

National Accounts

Gross Domestic Product in Germany
in accordance with ESA 1995
– Methods and Sources –



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Preliminary remarks

The present document contains the full updated description of the methods and sources used for the compilation of the gross domestic product and gross national income of the Federal Republic of Germany. Article 3 of Council Regulation 1287/2003 of 15 July 2003 on the harmonisation of gross national income at market prices stipulates that Member States of the European Union are to prepare and update this description.

The present version incorporates the results of the comprehensive revision of the national accounting system which was completed in April 2005. The main features of this revision were:

- changes to the procedure of measuring prices and volumes;
- the calculation and allocation of financial intermediation services (FISIM) to the users;
- the inclusion of new, previously not used or existent data sources (e.g. the annual structural survey in the economic sectors I and K of the classification of economic activities WZ 2003, hereafter referred to in short as service statistics, the annual structural survey for small enterprises, the statistics on day-case and in-patient care facilities (care statistics) and the results of the income and consumption sample surveys of 1998 and 2003);
- exhaustiveness checks within the calculation of gross domestic product and gross national income.

The reference year in this version is the year 2000, the results for which should be regarded as final. Values are given in euro and conversions to the euro took place at the official exchange rate (EUR 1 = DM 1.95583). Further results of the calculations of domestic product for the national accounts are published in the following Federal Statistical Office publications, subject-matter series 18:

- Series 1.1 First annual figures
- Series 1.2 Quarterly results
- Series 1.3 Seasonally adjusted quarterly results according to Census X-12 ARIMA and BV4.1)
- Series 1.4 Detailed annual results
- Series 1.5 Long-time series
- Series S.27 Revised quarterly results 1970 to 1991
- Series S.28 Revised seasonally and calendar-adjusted quarterly results according to Census X-12 ARIMA and BV4.1, 1970 to 1991 and
- Series S.29 Revised annual results 1970 to 1991

The present description of methods (GNI-inventory) was compiled by staff from the National Accounts Division of Department III in the Federal Statistical Office of the Federal Republic of Germany.

Wiesbaden, March 2009

1 General information on the statistics

1.1 Name of the statistics (according to EVAS*)

National accounts of the Federation (EVAS No 81)

1.2 Reference period

Reference quarter or reference year

1.3 Publication of results

The results of national accounts are published as tables in *Fachserie 18* (Subject-Matter Series 18), in the Genesis database, and on the internet. Also, there are press releases, leaflet, articles in the periodical *Wirtschaft und Statistik*, supplements to *Fachserie 18*, special volumes, methodical descriptions, and articles in cross-section publications.

1.4 Periodicity

Quarterly and annual

1.5 Regional coverage

Germany as a whole (from 1991) / former territory of the Federal Republic of Germany (until 1991)

1.6 Economic territory

In national accounts, the economic activity of all economic units is covered whose permanent seat or place of residence is within the economic territory (domestic concept). An economic territory may be the entire national economy (for example, Germany) or a part of it (for example, a Land).

1.7 Economic units

Economic units are all persons and institutions with their economic activities and related processes (production, distribution, consumption, investment, financing) that are important for the description of the economic processes, combined to form large groups (industries, institutional sectors). The entirety of the economic units which have their permanent seat or place of residence outside the economic territory are referred to as the “rest of the world”.

The smallest units represented are organisations which either draw up accounts of their own or for which it would be possible from legal and economic aspects to draw up complete accounts. Those units are grouped to form the following institutional sectors: Households, non-profit institutions serving households, financial corporations, non-financial corporations, general government.

1.8 Classifications

A large number of classifications, which generally are harmonised internationally, are used in national accounting to break down and systemise the results: Classification of Economic Activities (national WZ 2003 or NACE Rev.1, ISIC Rev.3), Classification of Products by Activity (CPA), Classification of Individual Consumption by Purpose (COICOP), Classification of the Functions of Government (COFOG); in a broader sense, also the breakdown of national accounting sectors, national accounting transactions, national accounting balancing items,

* EVAS = Integrated list of all statistics compiled by the German Federal Statistical Office and the Statistical Offices of the Länder

financial transactions, and assets, as well as the Nomenclature of Territorial Units for Statistics (NUTS) for the regional data.

What is especially important is the breakdown by industries, which is based on the national Classification of Economic Activities WZ 2003 (or the European NACE Rev.1, and the ISIC Rev.3 at UN level). The most detailed breakdown by industries available in national accounts is generally the A60 by 60 industries; at the level of Divisions (2-digit headings), it corresponds to the WZ 2003 (NACE).

1.9 Legal bases

1.9.1 EU legislation

Regulation (EC) No 2223/96

European System of National and Regional Accounts (ESA) 1995

1.9.2 Other bases

United Nations System of National Accounts (SNA) 1993 as well as numerous international handbooks (United Nations (UN), Organisation for Economic Co-operation and Development (OECD), Eurostat))

1.10 Confidentiality and data protection

This is generally not relevant for accounting systems because most of the data used are anonymised data of the subject matter statistics. No individual data are used because national accounts are macro-economic analyses.

2 Purpose and goals of the statistics

2.1 Content

National accounts comprise the compilation of domestic product (production approach, expenditure respectively use approach and income respectively distribution approach), the input-output accounts, the financial accounts, employment accounts, labour volume accounts and national wealth accounts. The most important figure is the rate of change of the gross domestic product (GDP).

2.2 Purpose of the statistics

The purpose of national accounts is to provide a quantitative overall picture of the economic activities in Germany which should be comprehensive, clearly structured and sufficiently detailed. They supply important data for the assessment and shaping of economic policies and should also ensure the European and international comparability, for example, regarding the calculation of the EU own resources by means of the gross national income (GNI).

2.3 Major users of the statistics

National: Federal Government (Federal Ministry of Economics and Technology (BMWi), Federal Ministry of Finance (BMF), Federal Chancellery), Deutsche Bundesbank, Council of Economic Experts, economic research institutes, universities.

International: Eurostat, European Central Bank (ECB), OECD, International Monetary Fund (IMF).

National accounting data are used, for example, as a basis for expert opinions, growth forecasts, estimates of tax receipts, pension adjustments, and calculations of GNI-based EU own resources.

2.4 User involvement

National accounting specialist committee; discussions with user representatives (Deutsche Bundesbank, BMWI, BMF) on every release date; co-operation with Deutsche Bundesbank on seasonal and calendar adjustment; user workshops and information events (for example, on the 2005 revision, background discussions on the annual GDP press conference in January); user satisfaction surveys (for example, on the publication programme after revisions, on the timeliness of quarterly GDP calculations (GDP Flash))

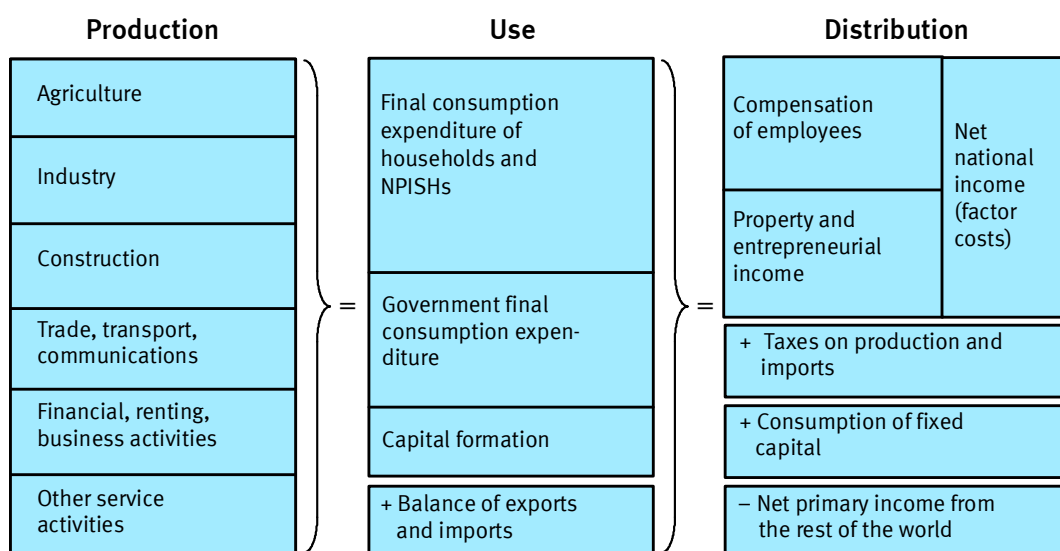
3 Methodology

3.1 Type of data calculation

To calculate the national accounting results, all suitable continuous surveys of economic statistics that are available at the time of publication or revision are used. Also, other data sources are evaluated, such as administrative data (for example, finance and tax statistics, Federal Employment Agency), administrative statistics and annual accounts of large enterprises (for example, Lufthansa, Telekom, financial corporations), household surveys (sample survey of income and expenditure (*EVS*), microcensus) and information from associations.

The gross domestic product (GDP) is calculated applying both the production and the use approach. The two results calculated are then reconciled, which produces the publication result of the GDP and its aggregates. The third variant, i.e. complete calculation of the GDP through the distribution approach, cannot be performed in Germany because of incomplete basic data on entrepreneurial and property income.

Gross domestic product



Due to the early calculation dates, the indicators available for estimating the short-term economic trend are often provisional and the data basis will successively be improved later through additional statistics becoming available. Therefore, missing data are first estimated or extrapolated on the basis of indicators.

3.2 Price adjustment

The gross domestic product and most of its components can be shown not only in nominal terms (i.e. at current prices) but also in price-adjusted terms. Since the national accounts major revision of April 2005, and according to international conventions and binding European legislation, price adjustment has been performed using a price base changing annually (previous year's price base). In this way, the calculation always uses the current price ratios, thus ensuring that "real" rates of change are calculated more exactly than is possible with a fixed price base year. This is what is actually done in the calculation applying the method of previous year's prices: The annual results are valued at annual average prices of the previous year (that is, for example, results for 2006 at 2005 prices) which, due to the chain-linking of every individual value, form comparable time series. The calculation method applied in Germany for the quarterly calculation is the annual overlap method.

3.3 Seasonal adjustment

The quarterly data are adjusted for seasonal and calendar variations using both the Census X-12-ARIMA method and the BV4.1 method.

3.4 Burden on respondents

As national accounts are an accounting system in which existing results of primary and secondary surveys and from administrative data sources are processed, no additional burden is placed on respondents.

4 Accuracy

4.1 Qualitative overall assessment of accuracy

As not all basic data required for national accounts are available already for the first release date but are successively integrated into the calculations, the first publication is to a considerable extent based on indicators and estimates. Only after about four years, almost all basic statistics required are completely available and the national accounting data are then considered as "final" (subject to major revisions).

4.2 Error calculation

Generally, the sampling and non-sampling errors of the basic statistics that are integrated into national accounting calculations can also be contained in the national accounting results; also, biases may occur due to estimated additions and deductions, other estimation procedures as well as extrapolation of time series. Due to that situation, it is not possible to exactly quantify the errors.

4.3 Revisions

Revision means the reworking of the results, for example, by including new data, new statistics and/or new methods into the accounting system. A distinction is made between regular current revisions referring to minor corrections for individual quarters or years and comprehensive or major revisions. The latter refer to the fundamental reworking of the entire national accounting system or of very long time series. Such comprehensive national

accounts revisions are performed every 5 to 10 years (last time in 2005, among other things to introduce the previous year's price base).

Reasons for comprehensive revisions may be the following:

- introducing new concepts, definitions, classifications, etc. into the accounting system;
- integrating new statistical bases for the calculation that have not been applied yet;
- applying new calculation methods;
- modernising the presentation and, where required, introducing new terms;
- enhancing international comparability.

Regular current revisions can generally be performed for any release date. Usually, the quarters of the current year are checked at every quarterly date, and the last four years, including the relevant quarters, are revised once a year (in August).

4.4 Revision measures¹⁾

	t_0 to $t+1Q$	t_0 to $t+1J$	t_0 to $t+2J$	t_0 to $t+3J$	t_{unrev} to t_{rev} ²⁾	t_0 to t_{final}
Reference periods (t_0 / t_{unrev})	1/1999 – 4/2006	1/1999 – 4/2006	1/1999 – 4/2005	1/1999 – 4/2004	1/1999 – 4/2004	1/1999 – 4/2003
Number of observations (n)	32	32	28	24	24	20
Mean revision (MR)	+ 0,02	+ 0,10	+ 0,03	+ 0,21	+ 0,14	+ 0,28
Mean absolute revision (MAR)	0,13	0,24	0,45	0,54	0,20	0,52

1) Put in relation to the relevant rates of change of the quarterly price-adjusted gross domestic product (chain-linked, 2000 = 100) compared with the previous year at the various dates of calculation.

2) Extent of the revision-related changes caused by the 2005 major revision of national accounts (data-related and concept-related changes).

Explanation:	t_0	time of first publication
	$t+1Q$	after first quarterly revision
	$t+1J$	after first annual revision
	$t+2J$	after second annual revision
	$t+3J$	after third annual revision
	t_{unrev}	last publication of unrevised data before 2005 major revision of national accounts
	t_{rev}	first publication of revised data after 2005 major revision of national accounts
	t_{final}	after final revision (corresponds to "final" result, subject to future major revisions)
	MR	$\sum (x_i - x_0) / n$ shows the upward or downward biases to be expected on average
	MAR	$\sum x_i - x_0 / n$ shows the absolute corrections to be expected on average
	x_0	value at the time of first publication
	x_i	value at the times of the subsequent publications

The calculations show that the regular current revisions of the gross domestic product are within a reasonable and justifiable scope considering the high timeliness and that they stand international comparison. In view of the complexity of the gross domestic product as an indicator of the overall economic performance, an average need for growth rate correction of about half a percentage point (mean absolute revision between first estimate and final

quarterly result in a year-on-year comparison) is an uncertainty that can hardly be avoided, as is also shown by international comparisons. According to a comparative study of the OECD (<http://www.oecd.org> › statistics › National Accounts › Quarterly National Accounts › “OECD Quarterly National Accounts (QNA) – Main Economic Indicators (MEI) Revisions Database, August 2007”), Germany always occupies one of the top ranks for this aspect of data quality, depending on the criteria used. This is even more remarkable as Germany, with its first release on the quarterly gross domestic product, is among the top countries in Europe also with regard to timeliness. When interpreting the revision measures, it must be taken into account that major revisions of national accounts which are due to methodological reasons cannot really be attributed to data quality in the narrow sense.

5 Timeliness and punctuality

The quarterly gross domestic product (GDP) is first published in a GDP first release after about 45 days. This is followed by more detailed results in a press release published about 55 days after the end of the reference quarter (that is, for the first quarter of any year in May, for the second quarter in August, for the third quarter in November and for the fourth quarter in February). On those occasions, the previous results of the last few quarters – in August those of the last four years – are updated, too. The first annual result is published at a press conference in January, about 15 days after the end of the reference year. Although the legally binding European standards (t+70) thus are definitely more than met by German national accounts, the revisions caused by that are justifiable. However, there is a trade-off between timeliness and accuracy, that is, lower accuracy in the form of more need for revision is the price of more rapid calculation and earlier publication.

6 Comparability over time and space

The definitions are entirely identical to those of the binding European System of National and Regional Accounts (ESA) 1995, so that data are available that are harmonised and comparable at a European level. At a global level, there is far-reaching comparability of national accounts thanks to the application of the United Nations System of National Accounts (SNA 1993). However, the SNA is not legally binding.

Based on the federal results, the national accounting working group of the Länder (<http://www.vgrdl.de>, tel. +49 (0) 711-6412470) calculates data for Länder and *Kreise* (administrative districts), though with a less detailed breakdown than at the federal level.

Quarterly and annual data are available without breaks from the first quarter of 1991 for Germany as a whole and for the period from 1970 to 1991 for the former territory of the Federal Republic (double presentation for 1991). In addition, unrevised annual data are available on the gross national income and the national income (factor costs) from 1925 to 1939 and on the gross domestic product from 1950 to 1969; however, those data involve breaks due to differences in territory, concepts, definitions and price base years and they will not be revised at all.

The quarterly data are consistently linked with the annual results.

7 Connections with other surveys

Many of the data published within the scope of national accounts differ from data of the relevant subject matter statistics regarding similar, or seemingly the same, variables. In most cases, this is due to methodical differences and to the nature of an accounting system in which a multitude of different data sources are integrated to calculate a variable. For example, the calculation of the output (including goods for resale) in trade is based not only on the monthly statistics of wholesale and retail trade but also, among other things, on the historical results of the census of distributive trade and the hotel and restaurant industry, the annual surveys in wholesale and retail trade and the turnover tax statistics; the same variable is covered by a primary survey in the specialised statistical unit. In these cases, the variables differ in terms of contents because the focus is different: The specialised statistics focus on the microeconomic aspect, while national accounts focus on the macroeconomic context.

8 Other information sources

Other information on national accounts such as the current data, press releases, documents on the annual press conference and definitions are available online at <http://www.destatis.de> on the national accounts page.

At <http://www.destatis.de> › Publikationen › Fachveröffentlichungen › Volkswirtschaftliche Gesamtrechnungen, all series and supplements to *Fachserie 18 "Volkswirtschaftliche Gesamtrechnungen"* (national accounts) as well as many other publications are available for free download:

- *Wichtige Zusammenhänge im Überblick* (national accounts info brochure)
- Methodical descriptions (*Fachserie 18, Reihe S.22, S.23 and S.24*)
- Regular articles in the periodical *Wirtschaft und Statistik* (WiSta, numbers 1 and 9)

Time series and tables are available in the GENESIS-Online database (<http://www.destatis.de> › GENESIS-Online).

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Abbreviations

€	Euro
ABM	job creation measures (<i>Arbeitsbeschaffungsmaßnahmen</i>)
AG	joint stock corporation (<i>Aktiengesellschaft</i>)
AHStat	external trade statistics (<i>Außenhandelsstatistik</i>)
APH	cost-of-living index (<i>Preisindex für die allgemeine Lebenshaltung der privaten Haushalte</i>)
Art.	article
AWV	German Foreign Trade Law (<i>Außenwirtschaftsverordnung</i>)
BaFöG	Federal Education and Training Assistance Act (<i>Bundesausbildungsförderungsgesetz</i>)
BAV	Federal Insurance Supervisory Office (<i>Bundesaufsichtsamt für das Versicherungswesen</i>)
BBk	Deutsche Bundesbank
BMA	Federal Ministry of Labour and Social Affairs (<i>Bundesministerium für Arbeit und Sozialordnung</i>)
BMF	Federal Ministry of Finance (<i>Bundesministerium der Finanzen</i>)
BMGS	Federal Ministry for Health and Social Security (<i>Bundesministerium für Gesundheit und soziale Sicherung</i>)
BMVEL	Federal Ministry of Food, Agriculture and Consumer Protection (<i>Bundesministerium für Verbraucherschutz, Ernährung, und Landwirtschaft</i>)
bn	billion (<i>Milliarde</i>)
ca.	circa
CF	commodity flow account
cf.	confer
cif	costs insurance freight
CN	Combined Customs Tariff and Statistical Nomenclature
COFOG	Classification of the Functions of Government
COICOP	Classification of Individual Consumption by Purpose
CPA	Classification of Products by Activity
D	Federal Republic of Germany
DIW	German Institute for Economic Research (<i>Deutsches Institut für Wirtschaftsforschung</i>)
DL	service (<i>Dienstleistung</i>)
DLS	service statistics (<i>Dienstleistungsstatistik</i>)
DP	data processing
DR-Verband	German Travel Agents' Association (<i>Deutscher Reisebüro-Verband</i>)
e. V.	registered association (<i>eingetragener Verein</i>)
e.g.	for example
e.V.	registered association (<i>eingetragener Verein</i>)
EC	European Community
ECU	European Currency Unit
EDP	electronic data processing
EEC	European Economic Community
EMU	European Monetary Union
ESA	European System of Accounts
et seq.	et sequens (and the following)
etc.	et cetera
EU	European Union

EUR	Euro
Eurostat	The Statistical Office of the European Communities
EVAS	Integrated list of all statistics compiled by the German Federal Statistical Office and the Statistical Offices of the Länder (<i>Einheitliches Verzeichnis aller Statistiken des Bundes und der Länder</i>)
EVS	Income and expenditure sample surveys (<i>Einkommens- und Verbrauchsstichproben</i>)
FGR	national forestry account (<i>Forstwirtschaftlichen Gesamtrechnung</i>)
FISIM	financial intermediation services indirectly measured
fm	cubic meter solid (<i>Festmeter</i>)
fob	free on board
FS	specialised series (<i>Fachserie</i>)
FSO	Federal Statistical Office
GDP	gross domestic product
GdW	Bundesverband deutscher Wohnungs- und Immobilienunternehmen e.V.
GEMA	Musical Performance and Mechanical Reproduction Rights Society (<i>Gesellschaft für musikalische Aufführungs- und mechanische Vervielfältigungsrechte</i>)
GFCF	Gross fixed capital formation
GKV	Statutory health insurance (<i>Gesetzliche Krankenversicherung</i>)
GNI	gross national income
GNP	gross national product
GP	German Systematic Classification of Commodities for Production Statistics, 1995 (<i>Systematisches Güterverzeichnis für Produktionsstatistiken</i>)
GRV	Statutory pension insurance (<i>Gesetzliche Rentenversicherung</i>)
GVA	gross value added
GVL	Performing Rights Society (<i>Gesellschaft zur Verwertung von Leistungsschutzrechten</i>)
GWS	sample surveys of buildings and dwellings (<i>Gebäude- und Wohnungsstichproben</i>)
GWZ	census of buildings and dwellings (<i>Gebäude- und Wohnungszählung</i>)
ha	hectare
HGZ	Census of distributive trade and the hotel and restaurant industry (<i>Handels- und Gaststättenzählung</i>)
HH	household
HS	Harmonised Commodity Description and Classification System (<i>Harmonisiertes System zur Bezeichnung und Codierung von Waren</i>)
Hv	commission trade (<i>Handelsvermittlung</i>)
HWB	crafts reports (<i>Handwerksberichterstattung</i>)
i.e.	id est
Ifo-Institut	ifo Institute for Economic Research, Munich (<i>Institut für Wirtschaftsforschung</i>)
incl.	inclusive
ind.	indirect
IOR	input-output compilation
IOT	input-output table
ISG	Institute for Social Research and Social Policy (<i>Institut für Sozialforschung und Gesellschaftspolitik</i>)
IT	information technology
KAU	Kind of activity unit
KBA	Federal Motor Transport Authority (<i>Kraftfahrt Bundesamt</i>)
KG	limited partnership (<i>Kommanditgesellschaft</i>)

Abbreviations

kg	kilogram
km	kilometre
KSE	cost-structure survey (<i>Kostenstrukturerhebung</i>)
KSK	artists' social security fund (<i>Künstlersozialkasse</i>)
KStSt	cost-structure statistics (<i>Kostenstrukturstatistik</i>)
kWh	kilowatt-hour(s)
KZBV	National Association of Statutory Health Insurance Physicians (<i>Kassenärztliche Bundesvereinigung</i>)
l	litre
LAWA	Association of Regional Water Authorities (<i>Ländergemeinschaft Wasser</i>)
LGR	National Agriculture and Forestry Accounts (<i>Land- und Forstwirtschaftliche Gesamtrechnung</i>)
m	million
m ²	square meter
max.	maximal
MP	market production
MTA	medical-technical assistant
n.e.c.	not elsewhere classified
NACE Rev. 1.1	Nomenclature générale des Activités économiques dans les Communautés européennes
NDP	net domestic product
NMP	non-market production
NNE	net national income
no.	number
NPISH	non-profit institutions serving households
OAS	own account software
ÖFEU	public funds, establishments and enterprises (<i>Öffentlich bestimmte Fonds, Einrichtungen, Betriebe und Unternehmen</i>)
öff.	public
OHG	general partnership (<i>offene Handelsgesellschaft</i>)
P	production
p.	page
p.a.	per annum
P+L	profit and loss account
PRODCOM	The EU-wide harmonised classification of products produced by the industrial sector specified in Council Regulation No. 3294/91
PSVaG	Pension Guarantee Fund (<i>Pensions-Sicherungs-Verein auf Gegenseitigkeit</i>)
PSW	purchased software
publ.	publisher
Rev.	revised
ROW	rest of the world
RWI	Rheinisch-westfälisches Wirtschaftsforschungsinstitut
RZ	computer centre (<i>Rechenzentrum</i>)
SEA	German Classification of Household Income and Expenditure (<i>Systematik der Einnahmen und Ausgaben der privaten Haushalte</i>)
SIO	Systematic Classification of Production Activities in Input-Output Accounting (<i>Systematik der Produktionsbereiche in Input-Output-Rechnung</i>)

SR	product assessment (<i>Sonderrechnung</i>)
SUT	supply use table
t	metric ton(s)
URS	business register system (<i>Unternehmensregistersystem</i>)
UStSt	VAT statistics (<i>Umsatzsteuerstatistik</i>)
VAT	value added tax
VBL	Versorgungsanstalt des Bundes und der Länder (a central organisation in Germany that provides supplementary pensions for federal and state government employees)
VDR	Association of German Pension Insurers (<i>Verband Deutscher Rentenversicherungsträger</i>)
WA	German Commodity Classification for External Trade Statistics (<i>Warenverzeichnis für die Außenhandelsstatistik</i>)
WZ 2003	German Classification of Economic Activities, Edition 2003 (<i>Klassifikation der Wirtschaftszweige, 2003</i>)
ZB	balance of payments (<i>Zahlungsbilanz</i>)

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Chapter 1 Overview of the system of accounts

1.1 Introduction

Production, investment, income and consumption are major aspects of economic activity and are also key factors in national accounting. The purpose of national accounts is to provide the most comprehensive, arranged and well structured quantified picture of a country's entire economy. So that this comprehensibility can be achieved, data have to be condensed. On one hand the numerous economic units are grouped together. On the other hand economic transactions are aggregated and meaningful measurement categories derived. On the international stage, the most commonly used aggregate is gross domestic product (GDP). From a European point of view, importance also attaches to gross national income (GNI), which is the basis for assessing the amount payable by each Member State into the budget of the European Union (EU).

The currently applicable definitions, concepts and classifications were compulsorily laid down in the European system of accounts of 1995 (ESA 1995). With a major revision in 1999, the German Federal Statistical Office (*Statistisches Bundesamt*) implemented the new ESA 1995 as the basis of the German system of national accounting. The following document describes the methods and statistical sources used to calculate GDP and GNI at market prices for the Federal Republic of Germany according to the revision conducted in 2005. On the one hand changes made as a result of the revision in 2005 affect the methods used for measuring prices and volumes. The fixed price basis used up to then was abandoned in favour of adjusting prices on the basis of the previous year's prices with subsequent chaining (chain linking). However, it is not the intention of this document to describe the methods and basis of calculating prices and volumes. They are dealt with in a separate publication, subject matter series 18, which is scheduled to appear

approximately in early 2007 as a fully revised version of special series S.24. Other important changes which result from the 2005 revision of the German system of national accounts are the allocation of financial intermediation services (FISIM; formerly: imputed bank service charges) to the users and the inclusion of new data sources (e.g. service statistics).

The national accounts for the Federal Republic of Germany are compiled by the Federal Statistical Office. The following divisions of the Office are involved in the production of the national accounting data:

- III A: Domestic Product, Production and Expenditure
- III B: National Income, General Government, External Economic Transactions
- III C: Input-Output Accounts; National Wealth Accounts
- III D: Labour Market

In the German accounting system, the production and expenditure approaches determine the level and the development of GDP and hence of GNI. This applies not only to the annual and quarterly data at current prices but also to the corresponding GDP results at prices adjusted for inflation.

The third method is the income approach. At this stage, however, GDP and GNI cannot be calculated on the basis of the income side alone because of the absence of further statistical details, particularly data on the profits of individual enterprises. Within a project being conducted for Eurostat, the possibilities of an independent calculation of entrepreneurial income in Germany are currently being examined with indications of the requirements of the statistical source data and tools. Nevertheless, the significance of the income approach in underpinning and substantiating GDP and GNI should not be underestimated.

Within the system of national accounting, sector accounts provide supplementary information for institutionally oriented users. They also serve as an important instrument ensuring coherence in the system of national accounts. They also serve as the basis for a comparison with the sectorally structured figures in the financial accounts, which the German Federal Bank (*Deutsche Bundesbank*) is responsible for compiling.

Detailed information on the supply and use of goods and services forms the basis of the input-output compilation. The final calculation of the annual results involves integrating the GDP accounts with the input-output compilation. A balancing process by type of product based on supply and use tables provides important indications regarding the consistency of the production and expenditure accounting. Moreover, information by type of product is also extremely important when it comes to adjusting current prices in the calculation of GDP and its aggregates.

At the core of the national wealth accounting by the Federal Statistical Office is a presentation of the assets by industries and by types of assets (e.g. equipment, buildings). All produced assets used permanently and recurrently in production for longer than one year count as fixed assets. An important indicator in this context is capital stock which serves as a measure of capital as a production factor. In the calculation of GDP, wealth accounting provides the capital consumption, i.e. the consumption of fixed assets as a result of wear and tear and foreseeable obsolescence.

Consumption of fixed capital by other non-market producers (government and private non-profit institutions) has a direct impact on gross domestic product and gross national income because their production value is compiled by totalling the production costs (including consumption of fixed capital).

The special emphasis of employment compilation is determining employment by industry, both as the number of persons in employment and the hours worked by them. These data can be used as a measure of labour as a production factor. The data are required to derive certain key indicators (e.g. productivity of labour, capital intensity, average earnings, unit labour costs). In addition, this information is necessary for calculating GDP because it forms the basis for compiling other figures – e.g. compensation of employees or gross value added of private non-profit institutions and in the economic activity 'household services'; it is also needed for the extrapolation of short-term GDP estimates and is used for plausibility checks of GDP and GNI.

Regional accounting data are compiled by the Working Party on the National Accounts of the Federal States (*Arbeitskreis 'Volkswirtschaftliche Gesamtrechnung der Länder'*), in which the Federal Statistical Office is represented. Here too, there is a direct link and feedback to the calculations made at national level.

1.2 Revisions policy and timetable for revising and finalising the estimates

In Germany the results of the national accounts are regularly subjected to revision, for example to include new data, new statistics, fresh definitions and/or new methods in the calculations. This involves distinguishing between regular **ongoing revision** and **comprehensive or 'major' revisions** which take place at greater intervals.

Regular revisions relate to minor corrections of the figures for individual quarters or years and take place within the normal accounting procedures. Generally it can take place for any publication date. In general, the quarters of the current year are checked each quarter, whereas the annual and quarterly data of the last four years are revised once a year (in August).

Regular revisions are conducted with a view to ensuring that any information which deviates significantly from the existing data is integrated into the accounts, thereby giving users the soundest possible basis for their analyses and projections. On the other hand, the process of continuous revision must not breed irritation or uncertainty among users or even doubts as to the reliability and objectivity of the data. Since various users of the national accounts are pressing for increasingly up-to-date statistics, it is up to the producers of statistics to make it clear that higher timeliness may also entail more frequent and extensive regular revisions.

In contrast to this, comprehensive revisions of the national accounts take place about every five years in Germany. These fundamental revisions of the entire national accounts data and of the associated time series are undertaken particularly when introducing new definitions and concepts. The last major revision was completed in April 2005 and introduced the use of the previous year's prices as well as the new arrangements for recording banking services (FISIM).

1.3 Outline of the production approach

In the production approach, the economic output of a national economy is described from the producers' perspective. Gross value added is calculated by deducting the value of intermediate consumption from the total output of the country's economic units. As the indicator of the economic performance of all industries, gross value added is the key aggregate in the production approach.

Table 1—1: Production approach by industry

Year 2000

Breakdown by industry (NACE Rev.1.1 / German classification of Economic Activities, Edition 2003)	Output	Intermediate consumption	Gross value added	
			EUR bn	%
Agriculture, hunting and forestry; fishing				
A. Agriculture, hunting and forestry	48.72	25.48	23.24	1.3
B. Fishing	0.41	0.19	0.22	0.0
Industry				
C. Mining and quarrying.....	13.16	7.93	5.23	0.3
D. Manufacturing	1 275.11	849.12	425.99	22.9
E. Electricity, gas and water supply	67.05	32.93	34.12	1.8
F. Construction.....	225.27	129.06	96.21	5.2
Services				
G. Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods	337.79	132.46	205.33	11.1
H. Hotels and restaurants	64.28	34.16	30.12	1.6
I. Transport, storage and communication	234.81	132.99	101.82	5.5
J. Financial intermediation.....	182.34	104.58	77.76	4.2
K. Real estate, renting and business activities	625.08	191.90	433.18	23.3
L. Public administration and defence; compulsory social security	166.85	48.83	118.02	6.4
M. Education	101.98	18.55	83.43	4.5
N. Health and social work	182.84	58.77	124.07	6.7
O. Other community, social and personal service activities	148.69	57.45	91.24	4.9
P. Private Households with employed persons	6.22	—	6.22	0.3
All industries (FISIM allocated)	3 680.60	1 824.40	1 856.20	100.0

When gross value added is calculated by means of the production approach, the various individual economic units are the conceptual basis of the computation. The results, however, are presented in aggregated form by industry (see Table 1-1). An industry in this sense comprises all economic units engaged in the same main activity. The basis for the classification of industries is the 2003 German classification of economic activities (WZ 2003), the first four categories of which are identical with those contained in the European industrial classification NACE Rev. 1.1. An additional tier is added to fit the national requirements. The data contained in the published production approach are broken down into 60 industries. It should be mentioned at this juncture that, in accordance with ESA 1995, the German accounting system divides the whole economy into areas of activity, which is why 'education', for example, covers not only state schools but also private and church schools as well as free schools run by charitable organisations.

The sum of the gross value added by all industries is the basis for the calculation of **gross domestic product** with the net taxes on products forming the intermediate step in this

calculation. According to the current concepts of ESA 1995, the gross value added is measured at basic prices. This means that the figures for gross value added by the various industries and for their output exclude taxes on products but include any production subsidies they receive. Taxes and subsidies on products are financial transactions that depend on the volume or value of the goods produced (e.g. VAT, taxes and duties on imports and excise duties). To render the gross domestic product (at market prices) equal on the production as well as the expenditure sides, it includes net taxes on products. The taxes less the subsidies on products therefore have to be added to the gross value added (at basic prices) in order to obtain the gross domestic product.

Aggregates of the production approach and derivation of gross national income

Year 2000 in EUR bn

Output.....	3 680.60
– Intermediate consumption.....	1 824.40
= Gross value added	1 856.20
+ Taxes on products	216.69
– Subsidies on products.....	10.39
= Gross domestic product (GDP)	2 062.50
+ Balance of primary incomes with ROW	– 19.34
= Gross national income (GNI)	2 043.16

Gross national income is calculated by subtracting from the gross domestic product those primary incomes which have flowed out of Germany into the rest of the world and, conversely, by adding the primary incomes that domestic economic units have derived from the rest of the world.

1.4 Outline of the income approach

The income approach offers a third method of determining gross domestic product and gross national income in addition to the production approach and expenditure approach. Other than in the production approach and expenditure approach, the income approach is not based on product transactions but focuses on the forms of revenue. Calculating GNI from the income side is an approach that can be used both for income provided (i.e. that has been generated or paid) or for income received. In the first case, the following definitions apply:

Calculating GNI via generated and distributed income

Year 2000 in EUR bn

Net operating surplus	282.47
of non-financial corporations	240.01
of financial corporations	8.16
of general government (market output)	– 2.63
of private households including NPISH	36.93
+ Mixed income	152.84
+ Compensation of employees (domestic)	1 101.66
+ Other production- and import taxes	41.05
– Other subsidies on production	30.30
= Net value added	1 547.72
+ Consumption of fixed capital	308.48
= Gross value added	1 856.20
+ Taxes on products	216.69
– Subsidies on products	10.39
= Gross domestic product	2 062.50
+ Primary income received from the rest of the world	118.28
– Primary income paid to the rest of the world	137.62
= Gross national income	2 043.16

The above table makes clear that the income approach is used to determine the individual forms of revenue as an original figure from initial statistical sources and to find the value added, domestic product and national income by adding them. This approach via the income generated within the country is often related to the functional distribution of income.

The other version of the income approach also starts from the forms of revenue, but links to the income received. In this approach, the income received by domestic residents (according to categories) has to be calculated so that the following definitions apply:

Calculating gross national income via income received

Year 2000 in EUR bn

Entrepreneurial income	147.60
+ Property income	276.77
+ Compensation of employees (residents)	1 100.06
+ Taxes on production and imports to the government	245.09
– Government subsidies	34.84
= Net national income	1 734.68
+ Consumption of fixed capital	308.48
= Gross national income	2 043.16

Neither income approach (generated or received) can be used in the German statistical system as an independent way to estimate GNI; the above figures were calculated subsequently from the totals, taking the production approach into account.

In the case of an approach based on income paid and income generated, the operating surplus figures could be calculated from source statistics only for financial corporations whose system of accounting is well documented, in as much as they are subject to banking supervision or the insurance monitoring system. No comprehensive balance sheet statistics permitting a similar

evaluation for non-financial corporations or enterprises in the private households sector are available (see also section 4.1). Statistics for general government, recording (quasi-)corporate public enterprises keeping commercial accounts, are being developed. However, operating surpluses cannot be derived directly where market production takes place in the cameral core area of state budgets, but only as a balance as in the production approach. Neither are there sufficient statistical sources for the market production of private non-profit institutions.

The other items in the above table of income generated or paid were calculated independently and could be used with the income approach without any problems.

Tax statistics, household surveys and business statistics would be the main sources for the estimation method based on received income. The results of the income and corporation tax statistics are available so late that they cannot be used for regular estimation of GNI. As, in a transition from the tax statistics to the national accounts approach, considerable conceptual differences (in particular the estimates for consumption of fixed capital and many special deductions and additions established under tax law) have to be eliminated, in addition to the problem that these results are not up-to-date, a subsequent substantiation of the results of the national accounts for the entrepreneurial income on the basis of the tax statistics cannot be performed. The figures for income from business and dependent activity from the income and expenditure sample survey are much too incomplete, in terms of time and content (e.g. absence of persons with high incomes), to provide a sound basis for the calculation of entrepreneurial income and profits. However, some general checks are possible concerning the development of entrepreneurial income of non-financial corporations using the balance sheet statistics provided by the Deutsche Bundesbank.

1.5 Outline of the expenditure approach

The expenditure approach estimates the output of a national economy from the use side. At the core of this approach is the value of the final use of domestic goods and services. Figures for final consumption expenditure, capital formation and the external balance of goods and services have to be determined. These aggregates are sometimes also known as categories of use. The composition of gross domestic product by individual categories of use is shown in the following table.

Breakdown of GDP by category of use

Year 2000 in EUR bn

Final consumption expenditure		1 606.07
of private households	1 180.33	
of private non-profit institutions serving households	33.83	
of the general government	391.91	
Gross capital formation		449.18
Tangible fixed assets	418.38	
including: Buildings	241.85	
Machinery and equipment	176.66	
Intangible fixed assets including costs of ownership transfer of undeveloped land	24.05	
Changes in inventories and acquisitions less disposals of valuables	6.75	
External balance of goods and services		7.25
Exports	688.39	
– Imports	681.14	
Gross domestic product		2 062.50

Three methods can basically be used to estimate the gross domestic product (GDP) from the use side. Firstly, the buyers or users of goods can be asked about their expenditure. Secondly, the producers of goods and services can be asked about their deliveries to consumers, investors and the rest of the world. Thirdly, the consumption structures for goods and services (commodity flow method) can be used. In theory, all three approaches lead to the same result, which means that the decision about which one to use in practice mainly depends on the statistical circumstances and the topicality required by users.

1.6 Balancing within the accounting system and other methods of validating GDP

GDP is calculated in Germany in two separate ways: The production approach calculates GDP using producers' gross value added and net taxes on products, whilst the expenditure approach calculates GDP as the sum of consumption expenditure, capital formation and the external balance of goods and services. The calculated results are combined in a macro-economic balancing process. In Germany, it is not really possible to calculate GDP in a third way via the distribution side (income approach) because of the large gaps in information about entrepreneurial income. However, the results from the income approach are used for consistency checks of GDP, by the creation of macro-economic parameters.

Balancing and validation of the GDP-calculations can basically be subdivided into three major blocks :

- (1) Macro-economic GDP balancing
- (2) Detailed balancing
- (3) Quality assurance during the process

The balancing of GDP serves to verify the results of the largely independently computed production and expenditure approaches at macro-level (1) and to combine them in a macro-economic balancing process. This procedure is performed separately in each calculation of GDP, starting with the first provisional quarterly GDP estimations (t+45 days after quarter end) and the

first provisional annual estimation in January of the following year, via the regular more in-depth annual estimations (for the first time after $t+18$ months) until the major national accounts revisions and backward projections which are carried out at intervals of several years (mostly combined with changes to the method). During these calculation cycles the statistical data become ever denser and the quality of the national accounts figures is progressively improved.

In addition to this macro-balancing there is a preliminary balancing of components. Aggregates which are statistically particularly closely related are checked for coherence in advance of the GDP balancing. Examples of this are particularly the reconciliation of the calculation of capital formation on construction and construction industry output or the reconciliation of the baseline values for retailing for the calculation of private consumption expenditure on the one hand and for the production approach of the retail trade industry on the other hand.

Detailed balancing (2) is a further step characterised by the integration of GDP and the input-output data. Based on tables showing supply and use, a detailed reconciliation of supplies of products (domestic output and imports) and use of products (final demand and intermediate consumption) takes place. If the detailed balancing reveals that due to the need for changes in various groups of products or industries the benchmarks in the tables cannot be retained, there may be yet another change to the results from the macro-balancing of GDP. Full integration of the input-output data was formerly only possible in the context of national accounts major revisions at intervals of several years, because the tables were only made available with relatively large delays. As a result of substantial acceleration in calculating the input-output tables (IOT) during recent years, however, it is now possible to integrate them into the current annual GDP estimations. However there is nonetheless a time lag in this integration of about three years (e.g. the IOT from the 2003 reporting year could be used in summer 2006 for the first time). Full integration without a time lag is not possible due to the data availability and the substantially more complex calculations involved in preparing the IOT.

As well as these two approaches to balancing GDP there is a whole range of further measures designed to provide accompanying quality assurance for the calculations (3); these are outlined in detail in section 6.2.

1.7 Overview of the allowances for exhaustiveness

The exhaustiveness of the results is an important goal of the national accounts, the significance of which has clearly risen since 1988 which is when the European Union (EU) started using GNP or GNI for its own resource purposes. In addition to the country-specific additions and adjustments to ensure exhaustiveness, which have long been applied in the German national accounts, a Europe-wide harmonised approach to improve exhaustiveness has been agreed¹. This agreement mainly provides for a review of existing (national estimated) allowances, the inclusion of tips and benefits in kind and the reconciliation with employment data. Another

¹ Commission Decision 94/168/EC, Euratom of 22 February 1994 on measures to be taken to improve exhaustiveness, in Official Journal L 77 of 19 March 1994, p. 51 ff.

matter that surely relates to the idea of exhaustiveness is the examination of the way in which the territory covered by national accounts is defined¹.

Paragraph 3.08e of ESA 1995 now states explicitly that activities not registered with the authorities must also be included. In the demarcation of economic activities to be recorded (within the production boundary), it is irrelevant whether a particular economic activity is legal or illegal, practised in accordance with the rules or associated with tax evasion, performed openly or in secret, practised regularly or occasionally, or produced for the market or for own use. Gaps and under-recording in the statistics, e.g. because of cut-off limits or reporting thresholds, should be remedied using estimates in the national accounts.

Art. 1(2) of the above decision to secure exhaustiveness¹ states that 'economic activities which are illegal under national law do not come within the area of application of the measures foreseen in this decision'. Since ESA 1979, 2nd ed., which was authoritative at that time, did not contain a clear rule on this, this provided important clarification. Although – in contrast to the previous ESA 1979 – ESA 1995 contains explicit provisions in various clauses, according to which even legally prohibited production such as (prohibited) prostitution or production of drugs has to be included in GDP and GNI. In terms of the legal basis, however, it is established that with the transition from ESA 1979 to ESA 1995 the measures aimed at exhaustiveness were not revised following Decision 94/168. So it was not conclusively clarified whether the introduction of ESA 1995 also covers illegal and criminal activities within its sphere of application, or not. At present all facts deemed by point 3.08 of ESA 1995 to be part of production are included in the German system of national accounts. Illegal and criminal activities form the sole exception.

Ensuring the exhaustiveness of GDP and GNI is checked again in Germany **as part of each major revision of the national accounts**. A whole bundle of measures were introduced in the 1999 revision, as mentioned in the previous GNI-inventory.² The measures introduced during the 2005 revision are described at length in Chapter 7.

1.8 Transition from GDP to GNI

The gross domestic product relates to economic activities in a particular economic area and measures domestic economic output. Gross national income, on the other hand, is a figure representing the economic activities of residents. In this context, 'residents' are all those people living in a particular economic area, irrespective of their nationality and the legal form. The difference between GDP and GNI arises from income transactions with the rest of the world. German outward commuters contribute to the GDP of another country; for the transition to GNI, this amount must be deducted from that country's GDP and added to Germany's GDP (and vice versa for inward commuters to Germany).

¹ Commission Decision 91/450/EEC, Euratom of 26 July 1991 defining the territory of Member States, in Official Journal L 240 of 29 August 1991, page 36ff in conjunction with Commission Regulation (EC) No. 109/2005 of 24 January 2005 on the definition of the economic territory of Member States for the purposes of Council Regulation (EC, Euratom) No. 1287/2003 on the harmonisation of gross national income at market prices in Official Journal L 21 of 21 January 2005, page 3f.

² Cf. Federal Statistical Office, Fachserie 18, Reihe S.22, Wiesbaden 2002, p.26ff.

In ESA 1995, point 8.94, GNI is defined first of all from the income side: "Gross national income (at market prices) represents total primary income receivable by resident institutional units: compensation of employees, taxes on production and imports less subsidies, property income (receivable less payable), (gross or net) operating surplus and (gross or net) mixed income". Deriving GNI from the aggregates used in the income approach of valuation is not the only option.

In the German national accounts, GNI is estimated on the basis of GDP, with income transactions with the rest of the world being added or deducted. This calculation method is defined as follows in ESA 1995, point 8.94: "Gross national income (at market prices) equals GDP minus primary income payable by resident units to non-resident units plus primary income receivable by resident units from the rest of the world". The following table shows the transition from GDP to GNI.

Transition from GDP to GNI

Year 2000 in EUR bn

Gross domestic product.....	2 062.50
+ Compensation of employees received from the rest of the world (outward commuters).....	4.08
– Compensation of employees paid to the rest of the world (inward commuters)	5.68
+ Property income received from the rest of the world.....	108.35
– Property income paid to the rest of the world	119.29
+ Subsidies received from the rest of the world.....	5.85
– Taxes on products to the rest of the world.....	12.65
= Gross national income	2 043.16

A total of EUR 19.34 billion in primary income, or almost 1% of GDP, was paid to the rest of the world in 2000 in net terms.

1.9 Effects of FISIM allocation on GNI

Regulation (EC) No. 1889/2002 of 23 October 2002¹ created a basic decision at European level concerning the calculation and recording of bank output in connection with interest-related operations. As part of the April 2005 major revision of the national accounts this conceptual arrangement was implemented in the German calculations. To clarify the differences, the previous term used ('imputed bank service charge') has now been replaced by the term 'financial intermediation services indirectly measured' (FISIM).

Output calculated as the sum of sales, value of own-account fixed capital formation and changes in inventories of own products may not be applied to banks which – apart from certain explicit remuneration (e.g. for consultancy services) – do not generate sales in the conventional sense. Therefore up to now a surplus of property income received (dividends and interest adjusted for earnings from investing own funds) over interest paid was used as a substitute figure for the missing sales. As no plausible method could be found of allocating the value of these banking services to the users, they were then treated totally as intermediate consumption by the whole

¹ Official Journal of the EC No. L 286 of 24 October 2002, p. 11f.

economy. As these banking services entered into output as well as intermediate consumption, they affected neither the level nor the development of GDP or GNI.

The change of concept was incorporated in the 2005 revision. It comprises two components. Firstly, the concept for determining the value of the services produced by banks was changed and secondly, this value was allocated to the consumers of banking services. The new estimation alone would not have had any impact on the level of GDP, because the full value of the banking services so far had been treated as intermediate consumption and therefore – regardless of the actual value of the banking services – has always been included in the accounts without affecting the value added. The allocation to the consumer sectors has resulted in obvious changes in GDP and GNI by contrast.¹ They are shown in the following table for the year 2000 by way of example. Chapter 9 explains the method of calculation and the significance of FISIM in finding GNI for the purposes of own resources.

**Changes to the final national uses,
gross domestic product and gross national income because of FISIM**

Year 2000 in EUR bn

	Household final consumption expenditure	+ 14.58
+	Consumption expenditure of private non-profit institutions.....	+0.63
+	Government final consumption expenditure.....	+ 4.56
=	Final national uses.....	+ 19.77
+	External balance of goods and services.....	+ 4.53
=	Gross domestic product.....	+ 24.30
+	Net cross-border primary income	– 4.53
=	Gross national income	+ 19.77

¹ A full explanation of the calculation of FISIM is provided in section 3.16.1 of this inventory and also an explanation of the impact of the FISIM calculation on other areas in the overall system of national accounts in: Eichmann, W., Finanzserviceleistung, indirekte Messung (FISIM), in Wirtschaft und Statistik 7/2005, Wiesbaden, p. 710-716.

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Chapter 2 Revisions policy and timetable for revising and finalising the estimates

2.1 Revisions policy

In Germany the results of the national accounts are regularly subjected to revision, for example by the inclusion of new data, new statistics and/or new methods in the accounting system. This involves distinguishing between **regular current revisions** and **comprehensive or major revisions** which take place at greater intervals.

Regular revisions relate to minor corrections of the figures for individual quarters or years and take place within the normal accounting procedures. Generally it can take place for any publication date. In general, the quarters of the current year are checked each quarter, whereas the annual and quarterly data of the last four years are revised once a year (in August).

Current revisions are conducted with a view to ensuring that any information which deviates significantly from the existing data is integrated into the statistics, thereby giving users the soundest possible basis for their analyses and projections. On the other hand, the process of continuous revision must not breed irritation or uncertainty among users or even doubts as to the reliability and objectivity of the data. Since users of the national accounts are increasingly pressing for more up-to-date statistics, it is up to the producers of statistics to make it clear that higher timeliness may also entail very frequent and extensive current revisions.

In addition to the current revision process major revisions are undertaken which entail a fundamental review of the entire German national accounts and of any long time series. Such comprehensive revisions of the German national accounts are conducted about every five years, with the last one in 2005 which brought in the use of the previous year's prices and the new rules for recording banking services (FISIM).

Reasons for such major revisions may be given by, for example:

- the introduction of new, or changes to existing, concepts, definitions and classifications;
- the integration of new, previously unused or not yet available statistical sources;
- the application of new methods of calculation;
- the conversion to a new price basis (this reason will in future be eliminated through the conversion in 2005 to the use of the previous year's prices);
- the modernisation of the presentation and introduction of new terms and expressions;
- the improvement of international comparability.

Out of consideration for the users of national accounts data in particular, such adjustments should, as a matter of principle, be carried out in a single consolidated process which is announced at an early stage. The existing five-yearly revision cycle has always been accepted by users in Germany. In addition, the consolidation of statistical adjustments into major revisions eases the workload of those who produce national statistics.

To offer all users the longest possible, unbroken time series even following comprehensive revisions, during the last major revisions the results from 1991 onwards for whole Germany after reunification were revised as well as those prior to 1991 for the former territory of the Federal Republic of Germany.. These results relate to the Federal Republic of Germany including West Berlin according to the frontier status until 3 October 1990 – in other words, prior to German reunification. As a rule this backward calculation only takes place during a second stage of the revision because of capacity constraints. The results for the former territory of the Federal Republic of Germany for the years 1970 to 1991 that were revised in the context of the 2005 major national accounts revision were published in September 2006. This entailed implementing changes to the concept of the major 2005 revision. Changes to data hardly played any role for the period prior to 1991 because there were no important new data sources. The single exception to this is the crucial year of 1991 on which there was new information to be drawn from the regional national accounts. At times this involved adjustments in other years in order to avoid breaks in the time series. In this way all users once again have long time series based on comparable methods with annual and quarterly information in compliance with the current system of national accounts.

Since this inventory relates only to annual figures for GDP and GNI, we shall only refer here to revisions of annual results, even though in Germany the annual and quarterly results are closely linked and are compiled by the same organisational units.

An important change to the method and one of the main issues of the 2005 revision was the introduction of a new method of price-adjustment. The new price adjustments based on the previous year's prices with chaining have replaced the previous fixed-price basis for deflating national accounts data and make a substantial contribution to the international harmonisation of price and volume measurement. With the Commission Decision 98/715/EC of 30 November 1998, the introduction of the previous year's pricing basis became binding on all Member States of the EU, although certain transitional periods were allowed (until 2005 in the case of Germany).

Banking services are now estimated so as to allocate the indirectly measured financial services (FISIM) to the individual demand entities (investors and borrowers) and/or purposes (intermediate consumption, consumption, exports, imports). This change is also in line with the implementation of a compulsory European regulation (Commission Regulation (EC) No. 1889/2002 of 23 October 2002).

As a result, even after the 2005 revisions and the backward calculation of 2006 the general economic situation portrayed has remained largely the same. However, careful examination reveals some notable changes.

As a result of the 2005 revision, the central figure of the national accounts, gross domestic product (GDP), was shown for the years 1991 to 2004 to be between around EUR 30 and 47 billion higher at current prices than before, in other words it entailed corrections of between + 1.4% and + 2.6%. The biggest part of the rise was due to changes in concept, whereas the total changes due to the nature of the data were of comparatively small impact. Over the course of time the nominal rates of GDP change in individual years deviated from the previous rates by between – 0.5 and + 0.4 percentage points, but over the entire period 1991 to 2004 the average annual rate of growth of + 2.8% stayed more or less unchanged (previously: + 2.9%). There was a different picture in the case of the price-adjusted gross domestic product where the real rates of change in most years were either higher than the previous figures (by up to + 0.4 percentage points) or remained unchanged. The average annual growth rate of the price-adjusted gross domestic product after the revision was 0.2 percentage points above the previous rate (+ 1.5% compared with + 1.3%).

For the former territory of the Federal Republic of Germany the new calculations during the period 1970 to 1991 led to an increase in nominal gross domestic product from EUR 8.6 billion in 1970 to a maximum of EUR 32.4 billion in 1989. Even nominal gross domestic product over time was sometimes noticeably altered with differences between the rates of change of from – 0.7 to + 0.8 percentage points. Price-adjusted, the corrections to gross domestic product were slightly lower, but here too the differences in the annual rates of change were between – 0.5 and + 0.4 percentage points. With a longer term comparison between 1970 and 1991 the differences are not significant, however: the average annual growth of gross domestic product during this period before and after the revision is + 6.7% in nominal terms and + 2.7% with price adjustments.

2.2 Timetable for revising and finalising the estimates

The **first preliminary annual results** for GDP/GNI and their production and use side aggregates, as well as the key indicators of the income approach, are published as early as a week and a half after the end of the year to which they relate.

The **first revision (current revision)** of this very early estimate takes place the following February in conjunction with the first publication of the figures for the fourth quarter of the preceding year. Great care is always taken, even at this point, to assess whether the remaining estimation margin allows to retain the initial annual estimate. However, the very early estimate of the annual GDP-data contains numerous statistical gaps, especially for the fourth quarter, and so once fuller information is available for the fourth quarter – or indeed for the first three quarters – there is generally a need to adjust the quarterly results on initial publication of the figures for all quarters of the last year. Depending on the extent of these adjustments, they may affect the result for the whole year. Another reason for checking and making any initial adjustment necessary to the annual results for the previous reporting year at the end of February in the following year lies in the desire where possible not to change the result of the previous year and the respective quarters when publishing the first quarter's figures at the end of May of the current year. The results for the first quarter, which play a vitally important part in analyses and projections of economic trends, require the soundest possible underlying data on each quarter of the previous year.

Despite these efforts, there is a **second check** if necessary and perhaps a change of the previous year's results in May of the following year in conjunction with the first publication of the first quarter, provided the new information renders continuous revision necessary at this point.

A **third revision**, generally entailing an adjustment of the annual result for the reporting year (t), takes place in August of the following year, since by that time almost all of the regularly updated indicators (monthly and quarterly figures) for the previous year are available. At that point, a revision of earlier years' figures also takes place, chiefly on the basis of annual data; this revision can cover a period of up to four years.

With the **fourth** and **fifth revision** of the annual results for the reporting year (t), normally conducted in August of $t + 2$ and $t + 3$, all annual source statistics are incorporated.

If necessary, a **sixth revision** for the reporting year (t) is conducted in August $t + 4$ if annual statistics become available late and deviate significantly from previous figures. Particular importance attaches in this context to the annual accounts of the federal states and local authorities which influence not only the level of GDP and GNI but also the net borrowing/lending of general government. After $t + 4$ years, the results – apart from major revisions – are final.

The following Overview 2-1 shows the timetable for the current revision of GDP and GNI as well as listing the main data sources for the various calculation dates.

Overview 2—1: Timetable and data sources for the annual results of GDP and GNI

Calculation and revision dates for reporting-year t	Data sources
1. Early January, year t+1 First provisional result	Monthly and quarterly indicators for updating previous year's results. Monthly indicators, some covering a 10-month period, quarterly indicators, largely covering three quarters
2. Mid-February, year t+1 First review/revision in connection with the initial publication of the figures for the fourth quarter of year t	Monthly indicators, mostly for a period of 12 months, quarterly indicators, some covering all four quarters, some covering three quarters
3. Mid-May, year t+1 Second review/revision in connection with the initial publication of the figures for the first quarter of t+1 where necessary	Monthly and quarterly indicators largely complete
4. Mid-August, year t+1 Third review/revision in connection with the initial publication of the figures for the second quarter of t+1	Full set of monthly and quarterly indicators
5. Mid-August, year t+2 Fourth review/revision in connection with the initial publication of the figures for the second quarter of t+2	First provision of annual data for 'initial estimates', e.g. <ul style="list-style-type: none"> ▪ annual VAT statistics, annual cost structure survey in areas of industry ▪ annual surveys in wholesale and retail trade and in segments of transport ▪ annual accounts of major companies (including Deutsche Bahn, Deutsche Post, Deutsche Telekom, Lufthansa) ▪ profit and loss accounts of financial institutions and insurance companies ▪ annual financial statistics (not always available in full) ▪ annual survey of the primary construction industry
6. Mid-August, year t+3 Fifth review/revision in connection with the initial publication of the figures for the second quarter of t+3	Annual data not yet taken into account or provided lately
7. Mid-August, year t+4 Final result in connection with the initial publication of the figures for the second quarter of t+4	Further annual data not yet taken into account or provided lately

Major revisions are conducted every five years as a rule in order to include new data, new statistics and new methods in the accounting system. The last major revision of the German national accounts took place in spring 2005. Its results and the associated changes to concepts, methods and data sources were published on 28 April 2005. The changes in method were then also applied to the results for the year 1970 to 1991 for the former territory of the Federal Republic of Germany. The revised, backward calculated results were published on 5 September 2006.

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Chapter 3 The production approach

3.0 Calculation of GDP using production and value added

In the production approach, the performance of a national economy is measured from the output side. Gross value added is calculated by deducting the value of intermediate consumption from the total output of the country's economic units. As the indicator of the economic performance of all industries, gross value added is the key factor in the production approach. Since the 2005 revision of the national accounts, parts of the intermediate consumption of each economic activity have comprised financial intermediation services indirectly measured (FISIM). Before deducting FISIM, when presenting the production approach the results of the particular economic activities, termed for better understanding 'FISIM not allocated', are referred to after deduction of FISIM as 'FISIM allocated'.

The **gross domestic product** is found from the sum of gross value added of all economic activities, taking into account the intermediate step – taxes on products less product subsidies. Under the ESA 1995 rules, gross value added has to be calculated at basic prices. This means that the figures for gross value added by the various industries and for their output exclude taxes on products but include any production subsidies they receive. In respect of products, these taxes and subsidies depend on the volume or value of produced goods (e.g. VAT, import levies and excise duties). So that gross domestic product at market prices is the same on both the generation and use-of-income sides, the full amount of net taxes on products, i.e. taxes less subsidies on products, must be added to gross value added at basic prices.

Aggregates in the production approach

Figures for 2000 in EUR bn

Output	3 680.60
– Intermediate consumption (including FISIM)	1 824.40
= Gross value added (FISIM allocated)	1 856.20
+ Taxes on products	216.69
– Subsidies on products	10.39
= Gross domestic product (GDP)	2 062.50
+ Balance of primary income received from the rest of the world	– 19.34
= Gross national income (GNI)	2 043.16

Gross national income is finally calculated by deducting from GDP the primary income paid to the rest of the world and adding the primary income that German-based economic units have earned in the rest of the world.

When gross value added is calculated by means of the production approach, the various individual economic units are the conceptual basis of the computation. The findings, however, are presented in aggregated form by industry (see Table 3-1). An industry in this sense comprises all economic units engaged in the same primary activity. The basis for the classification of industries is the 2003 German classification of economic activities (WZ 2003), the first four categories of which are identical with those contained in the European industrial classification NACE Rev. 1.1. WZ 2003 is the outcome of careful updating of the German classification of economic activities, 1993 edition (WZ 93), whose structure was largely retained. Only in cases

where serious economic and technical changes have taken place since the appearance of WZ 93 have modifications to the structure been required. The data contained in the published production approach are broken down into 60 industries.

Table 3—1: Production by industry
2000

Economic category (NACE Rev.1.1 / German classification of 2003)	Output	Intermediate consumption	Gross value added	
			EUR bn	%
Agriculture, hunting and forestry; fishing				
A. Agriculture, hunting and forestry	48.72	25.48	23.24	1.3
B. Fishing	0.41	0.19	0.22	0.0
Industry				
C. Mining and quarrying.....	13.16	7.93	5.23	0.3
D. Manufacturing	1 275.11	849.12	425.99	22.9
E. Electricity, gas and water supply	67.05	32.93	34.12	1.8
F. Construction.....	225.27	129.06	96.21	5.2
Services				
G. Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods	337.79	132.46	205.33	11.1
H. Hotels and restaurants	64.28	34.16	30.12	1.6
I. Transport, storage and communication	234.81	132.99	101.82	5.5
J. Financial intermediation	182.34	104.58	77.76	4.2
K. Real estate, renting and business activities	625.08	191.90	433.18	23.3
L. Public administration and defence; compulsory social security	166.85	48.83	118.02	6.4
M. Education	101.98	18.55	83.43	4.5
N. Health and social work	182.84	58.77	124.07	6.7
O. Other community, social and personal service activities	148.69	57.45	91.24	4.9
P. Private households with employed persons	6.22	—	6.22	0.3
All industries (FISIM allocated).....	3 680.60	1 824.40	1 856.20	100.0

3.1 Statistical framework

3.1.1 Conceptual framework

One of the key issues concerning the production approach is the precise definition of the statistical **recording units**. As its building blocks, ESA 1995 uses three different types of statistical unit:

- institutional units,
- local kind-of-activity units, and
- branches of homogeneous production.

Depending on the type of unit that is chosen, the individual industries' output, intermediate consumption and gross value added can vary. The choice may even alter the output and intermediate-consumption figures for the entire economy, but not its gross value added.

According to ESA 1995, an **institutional unit** is an elementary economic decision-making centre, i.e. a body engaging in economic activities for which it is directly responsible and keeping, or

able to compile, a full set of accounts covering all its economic and financial transactions carried out during the accounting period as well as a balance sheet of assets and liabilities (paragraphs 2.12 to 2.16 of ESA 1995). This set of accounts is the primary criterion, since it serves to convert these conceptual specifications into statistical data. The institutional units are the building blocks of the various sectors of the economy, and their main statistical purpose is the presentation of the transactions that take place in the domains of income, capital formation and finance.

An institutional unit may be shown to possess two or more **local kind-of-activity units** (local KAUs) if the following condition is met: "The institutional unit's information system must be capable of indicating or calculating for each local KAU at least the value of production, intermediate consumption, compensation of employees, the operating surplus and employment and gross fixed capital formation" (ESA 1995, paragraph 2.106; see also Regulation (EEC) No. 696/93 on the statistical units). The full value of the production of a local kind-of-activity unit and of its intermediate consumption includes supplies of products between such units, in other words internal supply within an enterprise, but not production destined for processing by the producer unit, i.e. additions to work in progress. In principle, as many local kind-of-activity units must be registered as there are secondary activities. However, if the accounting documents that would be necessary to describe such activities are not available, a local kind-of-activity unit may include one or several secondary activities (paragraph 1.29). Local kind-of-activity units are used as a means of recording production processes, and their data are consolidated into industries for accounting purposes.

Units of homogeneous production (paragraphs 1.29 and 2.112 et seq.) serve specific analytical purposes, particularly the presentation of connections between production processes in the framework of the input-output account. Their distinguishing feature is a unique activity which is identified by its inputs, a particular production process and its outputs. The products each unit produces must fall within a single classification category. Such units are not normally subject to direct observation; on the contrary, the data from statistical surveys have to be restructured in such a way that figures are produced for these notional units.

The **application** of this conceptual framework in Germany showed that it was impossible to achieve an ideal result on the basis of the range of statistical instruments that had been developed over several decades in the field of national accounting.

- Since in most cases in Germany the requisite comprehensive data from business accounts are only available for entire enterprises, the **enterprise**, as the smallest legally independent institutional unit, is the natural starting point for the valuation process. Only very few sets of statistical data contain combined information for each plant as well as for the whole enterprise, and there are no statistical records of intra-company supply operations. Since it was impossible to convert the whole system to a local-KAU basis, the concept of the enterprise has essentially been preserved for those areas of the economy in which enterprises operate, not least for reasons of clarity and interpretation. This means that enterprises are classified into industries on the basis of their primary economic activity, which is identified by measuring the contribution of each activity to the gross value added that the enterprise generates.

- In the **general government sector**, on the other hand, institutional units, such as national, regional or local authorities or bodies administering social security schemes, can sometimes be classified by industry at the level of the kind-of-activity unit where the necessary data can be obtained in that degree of detail. Fiscal statistics can be specially processed so that the data can be broken down into budget chapters and numbered areas of activity, even though a breakdown relating to individual cases is not possible. If the 50% cost-recovery criterion is applied, it is also possible to ascertain whether these newly formed units are market or non-market producers.
- Within **non-profit institutions serving households** too, it should be possible in principle to distinguish between those local kind-of-activity units which are market producers and those which are non-market producers, but this approach can only be taken in respect of housing rented out by these organisations, which is distinguishable as market production. Other largely cost-covering operations, such as – presumably – emergency services provided by relief and aid organisations, are regarded, in the absence of appropriate statistics, as secondary activities of institutional units rather than kind-of-activity units, unless they have been established as enterprises in their own right.
- **Housing services** must be regarded as a special case, since in German national accounting practice a body from which housing is rented is always regarded as a kind-of-activity unit, irrespective of whether housing services constitute the primary or secondary activity of the economic unit to which the body belongs. This accords with the conventional 'functional' definition of housing services, although they are no longer classed as a separate industry within a comprehensive enterprise sector but now fall under 'real estate services' (NACE division 70), covering all institutional sectors. For analytical reasons, it is expedient to show the economic activity of housing-service provision as a separate entity. This applies especially to the sub-sector of insurance corporations, in which actual insurance business and housing services provided to policyholders as part of a profitable investment have to be recorded separately. The methodology used for **national agriculture and forestry accounts** also involves a division between local kind-of-activity units in the realm of agriculture and forestry on the one hand and housing services and owner-occupied dwelling services on the other. It would, after all, make little sense to combine the large domain of housing services and owner-occupied dwelling services to households with some other activity, such as domestic services. The stratification model used in German national accounting, whereby the output of housing services is measured on the basis of floor area and is broken down in great detail into about 100 dwelling types with their respective levels of rent per square metre, furnishes the necessary differentiated information for this accounting approach.

In cases where **households**, as institutional units, are run by self-employed persons or business owners, these households are classified by industry on the basis of the primary economic activity of the householder's 'business'. The other production activities in which households engage, particularly if they undertake building work themselves, rent out or occupy their property, employ domestic staff, grow agricultural produce in domestic gardens and even engage, in addition to their primary employment, in independent activities such as academic, artistic or educational work or other primarily occupational activities, appear in the figures for the relevant industry. For analytical as well as statistical reasons, these domestic activities are not consolidated

Overview 3—1: Industries and economic sectors¹⁾

Industry German classification WZ 2003	S.11 Non-financial corporations	S.12 Financial corporations	S.13 General government	S.14 Households	S.15 Non-profit institutions serving households
A Agriculture, hunting and forestry	Corporations: <i>limited liability companies (AG and GmbH), cooperative societies</i>		Local kind-of-activity unit in the case of: – forestry	<i>Self-employment Farmers,</i>	
B Fishing					
C Industry to E excluding construction			– water supply services	<i>Sole traders engaged in productive activity crafts and trades (including building work undertaken by householders)</i>	
F Construction					
G Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods					
H Hotels and restaurants	Quasi-corporations: <i>partnerships</i>		– incidental and secondary activities in the realm of transport	<i>Traders, hoteliers and restaurateurs, self-employed providers of transport services self-employed insurance agents, etc.</i>	
I Transport, storage and communication					
J Financial intermediation		<i>Banks, insurers, Incidental services</i>			
K Real estate, renting and business activities	<i>General partnerships (OHG), Limited partnerships (KG)</i>	<i>Renting services (local kind- of-activity unit in the case of insurance corporations)</i>	– Real estate – Research National govt, federal states and local authorities, social insurers	<i>Housing landlords and owner- occupiers Sole traders providing services</i>	<i>Housing services (local kind-of- activity units) Research establishments</i>
L Public administration and defence; compulsory social security	<i>Business operations without autonomous legal personality belonging to the state or organisations, excl. extended business associations</i>				
M Education			– Education – Health	<i>Self-employed and freelance service providers</i>	<i>e.g. political parties, trade unions, churches, welfare organisations, voluntary associations</i>
N Health and social work			– Waste disposal – Cultural activities		
O Other community, social and personal service activities					
P Private households with employed persons					

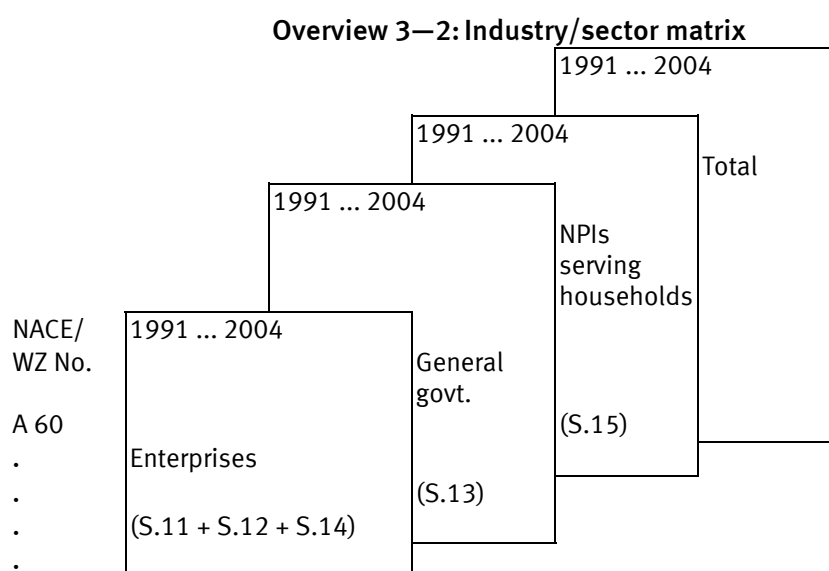
¹⁾ This Overview shows a simplified version of the actual categorisation.

- into a separate category. If this were the case, it would be necessary to identify the main activity of each household, which would not be a very meaningful piece of information. Services rendered at home by members of the household (housework) lie beyond the bounds of production as defined in the German accounting system. The production of goods by household members is by convention not included in the ESA, because the total volume of such goods is minimal.

To summarise the above, Overview 3.1 shows the relationship between institutional units and the statistical units. The whole productive structure is now divided into areas of economic activity, as defined in the German classification system WZ 2003. This is why, contrary to previous practice, 'education', for example, now covers not only state schools but also private and church schools as well as free schools run by charitable organisations.

3.1.2 Structure of the valuation process

The structure of the GDP valuation process based on the production approach can also be elicited from the industry/sector matrix (Overview 3-2). On the basis of the available statistical data, a separate valuation is undertaken in principle for general government (sector S.13) and for the non-profit institutions serving households (sector S.15), as well as for the remaining enterprise categories (non-financial corporations (S.11), financial corporations (S.12) and households (S.14)), each sector being subdivided by industry in accordance with the NACE classification. The output of this sizeable 'residual' category is broken down, in the framework of the sector account, into sectors S.11, S.12 and S.14, irrespective of level, chiefly with the aid of statistical data broken down into the various legal forms in which businesses are constituted:



3.1.3 Statistical reference framework

As far as registration is concerned, the official statistical system in Germany may be regarded as a multi-centred system. There are several parallel part-systems, each with its own register, but as yet the strands of information are not yet fully integrated. For this reason, the register has not been fully serviceable as a source of data for national accounting and specialised statistics. An

interesting fact, however, is that the stages in the creation of the register largely mirror the process of calculating national income on the basis of the production approach. The links between these processes are illustrated in Overview 3-3.

The starting point for the **creation of the register** was the index of producer units, with details of some 600 000 units. To these were added the data from the 1995 census of skilled craft and trade businesses and from the 1996 census of semi-skilled craft and trade businesses, i.e. craft and trade businesses whose owners are not required to hold a master's certificate (about 600 000 and 100 000 businesses respectively). The next step involved incorporating into the new register the 1.5 million entries from the register of the wholesale and retail trade and catering establishments, based on the 1993 census of wholesale and retail traders, hoteliers and restaurateurs. This enterprise register system (*Unternehmensregistersystem 95*, URS 95 for short) is updated on the basis of information from routine surveys and from the statistics relating to applications for the registration of new businesses. Administrative records are used as a third source of data for the development and updating of the register. The Statistical Register Act (*Statistikregistergesetz*) provides for regular transmission of the fiscal authorities' VAT records (2.8 million units) and of the data held by the Federal Employment Agency (*Bundesagentur für Arbeit*), relating to approximately 2 million local units. To improve quality still further, the records of the chambers of industry and trade and the guild chambers and the income and corporation tax records of the fiscal authorities have been integrated into the register.

Overview 3—3: Creation of the register and national accounting production approach

Sources for the register

Records on producer units	Register of craft and trade businesses	Register of the wholesale and retail trade and catering establishments	Administrative records
			<ul style="list-style-type: none">– fiscal authorities– Federal Employment Agency– chambers of industry and commerce– guild chambers
Updating by means of statistics on applications to register new businesses			

National accounting - production approach

Annual surveys of producer units	Full surveys and annual surveys	VAT statistics	Employment statistics	Population statistics
----------------------------------	---------------------------------	----------------	-----------------------	-----------------------

All the elements of the registration strategy are reflected in the production approach to **national accounting**. The register-based surveys of producer units are used, and the results of the full surveys and the regularly updated sample surveys based on these are also incorporated into the accounting data. As part of the checks for exhaustiveness of national accounting a comprehensive reconciliation process of VAT and service statistics was performed for the first time for the year 2000 under the Structural Business Statistics Regulation. The 'balance of employment' also serves to integrate employment statistics indirectly into the national accounting process; this integration is taken one step further through the reconciliation of these figures with the employment data contained in the population statistics.

3.2 Valuation

3.2.1 Valuation procedure

Various valuation procedures are used to establish gross value added, depending on whether the statistical units under examination are market producers or non-market producers (cf. Overview 3-4).

Overview 3—4: Method of calculating gross value added

	Calculation of gross value added	Calculation of output	Examples
Market producers	Subtraction method	Turnover method	Non-financial corporations (normal method)
		Differential method	Monetary financial institutions and insurance corporations
		Assessment method	Agriculture, forestry and housing services
Units producing for their own use		Valuation at basic prices	Owner-occupiers and users of domestic services
Other non-market producers	Addition method	Addition method	Public administrative bodies and non-profit institutions serving households

- a) **Market producers** are units whose production is chiefly marketable, in other words is sold in the market or is intended for sale in the market. In this case, gross value added is calculated by deducting the value of intermediate consumption from that of output (subtraction method). When it comes to valuing **output**, various calculation methods may be distinguished:
- **Sales method:** The output is the sum of sales (including drawings for own use), changes in stocks of products from own production and own-account fixed capital formation. This is the procedure that market producers normally adopt.
 - The term **differential method** may be used to describe special arrangements adopted by financial corporations (monetary financial institutions and insurance companies), because in these cases the value of output is calculated as the difference between particular revenue and expenditure positions.
 - In the **assessment method**, the value of output is calculated by assessing data relating to volume (the 'price/volume process'). This valuation procedure is only used in exceptional cases, for example in the domains of agriculture, forestry and housing services.
- b) Economic units **producing for their own use**, i.e. whose production is wholly or primarily intended for internal consumption, are a special case. Typical examples are owner-occupiers of dwellings and households paying for domestic services. Here too, as in the case of market production, output is valued at basic prices, and gross value added is formally calculated by subtracting the value of intermediate consumption. In this context, it goes without saying

that production for the producer's own use, i.e. goods and services consumed by the producer unit or plant constructed by its use, can also occur as a secondary activity of a market producer or of a non-market producer whose output is intended wholly or primarily for external users.

- c) In the case of this last category of other **non-market producers**, the bulk of production is made available as a rule to other units, either free of charge or at economically insignificant prices. Examples of such producers are public administrative bodies and non-profit institutions serving households. Since no market prices are available for the services rendered free of charge, the figures for gross value added and output are assessed in these cases by adding together the items from the expenditure side of these producers' accounts (the addition method). Gross value added is equal to the sum of compensation of employees, consumption of fixed capital of assets and taxes on production (minus production-related subsidies). The output is the sum of the gross value added and intermediate consumption. In the absence of any market valuation, values are allocated by the responsible (political) decision-making body.

3.2.2 Data sources

The calculation of gross value added in the framework of the production approach outlined above will generally – i.e. in the case of market production – require data on the output and intermediate consumption of the enterprises grouped together within each industry. The full range of economic statistics that are available from official and unofficial sources is used for this purpose. Most of these statistics have not been produced specifically for the purpose of national accounting but provide information for other purposes too; in this respect, it is inaccurate to speak of 'GDP statistics'. However, close cooperation takes place between specialised statisticians and the compilers of the German national accounts, and so the national accounting distinctions and definitions are incorporated as far as possible into the various sets of specialised statistics. At the present time, when the annual accounts are compiled – and our methodological description is confined to annual accounting - the production approach involves the processing of about 150 different statistics.

a) Source data for the valuation of output

In practice, the compilers of the production approach avail themselves in principle of **primary statistical** data on output and turnover; only when such data are unavailable do they have recourse to secondary statistics – chiefly VAT statistics. The core of the process for the valuation of output is formed by the **annual company surveys** which are conducted in most industries of manufacturing, commerce, transport and entrepreneurial services. Annual details are also available from the balance sheets of monetary institutions and insurance corporations. The valuations in the agricultural domain are based on extensive statistical data on German agriculture. For businesses outside the aforementioned categories, VAT statistics are normally used, taking data from the business registers as a data source for the valuation of output; this applies especially to other service enterprises, i.e. those operating outside the specifically defined areas of activity such as healthcare. The domain of housing services is a special case, its output, i.e. the total value of rents, being determined by means of the volume of housing stock and average rent levels. For the assessment of gross value added and output in the general

government sector, financial statistics can be used, while the main sources of data on non-profit institutions serving households are statistics on employment and pay levels.

Statistics published more than once a year (monthly and quarterly statistics) are used primarily for the quarterly GDP valuations, but they are also taken into account in the final calculation of the annual figures in the following cases:

- if there are no separate annual statistics (e.g. quarterly crafts reports, EVAS 53211),
- when the monthly surveys seem more suitable (perhaps with regard to time comparisons, e.g. the monthly surveys in wholesale trade and in commission trade (EVAS 45211) as well as retailing (EVAS 45241)),
- if there is simply no difference from the annual figures, because they represent no more than cumulative monthly figures; this applies, for instance, to the monthly reports on mining and manufacturing (EVAS 42111).

b) Source data for the valuation of intermediate consumption

The Council Regulation (EC, Euratom) No. 58/97 of 20 December 1996 concerning structural business statistics constitutes the international basis of the annual surveys as part of European harmonisation. Its implementation in national law was based, for the estimation of intermediate consumption, on a system of cost-structure statistics established early in the 1950s and since then refined further; with the service statistics, the appropriate instrument was created – initially for NACE Rev.1.1 section I (*transport, storage and communication*) and K (*business activities*). Today the system comprises a total of 10 surveys (see Overview 3.2.2). Additionally there are currently a further ten quarterly surveys in the other service sectors (voluntary until reference year 1996, since then also obligatory).

- The **annual** cost-structure surveys in the producing industries include enterprises with 20 or more employees, but are highly representative - the cost-structure survey of mining and quarrying and the manufacturing industry, for example, covers about 80% of the total turnover of the industries in question, and there is blanket coverage of enterprises employing 500 or more persons. In the realm of electricity, gas and water supply, indeed, there is effectively blanket coverage of the entire industry. Since the introduction of the aforementioned European Structural Business Statistics Regulation which specifies coverage of all enterprises of an industrial sector regardless of size, businesses in the producing industry with fewer than 20 employees have been included within a representative annual sample survey. Because of the Structural Business Statistics Regulation the cost-structure survey is now integrated into the annual surveys for the commerce and transport sectors.
- The **multi-annual** statistics on cost structure are the result of sample surveys and there are no threshold sizes. They are only compiled on a four-yearly basis, and the timing of the collection process is staggered to ease the collectors' workload. Because of the relatively small sample size (5% of all enterprises in each of the relevant industries) and because of the uneven spread of returns in terms of company turnover brackets, their findings undoubtedly carry less weight than those of the compulsory surveys; nevertheless, as extrapolated samples they can provide useful core data for determining cost relationships (intermediate-consumption ratios). Where available, information from the business register is used for the extrapolations. There are also unextrapolated sample surveys, which can

nevertheless be used to assess the expenditure distribution and average values for individual categories of company size. The more heterogeneous the structure of the sample, the less authority attaches to the results of these surveys. Consequently, these figures, which are only used internally for the production approach, are also subject to makeshift projection, sometimes on the basis of supplementary estimates. In the years that follow in which there are no cost-structure statistics, the estimated expenditure distribution, particularly the ratio of intermediate consumption to total output, remains unchanged, as a rule, until the next multi-annual revisions of the national accounts, when the results of two survey years are reconciled.

- In the few remaining economic sectors where there are **no official** cost-structure statistics, the annual accounts of individual institutions can sometimes be used (e.g. broadcasting stations). In other cases, an estimate has to be made, based partly on the published accounts of public funds, establishments and enterprises or trade association figures or by analogy with the cost-structure statistics of economically similar areas.

The domain of agriculture is a special case in this respect; the intermediate consumption of particular items by agricultural businesses is valued by means of a combination of statistics from various sources (statistics compiled from accounts kept by farms, data from chambers of agriculture and farming associations and assessments of national stocks (production plus imports less exports) of typically farm-produced agricultural inputs, such as manure). These calculations are performed in connection with the national agricultural account by the Federal Ministry of Consumer Protection, Food and Agriculture – since 22.11.2005 referred to as the Federal Ministry of Food, Agriculture and Consumer Protection – and included in the German national accounts.

The intermediate consumption by the general government sector is estimated on the basis of data from the accounting statistics of the public budgets (EVAS 71141), the annual accounts for the statutory health, accident and nursing care insurance schemes and the annual accounts for the statutory pension scheme, the agricultural pension fund and the unemployment insurance scheme. For the most recent periods, quarterly figures are used (e.g. the insurance fund statistics are extracted from the fiscal statistics).

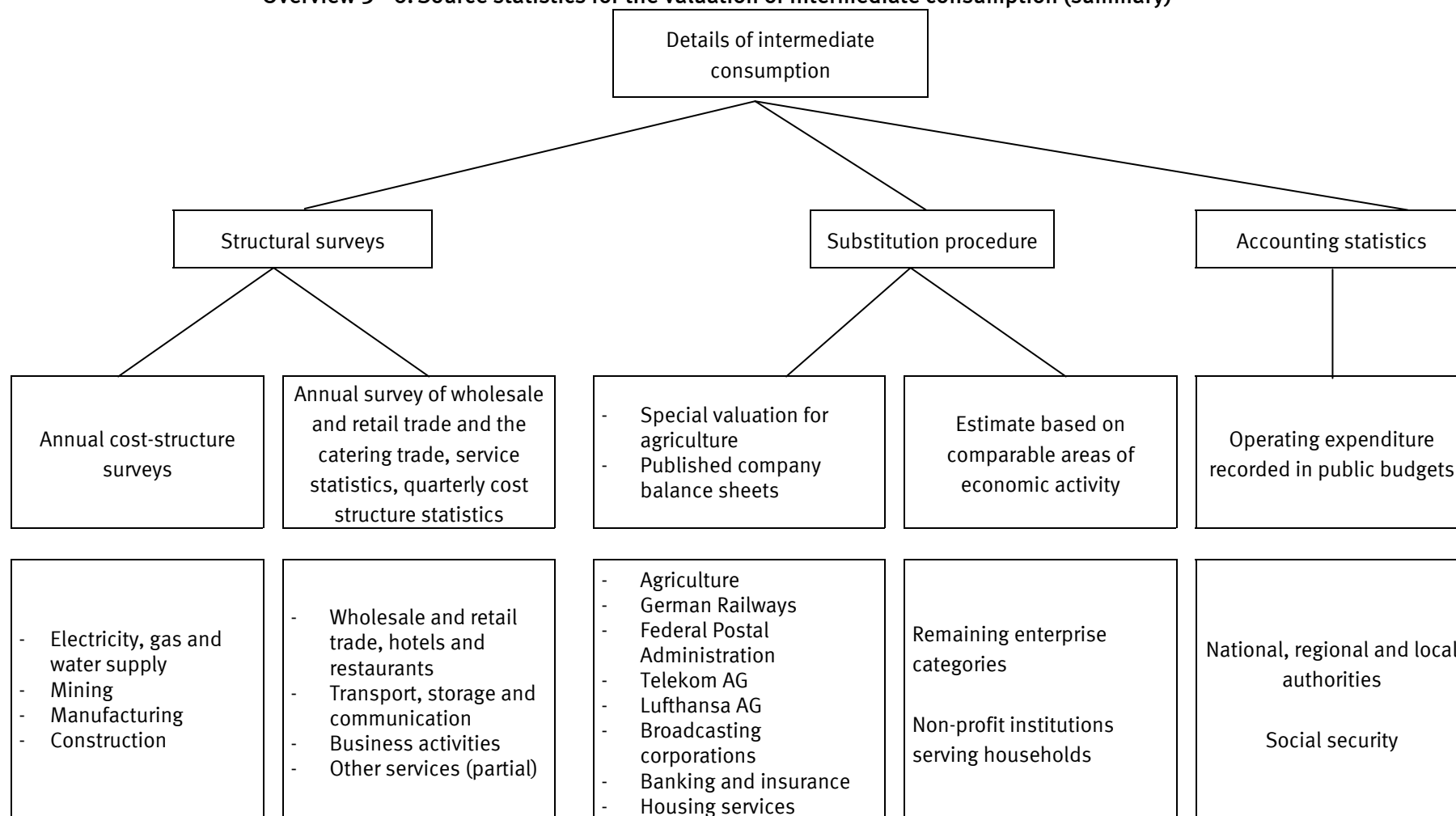
No original data on intermediate consumption are available for non-profit institutions; these figures are primarily assessed by analogy with similar activities which feature in public budgets.

Overview 3-5 recapitulates in summarised form the system for the acquisition of source data for the valuation of intermediate consumption.

Overview 3—5: Cost-structure statistics recorded by the Federal Statistical Office

Overview 3 - 3: Cost-structure statistics recorded by the Federal Statistical Office							
Cost-structure statistics	Legal basis for the collection of data	Type of reporting	Reporting units and sample size	Collection method	Frequency of collection	Classification basis	Publication FS = FSO specialised series
Mining and manufacturing industry	Statistics in Producing Industries Act 21 March 2002	Compulsory	max. 24 000 enterprises	sample survey	annual	German classification of areas of economic activity, 2003 edition (WZ 2003) and 1993 edition (WZ 93)	FS 4 Series 4.3
Primary construction			max. 12 000 enterprises		(new sample survey at approx. 4-yearly intervals)		FS 4 Series 5.3
Secondary construction			in conjunction with Federal Statistics Act 22.01.1987	full survey			
Electricity, gas and water supply	max. 1 400 enterprises						
Wholesale trade	Law on Restructuring Statistics on Wholesale and Retail Trade, Hotels and Catering of 10.12.2001, Art. 1 Trade Statistics Act (HdlStatG)	Compulsory	55 000 enterprises	sample survey	annual	German classification of areas of economic activity, 2003 edition (WZ 2003) and 1993 edition (WZ 93)	FS 6 Series 4
Sales representatives and commercial agents							
Retail trade							
Hotels and restaurants			12 000				FS 6 Series 7.3
Transport,storage and communications	Service Statistics Act of 19.12.2000 in conj. with Federal Statistics Law of 22.01.1987	Compulsory	15% of all enterprises in the category under review	sample survey	annual (new sample survey at approx. 3-yearly intervals)	German classification of areas of economic activity, 2003 edition (WZ 2003) and 1993 edition (WZ 93)	FS 9 Series 1 and 2
Real estate, renting and business activities n.e.c.							
Physicians	Cost Structure Statistics Act, 12.05.1959 in the current version	Compulsory	5 % of all enterprises in the category under review	sample survey	quarterly, with a new sample each time	German classification of areas of economic activity, 2003 edition (WZ 2003) and 1993 edition (WZ 93)	FS 2 Series R.1.6.1
Dentists							
Veterinary surgeons							
Practices run by non-medical practitioners							
Practices run by psychotherapists							
Audiovisual services							
Funeral directors							
Service crafts							
Pools, saunas, Solariums							
Driving schools							
Health care facilities							

Overview 3—6: Source statistics for the valuation of intermediate consumption (summary)



3.2.3 Time lags

Various time lags apply to the source data used for the initial estimate of gross value added, between the time when the data become available (internally) and the reporting period. In general, final annual results for all economic sectors can be established at $t + 30$ months, as is shown in Overview 3-7. While the source statistics for many industries are available sooner than this, these industries are automatically included in the macroeconomic balancing of the production approach with the use-of-income account for the valuation of GDP, which means that even their results may still be subject to alteration. In the case of the four-yearly cost-structure statistics, the time lag between the year of collection and the year of publication is indicated. Since we are referring here to surveys conducted in a four-year cycle, the inclusion of these data in a valuation process requires the establishment of a link between each survey and the previous set of cost-structure statistics, a link which only exists at the present time in the framework of the multi-annual major revisions of the national accounts. This list also does not show the source statistics for the provisional value added estimates; these figures are frequently updated (on a monthly or quarterly basis) and are used in the estimation of quarterly results, published about eight weeks after the end of each quarter, and provisional annual results, which are first published as early as January of the year following the reference year.

Overview 3—7: Availability of basic statistical data for the final annual account

Industry and data sources	Output/turnover	Intermediate consumption
	Time lags in months	
Agriculture, forestry and fishing	approx. 18	approx. 18
Electricity and gas supply		
- Cost-structure survey (cost-structure statistics, annual)	18	18
Manufacturing, mining and quarrying		
- Cost-structure statistics (annual)	17 – 21	17 – 21
- Reports on crafts and trades.....	3	–
- Structural survey	19 – 21	19 – 21
Construction		
- Cost-structure statistics (annual)	18	18
- Reports on crafts and trades.....	3	–
- VAT statistics.....	19	–
- Full survey.....	13	–
Wholesale trade		
- Annual survey	approx. 20	approx. 20
- Monthly reports.....	2	–
Retail trade		
- Annual survey	approx. 20	approx. 20
- Monthly reports.....	2	–
Hotels and restaurants		
- Annual survey	18 – 36	18 – 36
Railways		
- Annual accounts of German Railways (Deutsche Bahn AG), etc.	8	8
- Service statistics		18
Communications		
- Annual accounts of Deutsche Telekom, etc.	7	7
- Service statistics		18
Other modes of transport		
- Company surveys (inland waterway transport, air transport, passenger transport by road).....	9	–
- VAT statistics.....	18	–
- Service statistics		18
Financial intermediary services		
Profit and loss accounts (Deutsche Bundesbank)	8	8
Insurance corporations		
Profit and loss accounts (Federal Financial Supervisory Authority).....	12 – 16	12 – 16
Housing services		
- (Model accounts)	3	approx. 12
Business activities		
- Service statistics		18
Other services		
- VAT statistics.....	18	–
- Care statistics	16	–
- Expenditure of statutory and private insurance providers.....	3/16	–
- Cost-structure statistics (four-yearly)	20 – 25	20 – 25

3.3 Transition from private accounting and administrative concepts to ESA 1995 national accounting concepts

The process of transition from the source statistics to the published national accounting figures is presented in summarised form below.

Derivation of the national accounting results in the production approach
(all industries)
Year 2000 in EUR bn

	Output	Intermediate consumption	Gross value added
(1) Source statistics	4 798.59	2 890.32	1 908.27
+ Validation of statistical data	- 33.05	72.06	- 105.11
+ VAT threshold	7.34	-	7.34
= Subtotal	4 772.88	2 962.38	1 810.50
(2) + Allowances and adjustments	201.68	109.00	92.68
(3) = Balance sheet result	4 974.56	3 071.38	1 903.18
(4) + Reclassification by concept	- 1 299.15	- 1 263.54	- 35.61
Included in total:			
(4a) Adjustments not affecting GDP	- 1 316.58	- 1 269.18	- 47.40
(4b) Adjustments affecting GDP	17.43	5.64	11.79
(5) = National accounting result	3 675.41	1 807.84	1 867.57
(6) + Macroeconomic balancing adjustment	-	- 23.96	23.96
(7) = Adjusted figure (FISIM not allocated)	3 675.41	1 783.88	1 891.53
(8) + FISIM	5.19	40.52	- 35.33
(9) = Published figures (FISIM allocated)	3 680.60	1 824.40	1 856.20
Supplementary data: gross domestic product ...			2 062.50

With regard to step 1: The starting point for the calculations is the range of source statistics on output and intermediate consumption in the various sectors and industries, statistics which are described in detail in the following paragraphs. This item entails a further breakdown of the source data so as, on the one hand, to adjust the original values during data validation and, on the other hand, to give particular consideration to the thresholds when using the VAT statistics as basis.¹

With regard to step 2: When these source data are compiled, comprehensive checks are made, by means of various cross-referencing and cross-checking mechanisms, to ensure that the data are complete; as a result of these checks, specific allowances are calculated for particular industries (cf. section 3.6 below and the notes contained in the sections on individual industries). Where the source data permit, adjustments are also made, even at this early stage, to the demarcation lines between definitions of accounting concepts, for example between intermediate consumption and compensation of employees or between intermediate consumption and household consumption in entrepreneurs' households.

¹ This item is broken down similarly to the GNI process tables in which the data sources and their corrections and additions are indicated in great complexity for the individual industries and aggregates. The GNI process tables are designed to provide Eurostat with additional, comprehensible information about the nature of the data sources used and the adjustments made. Nonetheless the GNI process tables are not part of this publication.

With regard to step 3: As a transitional device, there is a so-called 'balance sheet result', the figures in which have not yet been brought fully into line with the divergent concepts of the national accounting system.

With regard to step 4: Conceptual reclassifications are corrections that are explicitly taken into account when data based on business accounting concepts are converted into national accounting categories. Featured is the conceptual adjustment of the source values to meet the requirements of ESA 1995.

The conceptual alterations result in considerable quantitative divergences from business accounts as well as from the way in which the national accounts used to be presented in Germany. The differences consist in the practice of recording the net value of goods bought for resale and the introduction of a new price concept, namely valuation at basic prices.

Recording the net value of **goods purchased for resale** entails reducing the intermediate consumption and output figures for all the relevant industries by the purchase price of the goods rather than merely reducing these figures in respect of the wholesale and retail trade. Although this netting down has no effect on gross value added, it does alter the ratios of intermediate consumption to output that typify each industry. Besides the goods for resale themselves, similar production processes are also netted down, namely the turnover of enterprises reselling electricity and gas, gross rents in the domain of housing services (deduction of additional fixed charges) and the turnover of travel agents, which is restricted to their commission. In terms of the whole economy, this netting-down reduces total recorded output, including goods for resale, by about 25% and total intermediate consumption by more than 40%. This presentation method reduces the recorded macroeconomic flow considerably, because it places greater emphasis on the physical product than has hitherto been customary in the German input-output account. In national publications, however, the former, more market-centred classification of gross output is shown in addition to the ESA-based figures, because the old format seems to lend itself better to certain purposes, such as comparisons with turnover data from other sources.

According to ESA 1995, output is generally valued at **basic prices** and intermediate consumption at **purchaser's prices**. The basic price is the amount that the producer receives for each unit of a good, excluding any taxes payable on the item in question (product taxes) but including any subsidies received in connection with the production of the good. Taxes and subsidies on products are transactions that depend on the quantity or value of produced goods and can consequently be integrated directly into company planning. In terms of the national economy, the deduction of the new (other) taxes on products reduced the previous figure for total output, and consequently gross value added, by over EUR 57 bn in 2000, while the inclusion of subsidies offset this reduction by some EUR 10 bn, making a net reduction of over EUR 47 bn in the values of output and value added. The influence of these reclassifications which do not affect GDP is also evident in the presentation of accounts for the various industries. The exclusion of taxes on products has the greatest impact in the realm of manufacturing industry (mineral oil, tobacco, electricity and spirits), and also has a significant effect in the domain of business services (insurance tax and land transfer tax) as well as private service provision (betting levies and lottery taxes). The inclusion of production-related subsidies has the most conspicuous effect in the domain of agriculture, as well as affecting transport (compensatory payments) and trade

(particularly export refunds to the Federal Institute for Agriculture and Food (*Bundesanstalt für Landwirtschaft und Ernährung*), which are recorded under the heading of wholesale trade).

The overall effect of the **reclassifications that affect GDP** on the gross domestic product (2000: EUR +11.79 bn) is elicited to by far the greatest extent by the general government sector. The main factors here are the additional consumption of fixed capital allowances applicable to public works other than buildings and to military equipment and buildings which can be used for civilian purposes. The amount of value added is reduced, on the other hand, by the subsidies for which non-market producers (the public sector and private non-profit institutions) are now eligible. The value added by service enterprises is primarily increased by the newly included production of copyright licences and user-produced software – which also have an impact on other industries – as well as by the inclusion of notional rents for garages used by their owners. The other reclassifications are spread across a wide range of industries and are less significant in terms of their monetary effect.

Overview 3–8 below shows an overview of the effects of conceptual adjustments on output, intermediate consumption and gross value added.

Overview 3–8: Conceptual reclassifications in the non-financial corporation sector (S.11) by type of reclassification

Type of reclassification	Entry among:		
	Output	Intermediate consumption	Gross value added
Netting-down of goods purchased for resale.....	–	–	0
Taxes on products	–	0	–
Subsidies on products	+	0	+
Valuation adjustment for own-account fixed capital formation.....	+	0	+
User-produced software	+	0	+
Production of copyright	+	0	+
Correction to licence revenue	+	0	+
Valuation adjustment (user-produced goods and services)	+	0	+
Other corrections to output			
a) Production from voluntary assistance (construction only)	+	0	+
b) Renting out of garages	+	0	+
c) Company-owned accommodation	+	0	+
Valuation adjustment for inexpensive economic assets	0	+	–
Purchased software.....	0	–	+
Correction for licence expenditure	0	+	–
General government concessions.....	0	+	–
Use of sports and leisure facilities.....	0	–	+
Other corrections for intermediate consumption			
a) Correction for exploratory drilling	0	–	+
b) General government charges	0	+	–
c) Renting out of garages	0	+	–
d) Minor repairs by housing owners.....	0	–	+

With regard to step 5: The 'national accounting results' of the production approach are derived from the balance sheet results which have undergone macroeconomic reclassification. If the production approach were considered in isolation and before deducting FISIM, these figures for total value added throughout the economy would have to be regarded as the final result of the valuation process.

With regards to steps 6 and 7: These 'national accounting results', however, are then subject to the macroeconomic balancing of the GDP figures as assessed in the generation- and use-of-income accounts; once the adjustments have been taken into account, the harmonised figures are obtained. The macroeconomic adjustment is normally distributed in proportion to gross value added as calculated in the national accounts and, if the value of output remains unchanged, is offset by a balancing adjustment to intermediate consumption. This is based on the belief that output is generally covered better in statistical terms than intermediate consumption (for details of the balancing method please refer to Chapter 6).

With regard to step 8: After macroeconomic balancing, the FISIM for the output of non-market producers and the intermediate consumption of the market producers **and** non-market producers is added. This is done separately for the individual industries. The balance of the corrections to output and intermediate consumption reveals the impact on gross value added.

With regard to step 9: The published result in concept is therefore 'FISIM allocated'; FISIM is therefore contained in the intermediate consumption of each industry as well as in the output of the non-market producers, and is always included in the output of the domain of financial intermediation – regarding steps (8) and (9) refer also to section 3.16 and Chapter 9.

3.4 The roles of direct and indirect estimation methods

3.5 The roles of source values and extrapolations

Since both of these aspects can in practice be combined, they are treated together here. The proportions of the individual methods of estimation are as follows for the year 2000:

Overview 3—9: Estimation methods and extrapolation

Figures for the 2000 in %

		Without extrapolation		With extrapolation	
Direct method	A	Output: 88.8 Intermediate consumption: 67.6		B	Output: 2.8 Intermediate consumption: 27.6
Indirect method	C	Output: 3.3 Intermediate consumption: 2.5		D	Output: 5.2 Intermediate consumption: 2.2

Direct estimation methods are defined here as those methods by which the required indicators (output, intermediate consumption) are collected directly in the form of statistical values. Indirect estimation methods, on the other hand, are those in which these indicators are not directly collected but are derived indirectly from other values, generally on the basis of a calculation model. Both methods can involve extrapolation, depending on whether the figures for a

particular benchmark year are extrapolated. All four combinations - A, B, C and D - can theoretically be used to ascertain both the output and the intermediate consumption of the various industries, and this means that a highly refined general picture is produced, especially since numerous other hybrid forms of estimation can occur in practice.

In the production approach in Germany, **combination A** is the most frequent form of estimation; in other words, ready-to-use source statistical data on output, comprising primary or secondary data from annual surveys, are normally available, and the same applies to intermediate consumption in the major industries (see subsection 3.2.2 above on data sources).

Direct estimation methods involving extrapolation (**combination B**) occur chiefly in the assessment of intermediate-consumption ratios in those industries for which cost-structure statistics are only compiled at intervals of two or more years.

Examples of indirect estimation methods in which no extrapolation takes place (**combination C**) are the valuations of output in agriculture, forestry and fishing, because data on volume are normally assessed in conjunction with the prevailing price levels. Another example is the value added calculation in the case of NPISHs. Here, the gross value added is estimated indirectly, on the basis of the number of employees and the wages paid.

An example of an indirect estimation method involving extrapolation (**combination D**) is the valuation of output in the realm of housing services, where, on the basis of a benchmark year, the quantity of housing stock is extrapolated annually by means of a refined stratified calculation model based on average rents.

3.6 The main approaches to achieving exhaustiveness

Ensuring the exhaustiveness of the statistics on gross national income (and GDP) has been one of the European Commission's and the GNP Committee's main concerns as part of the European-level national accounts harmonisation over recent years. As a result, it has also been a **key point** in the revision of the national accounts in Germany for the transition to the new ESA 1995. To this end, a whole package of measures has been adopted, and these measures will be summarised again in this section in relation to the 2005 national accounts revision for the production approach. Chapter 7 gives an overview of the measures adopted to secure exhaustiveness.

a) Employment reconciliation

An extensive project was conducted on behalf of Eurostat, the Statistical Office of the European Communities, with a view to verifying the exhaustiveness of GNP statistics with the aid of employment data. The final project report was published in June 1996. In the framework of the project, wide-ranging comparisons were made between employment data from population statistics and employment data from individual industries, in so far as the latter are included in the GDP calculations, with a view to identifying any under-reporting. To sum up, although there was no evidence that the overall GDP figure was under-reported, the study produced some valuable findings with regard to individual industries, and these were taken into account in the 1999 revision of the German national accounts. The connection between employment trends and

gross domestic product continues to be observed and will be taken into account if necessary in any revisions.

b) Input-output reconciliation

In the course of the revision of the 2005 national accounts, the compilers also processed more information than in the past from the input-output accounts of previous years, particularly 2000, information which generally becomes available too late for inclusion in the current GDP accounts. The changes necessitated in some industries featured both output and intermediate consumption. This adjustment served to better satisfy the Eurostat requirement that input-output accounts be incorporated into the GDP calculations and into the macroeconomic balancing process for the period since the last revision.

c) Reconciliation with the business register

For substantial areas of industry the business register supplies the statistical basis on which to base sampling and extrapolation. It is therefore also an important element for verifying exhaustiveness. But this state is not optimal in all points, because, for example, not every industry is yet included on the business register and the register's level of currency would benefit from updating.

d) Reconciliation with VAT statistics

As a further safeguard to guarantee the accuracy of the national accounts, each operation in the production approach was also reconciled with figures from the VAT statistics. It had to be borne in mind in each case that this comparison can be distorted by numerous special provisions in German fiscal law and by categorisation differences between economic systems. Nevertheless, these comparisons also helped to authenticate many of the figures in the national accounts.

e) Special valuations

Besides the wide-ranging checks for exhaustiveness to which we have already referred, separate examinations were conducted in many areas of the national accounts to ensure that no relevant data have been omitted; to this end, recorded figures are reconciled with special data sources, some of which are unofficial, relating to activities such as DIY (do it yourself) building work, prostitution, private tuition, tips and income in kind. For reasons of consistency, the results of the reconciliation with surveys on household budgets were also included in the production approach, particularly in the domains of wholesale and retail trade and of hotels and restaurants.

f) Allowances for under-reporting

On the basis of these exhaustiveness checks, special allowances for under-reporting have been calculated for each area of the production approach for the valuation of GDP. These allowances are an integral part of the valuation process rather than a separate and autonomous additional account. The sole purpose of these allowances is to guarantee the exhaustiveness of the data from which the GDP figure is derived, and they therefore compensate for every possible type of undercoverage, such as statistical cut-off points, other gaps in the statistical system, tax evasion and non-payment of other public charges. For this reason, it is not possible simply to infer reliable information about the hidden economy from these allowances made because of under-reporting.

3.7 Agriculture and forestry (WZ 2003: A)

Gross value added, 2000 (FISIM allocated): EUR 23.24 bn (1.3% of total GVA)

The valuation of output and intermediate consumption in the agriculture and forestry sector is primarily effected at the Federal Ministry of Food, Agriculture and Consumer Protection. The Federal Statistical Office takes the Ministry data and adds some of its own valuations. The methodological basis for the Ministry's calculations is the Manual on the Economic Accounts for Agriculture and Forestry, Rev. 1, which is derived from the relevant version of the European System of Accounts.

The characteristic feature of the valuations in the domains of agriculture, hunting and forestry is the product-by-product approach to accounting. The value of crop, livestock and forestry production is not normally assessed directly through the producers but is calculated by assessing the total quantities produced at their respective prices (the quantity-price method). Production inputs in agriculture and forestry are generally so specific (e.g. seed and fertilisers) that they can be very neatly attributed.

Gross value added in the realm of agriculture, hunting and forestry is broken down into the following categories for publication:

WZ 2003	Activity	2000 EUR m
01	Agriculture, hunting and related service activities	22 070
02	Forestry, logging and related service activities	1 850
	Total (FISIM not allocated).....	23 920

In the domains of agriculture, hunting and forestry there are statistical units in the enterprise categories of non-financial corporations S.11 and households S.14 and general government S.13. Owing to the data available, the valuations for the general government sector are described in section 3.18 as totals for the sector. In contrast to the valuations in the other industries in which there are statistical units in several sectors, the gross value added is not added together for the entire industry here. The following description encompasses the calculations for the entire industry. The gross value added of the general government sector must be subtracted from it to reach the result for non-financial corporations and households.

3.7.1 Agriculture and hunting (WZ 01)

The national account valuations in the domain of agriculture are based on the results of the agricultural account produced by the Federal Ministry of Food, Agriculture and Consumer Protection. The starting point for the Federal Statistical Office calculations is taken from the output at producer prices and the intermediate consumption shown in the agricultural account.

a) Output

The valuation of agricultural production is normally effected in the agricultural account by means of the quantity-price method for individual products. The following is a rough guide to the way in which this method may be applied:

- The valuation of the quantity of harvested crops, which is effected on the basis of the total area sown with each crop and the respective average yields, is often used as a means of establishing total crop production. Any losses should be deducted from these figures.
- Data on quantities supplied to dairies, abattoirs, sugar refineries, bodies administering the federal monopolies, export agencies, etc. may be used in cases where such purchasers or users are required to submit returns. These data are mainly used in the valuation of livestock production. One of the points that has to be checked in this context is the extent to which additional estimates are required for produce consumed by farmers' families and for installations erected by farmers themselves (own-account fixed-capital formation) and the extent of any changes in inventories.
- Inter-farm deliveries of seed, animal feed, agricultural services, etc. have to be recorded as output and intermediate consumption according to ESA 1995 as well as the Manual of Economic Accounts for Agriculture and Forestry. In the agricultural account certain internal flows (additions to work in progress) are also recorded as output and intermediate consumption which have to be calculated separately in the transition to the national accounts. This affects vegetable foodstuffs fed to the farmer's own livestock on the same farm.

Apart from the aforementioned correction to the figures for output and intermediate consumption to accommodate internal feedstuff consumption, other adjustments are required to the data so as to comply with the concepts, definitions and industry definitions of ESA 1995. The transition from the agricultural account to the national accounts is elucidated in the following figure:

Valuation of agricultural output for the year 2000

	EUR m
(1) Agricultural account result at producer prices	39 148
(2) – Internal feedstuff consumption	6 229
(3) + Domestic horticultural production	2 046
(4) + Buildings constructed for own use.....	530
(5.1) – Forest nurseries	122
(5.2) + Horticulture and landscaping (WZ 01.41.2 and WZ 01.41.3)	6 448
= Output at producer prices.....	41 821
(6) + Subsidies on products	3 819
(7) – Taxes on products	218
= Total output value at basic prices	45 422
= Output at basic prices (rounded figure as published)	45 430

Explanation of the steps in the valuation process

- (1) This is the output, at producer prices, of crop and livestock products, including perennial crops and secondary activities, as defined in the agricultural accounting system.
- (2) As has already been explained, internal farm feedstuff consumption has to be calculated separately from the figures for the agricultural account because a farming operation is treated as a statistical unit for national accounts purposes. The formation of technical farm departments as statistical units (local kind-of-activity units) fails due to the fact that it is impossible to determine intermediate consumption, investments or compensation of employees for parts of a farm (e.g. for the production of crops on the one hand and for animal products on the other hand). For this reason, the feeding of own produce represents

an addition to work in progress from the viewpoint of the national accounts and must be included within that statistical unit. The information on the farm's internal consumption is taken from the agricultural account.

- (3) As the agricultural account does not include units which only produce for their own consumption (e.g. domestic gardens), they are supplemented in the national accounts in view of achieving completeness. Estimates for this are available from the Federal Ministry of Food, Agriculture and Consumer Protection to cover the following produce: fruit, vegetables, flowers and garden plants, eggs, honey.
- (4) Agricultural self-constructed buildings are also not attributed to agricultural production in the agricultural account. Since the national accounting system does not assign the construction of buildings by their end users to separate local kind-of-activity units, the value of such building work is added to the output of the agricultural industry. Buildings erected by farmers are valued as part of the calculation of total fixed-capital formation. Their value is estimated primarily by reference to the erection of agricultural buildings by external contractors.
- (5) The economic system of distinguishing agricultural sectors in the agricultural account differs slightly according to the German classification of economic activities (WZ). Since the Ministry includes forest nurseries in the agricultural account but excludes the domains of horticulture, landscaping, the planning and design of sports facilities and cemetery gardening services, adjustments have to be made in the transition to the national accounts.
 - (5.1) The source statistics for the valuation of the output of forest nurseries is the percentage of the total surface area of all tree nurseries in Germany which was devoted to the cultivation of forestry. These figures originate from the publication '*Fachserie 3, Reihe 3, Landwirtschaftliche Bodennutzung und pflanzliche Erzeugung 2004*' of the Federal Statistical Office (EVAS 41221, survey of forest nurseries); the share of forest nurseries comes to approx. 13.6%. Since forestry plants cost less than other products of tree nurseries but require less space, it is assumed that forest nurseries are therefore similar to other tree nurseries in terms of economic yield per unit of surface area. For this reason, the output of forest nurseries is calculated as a proportion of the total output per unit of area of all tree nurseries.
 - (5.2) The output of horticulture and landscaping and provision of gardening services (WZ 01.41.2 and WZ 01.41.3) is taken from the turnover according to the VAT statistics (EVAS 73311).
- (8) The product-related subsidies comprised the European Community subsidies recorded in Annex E to Chapter 1004 of the German federal budget in respect of the following products: cereals, oil seed, pulses, hops, tobacco, cattle, sheep and goats.
- (9) The revenue from the sugar levy and the 'co-responsibility levy' on milk (*Milchmitverantwortungsabgabe*) from the agricultural account are included in the taxes on products. To this is added the spirits duty levied on spirits produced in agricultural establishments.

b) Intermediate consumption

Intermediate consumption for the year 2000		EUR m
(1)	Agricultural account result.....	25 382
(2)	– Internal feedstuff consumption.....	6 229
(3)	+ Domestic horticultural production.....	1 023
(4.1)	– Forest nurseries.....	61
(4.2)	+ Horticulture and landscaping.....	3 224
=	Total intermediate consumption	23 339
=	Intermediate consumption (rounded)	23 360

Explanation of the steps in the valuation process

- (1) This is the amount of intermediate consumption as defined in the agricultural accounting system.
- (2) Internal consumption is calculated separately as in the calculation of output.
- (3) Intermediate consumption is increased in line with the allowance for undercoverage in the output as recorded in the agricultural account. Because of the lack of information, an intermediate-consumption ratio of 50% is assumed for the small farms not included in the agricultural account. The intermediate-consumption ratio for small farms is therefore higher than the average intermediate-consumption ratio of all farms, an assumption which appears completely plausible.
- (4) The classification system used in the agricultural account is more detailed than the WZ classifications, and hence than those used in the national accounting system. Since the Ministry includes forest nurseries in the agricultural account but excludes the domains of horticulture, landscaping, the planning and design of sports installations and cemetery gardening services, adjustments have to be made to the recorded values of intermediate consumption.
 - (4.1) In the case of forest nurseries, an intermediate-consumption ratio of 50% was assumed.
 - (4.2) In the domain of horticulture and landscaping, the ratio of intermediate consumption to output was put at 49.5%, on the basis of internal statistics of GaLaBau (the German horticulture and landscaping federation).

3.7.2 Forestry, logging and related service activities (WZ 02)

Under ESA 1995, the production of forestry products is to be recorded as if it were being produced continuously over the entire growing period. 'Standing timber' is treated as work in progress, and the value of its growth during the reference period is to be assessed and recorded as output; in the use-of-income account, this value is recorded as an addition to the stock of work in progress under the heading of changes in inventories. For the period when harvesting or felling takes place, the stocks in question are to be reallocated from inventories of work in progress to inventories of finished products. Since as a rule timber is sold shortly after being felled, there is normally also a disposal from the inventories of finished goods during the same

period (at the level of sales), so that there are basically no stocks or changes in inventories of finished goods.

Under ESA 1995, the value of standing timber is assessed as the discounted value of expected future receipts from the sale of the timber less expenditure on forestry maintenance until the timber is ready for felling and less the expenses of logging.

Forestry output therefore corresponds to annual growth valued at a price net of harvesting costs plus the harvesting costs for the timber logged during the reference period. Theoretically the same output can also be expressed as the sum of the felled quantity of timber during the reference period (valued at the 'full' price, i.e. including harvesting costs) plus the unused growth (valued at earnings net of harvesting costs). The unused growth matches the change in the stock of work in progress.

In the 2005 revision, there was a fresh examination of the practice of valuing the German forests at a price of zero when their growth has constantly exceeded the quantity felled for the past 50 years. This approach was based on the assumption that these timber stocks would in future not be reduced by sales. Nowadays, even in Germany, the total increment of standing timber is assessed as output and as a change in inventories.

For the national accounts, results from the revised national forestry account were used as calculated by the economics institute of the Federal Research Centre for Forestry and Forest Products of Hamburg, on instructions from the Ministry of Food, Agriculture and Consumer Protection. The production of the units situated below the thresholds in the forestry account was added to the forestry account results. As the forest nurseries are contained not in the forestry account but in the agricultural account, the forestry nurseries were added (see section 3.7.1).

To find the quantity of timber that is felled, the results of the logging statistics in the forestry account (EVAS 41261) were validated and corrected where necessary. For this, the data from the Ministry's pilot scheme for the collection of statistics from individual holdings – particularly forestry businesses and farms with forestry plantations – and statistics on the afforested areas covered by agricultural reports as well as results of a separate quantitative use-of-income account for timber felling were used.

The calculations of unused growth are based on forest growth models which are extrapolated from the results of the first federal German forest inventory¹ (1986 to 1990) and of the GDR's 'Datenspeicher Waldfonds' inventory (which continued until 1993). The valuation is obtained at basic prices for the felling of the reference year less future 'harvesting costs (costs of felling the timber). It did not seem feasible to value at the net present value of expected future earnings because there was substantial uncertainty concerning the price of timber on dates in the future, future felling levels and also the discount factor.

In the context of the forestry account, the forestry and logging-related service activities are taken from the Ministry's pilot scheme (under the expenditure heading *'Aufwendungen der*

¹ See Federal Ministry of Food, Agriculture and Forestry (publ.), Bundeswaldinventur Band I und II, Bonn 1992 and Federal Ministry of Food, Agriculture and Forestry (publ.), Der Wald in den Neuen Bundesländern, Bonn 1994.

Forstbetriebe für forstliche Dienstleistungen’) and are extrapolated. This expenditure among the forestry enterprises represents the income of the forestry service providers.

In the forestry account it is assumed that 10% of businesses with less than 200 ha of forest area are producing exclusively for their own consumption. These businesses are not included in the forestry account, but are adjusted for in the national accounts by an allowance of 2.5%. This allowance is calculated using internal forestry account data and corresponds to the estimated proportion of the quantity of timber felled for private consumption.

The national accounts figures for intermediate consumption correspond to the intermediate consumption figures in the forestry account plus the allowance of 2.5% in respect of undercoverage and the estimated intermediate consumption for forest nurseries (see section 3.7.1). In the forestry account, intermediate consumption is determined on the basis of the Ministry's pilot scheme data, giving due consideration to the different concepts used by the pilot scheme and the forestry and national accounts. Where necessary, information from the pilot scheme statistics is transposed by means of estimates and expert knowledge to the ESA concepts.

Calculation of gross value added from forestry

Figures for 2000 in EUR m

	Output	Intermediate consumption	Gross value added
Forestry in the narrower sense	3 170	1 380	1 790
+ Forest nurseries	120	60	60
= Total forestry	3 290	1 440	1 850

3.8 Fishing (WZ 2003: B)

Gross value added, 2000 (FISIM allocated): EUR 0.22 bn (0.01% of total GVA)

In the national accounting system, the assessment of gross value added for the fishing industry (WZ 05) is undertaken separately for deep-sea and coastal fishing on the one hand and for fishing in inland waters and fish farming on the other. The following figure shows the 2000 results for both categories in EUR millions:

	Output	Intermediate consumption	Gross value added
Deep-sea and coastal fishing	190	80	110
Fishing in inland waters and fish farming	220	110	110
Total fishing and fish farming	410	190	220

The output of **deep-sea and coastal fishing** corresponds to the catch figure from the official fisheries statistics (EVAS 41361). Intermediate consumption is calculated with the aid of an intermediate-consumption ratio derived from the statistical tables volume of the agricultural report published by the Ministry of Food, Agriculture and Forestry (now the Ministry of Food, Agriculture and Consumer Protection).

The operating revenue from coastal and middle-water sea fishing, excluding income from leasing and interest received, is set against the operating expenditure for the same category of activity as recorded in the fisheries account. Items such as wage costs, consumption of fixed capital, leasing charges, interest charges and business taxes, which are not classifiable as intermediate consumption, are left out of the calculation.

Since the sample is relatively small and cannot therefore be considered sufficiently representative of a fleet which is highly heterogeneous in terms of boat size and target catch (crustaceans or fish), the factor that is used is not the intermediate-consumption ratio for the reference year but the arithmetic mean of the ratios for years t (the reference year) and $t-1$.

The valuation of the output of **fishing in inland waters and fish farming** is effected on the basis of the catch figures recorded in the annual report of the German fishing industry¹. Until 1991, this annual report included output figures for inland fishing and fish farming, so that a price average can be found for this year. In the subsequent years, this average price is extrapolated on the basis of the price index for fish and fish products. The output figure for the primary activities of fishing in inland waters and fish farming is calculated by means of the volume-price method. Output for 2000 has been measured at about EUR 180 m.

An upward adjustment is made to this output figure to take account of the processing of freshwater and farmed fish and other secondary activities. The percentage amount of this allowance is assessed on the basis of data from the VAT statistics regarding the number and turnover of the reporting enterprises in Subclass 05.01.2 – river and lake fishing – and Class 05.02 – operation of fish hatcheries and fish farms. It is assumed that none of the average turnover per enterprise in West Germany in 1980 came from secondary activities and that half of each subsequent annual increase in average business turnover has been due to secondary activities.

By analogy with the formula used for the agricultural account, the intermediate-consumption ratio is set at about 50% of output. Since the output is valued at EUR 220 m, intermediate consumption for this subclass therefore amounts to EUR 110 m.

¹ See Federal Ministry of Food, Agriculture and Forestry (publ.), Jahresbericht über die deutsche Fischwirtschaft, Bonn 2000.

3.9 Mining and quarrying (WZ 2003: C)

Gross value added, 2000 (FISIM allocated): EUR 5.23 bn (0.3% of total GVA)

3.10 Manufacturing (WZ 2003: D)

Gross value added, 2000 (FISIM allocated): EUR 425.99 bn (22.9% of total GVA)

Demarcation

The two sections are discussed in combination, because the data sources and the methods of calculation match for both industries. Gross value added in the domains of manufacturing, mining and quarrying is assessed and published for 28 separate areas of economic activity (divisions) in WZ 2003 as well as NACE Rev. 1.1:

WZ 2003	Activity	Gross value added, 2000 in EUR m
C	Mining and quarrying	5 230
CA	Mining and quarrying of energy-producing materials	2 550
10	Mining of coal and lignite; extraction of peat.....	970
11	Extraction of crude petroleum and natural gas; service activities incidental to oil and gas extraction	1 580
12	Mining of uranium and thorium ores	0
CB	Mining and quarrying, except of energy-producing materials	2 680
13	Mining of metal ores
14	Other mining and quarrying
D	Manufacturing.....	425 990
DA	Manufacture of food products, beverages and tobacco	36 680
15	Manufacture of food products and beverages	34 610
16	Manufacture of tobacco products.....	2 070
DB	Manufacture of textiles and textile products.....	8 890
17	Manufacture of textiles	5 680
18	Manufacture of wearing apparel; dressing and dyeing of fur.....	3 210
DC/19	Manufacture of leather and leather products.....	1 050
DD/20	Manufacture of wood and wood products, except furniture	8 180
DE	Manufacture of pulp, paper and paper products; publishing and printing.....	34 030
21	Manufacture of pulp, paper and paper products.....	9 810
22	Publishing, printing and reproduction of recorded media	24 220
DF/23	Manufacture of coke, refined petroleum products and nuclear fuel.....	5 280
DG/24	Manufacture of chemicals, chemical products and man-made fibres	41 260
DH/25	Manufacture of rubber and plastic products.....	20 020
DI/26	Manufacture of glass and glass products, ceramic goods and other non-metallic mineral products	16 350
DJ	Manufacture of basic metals and fabricated metal products.....	56 040
27	Manufacture of basic metals.....	16 570
28	Manufacture of fabricated metal products.....	39 470
DK/29	Manufacture of machinery and equipment n.e.c.....	62 000
DL	Manufacture of electrical and optical equipment.....	66 100
30	Manufacture of office machinery and computers	4 130
31	Manufacture of electrical machinery and apparatus n.e.c.	33 200
32	Manufacture of radio, television and communication equipment and apparatus .	11 850
33	Manufacture of medical, precision and optical instruments, watches and clocks.	16 920
DM	Manufacture of transport equipment.....	57 260

34	Manufacture of motor vehicles, trailers and semi-trailers	49 110
35	Manufacture of other transport equipment.....	8 150
DN	Manufacturing n.e.c.	12 850
36	Manufacture of furniture, jewellery and related articles, musical instruments, sports goods, games, toys and miscellaneous products.....	11 990
37	Recycling	860

In the following part of this chapter we present the various steps in the assessment of **gross value added** (FISIM not allocated) for the manufacturing industries and for mining and quarrying. Since the source statistics are similarly structured for all these areas of activity, aggregate figures for the entire range of categories are used. The data sources are summarised in the Overview 3-10.

Output

Output in the domains of manufacturing, mining and quarrying comprises the following components (aggregated source statistics, excluding any specific adjustments to comply with national accounting):

	2000	
	EUR m	as % of output
Turnover.....	1 438 253	(99.4 %)
+ Changes in inventories of work in progress and of companies' own finished products	6 422	(0.4 %)
+ Own-account fixed-capital formation	2 977	(0.2 %)
= Output	1 447 652	(100 %)

This table clearly shows that turnover at 99.4% is by far the main component of output.

Turnover

The turnover statistics for enterprises with **20 or more employees** are taken from the annual cost-structure survey of manufacturing, and of mining and quarrying enterprises¹.

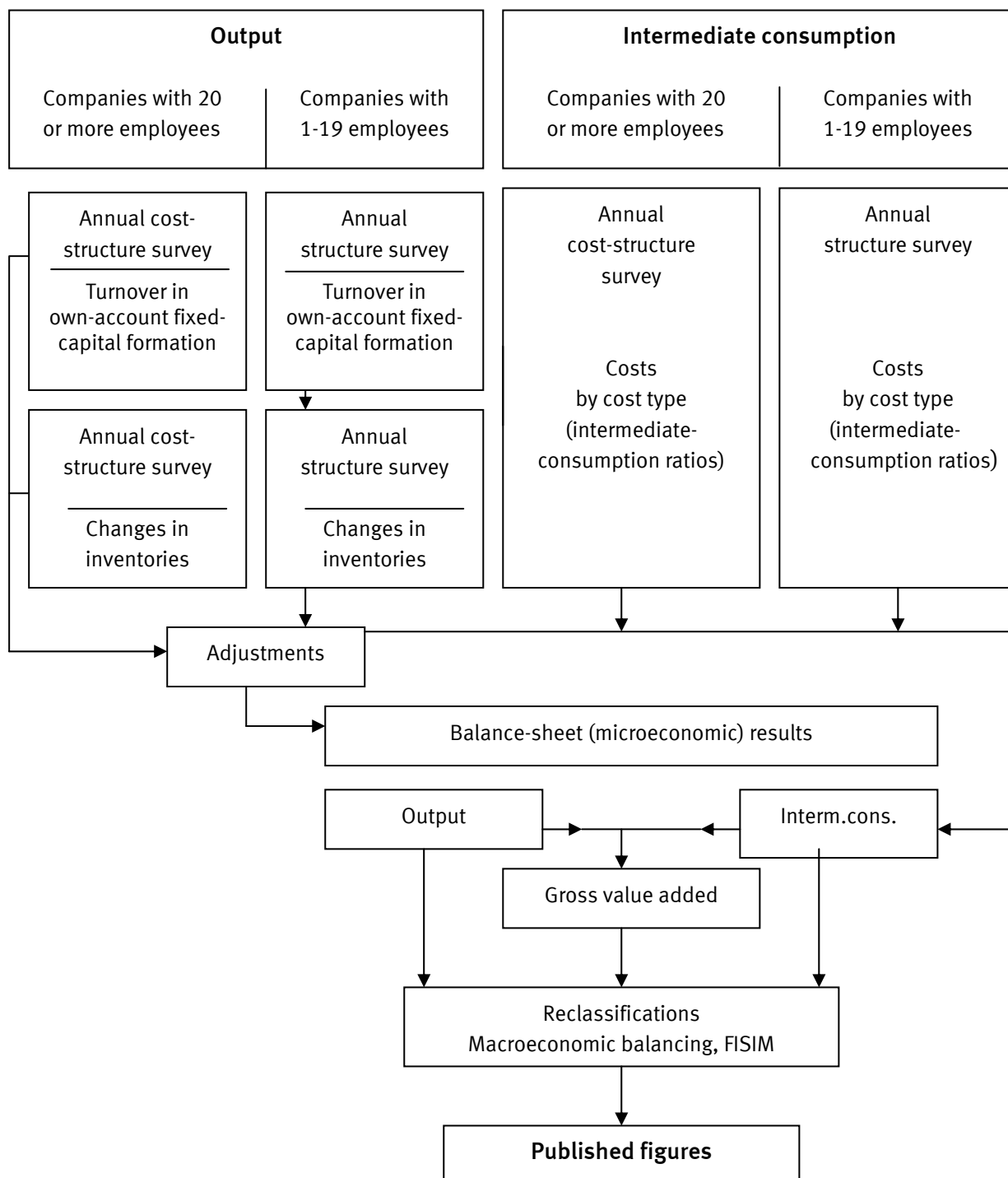
	2000	
	EUR m	as % of turnover
Turnover from company's own products	1 139 972	(84.2 %)
+ Turnover from goods purchased for resale.....	193 550	(14.3 %)
+ Turnover from other non-industrial and non- craft/trade activities	20 389	(1.5 %)
= Turnover	1 353 911	(100 %)

Since 2001, the turnover data for small businesses with fewer than 20 employees have been compiled on the basis of the annual structural survey of manufacturing, and mining and quarrying². This is a sample survey which has been extrapolated. Using the new base values for 2001, turnover during 2000 was extrapolated back with the previous development of the industries.

¹ See Fachserie 4 (Produzierendes Gewerbe), Reihe 4.3.

² See Federal Statistical Office, report on quality 'Strukturerhebung im Verarbeitenden Gewerbe, im Bergbau sowie in der Gewinnung von Steinen und Erden', November 2005.

Overview 3—10: Assessment of gross value added in the manufacturing industries and mining and quarrying



Changes in inventories and own-account fixed capital formation

The changes in the value of companies' inventories of work in progress and of their own finished products and of own-account fixed capital formation (companies with 20 or more employees) are taken directly from the annual cost-structure survey for manufacturing, mining and quarrying.

To limit the burden imposed on respondents, no explicit questions were asked concerning changes to inventories or own-account fixed capital formation within the structural survey among enterprises with fewer than 20 employees. Instead, data for the smallest size of business covered by the cost-structure survey (20 to 49 employees) were used as a substitute and an allowance calculated on a pro-rata basis from their output figures for changes in inventories and own-account fixed capital formation.

Intermediate consumption

The intermediate consumption of manufacturing, mining and quarrying enterprises is structured as follows for the year 2000 (aggregate of source statistics):

	EUR m	Percentage of intermediate consumption	Percentage of output
Material consumption.....	788 482	79.5 %	54.5 %
+ Other intermediate consumption	203 337	20.5 %	14.0 %
= Total intermediate consumption	991 819	100.0 %	68.5 %

Material consumption covers the cost of consumables and supplies, the input of goods purchased for resale and the cost of hired labour. The other items of intermediate consumption include the cost of other industrial and tradesmen's services (repairs, maintenance and installation or assembly work), rents and leases and other costs, such as insurance premiums, advertising expenses, freightage and bank charges.

Intermediate consumption is determined on the basis of statistics from the annual cost-structure survey on manufacturing, mining and quarrying, a sample survey which covers about 84% of the turnover of enterprises with more than 20 employees, and the intermediate consumption ratio obtained from this source is then applied to the total output figures from the investment survey¹ and the monthly report² on enterprises with 20 or more employees. The intermediate consumption of the enterprises with **20 or more employees** is based directly on the cost-structure survey.

The intermediate consumption of enterprises with **fewer than 20 employees** is determined using figures from the annual structure survey, and calculating items it did not cover by carrying out a separate analysis of the cost-structure survey for the smallest size category of enterprise (20 to 49 employees) to find the percentage of output taken by each cost type. Each economic activity is examined with a view to determining whether there is an obvious tendency in specific areas of activity for marginal costs to diminish as payrolls become larger (economies of scale) and vice versa, in which case this trend has to be extrapolated to businesses with fewer than 20 employees.

¹ See Fachserie 4 (Produzierendes Gewerbe), Reihe 4.2.1.

² See Fachserie 4 (Produzierendes Gewerbe), Reihe 4.1.1.

Gross value added

The 'balance sheet' figure for gross value added, i.e. excluding allowances and adjustments, is then obtained for the year 2000 by aggregating these figures:

	Size of enterprise (number of employees)			
	Unit	1 – 19	20 or more	Total
Output	EUR m	85 373	1 362 279	1 447 652
– Intermediate consumption	EUR m	45 466	946 353	991 819
Intermediate-consumption ratio .	%	(53.3)	(69.5)	(68.5)
= Gross value added	EUR m	39 907	415 926	455 833

Allowances and adjustments

Undercoverage allowances

Earlier full surveys, such as censuses of workplaces or crafts and trades, showed that the source statistics such as cost-structure surveys, investment surveys or monthly reporting usually contain figures that are slightly too low. This is mainly because the reporting entities tend to disappear over time due to company closures, insolvencies and such like while – contrasting with the departures – new firms are often incorporated into the reporting group only after a delay. Because of this, an allowance of 0.75% is made on the figures for turnover.

A comparison of the register with the files of the fiscal administration and Federal Employment Agency in 2002 revealed that there were a large number of new enterprises not so far registered. Twofold processing of the monthly report showed that this amounted to approx. 1% of turnover. This extra basis was distributed pro rata over the time series as far back as 1995. From 2002 onwards this adjustment is no longer required, because the source statistics now refer to the corrected register.

Besides the above adjustments, an allowance is also made for the **hidden economy**. On the basis of the register of fines which is maintained by the Central Association of German Craft Industries and Trades (*Zentralverband des deutschen Handwerks*), adjustment factors were calculated for selected areas of manufacturing and applied to the turnover figures recorded in the cost-structure survey.

Allowance relating to the Federal Monopoly Administration for Spirits

In the economic classification system, the Federal Monopoly Administration for Spirits, which is covered by category 15.9 in the 2003 German classification of economic activities (WZ 2003), is treated in the production approach as a non-financial corporation assigned to the food and beverage industry. However, since it is not under an obligation to submit a return showing its source statistics, the required data are taken directly from its profit and loss account and incorporated into the national accounts.

Allowance for waybill procedure and reconciliation with actual cash receipts

The annual cost-structure survey covers turnover including excise duties with separate figures on excise duties relating to self-produced products (beer, mineral oil, sparkling wine, tobacco and spirits). However, there is no reporting obligation on, for example, spirits duty if spirits industry enterprises have procured alcohol or products of distillation for processing from the Federal

Monopoly Administration for Spirits or from domestic or foreign enterprises, or if a product for further processing such as petrol is delivered via the customs waybill procedure and the excise duty subsequently due is only payable to the customs administration upon sale to end users. These figures therefore do not match the government receipts (which also vary slightly because of the time lag (see section 3.24)). The difference is recorded as an adjustment.

Addition of refined petroleum products

The correct recording of petroleum company turnover in the cost-structure survey becomes a problem due to the company's international involvement, the changing focus of its activities and sharp price fluctuations. This is noticeable in the national accounts and particularly in the input-output tables whose primary data source in this area is the cost-structure survey. For this reason extra calculations are made for the input-output account which also enter the calculation of output and intermediate consumption. For this, reliable information is used on the quantity structure of petroleum and petroleum products as well as known market prices which are available in a highly detailed breakdown of the data.

Concession fee (mineral royalty)

Mineral royalties (quantity extracted on the basis of concession agreements with private landowners) and field and mining royalties (payments to owners for consent to extract oil deposits or fossil fuels) are contained in the figures for other intermediate consumption contained in the company returns submitted for the cost-structure survey. However, in line with the concept only the mineral royalties constitute intermediate consumption in the sense of the national accounts system. For this reason, the value of company returns for determining the 'balance sheet' result is reduced by the amount of the field and mining royalties recorded as income from leases.

Allowance for own-account production

Own-account production refers to a company's own products or goods purchased for resale which the owner removes from the inventory for his or her own personal use. An allowance for own-account production is only required if it is not fully recorded in the source statistics. By means of a table used by the regional finance offices of the fiscal administration to determine fixed amounts of tax relief for own-account production, allowances were calculated for selected branches of the food and beverage industry; these allowances were then extrapolated to the national accounts based on the number of employees.

Allowance for own-account fixed-capital formation

The value of fixed capital produced by companies for their own use (own-account fixed capital formation) is estimated to be 20% higher than the specialised statistics indicate, because it may be assumed that part of the fixed capital produced by enterprises for their own account is not recorded by the enterprises as assets but is merely entered as consumption expenditure, which is set against taxable income.

Adjustment for operating expenditure

The value of operating expenditure is reduced by 0.3%, because it may be assumed that enterprises will treat as routine intermediate consumption the acquisition of some goods,

especially inexpensive goods, which should actually be classed as investments. It may also be assumed that even the withdrawal of assets for private use in the entrepreneur's household is treated to some extent as business expenditure.

Reclassifications for the purposes of national accounting and balancing; FISIM¹

To meet the ESA 1995 requirements, various reclassifications and revaluations in the production approach are necessary. A national accounting balancing then takes place between production, use and distribution. Notes on FISIM are given in section 3.16 and Chapter 9.

Derivation of the national accounting results in the production approach

Summary of manufacturing industries and mining and quarrying

Figures for 2000 in EUR m

	Output	Intermediate consumption	Gross value added
(1) Source statistics	1 447 652	991 819	455 833
(2) + Allowances and adjustments	41 145	21 638	19 507
(3) = Balance sheet result	1 488 797	1 013 457	475 340
(4) + Conceptual reclassification	- 200 538	- 155 451	- 45 087
Of which:			
Adjustments not affecting GDP	- 201 076	- 161 966	- 39 110
* Netting-down of goods purchased for resale	- 161 966	- 161 966	0
* Valuation at basic prices	- 39 110	0	- 39 110
Adjustments affecting GDP	538	6 515	- 5 977
(5) = National accounting result (rounded) ^{*)}	1 288 270	858 000	430 270
(6) + Macroeconomic balancing adjustment		- 6 790	6 790
(7) = Adjusted figure (FISIM not allocated)	1 288 270	851 210	437 060
(8) + FISIM	-	5 840	- 5 840
(9) = Result for publication (FISIM allocated)	1 288 270	857 050	431 220

*) As the figures for each of the 28 industries of the combined sector are rounded prior to publication, this calculation results in obvious deviations between the theoretical calculation and the rounded figures.

¹ On this point, see the general explanations contained in section 3.3.

3.11 Electricity, gas and water supply (WZ 2003: E)

Gross value added, 2000 (FISIM allocated): EUR 34.12 bn (1.8% of total GVA)

Demarcation

Gross value added in the domain of the electricity, gas and water supply is assessed and published for the following areas of economic activity:

WZ 2003	Activity	2000 EUR m
40	Electricity and gas supply	28 680
41	Water supply services	5 440
E	Electricity, gas and water supply	34 120

It should be noted that these industries also contain units from the general government sector (institutional category S.13). On valuations in the general government sector, see section 3.18.

The assessment stages are identical for all types of 'enterprise', and so the following paragraphs relate to the entire domain of the electricity, gas and water supply.

Output

The annual surveys of enterprises in the realm of the electricity, gas and water supply (EVAS 43221) can be used to determine output¹; these surveys provide blanket coverage of electricity, district heating and gas suppliers. Only in the case of the water supply will it be necessary to make an allowance for small water suppliers since the records are restricted to enterprises delivering water in quantities of 200 000 m³ and more. The output of electricity, gas and water suppliers deriving from the source statistics is made up as follows:

	2000 EUR m
Turnover	132 293
+ Changes in inventories	76
+ Own-account fixed-capital formation...	784
= Output	133 153

The entire amount of **turnover** can be taken directly from the annual survey, as can the figures for changes in inventories of companies' own products and for own-account fixed capital formation.

Intermediate consumption

The results of the annual cost-structure survey (EVAS 43221) are used to calculate the amount of intermediate consumption. The survey contains data on output as well as intermediate consumption for **all** enterprises that can be taken directly into the calculations.

The following are the results of the assessment of electricity, gas and water suppliers for the year 2000, shown in EUR m:

¹ See Fachserie 4 (Produzierendes Gewerbe), Reihe 6.1.

Output	Intermediate consumption	Gross value added
133 153	93 839	39 314

Allowances and adjustments

Undercoverage allowance for water supply

Because the survey of water suppliers is restricted to those delivering at least 200 000 m³, upward adjustment of the measured value of output is necessary. The calculation of this allowance is based on the statistics on public water supply¹ (EVAS 32211), which allow an estimate of the missing water delivery figures (survey year 1998). Based on a comparison and evaluation of the missing delivery quantities at average prices (m³ prices to end users), an allowance of 2.4% resulted for undercoverage in the available years 1998 and 2001 which was also applied to the year 2000.

Allowance for own-account fixed-capital formation

The value of own-account fixed capital formation ascertained in the investment survey (EVAS 43211)² for the domain of electricity, gas and water supplies is raised by an estimated 20% in the production approach, because it is assumed that a portion of the own-account fixed capital formation is not carried as an asset by the enterprises but is merely entered as intermediate consumption expenditure, which is set against the enterprises' taxable income.

Adjustment for intermediate consumption

The intermediate consumption recorded in the cost-structure statistics (EVAS 43221) is reduced because it can be assumed that enterprises will treat as routine intermediate consumption the acquisition of some goods, especially inexpensive goods, which should actually be classed as investments. The reduction is estimated at 0.3% of intermediate consumption, which naturally alters the cost structure as derived from company returns.

Gross value added (balance-sheet figure)

Accounting for the allowances and adjustments, the 'balance sheet' gross value added is as follows:

	2000
	EUR m
Output.....	133 508
– Intermediate consumption.....	<u>93 633</u>
= Gross value added.....	39 875

Conceptual reclassifications³

Netting-down in the domain of electricity and gas supply

¹ See Fachserie 19 (Umwelt), Reihe 2.1.

² See Fachserie 4 (Produzierendes Gewerbe), Reihe 6.1.

³ Refer also to the general notes in section 3.3 regarding further national accounts reclassifications and macroeconomic balancing adjustments.

So that the above statistics can be aligned with ESA 1995, the resellers' turnover which is included in both the business survey and the cost-structure survey must be converted from a gross to a net value. These gross turnover figures are netted down by means of a coefficient, which is applied to the figure for the use of outsourced electricity, gas and water supplies for distribution purposes as specified in the cost-structure survey¹, which covers all enterprises of the industry. The resulting absolute values are subtracted from both output and intermediate consumption equally and therefore have no effect on gross value added.

Derivation of the national accounting results in the production approach

Summary for the electricity, gas and water industries

Figures for 2000 in EUR m

	Output	Intermediate consumption	Gross value added
(1) Source statistics	133 153	93 839	39 314
(2) + Allowances and adjustments	355	– 206	561
(3) = Balance sheet result	133 508	93 633	39 875
(4) + Conceptual reclassification	– 67 198	– 60 743	– 6 455
Included in above item: Netting-down of goods purchased for resale	– 64 251	– 64 251	0
(5) = National accounting result (rounded; 'enterprise' sectors) ..	66 310	32 890	33 420
(6) + Addition for general government sector (S.13)	740	290	450
(7) + Macroeconomic balancing adjustment	0	– 530	530
(8) = Adjusted figure (FISIM not allocated)	67 050	32 650	34 400
(9) + FISIM	0	280	– 280
(10) = Result for publication (FISIM allocated)	67 050	32 930	34 120

3.12 Construction (WZ 2003: F)

Gross value added, 2000 (FISIM allocated): EUR 96.21 bn (5.2% of total GVA)

Demarcation

The calculation of gross value added for the construction industry is performed internally for the economic activities WZ 45.1-45.2 (primary construction) and WZ 45.3-45.5 (secondary construction). However, only the construction total is assessed and published.

3.12.1 Primary construction

Output

The valuation of the output of enterprises with **20 or more employees** is based on the data collected in the annual business survey for the construction industry (EVAS 44211)². Above the threshold this is a blanket survey. The assessment involves the following steps:

- The *annual value of construction work*; this figure reflects the value of all construction work undertaken in Germany during the financial year, irrespective of when the work was ordered

¹ See Fachserie 4 (Produzierendes Gewerbe), Reihe 6.1.

² See Fachserie 4 (Produzierendes Gewerbe), Reihe 5.2.

or paid for; it includes income from work performed by enterprises as subcontractors and work performed for them by external enterprises or subcontractors (annual survey of the construction industry, including an investment survey (EVAS 44211)).

- In addition, annual construction output is increased by the amount of the *other turnover* of construction companies. This includes receipts from the sale of other own-produced products and industrial/craft and trade services, from goods for resale and other non-industrial and non-craft/non-trade activities. This information is also derived from the annual survey and investment survey in the primary construction sector.
- The resulting value has to be *reduced by the turnover generated by the renting of housing*, since housing services are an area of activity in their own right, and so this entire turnover is already included under the heading of housing services.
- Once *changes in inventories* of work in progress and companies' own finished products from production activities other than building and *own-account formation of fixed capital in the form of machinery* have been taken into consideration, we arrive at the output for enterprises with 20 or more employees in the realm of primary construction. This information also comes from the cost-structure survey of the construction industry. Because of assumed undercoverage, the figure for own-account fixed-capital formation is multiplied by a factor of 1.2.

Because of the way in which the business surveys work, no data are available for the year 2000 on enterprises with **1 to 19 employees**. For this reason, the turnover of businesses with 1 to 19 employees is taken from the annual blanket survey of production units in the domain of primary construction¹ (EVAS 44231). Since this is a survey of production units in primary construction, the data must be adjusted for enterprise-based presentation. The first requirement is the elimination of units which are part of enterprises outside the construction industry, and then adjustments must be made for double recording of data within the category of primary construction. Such duplication of output or turnover data invariably occurs when construction units with 1 to 19 employees are required to submit returns for the blanket survey and the enterprises to which they belong are required to submit returns in the annual business and investment survey. On the basis of various special studies, it is currently estimated that 3.5% of the turnover of small businesses (1 - 19 employees) needs to be deducted. Because of assumed undercoverage, the figure for own-account fixed-capital formation is also multiplied by a factor of 1.2.

The output of **all** enterprises in the domain of primary construction is established by adding the results for both size categories after three other factors have been taken into account:

- In principle, construction work performed abroad is not part of domestic production, but the export of services deriving from such work is taken into account. German-based employees are involved in the construction of buildings outside Germany; they carry out planning and development work or perform managerial or supervisory functions on foreign building sites. On the basis of consultations with experts, the services provided by this extraterritorial labour force are estimated at 10% of the total value of construction work performed abroad

¹ See Fachserie 4 (Produzierendes Gewerbe), Reihe 5.1.

according to the investment survey¹. The corresponding amount is added to domestic output under the heading 'export of services'.

- **Increase in output after reconciliation with VAT statistics (EVAS 73311):** As a result of pilot assessments regarding the comparability of concept-based and activity-based divergences between the various data sources, it emerged that a further adjustment was needed. To avoid undercoverage mistakes, the output was increased by 2.5%.
- The treatment of **construction work that is undertaken for investment reasons** is based on the valuation of capital expenditure on building (see section 5.10.2). These are assumptions made for own services provided by the developers and for unpaid work and illegal employment in the building industry. **Non-capital construction work** is also taken into consideration. This is work that results from knowledge gained from reconciliation with the input-output account and estimates. For this a total of 10% of the work undertaken by parties for investment purposes is assumed. The level of output is thereby increased by EUR 2 bn in the year 2000.

In order to divide the value of this work between the internal accounting categories of primary and secondary construction, an auxiliary calculation is performed. The distribution formula is determined by the respective shares of the two areas of building activity in the total value of work on the construction of housing in accordance with the following model:

Output in the domain of primary construction	X	Percentage of the value of housing construction ascribable to primary construction activity	=	Housing construction recorded under primary construction
Output in the domain of secondary construction	X	Percentage of the value of housing construction ascribable to secondary construction activity	=	Housing construction recorded under secondary construction
Total construction				

The percentage of primary construction activity devoted to housing construction is estimated by assessing the turnover from housing construction as a percentage of total turnover, on the basis of the figures from the monthly unit surveys in the construction industry (EVAS 44111). For secondary construction activity, the equation is simplified by assuming that all such activity is ascribable to housing construction. From this auxiliary calculation we obtain the distribution formula by which building work performed by non-entrepreneurs is divided between primary construction (28.0% in 2000) and secondary construction (72.0% in 2000).

¹ See Fachserie 4 (Produzierendes Gewerbe), Reihe 5.2.

Valuation of output in the domain of primary construction

2000 in EUR m

(a) 20 or more employees

Annual value of construction work	74 404	
+ Other turnover.....	2 411	
– Turnover from housing services	90	
+ Changes in inventories of work in progress and companies' own finished products from other production activities.....	7	
Own-account fixed-capital formation	137	
+ Undercoverage (20%)	27	
– Own-account building work.....	<u>122</u>	
+ = Own-account production of machinery and equipment.....	42	42
= Output (balance-sheet figure)	76 774	76 774
+ + 2.5 % allowance (exhaustiveness adjustment - VAT)		<u>1 920</u>
= Output for units with 20 or more employees		78 694

(b) 1–19 employees

Total turnover.....	29 054	
+ Changes in inventories	0	
+ Own-account fixed-capital formation	46	
+ Undercoverage (20%).....	9	
– Adjustment for duplication (3.5% of turnover)	<u>1 019</u>	
= Output (balance-sheet figure).....	28 090	28 090
+ + 2.5 % allowance (exhaustiveness adjustment - VAT)		<u>702</u>
= Output for units of 1 – 19 employees		28 792
Total unadjusted output (balance-sheet figure)		107 486
Annual building work performed abroad.....	1 061	
+ 10% of above for exports of services	106	106
Construction work by non-entrepreneurs (including non-deductible VAT)	22 762	
+ 28.0% of above for primary construction	6 369	6 369
Total adjusted output (balance-sheet figure)		113 961

Intermediate consumption

The results of the annual cost-structure survey of the construction industry¹ are used to calculate intermediate consumption. The cost-structure survey is a sample survey of enterprises with **20 or more employees** and covers about 57% of the annual value of primary construction work undertaken by such enterprises. Its results are extrapolated to the whole body of enterprises covered by the investment survey, i.e. all construction enterprises with 20 or more employees. Once the output figure has been calculated, it is multiplied by the intermediate-consumption ratio derived from the cost-structure survey to produce the figure for intermediate consumption.

Since there are no original survey data on the intermediate consumption of businesses with **fewer than 20 employees**, the intermediate-consumption ratio of the smallest surveyed size category, i.e. enterprises with 20 to 49 employees, is used as a substitute assessment basis; in addition, an allowance is made for the fact that intermediate-consumption ratios tend to diminish from higher to lower size categories (multiplication by the adjustment factor 0.95). The combined intermediate-consumption ratio for all enterprises is then reduced by 0.3 of a percentage point; this estimated figure is based on the assumption that there is a tendency to

¹ See Fachserie 4 (Produzierendes Gewerbe), Reihe 5.3.

overstate intermediate consumption, because some inexpensive capital goods or products removed from inventories for private use are likely to be included in operating expenditure.

The intermediate-consumption ratio for work performed by non-entrepreneurs is derived from comparable statistics from the cost-structure survey of the construction industry; in other words, the irrelevant expenditure and revenue items are excluded from the calculation.

Valuation of intermediate consumption in the domain of primary construction

	2000 in EUR m
<i>(a) 20 or more employees</i>	
Gross output as per cost-structure survey	76 839
Intermediate consumption as per cost-structure survey	49 737
Intermediate-consumption ratio as per cost-structure survey	64.73 %
Intermediate consumption (64.73% of EUR 78 694 m)	50 937
<i>(b) 1–19 employees</i>	
Gross output as per cost-structure survey (20–49 employees)	19 023
Intermediate consumption as per cost-structure survey (20–49 employees)	10 349
Intermediate-consumption ratio as per cost-structure survey (20–49 employees)	54.40 %
Intermediate-consumption ratio x 0.95 (estimate for 1–19 employees)	51.68 %
Intermediate consumption (51.68% of EUR 28 792 m)	14 881
Total intermediate consumption	65 818
Intermediate-consumption ratio (65 818/107 486=61.23 %)	
Adjusted intermediate-consumption ratio 61.05% (deduction of 0.3%)	197
Total intermediate consumption (adjusted)	65 620
<i>Intermediate consumption by non-entrepreneurs</i>	
Intermediate consumption (58.96% of 6 369)	3 755
Total intermediate consumption	69 375

Gross value added

Gross value added can then be directly assessed as the difference between output and intermediate consumption.

Summary for primary construction:

Figures for 2000 in EUR m

	Output	Intermediate consumption	Gross value added
Balance sheet result.....	113 961	69 375	44 586
Included in total:			
Housing construction by non-entrepreneurs	6 369	3 755	2 614
Exports of services	106	–	106
Exhaustiveness adjustment	2 622	1 600	1 022
Conceptual reclassification	– 1 362	– 1 981	619
National-accounting result (rounded)	112 599	67 394	45 205

3.12.2 Secondary construction

Output

Various sets of statistics are available for the valuation of output in the domain of secondary construction. These statistics can be combined and cross-checked with each other. The basis for the valuation of output in the domain of secondary construction is provided by the annual cost-

structure surveys of the construction industry¹ (EVAS 44251), the quarterly reports on crafts and trades² (EVAS 53211) and the VAT statistics³ (EVAS 73311) which determine the level of secondary construction output.

Valuation of output in the domain of secondary construction

	2000 EUR m
Total turnover as per VAT statistics	97 457
+ Own-account fixed-capital formation (including undercoverage allowance)	56
+ Housing construction by non-entrepreneurs (see primary construction).....	<u>16 393</u>
= Output in secondary construction (balance-sheet figure)	113 906

Intermediate consumption

The results of the annual cost-structure survey of the construction industry are used to calculate intermediate consumption in the domain of secondary construction. The cost-structure survey is a sample survey of enterprises with 20 or more employees and covers about 44% of the annual value of secondary construction work undertaken by such enterprises. Its results are extrapolated to the whole body of enterprises covered by the investment survey,⁴ i.e. all construction enterprises with 20 or more employees, but the resulting figure does not include the small building firms, which play a major part in secondary construction activity.

When intermediate consumption is assessed, the first step is to divide output into two amounts on the basis of company size (enterprises with 1 to 19 employees and those with 20 or more); in the absence of more detailed information, percentages are calculated from the quarterly crafts and trades reports⁵ for each of the two size categories. For enterprises with 20 or more employees, the intermediate-consumption ratio is taken direct from the cost-structure survey referred to above; for want of statistics on businesses with 1 to 19 employees, the intermediate-consumption ratio for the 20 to 49-employee bracket is used instead. In addition, allowance is made for the fact that intermediate-consumption ratios tend to diminish from higher to lower size categories; this is done by multiplying the ratio by the adjustment factor 0.95. The combined intermediate-consumption ratio for all enterprises is then reduced by 0.3 of a percentage point; this figure is based on the assumption that there is a tendency to overstate intermediate consumption, because some inexpensive capital goods or products removed from inventories for private use are likely to be included in operating expenditure.

Similarly to primary construction work, the intermediate-consumption ratio for construction work carried out by non-entrepreneurs is derived from comparable items in the cost-structure survey⁶.

¹ See Fachserie 4 (Produzierendes Gewerbe), Reihe 5.3.

² See Fachserie 4 (Produzierendes Gewerbe), Reihe 7.1.

³ See Fachserie 14 (Finanzen und Steuern), Reihe 8.

⁴ See Fachserie 4 (Produzierendes Gewerbe), Reihe 5.2.

⁵ See Fachserie 4 (Produzierendes Gewerbe), Reihe 7.1.

⁶ See Fachserie 4 (Produzierendes Gewerbe), Reihe 5.3.

Valuation of intermediate consumption in the domain of secondary construction

	2000	
	in %	EUR m
<i>Output</i> (excluding non-entrepreneur construction work)		97 513
Enterprises with 1 to 19 employees (59.57% of total output)		58 088
Enterprises with 20 or more employees (40.43 % of total output)		39 425
Intermediate-consumption ratio (1 – 19)	51.81	30 095
Intermediate-consumption ratio (≥ 20)	57.66	
Intermediate consumption (≥ 20)		22 732
Intermediate consumption combined (unadjusted)	54.17	52 827
Intermediate-consumption ratio adjusted by 0.3%	54.01	
Intermediate consumption combined (adjusted)		52 669
<i>Output for non-entrepreneur construction work</i>		16 393
Intermediate-consumption ratio	61.84	
Intermediate consumption		10 137
Total intermediate consumption		62 806

Gross value added

Gross value added can then be directly assessed as the difference between output and intermediate consumption.

Summary for secondary construction:

Figures for 2000 in EUR m

	Output	Intermediate consumption	Gross value added
Balance sheet result.....	113 906	62 806	51 100
Included in total:			
Housing construction by non-entrepreneurs	16 393	10 137	6 256
Conceptual reclassification	– 1 234	– 1 589	355
National-accounting result (rounded).....	112 672	61 217	51 455

Derivation of the national accounting results in the production approach

Summary for the construction industry

Figures for 2000 in EUR m

	Output	Intermediate consumption	Gross value added
(1) Source statistics	203 394	117 044	86 350
+ Validation of statistical data.....	– 1 017	0	– 1 017
= Subtotal.....	202 377	117 044	85 333
(2) + Allowances and adjustments.....	24 834	15 137	9 697
(3) = Balance sheet result.....	227 211	132 181	95 030
(4) + Conceptual reclassification	– 1 941	– 3 570	1 629
(5) = National-accounting result (rounded)	225 270	128 600	96 670
(6) + Macroeconomic balancing adjustment	0	– 1 530	1 530
(7) = Adjusted figure (FISIM not allocated)	225 270	127 070	98 200
(8) + FISIM	0	1 990	– 1 990
(9) = Result for publication (FISIM allocated).....	225 270	129 060	96 210

3.13 Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods (WZ 2003: G)

Gross value added, 2000 (FISIM allocated): EUR 205.33 bn (11.1% of total GVA)

Output, intermediate consumption and gross value added in this domain are assessed and published for the following areas of economic activity:

WZ 2003 No.	Activity	Gross value added, 2000 EUR m
50	Sale, maintenance and repair of motor vehicles and motorcycles; retail sale of automotive fuel	29 960
51	Wholesale trade and commission trade, except of motor vehicles and motorcycles	90 730
52	Retail trade (except motor vehicles and motorcycles); repair of personal and household goods	84 640
G	Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods	205 330

3.13.1 Sale, maintenance and repair of motor vehicles and motorcycles; retail sale of automotive fuel (WZ 50)

Gross value added, 2000 (FISIM allocated): EUR 29.96 bn (1.6% of total GVA)

Demarcation

Gross value added by the sale, maintenance and repair of motor vehicles and motorcycles and by the sale of automotive fuel is differentiated into the following areas of economic activity:

WZ 2003 No.	Activity	2000 EUR m
50.10.1	Commission trade in new and used vehicles	410
50.30.1	Commission trade in motor vehicle parts and accessories.....	40
50.40.1	Commission trade in motorcycles and related parts and accessories	10
50.10.2	Wholesale trade in new and used vehicles	1 800
50.30.2	Wholesale trade in motor vehicle parts and accessories.....	2 800
50.40.2	Wholesale trade in motor vehicle parts and accessories.....	100
50.10.3	Retail trade in new and used vehicles	15 200
50.30.3	Retail trade in motor vehicle parts and accessories	1 550
50.40.3	Retail trade in motorcycles and related parts and accessories	250
50.50.1	Agents involved in the retail sale of automotive fuel.....	1 630
50.50.2	Own-account retail sale of automotive fuel.....	670
50.2	Maintenance and repair of motor vehicles.....	5 380
50.40.4	Maintenance and repair of motorcycles.....	120
50	Sale, maintenance and repair of motor vehicles and motorcycles; retail sale of automotive fuel	29 960

Output

Output is determined using data from the business register (EVAS 52121) combined with the VAT statistics (EVAS 73311) and the annual survey of the wholesale and retail trade (EVAS 45251). Undercoverage allowances are derived from the results of cross-checking. An allowance was also added for the hidden economy; this allowance is based on a register of fines maintained by the Central Association of German Craft Industries and Trades (*Zentralverband des deutschen Handwerks*) for selected manufacturing activities and is supplemented with the aid of turnover figures from the crafts and trades section of the cost-structure survey. The turnover data for WZ 50.2 (maintenance and repair of motor vehicles) and WZ 50.40.4 (maintenance and repair of motorcycles) were reassessed on the basis of new cross-checks against the VAT statistics. The turnover figures are supplemented by the amount of own-account fixed-capital formation, although this is a negligible quantity in the areas of activity under examination.

Intermediate consumption

Intermediate consumption is calculated separately for each activity group from the annual survey of the wholesale and retail trade. It shows the cost of materials broken down into the cost of consumables and supplies and goods purchased for resale as well as other operating expenditure. An accurate estimate of the value of goods purchased for resale can therefore be obtained through the annual survey for the wholesale and retail trade. The ratio of goods purchased for resale is found by comparing the value of goods purchased for resale with turnover. These ratios are then set against the figures for output. The output then contains only the trading margin and intermediate consumption contains only the remaining costs, including consumables and supplies. When calculating the ratios for the other expenses it should be remembered that the annual survey in its present form was introduced as recently as 1999. Because subsequent years' series showed relatively high fluctuations, a smoothing was performed during the revisions, resulting in a reduction of the ratio for the other expenses in the year 2000. In detail the following items were included:

Example: WZ 50.10.2 Wholesale trade in new and used vehicles

Item of annual survey	Share of output 2000 in %
Purchases of consumables and supplies.....	0.57
Rental and leasing charges	0.68
Expenditure on procurement and other operating expenditure.....	9.00
Ratio for other expenditure.....	10.25
Adjusted ratio for other expenditure	8.99

Gross added value can then be calculated from these data:

<i>Example: WZ 50.10.2 Wholesale trade in new and used vehicles</i>	2000
	EUR m
Output (including goods for resale)	25 989
Ratio of use of goods for resale	84.22 %
Goods for resale	21 888
Ratio of other expenditure.....	8.99 %
Other expenditure.....	2 336
– Total intermediate consumption (including goods for resale)	24 224
= Gross value added (balance-sheet figure)	1 765

Gross value added

In each of the activity groups, gross value added is simply taken as the difference between output and intermediate consumption. The figure published is the result of including and combining all additions, conceptual reclassifications and macroeconomic balancing adjustments¹.

Summary for sale, maintenance and repair of motor vehicles and motorcycles; retail sale of automotive fuel (WZ 50)

Figures for 2000 in EUR m

	Output	Intermediate consumption	Gross value added
Balance sheet result.....	168 160	138 730	29 430
Conceptual reclassification	- 123 263	- 123 649	386
Included in above item: Netting-down of goods purchased for resale	- 123 498	- 123 498	0
National-accounting result (rounded)	44 900	15 080	29 820
Macroeconomic balancing adjustment	-	- 470	470
Adjusted figure (FISIM not allocated)	44 900	14 610	30 290
FISIM	-	330	- 330
Result for publication (FISIM allocated).....	44 900	14 940	29 960

3.13.2 Wholesale trade and commission trade, except of motor vehicles and motorcycles (WZ 51)

Gross value added, 2000 (FISIM allocated): EUR 90.73 bn (4.9% of total GVA)

Demarcation

Gross value added by wholesale and commission trade in goods other than motor vehicles and motorcycles is differentiated by the following areas of economic activity:

WZ 2003 No.	Description of activity	2000 EUR m
51.1	Commission trade.....	18 890
	Wholesale of ...	
51.2	agricultural raw materials and live animals.....	2 480
51.3	food, beverages & tobacco	10 980
51.4	household goods.....	21 750
51.5	commodities, non-agricultural intermediate products, waste and scrap.....	21 130
51.8	machinery, equipment and supplies	10 390
51.9	Other wholesale.....	4 580
	Federal Institute for Agriculture and Food and German Oil Storage Association	530
51	Wholesale trade and commission trade, except of motor vehicles and motorcycles	90 730

¹ On this point, see the general explanations contained in section 3.3.

a) Commission trade

Output

The VAT statistics determine the assessment of output as before. Whilst after 1991 the statistics on commission trade were no longer compiled following the adoption of the Statistical Adjustments Act (*Statistikbereinigungsgesetz*), data based on the Structural Business Statistics Regulation (*Strukturverordnung*) are only available from the year 1999 onwards. Currently they do not appear sufficiently reliable to be used exclusively. For this reason, the data for the year 2000 are therefore taken from the VAT statistics and combined with and cross-checked against the information from the annual survey and business register.

Intermediate consumption

Data on intermediate consumption are available as structural information from the annual survey (EVAS 45251) which has been conducted since 1999 on the basis of the European Structural Statistics Regulation. The ratios of goods purchased for resale are found in the same way as those relating to the sale of motor vehicles and motorcycles described above (WZ 50). The latest information sourced from a survey stems from the year 1991, so it is not surprising that there was a relatively large discrepancy between it and the unrevised series. The new results affect the entire series ranging up to the early 1990s. Output in the commission trade comprises the trading margin and commission. The value of goods purchased for resale also has to be subtracted from the figure for intermediate consumption. The calculations are effected as described below for the wholesale trade:

	2000 EUR m
Output (including goods for resale).....	27 080
Ratio of use of goods for resale 14.50 %	
Goods for resale	3 927
Ratio of other expenditure 16.18 %	
Other expenditure.....	4 382
– Total intermediate consumption (including goods for resale).....	8 309
= Gross value added (balance-sheet figure)	18 771

b) Wholesale trade

Output

The basis for determining output is found in the results of the annual survey of the wholesale and retail trade, cross-checked against the VAT statistics and the business register. Undercoverage allowances are derived from the results of cross-checking. An allowance was also added for the hidden economy; this allowance is based on a register of fines maintained by the Central Association of German Craft Industries and Trades (*Zentralverband des deutschen Handwerks*) for selected manufacturing activities and is supplemented with the aid of turnover figures from the crafts and trades section of the cost-structure survey. Turnover is supplemented by own-account fixed capital formation, although in this area of activity it is negligible; to do this ratios were produced on the basis of the cost-structure statistics on wholesale – now included in the annual survey of the wholesale and retail trade (own-account fixed capital formation : turnover) which are applied to the figures for turnover for the relevant year. The annual survey itself cannot provide the corresponding data in this detail.

Intermediate consumption

Intermediate consumption is calculated separately for each activity group from the annual survey of the wholesale and retail trade. It shows the cost of materials broken down into the cost of consumables and supplies and goods purchased for resale as well as other operating expenditure. An accurate estimate of the value of goods purchased for resale can therefore be obtained through the annual survey for the wholesale and retail trade. The ratio of goods purchased for resale is found by comparing the value of goods purchased for resale with turnover. These ratios are then set against the figures for output. The output then contains only the trading margin and intermediate consumption contains only the remaining costs, including consumables and supplies. When calculating the ratios for the other expenses it should be remembered that the annual survey in its present form was introduced as recently as 1999. The ratio of these other costs uses the following items:

Example: WZ 51.2 Wholesale of agricultural raw materials and live animals

Item of annual survey	Share of output 2000 in %
Purchases of consumables and supplies.....	2.57
Rental and leasing charges	0.47
Services procured and other operating expenditure.....	3.68
Ratio of other expenditure.....	6.72

Gross value added can be calculated from these data as follows:

Example: WZ 51.2 Wholesale of agricultural raw materials and live animals

	2000 EUR m
Output.....	36 437
Ratio of use of goods for resale 86.31 %	
Goods for resale.....	31 449
Ratio of other expenditure..... 6.72 %	
Other expenditure.....	2 449
– Total intermediate consumption.....	<u>33 898</u>
= Gross value added (balance-sheet figure)	2 539

c) Special assessments in the domain of the wholesale trade

Federal Institute for Agriculture and Food

In the German system for the classification of economic activities for national accounting purposes, WZ 2003, the Federal Institute for Agriculture and Food (*Bundesanstalt für Landwirtschaft und Ernährung*), which was known until 1994 as the Federal Institute for Agricultural Market Regulation, belongs to the domain of wholesale trade. It is a public institute with its own legal personality. Its role is to regulate and organise the markets in agricultural produce within the framework of the law. It is required to procure, manage and utilise stocks of foodstuffs and animal feed with a view to safeguarding the supply of these products. In this type of market intervention, products usually have to be sold below cost price, and storage costs are high, which generally means that the value added by the Institute is initially a negative amount. These deficits are made up by government subsidies. Since the Federal Institute for Agriculture

and Food does not submit returns as part of the reporting system for trade statistics, its data have to be added as a separate entry. These data can be obtained from the Institute's business reports. The calculations focus on the following values:

Output	(proceeds from sales)
– Intermediate consumption	(input of goods, costs arising from revaluation, material administrative expenditure, storage costs)
= Gross value added	(at market prices)

German Oil Storage Association

The German Oil Storage Association (*Erdölbevorratungsverband*) is also assigned to the domain of wholesale. The German Oil Storage Association is a special administrative agency of the Federal Government, a corporation possessing legal personality and governed by public law. It is responsible under the Oil Storage Act (*Erdölbevorrattungsgesetz*) for the storage of mineral-oil products with a view to safeguarding the supply of such products. However, once the stocks of these products have been built up to full capacity, there is scarcely any more business activity in terms of the movement of goods. Enterprises which import mineral oil products on a commercial basis and those which produce them or have them produced for their own account are thus relieved of this task by the Association; all of these enterprises are subject to compulsory membership of the Association. Since the membership fees paid by companies to the Association should be recorded as part of those companies' other intermediate consumption, they represent an item of intermediate consumption for which there is initially no corresponding macroeconomic production. For this reason, the provision of services to the value of the membership contributions is imputed to the German Oil Storage Association, which also has to finance its current expenditure from these receipts. The data required for the assessment of value added are taken direct from the following entries in the Association's business report:

Output:	– Membership contributions
	– Administrative income
	– Other revenue
Intermediate consumption:	– Cost price of purchased quantities
	– Administrative expenditure
	– Insurance of product stocks
	– Expenditure on storage depots (tanks and underground caverns) and payments for storage of oil products under delegation agreements

Gross value added

In each of the activity groups, gross value added is simply taken as the difference between output and intermediate consumption. The value published results from including and combining all additions, conceptual reclassifications and macroeconomic balancing adjustments.¹

¹ On this point, see the general explanations contained in section 3.3.

Summary of published wholesale and commission trade (WZ 51)

Figures for 2000 in EUR m

	Output	Intermediate consumption	Gross value added
Balance sheet result	732 162	641 446	90 716
Conceptual reclassification	- 575 136	- 574 525	- 611
Included in above item: Netting-down of goods purchased for resale	- 576 236	- 576 236	0
National-accounting result (rounded)	157 030	66 930	90 100
Macroeconomic balancing adjustment	-	- 1 420	1 420
Adjusted figure (FISIM not allocated)	157 030	65 510	91 520
FISIM	-	790	- 790
Result for publication (FISIM allocated)	157 030	66 300	90 730

3.13.3 Retail trade (except of motor vehicles, motorcycles and automotive fuel); repairs of personal and household goods (WZ 52)

Gross value added, 2000 (FISIM allocated): EUR 84.64 bn (4.6% of total GVA)

Demarcation

In repairs of personal and household goods and the retail trade, excluding motor vehicles, **gross value added** is calculated for the following groups of activity:

WZ 2003 No.	Activity	2000 EUR m
	Retail trade in	
52.1	non-specialised stores	23 600
52.2	food, beverages and tobacco in specialised stores	3 720
52.3	pharmaceutical and medical goods, cosmetic and toilet articles	10 380
52.4	other retail sale of new goods in specialised stores	36 730
52.5	sale of second-hand goods in stores	510
52.6	sale not in stores	8 520
52.7	repair of personal and household goods	1 180
52	Retail trade (excluding motor vehicles); repair of personal goods	84 640

Output

Output is determined using data from the data contained in the business register combined with the VAT statistics and the annual survey of the wholesale and retail trade (EVAS 45251). Undercoverage allowances are derived from the results of cross-checking. An allowance was also added for the hidden economy; this allowance is based on a register of fines maintained by the Central Association of German Craft Industries and Trades (*Zentralverband des deutschen Handwerks*) for selected manufacturing activities and is supplemented with the aid of turnover figures from the crafts and trades section of the cost-structure survey. Turnover is supplemented by **own-account fixed capital formation**, although in this area of activity it is negligible, as in the other areas of the wholesale and retail trade. To do this, ratios were produced on the basis of the cost-structure statistics on retail, now included in the annual survey of the wholesale and retail trade (own-account fixed capital formation : turnover), which are applied to the figures for turnover for the relevant year. The annual survey itself cannot provide the corresponding data in this detail.

Intermediate consumption

Intermediate consumption is calculated separately for each activity group from the annual survey of the wholesale and retail trade. It shows the cost of materials broken down into the cost of consumables and supplies and goods purchased for resale as well as other operating expenditure. An accurate estimate of the value of goods for resale can therefore be obtained through the annual survey of the wholesale and retail trade. The goods purchased for resale ratio is found by comparing the value of goods purchased for resale with turnover. These ratios are then set against the figures for output. The output then contains only the trading margin and the intermediate consumption contains only the other costs including consumables and supplies.

Gross value added

In each of the activity groups within the domain of the retail trade, gross value added is simply the difference between output and intermediate consumption. The published figure is found after including conceptual reclassifications and macroeconomic balancing adjustments.¹

Summary of published retail trade (excluding motor vehicles and retail sale of automotive fuel), repair of personal and household goods (WZ 52)

Figures for 2000 in EUR m

	Output	Intermediate consumption	Gross value added
Balance sheet result	397 933	314 049	83 884
Conceptual reclassification.....	– 262 072	– 262 562	490
Included in above item: Netting-down of goods purchased for resale.....	– 262 317	– 262 317	0
National-accounting result (rounded).....	135 860	51 490	84 370
Macroeconomic balancing adjustment.....	–	– 1 330	1 330
Adjusted figure (FISIM not allocated)	135 860	50 160	85 700
FISIM	–	1 060	– 1 060
Result for publication (FISIM allocated)	135 860	51 220	84 640

¹ On this point, see the general explanations contained in section 3.3.

Derivation of the national accounting results in the production approach
Summary for the wholesale and retail trade; maintenance and repair of motor vehicles,
motorcycles and personal and household goods (WZ 2003: G)
 Figures for 2000 in EUR m

	Output	Intermediate consumption	Gross value added
(1) Source statistics	1 245 953	1 049 635	196 318
(2) + Allowances and adjustments	52 302	44 590	7 712
(3) = Balance sheet result	1 298 255	1 094 225	204 030
(4) + Conceptual reclassification.....	- 960 471	- 960 736	265
Included in above item: Netting-down of goods purchased for resale.....	- 962 051	- 962 051	0
(5) = National-accounting result (rounded).....	337 790	133 500	204 290
(6) + Macroeconomic balancing adjustment.....	-	-3 220	3 220
(7) = Adjusted figure (FISIM not allocated)	337 790	130 280	207 510
(8) + FISIM	-	2 180	- 2 180
(9) = Result for publication (FISIM allocated)	337 790	132 460	205 330

3.14 Hotels and restaurants (WZ 2003: H)

Gross value added, 2000 (FISIM allocated): EUR 30.12 bn (1.6% of total GVA)

Output

Turnover data from the following statistical sources are available for the valuation of output:

- Data from the business register (EVAS 52121)
- Annual survey of the catering trade¹ (EVAS 45421)
- Monthly survey of the catering trade² (EVAS 45411)
- VAT statistics (EVAS 73311)

Modified data from the business register formed the starting point for determining output. These data are substantially higher than the mix of results previously used on VAT statistics and the annual and monthly surveys of hotels and restaurants. In addition, allowances were added to the turnover figures for undercoverage - activities in the hidden economy, for example - and for the estimated income from tips. A special assessment was made of turnover from the letting of short-stay accommodation in smaller establishments, since the above statistics only relate to the turnover of establishments with nine or more beds. The special assessment is based on surveys of the tourist information centres in Bavaria, Baden-Württemberg, Mecklenburg/Western Pomerania and Rhineland-Palatinate on the number of overnight stays in small establishments with fewer than nine beds.

Intermediate consumption

The figures on intermediate consumption were derived from the annual survey of the catering trade. This shows the cost of materials broken down into the cost of consumables and supplies and goods purchased for resale as well as other operating expenditure. An accurate estimate of

¹ See Fachserie 6, Reihe 7.3 - Handel, Gastgewerbe, Tourismus

² See Fachserie 6 Reihe 7.4 - Gastgewerbe - long-term series for combined areas of activity

the value of goods for resale can therefore be obtained from the survey data. It is subtracted from the output¹. The output then contains only the trading margin and the intermediate consumption contains only the other costs including consumables and supplies.

		2000
<i>Example: Hotels and restaurants</i>	%	EUR m
Output.....		65 621
Ratio of use of goods for resale	4.02 %	
Goods for resale		2 638
Ratio of other expenditure.....	51.99 %	
Other expenditure		34 116
– Total intermediate consumption		36 754
= Gross value added (balance-sheet figure)		28 867

Gross value added

In each of the activity groups, gross value added is simply taken as the difference between output and intermediate consumption. The published figure results from including and combining all additions, conceptual reclassifications and macroeconomic balancing adjustments.² Regarding hotels and restaurants, conceptual changes that affect GDP relate in particular to the income from tips.

Derivation of the national accounting results in the production approach

Summary of hotels and restaurants (WZ 2003: H)

Figures for 2000 in EUR m

	Output	Intermediate consumption	Gross value added
(1) Source statistics	55 991	31 361	24 630
(2) + Allowances and adjustments.....	9 630	5 395	4 235
(3) = Balance sheet result	65 621	36 756	28 865
(4) + Conceptual reclassification	– 1 339	– 2 844	1 505
Included in above item: Netting-down of goods purchased for resale.....	– 2 639	– 2 639	0
(5) = National-accounting result (rounded)	64 280	33 910	30 370
(6) + Macroeconomic balancing adjustment.....	–	– 480	480
(7) = Adjusted figure (FISIM not allocated)	64 280	33 430	30 850
(8) FISIM	–	730	– 730
(9) = Result for publication (FISIM allocated).....	64 280	34 160	30 120

¹ Figures were obtained from the current annual survey for calculating the results for the year 2000.

² On this point, see the general explanations contained in section 3.3.

3.15 Transport, storage and communication (WZ 2003: I)

Gross value added, 2000 (FISIM allocated): EUR 101.82 bn (5.5% of total GVA)

Demarcation

In the domain of transport and communication, **gross value added** is assessed for 20 categories of economic activity, and the results are collated and published into the following five divisions:

WZ 2003 No.	Activity	2000 EUR m
60	Land transport; transport via pipelines	28 880
61	Water transport	4 390
62	Air transport	6 760
63	Supporting and auxiliary transport activities; transport agencies	25 720
64	Post and telecommunications.....	36 070
I	Transport, storage and communication	101 820

The activity categories are described in detail below. The effects of FISIM are not yet included in these categories.

3.15.1 Land transport; transport via pipelines (WZ 60)

The valuation of the rail transport sub-sector (WZ 60.1) is described in detail by way of example. The data sources and results of the calculations for the other areas of activity in WZ 60 are described together below.

Rail transport (WZ 60.1)

The valuation is effected separately for the Deutsche Bahn subsidiaries (under NACE 60) and other private railway companies.

The valuation is carried out for the **rail subsidiaries** as follows:

Output

The annual business reports of Deutsche Bahn AG, Cargo AG, Reise und Touristik AG and Regio AG are available to provide turnover and other operating income figures for assessing output. Figures from these reports are also available to determine the **own-account fixed capital formation**. The following figures are shown for the three aforementioned Deutsche Bahn subsidiaries:

	2000 EUR m
Turnover	11 846
+ Own-account fixed-capital formation	669
+ Other operating revenue.....	2 686
= Output	15 201

Intermediate consumption

The intermediate consumption is also calculated on the basis of the business reports mentioned above. As well as the costs of materials, the other operating expenses according to the ESA 1995 definitions are used:

	2000
	EUR m
Cost of materials.....	8 051
+ Other operating expenses.....	3 191
= Intermediate consumption.....	11 242

Gross value added

	2000
	EUR m
Output.....	15 201
– Intermediate consumption.....	<u>11 242</u>
= Gross value added.....	3 959

The **output of railway companies** other than Deutsche Bahn comprises turnover as per VAT statistics¹ (EVAS 73311) plus own-account fixed capital formation. Own-account fixed capital formation and intermediate consumption are assessed with the aid of ratios taken from the service statistics, 2000 (EVAS 47415). Gross value added is found as follows:

	2000
	EUR m
Output.....	417
– Intermediate consumption.....	<u>155</u>
Intermediate-consumption ratio.....	37.2 %
= Gross value added (balance-sheet figure).....	262

A review of the other categories of activity in this division provides the following summary with figures for output and intermediate consumption for the year 2000:

¹ See Fachserie 14 (Finanzen und Steuern), Reihe 8.

WZ 2003 No.	Activity	Output	Intermediate consumption ratio ¹
60.21 60.23	Scheduled and unscheduled passenger land transport other than rail transport	Turnover: company statistics on passenger transport by road ² : EUR 8 821 m	50.5 %
60.22	Taxi operation	Turnover: VAT statistics ³ : EUR 2 880 m + undercoverage allowance: National accounting valuation: EUR 3 024 m	34.2 %
60.24	Freight transport by road	Turnover: VAT statistics: EUR 33 409 m Less removals companies (ex WZ 60.24.2 - transferred under WZ 2003 to WZ 63.40) EUR 800 m National accounting valuation: EUR 32 609 m	50.3 %
60.3	Transport via pipelines	Turnover: VAT statistics: EUR 420 m	51.1 %

Notes:

- The output figures include turnover as well as, often to a lesser extent, **own-account fixed asset formation**. These figures are derived from the service statistics by applying ratios (own-account fixed asset formation/turnover).
- As a rule, **intermediate consumption** is determined by means of intermediate-consumption ratios derived from the service statistics.
- With regard to **passenger transport** by tram or bus, it should be noted that grants for the transportation of disabled persons, schoolchildren, etc., are not initially included in turnover, because they are treated as subsidies in the national accounts and only enter the figures for output at a later stage of the process.

3.15.2 Water transport (WZ 61)

A review of the source statistics used in the assessment of output and intermediate consumption for the various areas of activity in this division provides the following summary. The table also shows the source output and the source intermediate-consumption ratios for the year 2000.

¹ The intermediate-consumption ratios are taken from the service statistics for the year 2000.

² See Fachserie 8 (Verkehr), Reihe 3; (EVAS 46211).

³ See Fachserie 14 (Finanzen und Steuern), Reihe 8.

WZ 2003 No.	Activity	Output	Intermediate- consumption ratio ¹
61.1	Sea and coastal water transport	Turnover: income from German maritime transport as per balance-of-payments statistics:EUR 10 435 m	64.4 %
61.20.1 61.20.2 61.20.3	Inland water transport	Turnover: company statistics on inland water transport (EVAS 46311) ² :EUR 1 198 m	65.2 %
61.20.4	River and canal ferries; harbour craft	Turnover: VAT statistics ³ : EUR 170 m	29.1 %

Notes:

- The figures for **own-account fixed-capital formation** are calculated in each of the aforementioned activity categories by means of ratios (own-account fixed-capital formation as a percentage of turnover) derived from the service statistics; however, the quantities involved are negligible.
- As a rule, **intermediate consumption** is determined by means of intermediate-consumption ratios derived from the service statistics.
- In the case of **inland water transport**, the turnover figures from company statistics are increased slightly, a 0.2% allowance being added to compensate for the fact that, by the reporting date (30 June of year t+1), enterprises that were in existence throughout the reference year might have ceased trading – perhaps because their vessel has gone to the breaker's yard. Since the statistics on enterprises no longer recorded secondary activities after 2000, a percentage was allowed in line with the figures recorded for 1999.
- For **sea transport** there are no explicit compilations of company statistics on turnover, and the VAT statistics leave certain areas undercovered because of the system of fiscal legislation. For that reason, the income from German sea transport (revenue from cargo and passenger transport by regular service ships and tramp vessels) from the Deutsche Bundesbank's balance-of-payments statistics (EVAS 83111) is used as a substitute⁴.

¹ The intermediate-consumption ratios are taken from the service statistics for the year 2000.

² See Fachserie 8 (Verkehr), Reihe 4.

³ See Fachserie 14 (Finanzen und Steuern), Reihe 8.

⁴ See Deutsche Bundesbank, Statistisches Beiheft zum Monatsbericht, Reihe 3.

3.15.3 Air transport (WZ 62)

WZ 2003 No.	Activity	Output 2000	Intermediate consumption 2000
62	Air transport	Turnover: Company statistics on air transport (EVAS 46411) ¹ + allowance for offices abroad: EUR 20 040 m	Ratio for Lufthansa, as per annual business report, as a substitute figure 66.8 %

- In the realm of **air transport**, the published financial results for the Lufthansa corporation are used as a substitute basis for the assessment of the intermediate-consumption ratio. Because of Lufthansa's dominant position in the present market structure, it is reasonable to extrapolate from this figure.

3.15.4 Supporting and auxiliary transport activities; transport agencies (WZ 63)

The following table gives a review of the source statistics used in the assessment of output and intermediate consumption for the various areas of activity in this division. It also shows the figures for output and intermediate-consumption quotas for the year 2000 (balance sheet results):

WZ 2003 No.	Activity	Output	Intermediate consumption
63.1	Cargo handling and storage	Turnover: VAT statistics: EUR 5 186 m	Ratios taken from service statistics: 58.2 %
63.21	Other supporting land transport activities	Turnover: VAT statistics: EUR 767 m + allowance for undercoverage + rail subsidiaries 'Station u. Service AG' and 'Netz AG' National accounting valuation: EUR 5 117 m	Ratios taken from service statistics: 62.5 %
63.22	Other supporting sea transport activities	Turnover: VAT statistics: EUR 674 m National accounting valuation: EUR 1 159 m	Ratios taken from service statistics: 29.1 %
63.23	Other supporting air transport activities	Turnover: VAT statistics: EUR 7 445 m Allowance for German Air Traffic Control + correction to VAT statistics for incorrect attribution of Airbus: National accounting valuation: EUR 5 513 m	Own calculation from data taken from Association of German Airports and service statistics: 39.4 %
63.3	Travel agencies and tour operators	Travel agencies: Turnover: VAT statistics: EUR 3 087 m Tour operators: Turnover (service statistics): EUR 20 433 m National accounting valuation: EUR 23 343 m	Ratios taken from service statistics: 82.8 %
63.4	Other transport agencies	Turnover: VAT statistics: EUR 45 151 m + allowance for undercoverage + transposition of removals companies of 60.24 National accounting valuation: EUR 45 951 m	Ratios taken from service statistics: 72.2 %

¹ See Fachserie 8 (Verkehr), Reihe 6.

Notes:

- The output figures include turnover as well as, often to a lesser extent, **own-account fixed capital formation**. These figures are derived from the service statistics by the use of ratios (own-account fixed asset formation/turnover). Far too low a figure for turnover appears to have been used in WZ activity class 63.23, and various additions are made - German Air Traffic Control turnover, for instance.
For tour operators and travel agencies the turnover figures from the service statistics have been used for the tour operators because the figures for gross as well as net turnover both appear to be plausible. The output of tour operators (travel agencies) primarily comprises turnover which can be taken from the VAT statistics. Until the year 1996, the figures for tour operators were transferred to the travel agencies as part of the East/West account at that time (amounting to approx. EUR 200 m). From 1997 onwards, however, this slight increase in value was extrapolated using the growth rate of the VAT statistics for the year.
- **Intermediate consumption** is normally determined with the help of intermediate-consumption ratios derived from the service statistics (except for WZ 63.23 – the ratio in this area is implausibly high; by way of substitution the relevant information is taken from the commercial airports as provided by the Association of German Airports).
- In the domain of **haulage and storage** as well as **activities of other transport agencies**, the turnover figures taken from the VAT statistics are subject to an upward adjustment of about 2%; this adjustment is explicitly linked to presumed undercoverage, for example the unrecorded turnover from transactions between companies within a profit-sharing arrangement (*Organschaft*). To this is added the turnover of removals companies.

3.15.5 Communications (WZ 64)

Postal administration (WZ 64.11)

The valuation of output is based on data from the annual business report of the German Postal Service (*Deutsche Post*). Intermediate consumption is valued using the intermediate-consumption ratio found from the service statistics (38.1%).

	2000 EUR m
Turnover from postal services.....	15 131
+ Other turnover.....	788
+ Own account production entered as assets	0
= Output	15 919
– Intermediate consumption	6 068
= Gross value added (balance-sheet figure)	9 851

Private postal and courier services (WZ 64.12)

The **output** of private courier services comprises turnover as per VAT statistics plus an additional amount reallocated from the category 'provision of other services, including personal services' in the 1993 German classification of economic activities (WZ 93.05.02).

The **intermediate-consumption ratio** has been taken from the service statistics.

	2000
	EUR m
Output	4 059
– Intermediate consumption	<u>1 547</u>
= Gross value added	2 512

Telecommunications (WZ 64.3)

The annual business report of the German telecommunications company Telekom AG can be used for the valuation of **output**. With the data from this report, the figures for turnover, own-account fixed capital formation and intermediate consumption can be accurately ascertained. For other suppliers the values are taken from the VAT statistics. The output of the Federal Institute of Postal Services and Telecommunications (*Bundesanstalt für Post- und Telekommunikation*), obtained from the Institute's published accounts, is also added to total output.

Intermediate consumption comprises the cost of materials and other operating expenditure. The intermediate-consumption ratio for the 3-digit subdivisions of the WZ classifications is taken from the service statistics. The intermediate-consumption ratios for Telekom AG and Bundesanstalt für Post- und Telekommunikation are taken from the business report and annual accounts in a more refined classification system. The intermediate consumption of private suppliers is found from the difference from the intermediate consumption determined for the entire 3-digit subdivision of WZ.

	2000
	EUR m
Output	50 728
– Intermediate consumption	<u>27 816</u>
= Gross value added	22 912

Derivation of the national accounting results in the production approach

Summary for transport, storage and communications (WZ 2003: I)

Figures for 2000 in EUR m

	Output	Intermediate consumption	Gross value added
(1) Source statistics.....	244 687	125 143	119 544
+ Validation of statistical data	0	26 174	– 26 174
= Subtotal	244 687	151 317	93 370
(2) + Allowances and adjustments	1 507	433	1 074
(3) = Balance sheet result	246 194	151 750	94 444
(4) + Reclassification by concept	– 11 375	– 18 405	7 030
(5) = National-accounting result (rounded)	234 810	133 330	101 480
(6) + Macroeconomic balancing adjustment	0	– 1 580	1 580
(7) = Adjusted figure (FISIM not allocated)	234 810	131 750	103 060
(8) + FISIM.....	0	1 240	– 1 240
(9) = Result for publication (FISIM allocated)	234 810	132 990	101 820

3.16 Financial intermediation (WZ 2003: J)

Gross value added, 2000 (FISIM allocated): EUR 77.76 bn (4.2% of total GVA)

Demarcation

Gross value added by financial intermediation is assessed and published in three divisions of economic activity:

WZ 2003 No.	Activity	2000 EUR m
65	Financial intermediation, excluding insurance and pension funds (S.121, S.122, S.123)	53 540
66	Insurance and pension funding excluding compulsory social security (S.125)	14 790
67	Activities auxiliary to financial intermediation (S.124)	9 430
J	Financial intermediation (S.12).....	77 760

The treatment of the banking and insurance industries in the national accounts is based on the fundamental concept of intermediation. The main function of monetary institutions is deemed to be the collection of financial resources with a view to lending them in return for the payment of interest or investing them. Commercial insurers provide cover against particular risks by collecting premiums in order to compensate policyholders financially for loss or damage. In neither of the two areas is payment normally billed, but instead is dealt with by means of interest or premiums. So both industries are characterised by the valuation of output as a differential. The data required for the valuations mainly comes from the supervisory bodies responsible for the banking and insurance industries whose functions ensure that they have access to regular and extensive information.

3.16.1 Financial intermediation, except insurance and pension funding (WZ 65)

Because of the diversity of data sources as well as for methodological and conceptual reasons, the domain of financial intermediation other than insurance and pension funding is divided into three categories. These are the central bank, the banking institutions and other financial institutions.

Valuation of gross value added for financial intermediation, except insurance and pension funding (WZ 65)

Figures for 2000 in EUR m

Subcategories	Output	Intermediate consumption	Gross value added
Central bank (WZ 65.11)	1 670	490	1 180
+ Other monetary institutions (WZ 65.12).....	96 880	44 620	52 260
+ Other financial intermediation (WZ 65.2).....	4 820	4 720	100
= Total	103 370	49 830	53 540

Before a closer description of the individual economic activities, a brief discussion follows on the conceptual background to the valuation of financial intermediation output. At the European level,

there has been a wide-ranging new regulation¹, which was integrated into the German national accounts system as part of the major revision completed in April 2005. Behind this new regulation is the question of how to measure the output of financial institutions and who will use the banking services. The main difficulties here arise in particular from the fact that no explicit charge is made to customers of banking services in respect of loans and deposits. So no definite price is paid for the cost of credit administration, but the service is implicitly covered by the agreed interest on loans. On the other hand, investors are also not explicitly charged for the investment of their money, but the payment for this banking service is already taken from the agreed interest payable on the deposit.

To clarify the differences, the previous term used ('imputed bank service charge') has now been replaced by the term 'financial intermediation services indirectly measured' (FISIM). The new arrangements for FISIM are based on the principle that there is a pure rate of interest – free of charges for service and risk – which is the same for borrowers and depositors. This simple rate of interest is referred to as the reference interest rate. In fact, borrowers actually pay a higher rate of interest than the reference rate and depositors receive a lower rate of interest. FISIM is the difference between the actual interest flows and the amount of interest valued at the reference interest rate. Adding together the additions and deductions for the various groups of customer, in other words the amount of FISIM, gives the banks' output in terms of credit transactions. At the same time the disaggregated valuation of FISIM per customer group allows allocation to the various categories of use.

As well as the allocation serving to increase domestic product and national income, the new FISIM arrangement mainly differs from the previous arrangement through the following features:

- FISIM is only produced in the sub-sectors 'other monetary financial institutions' (S.122) and 'other financial intermediaries, except insurance corporations and pension funds' (S.123)², each without investment funds. Sub-sector S.122 is identical to all the MFIs (Monetary Financial Institutes) in the definition applied by the European Central Bank (ECB). The output of the central bank (S.121), which was previously determined in the same way as the output of the commercial banks, is now valued as the sum of the 'administrative costs' (essentially the sum of intermediate consumption, consumption of fixed capital and compensation of employees).
- FISIM is only now produced in connection with loans (AF.4) and deposits, i.e. sight deposits (AF.22) and other deposits (AF.29). The other basis for the previous calculation of the 'imputed bank service charge' was provided by the securities portfolios held by banks and, on the liabilities side, the bonds issued by the banks.

¹ Commission Regulation (EC) No. 1889/2002 of 23 October 2002 on the implementation of Council Regulation (EC) No. 448/98 completing and amending Regulation 2223/96 with respect to the allocation of financial intermediation services indirectly measured (FISIM) within the European System of national and regional accounts, in Official Journal L 286 of 24 October 2002, page 11ff.

² In Germany, FISIM is only produced in sub-sector S.122, because there are more or less no other financial institutions from sub-sector S.123 here. This is because, on the one hand, no finance leasing takes place as defined in ESA 1995 for legal reasons (see 3.16.1.3 a)). On the other hand, the German banks basically have a general licence and thus belong to the monetary financial institutions (S.122).

- FISIM result from the difference between the actual interest and the interest calculated at the reference rate. The reference interest rate is the average interbank rate which, in theory, is free of payment for services and risk assumption.
- FISIM has to be calculated separately for the institutional sectors. For cross-border interest payments with the rest of the world (S.2) a special, so-called 'external', reference rate has to be used. In the case of households (S.14) FISIM is separated to allow for consumptive and productive purposes. The sectoral FISIM can be broken down further into areas of economic activity by reference to the relevant output figures.

3.16.1.1 Central bank (WZ 65.11)

The output of the central bank (S.121) is now valued according to the new concept as the sum of the 'administrative costs'. Gross value added for the central banks sub-sector is found as follows:

Valuation of gross value added for the Deutsche Bundesbank

Figures for 2000 in EUR m

Intermediate consumption.....	490
+ Fixed capital consumption	200
+ Compensation of employees.....	980
= Output.....	1 670
– Intermediate consumption.....	490
= Gross value added	1 180

The profit and loss account of the Deutsche Bundesbank as published in its annual business report can be used as a basis for the valuation of the output generated by the central bank.

The data used to assess the central bank's intermediate consumption are also taken from the published profit and loss account of the Deutsche Bundesbank. The following items make up the intermediate consumption:

	2000 EUR m
Cost of material.....	300
+ Commission costs	10
+ Cost of printing paper currency	160
+ Other charges.....	20
= Total intermediate consumption	490

3.16.1.2 Other monetary institutions (except special monetary institutions) (WZ 65.12)

The institutions indicated here come from the following groups of banks:

- commercial banks,
- central giro institutions,
- savings banks,
- central cooperative banks,
- mortgage banks,
- monetary institutions with special functions, and
- credit cooperatives and
- building societies.

The main source of data for the assessment of value added by these monetary institutions is the statistics on the profit and loss accounts of monetary institutions¹ (EVAS 47261) compiled by the Deutsche Bundesbank, to which all monetary institutes are required to submit their accounts. These statistics provide information concerning the aforementioned banking groups, including savings banks.

Valuation of gross value added for monetary institutions

Figures for 2000 in EUR m

FISIM	59 630
+ Ancillary sales	36 870
+ User-produced software.....	380
= Output.....	96 880
– Intermediate consumption.....	44 620
= Gross value added	52 260

The following steps represent the method of determining the FISIM:

Firstly the assets and liabilities, i.e. particularly the loans and deposits according to sector, are taken from the banking statistics (EVAS 47251). In this connection, the Federal Statistical Office makes the same changes to the sectoral allocations as in the financial account. These changes apply in particular to loans drawn on by government bodies under the rules of the national accounting system.

Secondly, a model is established. Interest rates are allocated to the (adjusted) loans and deposits of the banks. For this purpose the Deutsche Bundesbank's statistics on interest rates for the years 1991 to 2002 were used. These statistics have now been replaced by fresh statistics on interest rates produced by the European Central Bank (from January 2003 onwards) (EVAS 84331).

The salient improvement in the suitability of the new interest rate statistics of the European Central Bank for the purpose of valuing FISIM lies in the fact that now the surveys include not just the interest rates applied for new business in certain investment instruments (short-term loans, term money, etc.), registered up to now with the Deutsche Bundesbank, but they also now cover the average interest rates of portfolios by sector (ESA definition).

Estimates of the banks' interest revenue and expenses are obtained based on the combination of loans and deposits with the corresponding interest rates. The results of the model then have to be refined to suit the actual interest revenue and expenditure of the banks, as recorded in the annual profit and loss accounts. This reconciliation is preceded by modifications to both sets of results:

- In some cases, such as the interest paid by insurance companies to banks or the interest received by insurance companies from banks, reliable information can be obtained from the insurance companies' accounts. The values for insurance replace the estimates used in the model. This also applies to the cross-border interest paid and received by banks. In this case,

¹ See monthly reports of the Deutsche Bundesbank.

the external source is the balance-of-payments statistics (EVAS 83111). Because ultimately the interest flows from (domestic) interbank relationships have to be equal (since the amount a domestic bank has to pay another domestic bank in terms of interest must match what the second bank receives), the estimated value of the interest paid by domestic banks to other domestic banks is also entered on the income side of the banking sector. The same procedure is applied to the interbank assets and liabilities, the liabilities being the significant factor.

- The profit and loss accounts of banks are drawn up according to the commercial concept, so they also include the interest flows of the legally dependent foreign branches of German banks. As these foreign branches of German banks are not domestic economic units, their interest income and expenditure have to be eliminated. For this, the Federal Statistical Office uses estimates produced by the Deutsche Bundesbank. As profit and loss accounts have to be prepared for (legally dependent) branches of foreign banks from non-EU countries in Germany, no correction is needed in this instance. The estimates of the source values for domestic branches of foreign banks from EU member states required for calculating FISIM are based on the balance sheet total. For the sake of completeness, it is mentioned that it is unnecessary to adjust the figures for the assets and liabilities of banks because from the outset only the domestic portion of the entity with its assets and liabilities is counted.

Accordingly the difference between the (partially corrected) result of the model and the (modified) result of the profit and loss account is found and apportioned appropriately.

The reference interest rate is found from the interbank liabilities and the interest paid by domestic banks to other domestic banks. Since, as described, reciprocity has been ensured beforehand, this reference rate will correspond exactly to the interest received from the interbank assets and the interest received from domestic banks.

When the loans and deposits of the banks according to sector are multiplied by this rate of interest, the difference from the actual interest income and expenditure (after all modifications and balancings) represents the service charge. The results are shown in the following table.

FISIM production of domestic banks by customer groups

Figures for 2000 in EUR m

Sector code	Activity	FISIM total	FISIM on bank loans	FISIM on bank deposits
S.11	Non-financial corporations	10 900	7 960	2 940
S.12	Financial corporations			
(rest)	without FISIM production	1 680	150	1 530
S.13	General government	4 270	3 250	1 020
S.14a	Households (consumers)	14 580	4 090	10 490
S.14 b	Households (owners)	13 480	13 480	–
S.14 c	Households (sole traders)	7 500	5 740	1 760
S.15	Non-profit institutions serving households	630	130	500
S.2	Export	6 590	4 170	2 420
Total	FISIM output	59 630	38 970	20 660

In order to determine the total output for this area of activity, the income from ancillary sales and own-account fixed capital formation is added to FISIM. The ancillary sales consist of:

	2000
	EUR m
Revenue from commission charges	35 570
+ Revenue from commodity trade (net).....	200
+ Other operating revenue (20%) (excluding housing)	1 300
– Non-life insurance claims.....	200
= Total ancillary sales	36 870

The source data are taken from the statistics compiled by the Deutsche Bundesbank from the profit and loss accounts of the monetary institutions and savings banks. On the basis of an estimate, 20% of other operating revenue is assigned to output.

In addition, a value of EUR 380 m was added to the account for user-produced software (under the heading of non-market production) in the year 2000. This figure comes from the valuation of investments in intangible fixed assets (see section 5.11.2).

The same profit and loss accounts of the monetary institutions and savings banks were also used as the data source for the valuation of **intermediate consumption**. The following are included as intermediate consumption:

	2000
	EUR m
Commission costs.....	7 000
+ Other administrative expenditure	31 630
+ Other operating expenditure (excluding expenditure on housing)	4 520
– Net non-life insurance premiums	200
+ Output of central bank (S.121)	1 670
= Intermediate consumption	44 620

Net non-life insurance premiums are excluded from the expenditure of monetary institutions, with the result that only the service charge contained in the insurance premium is ultimately taken into account as intermediate consumption of these institutions. Furthermore, the output of the central bank is attributed to the intermediate consumption of the monetary institutions. The gross value added of the monetary institutions mentioned above is valued by subtracting the intermediate consumption from the output.

3.16.1.3 Other financial intermediation (WZ 65.2)

This category comprises numerous diverse activities, ranging from financial leasing to investment management and from there to pawnbroking. Before the individual activities are examined in detail, the following table shows the result of the production approach:

	2000
	EUR m
Output	4 820
– Intermediate consumption	4 720
= Gross value added	100

a) Financial leasing (WZ 65.21)

For legal reasons, financial leasing as defined in ESA 1995 does not exist in Germany. Under ESA 1995 (Annex II: Leasing and hire purchase of durable goods, paragraph 4), financial leasing exists "if all risks and rewards of ownership are, de facto though not de jure, transferred from lessor to lessee". In contrast, German law in this case in particular provides for recording in company accounts as 'financed hire purchase', because it is not permissible "to burden the lessee so entirely with the material risk that his [the lessor's] status does not extend beyond that of a financier"¹. The authors of ESA 1995 may well have defined leasing agreements with the Anglo-Saxon financial lease in mind, but under German law such agreements are automatically – and hence in accordance with ESA - regarded as financed hire purchases. Some other transactions bearing the name of leasing agreements have been recorded as renting of property.

b) Other credit granting (WZ 65.22)

The data for guarantee banks (*Bürgschaftsbanken*) are calculated on the basis of unpublished aggregated profit and loss accounts compiled by the Deutsche Bundesbank. (Association: Activities auxiliary to financial intermediation (WZ 67.13))

c) Investment management companies (WZ 65.23.1)

Whereas ESA 1995 itself, when classifying institutional units, distinguishes between units managing investment funds (paragraph 2.58(h)), which belong to sub-sector S.124 (financial auxiliaries), and the investment funds themselves, the classification of economic activities makes no distinction between these types of unit. These investment funds may themselves be either monetary units belonging to sub-sector S.122 (other monetary financial institutions) or non-monetary units belonging to sub-sector S.123 (other financial intermediaries, except insurance corporations and pension funds). So that the requirements of the ESA 1995 institutional classification can be met, a form of double-entry accounting is also undertaken in the classification of economic activities, but this has no effect on gross value added. In the hypothetical model, the investment funds sell a service to investors; the funds, in turn, incur intermediate consumption, since the price of this same service is debited to them by the management companies. The gross value added by the investment fund is therefore zero. The intermediate consumption of the investment funds is equal to the output of the investment management companies. The output of the investment management companies and their intermediate consumption are calculated on the basis of unpublished aggregated profit and loss accounts compiled by the Deutsche Bundesbank.

d) Pawnshops (WZ 65.23.2)

The valuation basis is provided by data from the Central Association of the German Pawnbroking Trade (*Zentralverband des Deutschen Pfandkreditgewerbes*) on the annual volume of loans granted by pawnbrokers. According to expert opinions² various charges are made for this service, making a total equivalent to 36% p.a. of the original loan amount. A 10% allowance is added to total output to cover the activity of vehicle pawnbrokers, who are not members of the Association, and an intermediate-consumption ratio of 41% is applied. This information is based

¹ Judgment delivered by the Federal Court of Justice on 19 February 1986, case no. VIII ZR 91/85, quoted from: KPMG-Deutsche Treuhandgesellschaft: Leasing im handelsrechtlichen Abschluss, no date, p. 15.

² See Finanztest 2/1998, Berlin 1998, p. 23.

on data from the Central Association of the German Pawnbroking Trade (*Zentralverband des Deutschen Pfandkreditgewerbes*).

e) Other financial intermediation n. e. c. (WZ 65.23.3)

The value of purchased claims can be obtained from the annual report of the German Factoring Association (*Deutscher Factoring-Verband e.V.*). After refinancing, it is assumed that there will be a 'turnover margin' amounting to 1% of the value of the purchased claims. The value of the purchased claims, however, is halved, because the special analysis of an annual report showed that about half the volume of output is from member businesses of the Association which are registered monetary institutions and, as such, are already included in the figures for monetary institutions. The intermediate-consumption ratio is estimated at 40%.

The output and intermediate consumption of the credit card organisations are taken from the accounts of the payment-systems company, Gesellschaft für Zahlungssysteme (GZS). (Association: Activities auxiliary to financial intermediation (WZ 67.13).

Venture-capital companies are not taken into consideration. In terms of national accounting, the profits of such a company are assignable to 'holding gains'. According to information from the German Venture Capital Association (*Bundesverband Deutscher Kapitalbeteiligungsgesellschaften*)¹ the main 'exit channels' for providers of venture capital consist in a buy-back by the senior partner (around 60% of transactions) or the sale of the venture to another investor (such 'trade sales' account for around 30% of transactions). Moreover, the availability of data on the profits of these companies is regarded as disappointing in that the performance of venture-capital providers in Germany is still not open to scrutiny.²

3.16.2 Insurance and pension funding, except compulsory social security (WZ 66)

In the national accounts, the output of commercial insurers is equated with the so-called service charge, which is calculated as the difference between revenue from premiums, including income from invested premiums, and claims due, including any reserves. To the service charge are added any revenue from other services as well as own-account fixed-capital formation. The gross value added by insurance corporations is assessed by subtracting their intermediate consumption from the sum of the aforementioned revenue items (output). The result of this calculation is shown below for the various insurance categories:

¹ Bundesverband Deutscher Kapitalbeteiligungsgesellschaften, Jahrbuch 1996, p. 114.

² Damisch, H.: Der Beteiligungsmarkt in Deutschland, Jahrbuch des Bundesverband Deutscher Kapitalbeteiligungsgesellschaften 1997, p. 13.

Valuation of gross value added of the insurance industry

Figures for 2000 in EUR m

Categories of insurance	Service charge from premiums	Other charges	Intermediate consumption	Gross value added
Life insurance (WZ 66.01)	12 180	3 870	10 720	5 330
+ Pension funding (WZ 66.02)	800	920	430	1 290
+ Health insurance (WZ 66.03.1)	3 970	910	2 600	2 280
+ Insurance against loss, damage and accidents (WZ 66.03.2)	22 750	4 430	16 540	10 640
+ Reinsurance (WZ 66.03.3)	–	9 400	13 200	– 3 800
= Subtotal	39 700	19 530	43 490	15 740
– Letting of own property (WZ 70.2)	–	870	190	680
+ FISIM	–	–	270	– 270
= Total	39 700	18 660	43 570	14 790

The sources of data on insurance and pension funding made available to the Federal Statistical Office are the forms and vouchers submitted as part of the internal accounting process to the Federal Financial Supervisory Authority (*Bundesanstalt für Finanzdienstleistungsaufsicht*) as prescribed in the Order concerning Reporting by Insurance Undertakings to the Federal Financial Supervisory Authority (*Verordnung über die Berichterstattung von Versicherungsunternehmen gegenüber der Bundesanstalt für Finanzdienstleistungsaufsicht*).

Data on the following types of insurance policy which are not subject to this reporting obligation are also analysed:

- occupational pension schemes,
- civil-service supplementary pension schemes, and
- the health-insurance schemes operated by German Railways (Deutsche Bahn AG) and the German Postal Service (Deutsche Post AG).

Data concerning these schemes are published by the Federal Ministry of Labour and Social Affairs in a compilation of data on the welfare budget entitled *Materialband zum Sozialbudget*. Data are also available on the health insurance scheme for members of the Deutsche Bahn staff as well as postal workers.

3.16.2.1 Life insurance (WZ 66.01)

For life-insurance undertakings, the **service-charge element of premium revenue** is assessed as follows:

	2000 EUR m
Gross premiums from own business transactions concluded.....	61 050
+ Income from the investment of provisions for rebate of premiums	7 730
+ Property income attributed to insurance policy holders	30 690
+ Revenue from the reduction of specific gross technical provisions.....	0
+ Balance of share-price gains and losses.....	4 290
+ Change in gross provision for unearned premiums	- 70
- Gross expenditure on settlement of claims.....	32 480
- Gross expenditure on policy redemptions	8 980
- Gross expenditure on rebate of premiums.....	14 640
- Gross allocation to provisions for claims	190
- Gross allocation to redemption provisions	20
- Gross allocation to provisions for rebate of premiums	4 740
- Gross allocation to actuarial reserves.....	30 450
- Expenditure arising from increases in specific gross technical provisions	10
= Service-charge element of total premium revenue	12 180

The figures for the first two items relating to revenue from premiums and for the changes in gross amounts of prepaid premiums can be taken direct from the basic tables in the internal accounts. Property income attributed to insurance policy holders is an estimated value which does not appear in the insurance companies' accounts but is derived from items in business reports for national accounting purposes; it is designed to reflect an imputed rate of interest applied to policyholders' financial claims. The first step in the estimation process is the calculation of a figure for total revenue, comprising the following items:

- interest income
- dividend income
- net rents from commercial or residential land used by third parties.

It is assumed that the liability to be assigned to the policyholders for the payment of interest is part of the aforementioned total revenue, a percentage derived from the ratio of technical reserves to the aggregate balance-sheet total for the undertakings in each insurance category (in 2000, for example, this came to 86.1% for life assurance undertakings).

The life insurers' **other service charges** comprised the following items:

	2000 EUR m
Other gross technical revenue.....	160
+ Other revenue	2 150
+ Net income from reinsurance	90
+ Income from land used by others	1 400
+ User-produced software	70
= Other service charges	3 870

Income from reinsurance is assigned to output for secondary activities. In the national accounts, only economic transactions between sectors and/or sub-sectors should be recorded in principle; economic transactions with a single sector or sub-sector, such as those between insurers and reinsurers, are accordingly left out of account when it comes to assessing the service charge element of premium income. The item 'Net income from reinsurance' in the above table is calculated in the same way as the service charge from the relevant reinsurance statistics. The

balance of income and expenditure is shown here. All the other items are taken from the basic accounting tables, either directly or after a balancing operation.

Intermediate consumption for life assurance undertakings is calculated as follows:

	2000 EUR m
Commission.....	4 630
+ Material administrative expenditure.....	4 230
+ Net cost of reinsurance	– 50
+ Other gross technical expenditure.....	1 500
+ Other expenditure not elsewhere specified	290
+ External services.....	280
– Income from own land used by the company.....	160
= Intermediate consumption	10 720

The amount of expenditure on commission is directly obtainable from the basic internal accounts tables. For all the other items there are data in the basic internal accounts tables which are mostly directly available for use. The first step in the assessment of material administrative expenditure involves adding together the cost of claims settlement, recordable acquisition costs, underwriting costs and administrative and other expenses. If all staff costs are deducted from this total, the result is the figure for material administrative expenditure.

The cost of reinsurance (services obtained) and the income from reinsurance (services provided) are both shown as net amounts. With regard to the cost of reinsurance, income from underwritten policies is deducted from reinsurance premiums and other reinsurance-related expenditure so as to guarantee consistency of accounting by recording only the service charge.

3.16.2.2 Pension funding (WZ 66.02)

Data on pension funding, which is subject to supervision by the German Financial Supervisory Authority, can be obtained from the internal accounts collated by the Authority. Supplementary estimates are made for welfare institutions, the Pensions Security Association (*Pensionssicherungsverein*) and supplementary pension funds.

The **service-charge element of premium revenue** accruing to pension insurers is assessed in a similar manner to the service charge accruing to life-insurance undertakings. The calculation is set out below:

	2000 EUR m
Gross premiums from own business transactions concluded	17 130
+ Income from the investment of provisions for rebates of premiums.....	1 280
+ Property income attributed to insurance policy holders.....	8 990
+ Revenue from the reduction of specific gross technical provisions	0
+ Balance of share-price gains and losses	690
– Gross expenditure on settlement of claims	12 610
– Gross expenditure on policy redemptions.....	70
– Gross expenditure on rebate of premiums	1 590
– Gross allocation to provisions for claims	0
– Gross allocation to provisions for rebate of premiums.....	– 140
– Gross allocation to actuarial reserves	13 040
– Expenditure arising from increases in specific gross technical provisions	120
= Service-charge element of total premium revenue	800

All of the values that add up to the figure for property income attributed to insurance policy holders are obtained in the same way as was described above in connection with the life-assurance undertakings. Here too, a weighting is derived from the proportion of technical provisions in the balance sheet total in order to estimate the interest attributable to the policyholders. For the domain of pension funding in 2000, this ratio amounted to 96.6%. The method for calculating all the other items does not differ in any way from the method that is used for life-assurance undertakings.

The pension insurers' **other service charges** comprise the following items, which are ascertained in the same way as those of life insurers.

	2000 EUR m
Other gross technical revenue.....	200
+ Other revenue.....	20
+ Income from land used by others	700
+ User-produced software.....	0
= Other service charges	920

The pension insurers' **intermediate consumption** is also calculated in the same way as that of life insurers. The following items were included in the assessment of intermediate consumption:

	2000 EUR m
Commission.....	0
+ Material administrative expenditure.....	340
+ Other gross technical expenditure.....	20
+ Other expenditure not elsewhere specified	0
+ External services	70
– Income from own land used by the company.....	0
= Intermediate consumption	430

3.16.2.3 Health insurance (WZ 66.03.1)

The data obtained from the health insurers' own accounts are supplemented by details of the premiums received and payments made by the in-house health insurance funds of the German Postal Service and German Railways. This, however, does not affect the value of the **service-charge element of premium revenue**, since the premiums received by these funds are equal to the payments made. The service-charge element of the health insurers' revenue from premiums is calculated as follows:

	2000 EUR m
Gross premiums from own business transactions concluded	20 710
+ Income from the investment of provisions for rebates of premiums	1 770
+ Property income attributed to insurance policy holders	4 430
+ Revenue from the reduction of specific gross technical provisions.....	0
+ Balance of share-price gains and losses.....	350
+ Change in gross provision for unearned premiums	0
– Gross expenditure on settlement of claims.....	12 810
– Gross expenditure on rebate of premiums	2 420
– Gross allocation to provisions for claims	200
– Gross allocation to provisions for adjustment expenses	10
– Gross allocation to provisions for premium rebates	440
– Gross allocation to actuarial reserves	7 410
– Expenditure arising from increases in specific gross technical provisions	0
= Service-charge element of total premium revenue	3 970

The valuation of the various items in the above table is based on the same method as in the case of life-assurance undertakings. The ratio of technical provisions to the balance sheet total which is used as weighting for the total revenue in the valuation of property income attributed to insurance policy holders, amounted to 92.4% in 2000.

The health insurers' **other service charges** comprise the following:

	2000 EUR m
Other gross technical revenue	90
+ Other revenue	660
+ Net income from reinsurance	10
+ Income from land used by others.....	130
+ User-produced software	20
= Other service charges	910

Like the valuation of **intermediate consumption** of health insurers, these valuations are obtained in the same way as those of the life insurance companies.

	2000 EUR m
Commission	1 220
+ Material administrative expenditure	1 200
+ Net cost of reinsurance	20
+ Other gross technical expenditure	120
+ Other expenditure not elsewhere specified	50
+ External services.....	50
– Income from own commercial land used by the company	60
= Intermediate consumption	2 600

3.16.2.4 Insurance against loss, damage or accident (WZ 66.03.02)

The internal accounts are used as the source of data for the valuations in the realm of insurance against loss, damage or accident. The **service-charge element** of the premiums for insurance against loss, damage or accident is calculated as follows:

	2000 EUR m
Gross premiums from own business transactions concluded.....	52 220
+ Income from the investment of provisions for rebate of premiums.....	0
+ Property income attributed to insurance policy holders	4 170
+ Revenue from the reduction of specific gross technical provisions.....	10
+ Balance of share-price gains and losses.....	1 350
+ Change in gross provision for unearned premiums	20
– Gross expenditure on settlement of claims.....	33 110
– Gross expenditure on policy redemptions	700
– Gross expenditure on rebate of premiums	450
– Gross allocation to provisions for claims	720
– Gross allocation to provisions for adjustment expenses	60
– Gross allocation to provisions for premium rebates	100
– Gross allocation to actuarial reserves.....	280
– Expenditure arising from increases in specific gross technical provisions	40
– Change in equalisation provisions	– 440
= Service-charge element of total premium revenue	22 750

The valuation of the various items in the above table is based on the same method as in the case of life-assurance undertakings. The ratio of technical provisions to the balance-sheet total, which is used as weighting in the valuation of property income attributed to insurance policy holders, amounted to 68.3% for providers of insurance against loss, damage or accident in 2000.

The **other service charges** accruing to providers of insurance for loss, damage or accident comprise the following items:

	2000 EUR m
Other gross technical revenue.....	200
+ Other revenue.....	3 360
+ Net income from reinsurance	580
+ Income from land used by others	300
+ User-produced software.....	120
– Claims settled.....	130
= Other service charges.....	4 430

The assessment, like the valuation of intermediate consumption, is based on the same procedure as for life insurance companies, which is outlined above.

The calculation of these insurers' **intermediate consumption** takes the following items into account:

	2000 EUR m
Commission.....	8 200
+ Material administrative expenditure	8 090
+ Net cost of reinsurance	– 70
+ Other gross technical expenditure.....	60
+ Other expenditure not elsewhere specified.....	440
+ External services	180
– Income from own land used by the company	230
– Net premiums	130
= Intermediate consumption.....	16 540

3.16.2.5 Reinsurance (WZ 66.03.3)

As was explained above, the figure for reinsurance business is assigned to **other service charges**, even if the business is conducted by reinsurance companies. The calculation is based on the reinsurance operations that are carried out in other insurance classes. The calculation is as follows:

	2000
	EUR m
Other revenue.....	160
+ Income from land used by others.....	230
+ Net income from reinsurance	9 250
+ User-produced software.....	20
– Special allocation to gross special provision for reinsurance undertakings operating internationally	260
= Other service charges	9 400

The **intermediate consumption** of reinsurance undertakings is also determined in the same way as that of the life insurance companies. The calculation for 2000 was as follows:

	EUR m
Material administrative expenditure.....	11 990
+ Other expenditure not elsewhere specified	550
+ External services.....	690
– Income from own commercial land used by the company	30
= Intermediate consumption	13 200

3.16.3 Activities auxiliary to financial intermediation (WZ 67)

This division contributes about 0.5% of total gross value added to the German economy. The result for the activities associated with financial intermediation is subdivided among four accounting categories.

Valuation of gross value added for activities auxiliary to financial intermediation (WZ 67)

Figures for 2000 in EUR m

Subcategories	Output	Intermediate consumption	Gross value added
Administration of financial markets (WZ 67.11)	870	490	380
+ Security brokering and fund management (NACE Class 67.12)	340	140	200
+ Activities auxiliary to financial intermediation (WZ 67.13).....	5 350	3 320	2 030
+ Activities auxiliary to insurance and pension funding (WZ 67.2)	14 050	5 620	8 430
+ FISIM.....	–	1 610	– 1 610
= Total	20 610	11 180	9 430

3.16.3.1 Administration of financial markets (WZ 67.11)

The output and intermediate consumption of the German stock exchanges are obtained from the group accounts of their controlling company, Deutsche Börse AG. With the aid of the accessible data, the output and intermediate consumption of these institutions are assessed.

3.16.3.2 Security brokering and fund management (WZ 67.12)

The basis for the calculation of stockbrokers' output at the present time is the total turnover of the German stock exchanges, which is reduced by 30%, this being the estimated relative value of block trading. An amount of 8% of this reduced stock-exchange turnover is included in the calculation for the output of stockbrokers. Their intermediate-consumption ratio is set at 40%.

The adoption in 1998 of the Sixth Amendment to the Banking Act (*Kreditwesengesetz*) placed the following financial services and institutions under the supervisory authority of the Deutsche Bundesbank and the Federal Financial Supervisory Authority (*Bundesanstalt für Finanzdienstleistungsaufsicht*).¹

- investment brokering,
- contract brokering,
- portfolio management,
- own-account trading,
- non-EEA deposit brokering,
- money-transmission services,
- foreign-currency dealing, and
- banks trading in securities.

It is planned that the information collected during supervisory functions is to be used as an input to the set of statistics the European Central Bank (ECB) plans to collate on 'other financial intermediaries' (OFIs). These OFI statistics will substantially improve the statistical basis for this area of activity.

3.16.3.3 Activities auxiliary to financial intermediation (WZ 67.13) including special monetary institutions (WZ 65.22) and credit card organisations (part of WZ 65.23.3)

For the calculation of output and intermediate consumption information is available from such institutions as the Deutsche Bundesbank by way of profit and loss accounts for guarantor institutions and investment management companies. Furthermore, the value added of service providers to the financial markets is assessed with the help of the annual accounts of the payment systems company, Gesellschaft für Zahlungssysteme. A figure for user-produced software of EUR 50 m in the year 2000 is added to the output figure of this sector.

In future, an improvement in the available data is also expected for this area of activity as described in the foregoing section on security brokering and fund management (WZ 67.12).

¹ See Deutsche Bundesbank: 'Die Sechste Novelle des Kreditwesengesetzes', monthly report of January 1998, p. 61.

3.16.3.4 Activities auxiliary to insurance and pension funding (WZ 67.2)

Under section 51(5) of the Insurance Undertakings Accounting Order (*Verordnung über die Rechnungslegung der Versicherungsunternehmen*) of 8 November 1994, insurance undertakings are required to provide not only the data specified in the model technical account (Model 2 of the said Order) but also information on the commission and other emoluments paid to insurance agents within the meaning of section 92 of the German Commercial Code (*Handelsgesetzbuch*). The amounts recorded in these returns add up to the output of self-employed insurance agents. Their intermediate-consumption ratio is set at 40%. Data from the VAT statistics are taken into account when the result is divided between sectors S.124 (financial auxiliaries) and S.14 (households). Commission paid to members of insurers' direct-sales forces is a component of wages and salaries.¹ Payments made between insurers for soliciting and negotiating insurance business are part of the non-technical account and are recorded in the profit and loss account as other income or other expenditure, as appropriate.²

3.17 Real estate, renting and business activities n.e.c. (WZ 2003: K)

Gross value added, 2000 (FISIM allocated): EUR 433.18 bn (23.3% of total GVA)

Demarcation

Gross value added in Section K is separately assessed for a total of 28 categories of economic activity, and the results are consolidated into the following five divisions for publication:

WZ 2003 No.	Activity	2000, in EUR m
70	Real estate services.....	207 020
71	Renting services of machinery and equipment without operator and of personal and household goods.....	34 800
72	Computer and related services.....	27 820
73	Research and development	7 440
74	Business services n.e.c.....	156 100
K	Real estate, renting and business activities n.e.c.	433 180

¹ On this point, see *Handwörterbuch der Versicherung*, Karlsruhe 1988, p. 1166.

² On this point, see von Treuberg, Angermayer: *Jahresabschluss von Versicherungsunternehmen*, Stuttgart, 2000, p. 400.

3.17.1 Real estate services (WZ 70)

Gross value added, 2000 (FISIM allocated): EUR 207.02 bn (11.2% of total GVA)

The figures for real estate are set out in the national accounts in the following subdivisions:

- 70.1 Real estate services with own property
- 70.2 Letting of own property
- 70.3 Real estate services on a fee or contract basis

These groups are each assessed without the housing services component. Housing services is a separate accounts item which includes owner occupation.

3.17.1.1 Real estate services, excluding housing services

Output

In the domain of **real estate services**, it is essential to eliminate income from housing services from the valuation of output, because all activities relating to the use of housing stock are included in the domain of housing services. For this reason, in two activity categories, namely Subclass 70.11.3 (activities of housing developers) and Subclass 70.20.2 (letting of own residential property), only taxable turnover as per VAT statistics is recorded, because the bulk of tax-free turnover in these areas is revenue from housing lets. By contrast, the tax-exempt turnover is also recorded in WZ 70.3 (real estate services on a fee or contract basis). However, a 50% deduction is made in respect of the rental. In all the other areas of WZ 70 the full taxable turnover is used in calculating output.

Example – balance sheet figures –
Figures for 2000 in EUR m

WZ 2003 No.	Activity	Services and deliveries	Tax-exempt turnover	National accounting valuation
70.1	Real estate services with own property	18 967	6 544	16 565
70.2	Letting of own property	72 216	19 411	57 347
70.3	Real estate services on a fee or contract basis	22 698	4 919	20 284
70 (excl. housing services)	Real estate services, excluding housing services	113 881	30 874	94 196

Intermediate consumption

An intermediate-consumption ratio of 34.1% is derived from the service statistics (EVAS 47415). Ratios are used based on the relationship between turnover and material costs. The content of the material costs item does not match intermediate consumption according to the national accounting definitions, for it includes items not affecting intermediate consumption such as travel costs, interest on borrowed capital, provisions, etc. For this reason, the source value is reduced by 15%. Further information came through concrete figures drawn from studies carried out by the Federation of German Estate Agents (*Ring Deutscher Makler*), which give considerably greater detail.

This survey was conducted for the first time for the year 2000. It was based on Council Regulation (EC, Euratom) No. 58/97 of 20 December 1996 concerning Structural Business Statistics.

This meant that the valuation for the activity WZ 70, excluding housing services, was as follows (balance-sheet figures for 2000):

Output	Intermediate consumption	Intermediate-consumption ratio	Gross value added
EUR m		%	EUR m
94 196	32 122	34,1	62 074

3.17.1.2 Housing services

In German national-accounting practice, the housing-services industry, which is part of WZ 70, comprises all letting of residential accommodation, irrespective of ownership, and owner-occupation of dwellings. In conceptual terms, housing services are invariably regarded as a statistical unit in their own right, irrespective of whether their provision is the principal or secondary activity of an economic unit. Based on the data, this approach facilitates full statistical coverage of the activities in connection with housing services. The consequence of this approach, however, is that care must be taken to ensure that the assessment of gross value added in all other areas of activity excludes housing services so that the contribution of these services is not counted twice¹.

The valuation of output and intermediate consumption in the realm of housing services involves the adoption of somewhat different approaches for the older Lander, i.e. the federal states of West Germany, and the new Federal States, including the former East Berlin. This is because the East German housing market differed in many ways from the West German market in the years following reunification, while the data categories on which statistical calculations in the old federal territory had been based were not always available for the eastern states. The following is a description of the methods used in the former West Germany and in the eastern states.

Output

The results of the survey of source statistics only indicate the output for rental housing. In Germany, the output produced by owner-occupied housing is determined by means of a tabular analysis with the aid of the stratification method² based on actual rental levels. The various strata are defined by means of the primary factors that affect rents. Such factors may be the following:

- size of the dwelling (floor surface area in square metres)
 - 40m² or smaller
 - 41 to 80

¹ On this point, see the general explanations contained in section 3.1.

² Regarding the application of the stratification method, refer to Commission Decision of 18 July 1995 (95/309/EC) specifying the principles for estimating dwelling services, Brussels 1995, and/or Commission Regulation (EC) No. 1722/2005 of 20 October 2005 on the principles for estimating dwelling services for the purpose of Council Regulation (EC, Euratom) No. 1287/2003 on the harmonisation of gross national income at market prices.

81m² or larger

- the amenities with which the dwelling is equipped
 - with central heating, bath and toilet
 - without central heating, bath and toilet
 - other amenities
- the age of the building
 - until 1948
 - 1949 to 1971
 - post-1971
- the way in which the construction of the building was funded
 - privately funded
 - publicly funded
- the location factor
 - differentials between Federal States

With the aid of these characteristics, it was possible in practice to define 495 tiers of rental value for the **pre-unification territory of the Federal Republic**. Of the 594 combinations which were theoretically possible, 99 had to be eliminated, because public funding does not apply to buildings constructed before 1948. Significance tests showed that all of the characteristics had a significant effect on average rent levels.

The 495 combinations of characteristics are applied to both the number and the aggregate floor area of the following housing categories:

- normal rented dwellings (full market rent, excluding holiday homes, apartments in residential homes and dwellings placed free of charge at the disposal of relatives or acquaintances),
- dwellings let at low or concessionary rents, such as official residences, staff quarters and company housing,
- owner-occupied dwellings (excluding holiday homes, apartments in residential homes and dwellings placed free of charge at the disposal of relatives or acquaintances),
- dwellings placed free of charge at the disposal of relatives or acquaintances,
- apartments in residential homes,
- rented holiday homes, and
- owner-occupied holiday homes.

Because of the different structure of the housing market in the **new Federal States and East Berlin**, some of the stratification characteristics are defined differently for those parts of the country:

- the amenities with which the building is equipped:
 - with central heating, bath and toilet
 - without central heating but with bath and inside toilet
 - without central heating or inside toilet
 - other amenities
- age of the building
 - until 1948

1949 to 1970

1971 to 1981

1982 to 1990

post-1990

- location factor
 - differentials between Federal States
- size of the dwelling (in square metres) – differentiated as in the former Federal Republic:
 - 40m² or smaller
 - 41 to 80
 - 81m² or larger

In the past, the way in which the construction of housing was funded was not a relevant stratification criterion. A total of 360 tiers existed.

In the **old Federal States**, the valuation of output is based on figures for the base year 1987. The census of building and housing stock (EVAS 31211)¹ which was conducted in connection with the national population census provides exhaustive coverage of the housing situation in that year. Other data sources used in the valuation of output from housing services are the highly detailed combinations of stratified characteristics from the 1968 census of building and housing stock, the 1972, 1978 and 1993 sample housing surveys (EVAS 31221) and the supplementary microcensus programmes of 1980, 1982, 1985, 1998 and 2002 (EVAS 12212). At present, the building and housing stock sample of 1987, that of 1993² and the supplementary microcensus programmes of 1998 and 2002³ are the most important surveys because they provide the most up-to-date and detailed data. As we mentioned above, the 1987 census was a blanket survey with compulsory completion and return of questionnaires, while the 1993 survey and the supplementary microcensus programmes were area samples whose completion was also compulsory.

As far as the housing stock is concerned, the valuations for the **new Federal States** are based on the results of the 1995 survey of building and housing stock, which was conducted as a full census in the new Federal States (EVAS 31211)⁴. Information on rent levels was provided by the 1993 sample survey of buildings and housing (EVAS 31221). In addition, information is also obtained from the Federation of German Housing Enterprises (*Gesamtverband der Wohnungswirtschaft*) and the supplementary survey conducted in the framework of the 1998 and 2002 microcensus (EVAS 12212). The base year for the assessment of the output produced by housing services in the new Federal States is 1995, i.e. the year of the full census of buildings and housing in eastern Germany. The data on rent levels for 1995 are extrapolated from the results of the 1993 sample survey with the aid of data from the Federation of German Housing Enterprises.

¹ See Fachserie 5 (Bautätigkeit und Wohnungen) - Gebäude- und Wohnungszählung vom 25. Mai 1987, Hefte 1 bis 6.

² See Fachserie 5 (Bautätigkeit und Wohnungen) – 1% Gebäude- und Wohnungsstichprobe 1993, Hefte 1 bis 3.

³ See Fachserie 5 (Bautätigkeit und Wohnungen) – Mikrozensus-Zusatzerhebungen 1998 und 2002 – Wohnsituation der Haushalte-, Hefte 1 und 2 (2002 nur Heft 1).

⁴ See Fachserie 5 (Bautätigkeit und Wohnungen) - Gebäude- und Wohnungszählung vom 30. September 1995 in den neuen Ländern und Berlin-Ost, Hefte 1 bis 9.

The number and aggregate area of apartments in residential homes and in rented and owner-occupied holiday homes in the **pre-unification territory of the Federal Republic** are each broken down into 33 combinations of characteristics, namely: the dwellings in each of 11 Federal States which were built

- until 1948
- post-1948, privately financed
- post-1948, built with public support

The floor surface areas for each of the combinations are reduced by the total amount of floor space devoted to commercial purposes, such as offices. In the case of apartments in residential homes, of holiday homes and of dwellings placed free of charge at the disposal of relatives or acquaintances, the possibility of commercial use is discounted.

The result is a number and a total surface area for each of the aforementioned housing categories and combinations of characteristics. In the next step of the valuation process, the average rent for each stratum is applied to these results. Rent levels in the older Federal States and West Berlin are assessed for each housing category by applying as many average square-metre rents as there are combinations of characteristics in that category of housing, based on the building and housing stock survey of 1987 and the sample buildings and housing survey of 1993:

- For normal rented housing, owner-occupied housing and dwellings placed free of charge at the disposal of relatives or acquaintances, 495 different equivalent square-metre rents for normal rented housing are assessed.
- For low-rent and subsidised housing (e.g. in cases where rents are reduced because of advance payments), 495 equivalent m² rents for normal rented housing are used to ensure that the rental value of these dwellings is recorded in the accounts at the full market rate.
- For apartments in residential homes, 33 individual m² rent prices for apartments in residential homes are used.
- For rented holiday homes, 33 individual m² rent prices for normal rented dwellings are used, because the surveys do not provide any reliable data on this type of housing. In order to compensate for the excessively low annual rent levels, all-year use of these holiday homes is imputed.

In the new Federal States the same basic approach is adopted, although in this case apartments in residential homes, low-rent housing and holiday homes are put into the same category as normal rented housing, and it is assumed that all these forms of housing are used throughout the year.

Time-share properties play a very minor part in the German housing market, for which reason they are not treated separately but are bracketed together with holiday homes. This means that it is assumed that these properties are used throughout the year and the average rent for normal rented housing is applied.

Income from subletting is regarded in the German accounting system as no more than a contribution to the principal tenant's rent.

Empty dwellings are defined in Germany as those housing units, other than holiday homes, which are neither let nor used by their owner. A zero rent is recorded for empty dwellings. For the

pre-unification territory of the Federal Republic, information on the number of empty dwellings is provided by the 1968 and 1987 censuses of building and housing stock, the 1993 sample survey of buildings and housing, the supplementary microcensus programmes of 1980, 1982, 1985, 1998 and 2002 and the 1% sample housing surveys that were conducted in 1972 and 1978. For 1994 and subsequent years, a set quantity of empty stock is established first of all on the basis of the 1993 buildings and housing stock census; this figure represents the housing stock that stands empty for up to three months as a result of the routine turnover of tenants. In the case of dwellings that remain empty for more than three months, cyclical fluctuations are assumed to be the reason for their being empty. This part of the empty housing stock is therefore calculated with the aid of statistics on the new housing stock that has come on stream in the course of the same year. In both the full census and sample surveys of building and housing stock, the owner is asked about vacancies. The empty dwellings found in this way are counted as full units. The microcensus, however, only covers households, and this means that while inspecting a particular building and possibly also when questioning the neighbours, the interviewer finds that one or several dwellings are currently not inhabited. Whether a particular dwelling is actually empty, or whether it is empty but rent is already, or still, being paid can only be answered by the owner. Based on this reasoning, only 80% of the number of empty dwellings ascertained in the microcensus are actually recorded.

For the new Federal States and East Berlin, the number of vacant dwellings is assessed on the basis of the 1993 sample survey, the 1995 census and the supplementary microcensuses carried out in 1998 and 2002.

Publicly owned housing, which is included in the category of normal rented housing, is entered in the calculation at the actual level of rent. Although Principle 4 of the European Commission Decision¹ specifying the principles for estimating dwelling services states that the assessment of imputed rents should be based on actual rents from all tenancy agreements relating to privately owned dwellings, the results of the 1993 buildings and housing survey show that some of the rents for public-sector housing in both the eastern and western parts of Germany are actually higher than those payable to other groups of owners. Besides, publicly owned housing represents only 1.5% of the entire housing stock (6% in eastern Germany).

The total surface area of owner-occupied dwellings and of houses or flats placed free of charge at the disposal of relatives or acquaintances, broken down into the aforementioned combinations of stratified characteristics, is assessed in terms of m² rents for similar, i.e. comparable, rented housing. The aggregated results provide the sum of imputed rents for these types of housing. The sum of all rents for dwellings is obtained by multiplying the average rents for normal rented housing, for apartments in residential homes and for rented holiday homes by the total floor area for each category, then adding the results. The sum of the imputed and actual rents represents the gross rental income (excluding services) in the domain of housing services for the base year 1987 in the West and for the base year 1995 in the East. Based on the content of the sample survey of buildings and housing stock conducted in 1993, the service charges are assessed to the same depth of detail for rented and owner-occupied dwellings. The gross rental income

¹ See Commission Decision of 18 July 1995 specifying the principles for estimating dwelling services for the purpose of implementing Article 1 of Council Directive 89/130/EEC, Euratom, on the harmonisation of the compilation of gross national product at market prices.

minus service charges gives the net rental income, which according to ESA 1995 corresponds to the output by housing services.

For years in respect of which there are no detailed data on quantities of housing stock and rent levels from statistical surveys, the gross rental income and service charges are updated by means of a combined quantity and price extrapolation.

The **quantitative extrapolation** (number of dwellings and total floor area) is undertaken in two steps. First of all, the overall total number of dwellings and square metres of floor area are extrapolated from the last available statistics. In the second step, separate extrapolations are effected for housing stock with each set of particular characteristics (strata), and the results of these calculations are reconciled with the figures extrapolated for the entire housing stock in the first step of the valuation process.

The extrapolation of the entire stock is largely based on the statistics relating to building activity¹ (EVAS 31111). This set of statistics provides information on new housing stock and on stock withdrawn from the housing market. The information on new stock covers the completion of new buildings, the completion of construction work to provide housing in existing buildings and other additions to the stock of dwellings. The withdrawals occur when houses or flats are demolished or destroyed, when they undergo construction work, for example with a view to conversion to commercial premises or when they are otherwise removed from the housing market.

Moreover, additions and withdrawals that are not covered by the statistics on building activity are also taken into account. These may be, for example, the conversion of a residential dwelling to commercial use (e.g. a doctor's surgery, solicitor's chambers, etc.) or the joining of two or more dwellings. In the pre-unification territory of the Federal Republic, the additions and withdrawals that are not covered by the statistics on building activity are assessed on the basis of a comparison between the results of the 1987 census of buildings and housing stock and the extrapolated results of the 1968 buildings and housing census that were produced in the years preceding 1987, with the aid of certain plausible assumptions. Finally, the empty dwellings and the total floor space used for commercial purposes are subtracted from the aggregate figures to ensure that the assessment of the total rental value will be based on the appropriate number of dwellings and the appropriate floor area.

Only one blanket survey (1995) exists for the new Federal States, which means that the additions and withdrawals not covered by the statistics on building activity have to be estimated on the basis of plausible assumptions. The extrapolation of the housing stock by characteristics is confined to the following criteria:

- federal state
- type of dwelling:
 - rented dwelling
 - owner-occupied dwelling
- age and funding
 - until 1948
 - post-1948, privately financed

¹ See Fachserie 5 (Bautätigkeit und Wohnungen), Reihe 1.

- post-1948, built with public support

In the new Federal States, besides the location factor, i.e. the federal state, and the type of dwelling, the age of the building (pre-1949 or post-1948) is the only other applicable criterion.

There are therefore 33 possible combinations of characteristics in the older federal territory for rented and owner-occupied dwellings and 12 combinations for the new Federal States plus East Berlin. A more sophisticated stratification is not possible, because no suitable extrapolation indicators are available.

In the old Federal States, the quantity structure (floor areas) is assessed at the gross rental per square metre of living area by extrapolating the gross rental income (excl. services) per square metre from the 1987 building and housing stock census, adding on the one hand allowances for changes in quality and other price-relevant changes not otherwise included in the housing price index and, on the other hand, using the development of the rent index based on the consumer price index¹ (EVAS 61111). The price valuation is therefore divided into a price component and a quality component.

$$BM_{(t)} \left[\frac{\text{€}}{\text{m}^2} \right] = BM_{(t-1)} \left[\frac{\text{€}}{\text{m}^2} \right] \times \frac{MPI_{(t)}}{MPI_{(t-1)}} \times F_N \times F_A$$

BM: Gross rental income (excl. services)

MPI: Rent index from the APH

F_N : Factor allowing for changes in quality brought about by new builds

F_A : Factor for changes in the quality of the housing stock

The supplemental factors F_N and F_A are necessary because a comparison of rents per square metre extrapolated for 1993 from the 1987 census of buildings and housing stock by means of the rent index with the average rent levels revealed by the 1993 survey shows that the extrapolated values for each of the strata are below those of the 1993 sample. The reasons for this are, firstly, the improvement in quality brought about by new builds, covered by the supplemental factor F_N . The factor F_A on the other hand also makes allowance for changes in the quality of the housing stock caused by conversions and renovation.

The pure price component is based on the rent indices taken from the index of consumer prices. A total 33 price series from the consumer price index, combining the characteristics of federal state and age/grants, are used for rented and for owner-occupied dwellings according to the strata of the extrapolation for the quantity structure. The extrapolated results for gross rental income per m² are reconciled with the 1993 survey and the 1998 and 2002 supplemental microcensuses on the living conditions of households. The 33 strata in the extrapolation for the quantity structure, applied separately to rented and to owner-occupied dwellings, form the basis of the extrapolation of gross rental income per square metre. The first step finds the total gross rental income by multiplying the floor area per stratum by the gross rental income per square metre. The second step involves subtracting the service charges from the gross rental income in

¹ See Fachserie 17 (Preise), Reihe 7.

order to find the output for rented housing, corresponding according to ESA 1995 to the net rental income.

The service charges (occupier's additional property expenses) do not form part of the output in the domain of housing services, but instead in those areas of activity in which the services are provided. On the use side, these service charges are part of household consumption expenditure (SEA No. 044 – water supply and miscellaneous services relating to the dwelling). The service charges per m² are based on the 1993 survey and involve 495 strata which correspond to the strata in the quantity structure. The prices can only be extrapolated by using price series for the incidental rental costs excluding utilities per Land (11 price series) taken from the consumer price index. The changes in value of the service charges per m² are therefore based on a pure price component. The overall valuation of service charges is found by multiplying the extrapolated figure for services charges per square metre by the floor area in the relevant year. The extrapolated service charges are then adjusted to accord with the figures found in the regular family-budget surveys (EVAS 631) available for the years 1999 onwards. The methodology of these accounts was redesigned in 1998 and is therefore suitable for this purpose.

The average rent for garages/parking places found in the 1993 survey has been applied to rented as well as owner-occupied garages and parking places. Average rents are extrapolated using the price index for garage rents for 11 Federal States (11 strata) taken from the consumer price index. No supplemental factors have been applied. The number of garages/parking places is extrapolated to take account of the development of the housing stock.

The method of valuing the quantity structure in the new Federal States is not the same as that used for the former Federal Republic because the data sources differ. Information about rental levels is based on the gross rental income per square metre recorded in the 1993 sample survey broken down into 360 strata matching those of the quantity structure. These data are extrapolated for 1995 with the development of gross rental income in the five Federal States (Brandenburg, Mecklenburg/Western Pomerania, Saxony, Sachsen-Anhalt and Thüringia) as well as East Berlin. This provides data applying to the year 1995, as with the quantity structure itself. The gross rental income for the 360 strata are found for 1995 by multiplying these data with the quantity structure.

For the backward and forward projections, the gross rental income per square metre are aggregated over 12 strata (Federal States and age of building similarly to the quantity structure) for rented and owner-occupied dwellings and projected backwards and forwards to this degree of detail using information on rental levels obtained from the Federation of German Housing Enterprises (*Gesamtverband der deutschen Wohnungswirtschaft*). The data obtained from the Federation may be considered representative for the new Federal States because it covers around 80% of the rented housing stock in the new Federal States. As well as this, the extrapolated average rents per m² are adjusted to allow for the results of the supplementary microcensus programmes of 1998 and 2002 regarding the living conditions of households. The gross rental income per m² is applied to the quantity structure to supply the nominal gross rental income in the new Federal States.

The service charges are valued in the same way as the gross rental income. As in the old Federal States the data are adjusted to conform with the results from the regular family-budget surveys.

The service charges are subtracted from the gross rental income to find the net rental income relevant to output.

The rental values of garages and parking places are based on the average rents found through the 1993 sample survey. Average rents are extrapolated using the price index for garage rents for five Federal States and East Berlin (six price series) taken from the consumer price index. No supplemental factors have been applied. Garage rents and the net rental income combined give the output from housing services. The number of garages/parking places is extrapolated to take account of the development of the housing stock.

Intermediate consumption

Intermediate consumption in the realm of housing services comprises the consumption of goods and services that occurs in connection with the letting or owner-occupation of dwellings in the form of expenditure on maintenance and repairs. These represent activities that affect neither the function and capacity nor the useful life of the dwelling concerned.

The main basis for the calculation of intermediate consumption and intermediate-consumption ratios in the realm of housing services are the regular family-budget surveys¹ conducted each year since 1999, because these are the only sources in which the data are broken down into the requisite components. In addition, as a way of cross-checking the results, further statistics are taken such as the income and consumption sample² (EVAS 63221), sample inventories of buildings and housing stock³ and data from the Federation of German Housing Enterprises⁴.

The statistics from these sources cannot normally be lifted straight into the national accounts but must first be converted and supplemented so that they fit into the defined accounting concepts. When family-budget surveys are conducted, for example, tenants' households are often not fully aware of the precise nature of all their expenditure, while the balance sheets of housing companies contain various items of revenue and expenditure that are not to be entered in the national accounts. Special analyses of regular family-budget surveys from 1999 onwards provide information on net rental income and intermediate consumption of owner-occupied housing, and the resultant intermediate-consumption ratios in the old Federal States are also applied to rented housing. In the new Federal States the ratio of regular family-budget surveys is also used for owner-occupied housing, but for rented housing a 20% deduction is made from the ratio used by the Federation of Housing Enterprises. There are two reasons for this approach. On the one hand there is an extraordinary demand for intermediate consumption in the new Federal States while on the other hand the information provided by the Federation of Housing Enterprises is representative of around 80% of all rented housing in the new Federal States. In the interests of consistency, the old ratios for the years 1991 to 1998, which were established on the basis of the regular family-budget survey prior to the 2005 revision, have now been adjusted to the new levels of the years 1999 and 2000.

¹ See Fachserie 15 (Wirtschaftsrechnungen), Reihe 1

² See Fachserie 15 (Wirtschaftsrechnungen), Einkommens- und Verbrauchsstichprobe 1993 Hefte 1 bis 7 and Einkommens- und Verbrauchsstichprobe 1998 Hefte 1 bis 6.

³ See Fachserie 5 (Bautätigkeit und Wohnungen) – 1% Gebäude- und Wohnungsstichprobe 1993, Hefte 1 bis 3.

⁴ See annual report of Bundesverband deutscher Wohnungsunternehmen (GdW).

Intermediate consumption is determined by multiplying the intermediate-consumption ratio by the net rental income calculated from the valuation of output plus the service charges for the associated buildings insurance. The gross value added for housing services is found by subtracting intermediate consumption from output.

Output, intermediate consumption and gross value added for the domain of housing services
(before balancing; FISIM not allocated)
2000

Category of housing	Output	Intermediate-consumption ratio	Intermediate consumption	Gross value added
	EUR m	%	EUR m	
Rented housing.....	81 760	18.6	15 240	66 520
Owner-occupied housing .	105 260	20.4	21 490	83 770
Total	187 020	19.6	36 730	150 290

The results for the **entire domain of real estate services (WZ 70)** are as follows: (balanced published result, FISIM allocated, for 2000)

Output	Intermediate consumption	Intermediate-consumption ratio	Gross value added
EUR m		%	EUR m
281 820	74 800	26.5	207 020

3.17.2 Renting services of machinery and equipment without operator and of personal and household goods (WZ 71)

Gross value added, 2000 (FISIM allocated): EUR 34.80 bn (1.9% of total GVA)

Output and intermediate consumption are calculated for three separate categories of economic activity. The table below summarises the sources of source statistics as well as indicating the source figures for output (in EUR m) and for the intermediate-consumption ratios (in %) for the year 2000 (balance-sheet results).

WZ 2003 No.	Activity	Output	Intermediate-consumption ratio (service statistics 2000)
71.1 and 71.2	Renting of automobiles up to 3.5 t laden weight and other transport equipment	Turnover: VAT statistics, 2000:..... EUR 24 161 m + special assessment for national accounting valuation, 2000:EUR 34 053 m	33.9 % + balance sheets of major, affiliated leasing enterprises for special assessment
71.3	Renting of other machinery and equipment	Turnover: VAT statistics, 2000:..... EUR 15 191 m National accounting valuation, 2000:EUR 15 206 m	30.8 %
71.4	Renting of personal and household goods n.e.c.	Turnover: VAT statistics, 2000:..... EUR 2 358 m National accounting valuation, 2000: EUR 2 373 m	37.4 %

The calculations in the domains of 'renting of automobiles under 3.5 t and other transport equipment' and in particular the **special account** for the valuation of output are explained below.

Output

The VAT statistics are normally the data source for the assessment of output in this area of activity. However, the allocation process is not without its problems, because many leasing enterprises, though legally independent, are actually subsidiaries of a group or organs of a larger company. Since the VAT statistics treat the group or principal company as the sole taxable entity, and since the main activity of such groups is often manufacturing, the turnover data for the leasing enterprises is 'lost' within the VAT statistics, because the assessment of manufacturing output is based on the relevant specialised statistics rather than VAT statistics, and industry turnover rather than group turnover is the key variable.

To counter this problem, first of all the leasing enterprises are separated into **affiliated** and **independent** enterprises. The turnover of the independent leasing enterprises is contained in the VAT statistics for WZ 71. Most of the leasing activity by affiliated enterprises is regarded as an activity of the parent group, as outlined above. An **allowance** is calculated for this area.

Enquiries addressed to major companies and analyses of their balance sheets revealed a turnover volume of about EUR 8 bn for the entire domain of affiliated leasing in 2000. The book value of withdrawals (approx. EUR 1 bn) from the pool of leasable vehicles was deducted from this figure, because the withdrawals are purely balance-sheet extensions (see the remarks on intermediate consumption). The remainder was inserted into the account along with the values from the VAT statistics, from which the balance-sheet extension items were also deducted, the value of intermediate consumption being reduced by the same amount.

A further allowance was made for undercoverage in the domain of VAT statistics so as to include those enterprises which fall below the threshold for inclusion in the VAT statistics.

	VAT statistics, 2000:	EUR 41 710 m
+	Allowance for leasing:	EUR 9 868 m
+	Allowance for undercoverage:	EUR 55 m
=	Total output.....	EUR 51 633 m

Intermediate consumption

The intermediate-consumption ratio of 33.2% for the activity category WZ 71 derives from the service statistics (cf. remarks on WZ 70). Ratios are used based on the relationship between turnover and material costs. The content of the item material costs does not match intermediate consumption according to the national accounting demarcation, for it includes items not affecting intermediate consumption, such as travel costs, interest on borrowed capital, provisions, etc. For this reason, the source value is reduced by 10%. Further information comes from the actual results or conclusions drawn by analogy from earlier cost-structure statistics, which contained a considerably greater level of detail.

Before introducing the service statistics, the **intermediate-consumption ratios** were derived from the annual accounts of major leasing enterprises. This process continues for checking purposes.

The process is also explained below. Pure leasing occurs rarely: most of the activities in this domain are a mixture of leasing, service provision and capitalisation, i.e. trading or selling the leased item when the lease expires. In the latter case the considerable residual value of the item is recorded as material expenditure. This substantially increases intermediate consumption in the balance sheet. The same applies for the turnover side (see above). The transaction, in fact, amounts to a mere balance-sheet extension. Since the sale of leased equipment is neither a matter of new production nor of goods bought from a third party for resale, the loss of the book value of leased items has not been taken into consideration for national-accounting purposes on the expenditure side or on the income side. Consequently, the national accounts show considerably less output than the company balance sheets and a corresponding reduction in intermediate consumption, which means that the intermediate-consumption ratio works out at about 30%.

With the substantial shares of goods purchased for resale in turnover for this area of activity, the provisions of ESA 1995 on recording the net value of goods purchased for resale entail a considerable difference in the intermediate-consumption ratio between the balance sheet results and the national accounting results.

For activity category **WZ 71** the figures are as follows
(balanced published result for 2000):

Output	Intermediate consumption	Intermediate consumption ratio	Gross value added
EUR m		%	EUR m
45 310	10 510	23.2	34 800

3.17.3 Computer and related services (WZ 72)

Gross value added, 2000 (FISIM allocated): EUR 27.82 bn (1.5% of total GVA)

Output and intermediate consumption are calculated for six separate categories of economic activity. The table below summarises the source statistics as well as indicating the source figures for output and for the intermediate-consumption ratios of the year 2000 (balance sheet results):

WZ 2003 No.	Activity	Output	Intermediate-consumption ratio (service statistics, 2000)*
72.1	Hardware consultancy	Turnover: VAT statistics VAT statistics, 2000: EUR 1 968 m National accounting valuation, 2000: EUR 1 972 m	55.08 %
72.2	Software firms	Turnover: VAT statistics, 2000: EUR 17 675 m National accounting valuation, 2000: EUR 17 711 m	38.16 %
72.3	Data processing	Turnover: VAT statistics, 2000: EUR 14 520 m National accounting valuation, 2000: EUR 15 049 m	43.18 %
72.4	Databases	Turnover: VAT statistics, 2000: EUR 353 m + special assessment National accounting valuation, 2000: EUR 4 071 m	39.60 %
72.5	Maintenance and repair of office, accounting and computing machinery	Turnover: VAT statistics, 2000: EUR 831 m National accounting valuation, 2000: EUR 836 m	45.73 %
72.6	Other computer-related activities	Turnover: VAT statistics, 2000: EUR 4 384 m National accounting valuation, 2000: EUR 4 480 m	50.67 %

*) Ratios are used based on the relationship between turnover and material costs. The content of the item material costs does not match intermediate consumption according to the national accounting demarcation, for it includes items not affecting intermediate consumption, such as travel costs, interest on borrowed capital, provisions, etc. For this reason, the source value is reduced by 10%. Further information comes from the actual results or conclusions drawn by analogy from earlier cost-structure statistics, which contained a considerably greater level of detail.

Special assessment for database activities

Since the coverage of the VAT statistics for the publishing industry as defined in the 1979 German classification of economic activities, including databases, was not reduced or amended when the 1993 classification came into effect in 1994, it is necessary to transfer the turnover generated by database activities from publishing (WZ 22.1) to database activities (WZ 72.4) with a figure of around EUR 3.7 bn for the year 2000. There is no counterpart item in the account for WZ 22.1, because VAT statistics are not prescribed as the primary source of data on the output of the publishing industry.

Special assessment for software

As a result of implausible disparities that emerged when the basis for the categorisation of VAT statistics was changed from the 1979 classification of economic activities to the 1993 version, a software allowance amounting to more than EUR 3 bn has been added since 1994 to Groups 72.1 - 72.3 and 72.6. As with time the figures for turnover were indicated more accurately by the annual levels of value added tax, the allowances were gradually reduced each year. For the year 2000 only EUR 500 m was allowed.

For the activity category **WZ 72** the figures are as follows
(balanced published result for 2000):

Output	Intermediate consumption	Intermediate consumption ratio	Gross value added
EUR m		%	EUR m
40 500	12 680	31.3	27 820

3.17.4 Research and development (WZ 73)

Gross value added, 2000 (FISIM allocated): EUR 7.44 bn (0.4% of total GVA)

In the domain of research and development (WZ 73) there are statistical units in the following institutional sectors: general government (S.13), non-profit institutions serving households (S.15), non-financial corporations and households (S.11 and S.14). The valuations for **non-market producers** are affected together for these sectors (see sections 3.18 and 3.21.2). The valuations for **market producers in the combined 'enterprise' sector** (i.e. S.11 and S.14) are carried out in two accounting categories, namely:

- WZ 73.1 Research and development in natural sciences and engineering,
- WZ 73.2 Research and development in social sciences and humanities

Output figures are essentially derived from the **VAT statistics**¹, subject to reclassification adjustments and the addition of undercoverage allowances. The latter have been significantly increased as part of the 2005 revision in accordance with the employment account.

Despite the service statistics being available, the VAT statistics still represent the main basis for determining output. The reasons for this lie on the one hand in the inadequate time base of the service statistics data of, so far, just four survey years (2000 to 2003) and on the other hand in the business register which is not yet fully functioning but is meant to serve the service statistics as the sampling frame and extrapolation base.

Intermediate consumption used to be calculated on the basis of intermediate-consumption ratios, which were transferred by analogy out of comparable sets of cost-structure statistics. Since the 2005 revision, information from the **service statistics** has been channelled into the intermediate consumption figures.

Ratios are used based on the relationship between turnover and material costs. The content of the material costs item does not match intermediate consumption according to the national accounting demarcation, for it includes items not affecting intermediate consumption, such as travel costs, interest on borrowed capital, provisions, etc. For this reason, the source value is reduced by 10%. Further information came from analogy with earlier cost-structure statistics, which contained a significantly greater level of detail.

¹ See Fachserie 14 (Finanzen und Steuern), Reihe 8.

When results are interpreted, it is important to note that the calculations are confined to those units whose main activity lies in the sphere of research and development and which are therefore statistically identifiable as research and development bodies. This, however, excludes all those research activities that are already included in company performance figures in various industries where research is conducted as an ancillary or secondary activity, which explains why research activities account for only 0.4% of macroeconomic production.

The results for **WZ 73**, 'research and development', in the year 2000 may be summed up as follows (balanced published result, FISIM allocated):

Sector	Output	Intermediate consumption	Gross value added (GVA)	Sectoral share of GVA
	EUR m			%
S.11/14	7 690	3 580	4 110	55.2
S.13	6 290	5 020	1 270	17.1
S.15	2 980	920	2 060	27.7
Total	16 960	9 520	7 440	100.0

3.17.5 Business services n.e.c. (WZ 74)

Gross value added, 2000 (FISIM allocated): EUR 156.10 bn (8.4% of total GVA)

Output and intermediate consumption: Output, intermediate consumption and gross value added are calculated separately for fourteen areas of economic activity. The following table provides a survey of the source statistics used for the year 2000 (balance-sheet figures). In the domain of the management activities of holding companies (WZ 74.15) it should be noted that the assessment is only based on adjusted values from the 2000 VAT statistics; this is due to problems with identifying controlling entities for the purposes of the tax authority data.

Despite the service statistics being available, the **VAT statistics** still comprise the main basis for determining output. The reasons for this lie on the one hand in the inadequate time base of the service statistics data of, so far, just four survey years (2000 to 2003) and on the other hand in the business register which is not yet fully functioning but is meant to serve the service statistics as the sampling frame and extrapolation base.

Since the 2005 revision, information from the **service statistics** has been channelled into the **intermediate consumption figures**.

Ratios are used based on the relationship between turnover and material costs. The content of the material costs item does not match intermediate consumption according to the national accounting demarcation, for it includes items not affecting intermediate consumption, such as travel costs, interest on borrowed capital, provisions, etc. For this reason, the source value is reduced by 10%. Further information comes from the actual results or conclusions drawn by analogy from earlier cost-structure statistics, which contained a considerably greater level of detail.

WZ 2003 No.	Activity	Output	Intermediate consumption ratio (service statistics, 2000)
74.11	Legal activities	Turnover: VAT statistics, 2000:EUR 12 623 m National accounting valuation, 2000:.....EUR 12 648 m	22.3 %
74.12	Auditing, accountancy and tax advice; auditing	Turnover: VAT statistics, 2000:.....EUR 18 701 m National accounting valuation, 2000:.....EUR 18 739 m	23.1 %
74.13 and 74.14	Market and opinion research, business consultancy and PR advice	Turnover: VAT statistics, 2000:.....EUR 27 071 m National accounting valuation, 2000:.....EUR 27 125 m	36.7 %
74.15	Management activities of holding companies	Reduced figure from VAT statistics (80%) Turnover: VAT statistics, 2000:.....EUR 40 615 m National accounting valuation, 2000:.....EUR 40 615 m	38.3 %
74.2	Architectural and engineering activities and related technical consultancy	Turnover: VAT statistics, 2000:.....EUR 37 098 m National accounting valuation, 2000:.....EUR 37 172 m	33.2 %
74.3	Technical testing and analysis	Turnover: VAT statistics, 2000:.....EUR 6 111 m National accounting valuation, 2000:.....EUR 6 124 m	33.3 %
74.4	Advertising	Turnover: VAT statistics, 2000:.....EUR 27 646 m National accounting valuation, 2000:.....EUR 27 702 m	50.3 %
74.5	Labour recruitment and provision of personnel	Turnover: VAT statistics, 2000:.....EUR 7 909 m National accounting valuation, 2000:.....EUR 7 924 m	15.4 %
74.6	Investigation and security activities, and detective agencies	Turnover: VAT statistics, 2000:EUR 3 566 m National accounting valuation, 2000:.....EUR 3 573 m	18.6 %
74.7	Industrial cleaning	Turnover: VAT statistics, 2000:.....EUR 10 603 m National accounting valuation, 2000:.....EUR 10 921 m	20.2 %
74.81	Photography and photographic laboratories	Turnover: VAT statistics, 2000:.....EUR 2 279 m National accounting valuation, 2000:.....EUR 2 282 m	46.0 %
74.82	Packaging activities	Turnover: VAT statistics, 2000:.....EUR 1 615 m National accounting valuation, 2000:.....EUR 1 618 m	43.8 %
74.85 and 74.86	Secretarial and translation activities; copy shops, call centres	Turnover: VAT statistics, 2000:.....EUR 1 418 m National accounting valuation, 2000:.....EUR 1 420 m	39.5 %
74.87	Business services n.e.c.	Turnover: VAT statistics, 2000:.....EUR 48 768 m National accounting valuation, 2000:.....EUR 48 865 m	49.4 %

For the activity category **WZ 74** the figures are as follows
(balanced published result for 2000, FISIM allocated):

Output	Intermediate consumption	Intermediate consumption ratio	Gross value added
EUR m		%	EUR m
240 490	84 390	35.1	156 100

Summary for Section K: Real estate, renting and business activities n.e.c.

Once the 'balance-sheet' results have been obtained for various accounting categories, the necessary reallocations are made to bring the figures into line with national accounting concepts.¹

Mention should be made here of land-transfer tax, which is a special feature of this domain of economic activity. Since this tax is recorded under capital expenditure on building as an ancillary acquisition cost, it must consequently be recorded on the production side under supplies of products. This is done by applying an explicit upward adjustment to the figures for output and taxes on production in the account for business activities not elsewhere classified. However, the effect is neutralised with the transition to basic prices as part of the conceptual reallocations for national accounting.

Derivation of the national accounting results in the production approach

Real estate, renting and business activities n.e.c. (WZ 2003: K)

Figures for 2000 in EUR m

	Output	Intermediate consumption	Gross value added
(1) Source statistics	685 539	182 460	503 079
+ Validation of statistical data	- 30 066	45 949	- 76 015
+ Threshold for measurement of contribution	288	0	288
= Subtotal.....	656 761	228 409	427 352
(2) + Allowances and adjustments	16 577	6 090	10 487
+ Special entry for land-transfer tax.....	5 250	0	5 250
(3) = Balance sheet result	677 588	234 499	443 089
(4) + Conceptual reclassification	- 52 758	- 53 869	1 111
(5) = National-accounting result (rounded)	624 830	180 630	444 200
(6) + Macroeconomic balancing adjustment	250	- 6 950	7 200
(7) = Adjusted figure (FISIM not allocated)	625 080	173 680	451 400
(8) + FISIM	0	18 220	- 18 220
(9) = Result for publication (FISIM allocated).....	625 080	191 900	433 180

3.18 Public administration and defence; compulsory social security (WZ 2003: L)

Gross value added, 2000 (FISIM allocated): EUR 118.02 bn (5.7% of total GVA)

This section begins with a description of the way in which output for the entire general government sector (S.13) is calculated, because the assessment bases and methods are very similar and can be examined without reference to specific categories of industrial and commercial activity as classified in the German classification system. The results are then assigned to the various domains of economic activity and collated with the results from the other sectors of the national economy.

¹ On this point, see the general explanations contained in section 3.3.

The sources for the assessment of general government output are for the sub-sector central government information from the federal budget with its departmental accounts as well as the Federal Special Assets (EVAS 71142 and 71143) provided by the Federal Ministry of Finance. For the calculation of the output of states and local governments the public finance statistics with a highly detailed presentation of revenues and expenditures – including their special assets and special purpose associations – is used (EVAS 71146, 71147 and 71148). In addition, statistics are incorporated which are compiled by the branches of social insurance (pension insurance scheme, agricultural pension funds, statutory health insurance schemes, statutory long-term care insurance schemes, statutory accident insurance schemes and unemployment insurance schemes) (EVAS 71145). The statistical sources cover all public budgets in Germany in their entirety.

Due to the prescribed budget and accounting systems, the statistical sources not only provide data on the economic categories to which the public institutions' revenue and expenditure belong but also serve as a basis for differentiation by local kind-of-activity unit (KAU) by means of functional classification. Although data relating to individual local KAUs of a particular local authority, for example, are not recorded, information such as the total income and expenditure of all local-authority units with the same responsibilities (e.g. local water supply company) is obtainable. The analysis of the source statistics shows that local KAUs can be identified in eleven areas of economic activity in the general government sector; these KAUs are assignable to either the category of market producers or that of other non-market producers, including non-market output produced for own final use, depending on the area of economic activity in which they operate.

The market-producer KAUs in the general government sector cannot be moved out of that sector and reclassified as public quasi-corporations, since it is impossible to produce a complete balance sheet for them, especially with regard to debt assignment and the allocation of general tax revenue.

Assuming more than half the production costs are covered by turnover (paragraph 3.33, ESA 1995), the following subdivisions according to area of economic activity and by market producers and other non-market producers result in the general government sector:

Market and non-market production in the sector of general government, 2000

WZ 2003 No.	Activity	Output EUR bn	Central and states government	Local government	Social insurance
01	Agriculture, hunting and related service activities	0.31	MP		
02	Forestry, logging and related service activities..	0.85	MP	MP	
41	Collection, purification and distribution of water	0.74	MP	MP	
63	Supporting and auxiliary transport activities; travel agencies.....	3.29	NMP	MP	
70	Real estate services	1.98	MP	MP	
73	Research and development.....	6.29	NMP	NMP	
75	Public administration and defence; compulsory social security	166.85	NMP	NMP	NMP
80	Education	73.21	NMP	NMP	
85	Health and social work.....	5.23	NMP	NMP	
90	Sewage and refuse disposal, sanitation and similar activities.....	9.90	MP	MP	
92	Recreational, cultural, sporting activities.....	11.07	NMP	NMP	
	Total general government sector.....	279.72			

MP = market production, NMP = other non-market production

a) Other government non-market production

Other non-market production is situated entirely within the industry public administration (only general government). This means that the output of these government KAUs with other non-market production is calculated by adding together the compensation of employees, taxes on production paid (less other subsidies received), consumption of fixed capital and intermediate consumption. Output includes non-market production by these units for their own final use.

Other government non-market production

Figures for 2000 in EUR bn

	Public administration sector	Other categories of economic activity	General government sector
Compensation of employees	99.48	64.20	163.68
+ Other taxes on production	0.04	0.00	0.04
– Other subsidies	0.55	0.31	0.86
+ Fixed capital consumption.....	19.05	10.37	29.42
= Gross value added	118.02	74.26	192.28
+ Intermediate consumption.....	48.83	24.48	73.31
= Output	166.85	98.74	265.59

Compensation of employees covers the emoluments of civil servants', the salaries of non-manual workers, the wages of blue-collar workers, emoluments for professional soldiers and service pay for conscripts in the armed forces and payments made to conscripts performing alternative non-military service, including expenditure on conscripts' food and accommodation. Besides the actual social contributions payable by employers and employees, compensation of employees also includes social contributions which may be imputed on grounds of comparability for established civil servants' superannuation, for invalidity benefits and for income support. The

calculation of the imputed contributions to superannuation schemes for civil servants in federal state and local governments as well as for the benefits payable by these government sub-sectors to superannuation recipients, a percentage of the civil servants' pay (26.3% for 2000) is used as the assessment basis. This percentage derives from the rate of contribution payable by non-manual workers to their pension scheme plus seven per cent, which corresponds to the rate of contribution to the supplementary pension scheme for non-manual workers, plus the rate of benefit payable to superannuation recipients. The other imputed social contributions are calculated on the basis of the actual monetary cost of the benefits in question.

With regard to the **other taxes on production**, it should be noted that, under German fiscal law, the tax liability of governments is limited. The other taxes on production that are paid by the general government consist only of local rates, which are payable on land used for residential and commercial purposes, including forestry, and of road tax on official vehicles, except those in exempted categories.

The **other subsidies** received by the general government are payroll grants awarded by the Federal Employment Agency (*Bundesagentur für Arbeit*) to employers who recruit employees in the framework of the national job-creation programme, and central government subsidies associated with the labour market reform programmes. The payroll grants are awarded to employers in all sectors on the basis of the same criteria, which means that they can be assigned to the general government sector as other subsidies received.

The compilation of **consumption of fixed capital** in respect of local other non-market-producer KAUs in the general government sector is described in section 4.12.

All government purchases of goods and services, including FISIM, for the regular production of other non-market producer units are recorded as **intermediate consumption**. These purchases relate to items required for official business, such as office materials, books and journals and to official expenditure on postage, telephone calls, consumables, rent, vehicle running costs, the management and maintenance of land and buildings etc., procurement of military materiel other than capital goods, purchases of machinery, furnishings and equipment other than capital goods and the cost of official travel and various services, including MPs' expenses and legal and consultancy fees.

b) General government market production

In the local market-producer KAUs within the general government sector, output is calculated on the basis of turnover. The turnover of these units includes revenue from user charges, income for chargeable administrative services, such as inspections, income from economic activity, including rents and revenue from concessions and licences, unless such income is derived from property (rents) or from acquisitions less disposals of non-produced non-financial assets. For 2000, the output of these units amounted to EUR 14.13 bn. After the deduction of intermediate consumption totalling EUR 9.07 bn, this left EUR 5.06 bn in gross value added.

The following table shows the gross value added of the general government sector for market and other non-market production combined according to areas of economic activity.

Table 3—2: Output, intermediate consumption and gross value added in the domain of general government by industry

Figures for 2000 in EUR bn

WZ 2003 No.	Industry	Output	Intermediate consumption	Gross value added
01	Agriculture, hunting and related service activities.....	0.31	0.35	–0.04
02	Forestry, logging and related service activities ...	0.85	0.72	0.13
41	Collection, purification, distribution of water.....	0.74	0.29	0.45
63	Supporting and auxiliary transport activities	3.29	1.37	1.92
70	Real estate services	1.98	2.22	–0.24
73	Research and development.....	6.29	5.02	1.27
75	Public administration and defence; compulsory social security	166.85	48.83	118.02
80	Education	73.21	11.77	61.44
85	Health and social work	5.23	2.13	3.10
90	Sewage and refuse disposal, sanitation and similar activities	9.90	5.41	4.49
92	Recreational, cultural and sporting activities.....	11.07	4.27	6.80
	Total for general government sector	279.72	82.38	197.34

3.19 Education (WZ 2003: M)

Gross value added, 2000 (FISIM allocated): EUR 83.43 bn (4.5% of total GVA)

In the domain of education (WZ 80), there are statistical units in the sectors of general government (S.13), non-profit institutions serving households (S.15) and the enterprise sector, comprising non-financial corporations and households (S.11 and S.14).

Because of the form in which the relevant data are available, the calculations for **non-market producers** lump all of these sectors together (see sections 3.18 and 3.21.2).

The figures for the **market producers of the 'enterprise sector'** are calculated in three separate accounts. The table below summarises the sources of source statistics as well as indicating the source figures for output and for the intermediate-consumption ratios of the year 2000 (balance-sheet results):

WZ 2003 No.	Activity	Output	Intermediate-consumption ratio
80.1 and 80.2	Pre-school, primary and secondary education	Turnover: VAT statistics, 2000: EUR 547 m National accounting valuation, 2000: EUR 1 832 m	Estimate based on cost-structure statistics for independent professions (for 2000): 28.7 %
80.3	Universities and other tertiary educational institutions	Turnover: VAT statistics, 2000: EUR 81 m National accounting valuation, 2000: EUR 271 m	Estimate based on cost-structure statistics for independent professions (for 2000): 28.1 %
80.4	Adult and other education	Turnover: VAT statistics, 2000: EUR 4 209 m National accounting valuation, 2000: EUR 14 099 m	For driving schools (WZ 80.41.1) cost-structure statistics are used which were first produced in 2002. Modified figure for 2000 calculated; together with the estimate based on cost-structure statistics for independent professions for the remaining sector the resultant intermediate-consumption ratio for 2000 is: 30.6 %

The VAT statistics, however, do not cover all services rendered in the enterprise sector, because some of these services are VAT-exempt. For this reason, the general check for exhaustiveness resulted in the addition of substantial undercoverage allowances in this domain.

For the enterprise sector of WZ 80, the resulting figures are as follows (balanced figure for 2000, FISIM allocated):

Output	Intermediate consumption	Intermediate consumption ratio	Gross value added
EUR m		%	EUR m
16 230	4 750	29.3	11 480

Derivation of the national accounting results in the production approach

Summary for education (WZ 2003: M)

Figures for 2000 in EUR m

	Output	Intermediate consumption	Gross value added
(1) Source statistics	89 347	15 260	74 087
+ Threshold for measurement of contribution	1 570	0	1 570
= Subtotal.....	90 917	15 260	75 657
(2) + Allowances and adjustments.....	11 365	3 448	7 917
(3) = Balance sheet result.....	102 282	18 708	83 574
(4) + Conceptual reclassification	- 302	- 48	- 254
(5) = National-accounting result (rounded)	101 980	18 660	83 320
(6) + Macroeconomic balancing adjustment	0	- 180	180
(7) = Adjusted figure (FISIM not allocated)	101 980	18 480	83 500
(8) + FISIM	0	70	- 70
(9) = Result for publication (FISIM allocated).....	101 980	18 550	83 430

The results for 'education' (WZ 2003: M) may be summed up as follows (balanced published result for 2000, with FISIM allocated):

Sector	Output	Intermediate consumption	Gross value added (GVA)	Sectoral share of GVA
	EUR m			%
S.11/14	16 230	4 750	11 480	13.8
S.13	73 210	11 770	61 440	73.6
S.15	12 540	2 030	10 510	12.6
Total	101 980	18 550	83 430	100.0

3.20 Health and social work (WZ 2003: N)

Gross value added, 2000 (FISIM allocated): EUR 124.07 bn (6.7% of total GVA)

In this domain of activity, most of the statistical units fall within the 'enterprise sector' (non-financial corporations and households - S.11 and S.14) and, to a lesser extent, within the sectors of general government (S.13) – public health boards, for example – and non-profit institutions serving households (S.15), especially in the field of social welfare.

Because of the form in which the relevant data are available, the calculations for **non-market producers** lump all of these sectors together (see sections 3.18 and 3.21.2).

The figures for the **market producers in sectors S.11 and S.14** are calculated in separate accounts for the following categories:

WZ 2003 No.	Activity
85.11	Hospital activities
85.12	Medical practice activities
85.13	Dental practice activities
85.14	Other human health activities (with a further three subdivisions)
85.2	Veterinary activities
85.3	Social work activities (with further subdivisions)

3.20.1 Hospital activities (WZ 85.11)

As far as the valuation of gross value added in hospital activities is concerned, it is a case of market producers because more than 50% of the costs are covered by sales¹. For this reason, in contrast to the previous German system of national accounts, hospital statistics are now recorded under the heading of human health activities, whatever the nature of their sponsoring body.

The main common valuation basis is available in the form of the annual **hospital statistics**² (EVAS 23121), which provide information on hospital equipment, performance and operating

¹ See ESA 1995, paragraph 3.19.

² See Fachserie 12 (Gesundheitswesen), Reihe 6.3.

costs. This survey was introduced in 1991 and provides information for the valuation of **output** and **intermediate consumption** in this account with a highly detailed breakdown of the data.

Because hospital cost statements were converted to the netting principle for statistical purposes, figures on hospital treatment expenditure (including rehabilitation) were used during the period 1996 to 2001. These figures come from the Federal Ministry for Health and Social Security (*Bundesministerium für Gesundheit und soziale Sicherung*) and provide much more general data.

Since the 2002 reporting year, German hospital costs have again been recorded using gross figures, so that a return to the preferred data source and the original procedure was planned for the year 2002 onwards. However, this will only take place during the next revision of the German national accounts, because the results of the hospital cost statements were not received early enough to be included in the 2005 revision.

The following 'balance-sheet' figures result for hospitals for the year 2000 in EUR m:

Hospital activities	Output	Intermediate consumption	Gross value added
	68 711	23 766	44 945

3.20.2 Medical practice activities (WZ 85.12)

Output

The **output** of medical practices is calculated with the aid of expenditure figures for the statutory health-insurance schemes from their annual reports and accounts, which are published in the quarterly statistics of the Federal Ministry of Health and Social Security. After balancing with the use-of-income account, this value is raised to the total material purchases by the statutory health insurance schemes for all medical services. As well as the actual medical services, it also includes such items as dialysis and maternity support services.

Doctors' income from private practice and from other independent medical activity is added to this figure. This addition is obtained from the cost-structure statistics for physicians (EVAS 52551) and is calculated by applying the ratio of income from private practice and other independent medical activity to income from health-insurance funds. This estimate is then cross-checked by means of a comparison with the necessarily lower expenditure of private health schemes as indicated in the statistical reports on private health insurance obtained from the Private Health Insurance Association (*PKV-Verband*).

	2000
	EUR m
Expenditure of statutory health schemes (plus adjustment)	24 952
Ratio of statutory health expenditure to national accounting source.....	76.70 %
+ Allowance for other income	7 580
= Output (balance-sheet figure).....	32 532

Intermediate consumption

The intermediate-consumption ratio is obtained with the aid of the four-yearly cost-structure statistics for physicians (EVAS 52551), last published in 2000. The valuation of the intermediate-consumption ratio is based on the following individual cost items:

Ratios for the reporting year 2000 in % of revenue:

Consumption of materials in own practice and laboratory	3.50
Refunds to laboratory association.....	1.00
Fees for occasional assistance and locum work	0.70
Rents for surgeries and garages	5.00
Rents for surgeries in doctors' homes (30% of the ratio).....	0.12
Rent/lease charges for equipment, computers, etc.	0.80
Gas, electricity, water and heating costs	0.80
Subscriptions to professional organisations	0.30
Administrative cost of association of panel doctors (<i>Kassenärztliche Vereinigung</i>).....	1.70
Insurance premiums for professional liability and practice insurance	0.70
Vehicle costs, less road tax and consumption of fixed capital	1.16
Expenditure in connection with scientific congresses, training courses and literature, etc.	0.40
Other costs (incl. 1/3 of other voluntary social costs and 50% of inexpensive economic assets) ...	5.89
Intermediate-consumption ratio for 2000 in % of revenue	22.07
Intermediate consumption – absolute amount	EUR 7 180 m
Gross value added	EUR 25 352 m

3.20.3 Dental practice activities (WZ 85.13)

Output

The annual statistics of the Cologne-based Federal Association of Panel Dentists (*Kassenzahnärztliche Bundesvereinigung*) are available as an assessment basis for the output of dental practices. The calculation process begins with the recorded average income for proprietors of dental practices. This figure is multiplied by the number of registered dentists. An allowance is applied to the results to cover out-patient dental treatment which is not included in the statistics of the Federal Association. Such items could include, for example, dental services purchased on a purely private basis and the privately invoiced services of dentists employed in hospitals or similar institutions. By analogy with the national satellite account for health services¹, this allowance is set at 10% of the calculated output figure.

Intermediate consumption

Intermediate consumption is assessed on the basis of the annual cost-structure figures against the backdrop of the statistics of the Federal Association mentioned above. The figures from the official cost-structure statistics for dentists now available for the year 2000 were taken into account in the 2005 revision. The two sources of information showing relatively similar figures were combined to provide a weighted intermediate-consumption ratio.

¹ See Satellitensystem für das Gesundheitswesen zu den Volkswirtschaftlichen Gesamtrechnungen, final report commissioned by the BMA, prepared by the Bonner Forschungsgruppe and the Federal Statistical Office, Bonn/Wiesbaden, October 1992.

Summary:	2000	
	EUR m	
Number of proprietors of dental practices	53 914	
Revenue per practice holder (in EUR).....	336 602	
Revenue in EUR m		18 148
10% allowance		<u>1 815</u>
Output (balance-sheet figure)		19 962
Intermediate-consumption ratio for 2000 in %	40.88	
Intermediate consumption – absolute amount		<u>8 160</u>
Gross value added		11 803

3.20.4 Other human health activities (WZ 85.14)

In terms of economic accounting classification, this domain is divided into the following six subclasses:

WZ 2003 No.	Activity
85.14.1	Psychotherapists and psychologists' practices
85.14.2	Medical massage, hydrotherapy, physiotherapy, midwifery and related professions
85.14.3	Practices run by non-medical practitioners
85.14.4	Other independent activities in the field of healthcare
85.14.5	Ambulance and rescue services
85.14.6	Other healthcare facilities and institutions

Value added is calculated for the following three categories:

85.14.1, 2 and 4
85.14.3
85.14.5 and 6

a) Psychotherapists and psychologists; medical massage, hydrotherapy, physiotherapy, midwifery and related professions; other independent activities in the field of healthcare

Output

The basis for the assessment of the combined **output** of these subclasses is provided by the data on the statutory health-insurance scheme. The distribution of doctors' turnover found in the cost-structure statistics (EVAS 52551) serves to indicate the percentages of turnover that do not come from the statutory health-insurance funds, and these percentages are used in the assessment of output. A 10% allowance is also added on the assumption of undercoverage.

	2000 EUR m
Expenditure by statutory health-insurance funds	3 476
Percentage share of billing by doctors via the statutory health-insurance funds according to VAT statistics.....	76.70
Other expenditure (vehicles, etc.)	<u>1 056</u>
Subtotal	4 532
10% allowance	<u>453</u>
Output (balance-sheet figure)	4 985

Intermediate consumption

The relevant cost-structure statistics for the reporting year 2000 (EVAS 52551) were taken into account to assess the **intermediate consumption** by psychotherapists' and psychologists' practices (WZ 85.14.1).

The ratios for the other two classifications (WZ 85.14.2 and 85.14.4) were originally estimated by reference to the cost-structure statistics for doctors. In the 2005 revision, data from official cost-structure surveys were available for the 2002 reference year (EVAS 52551) for the first time. As this was also based on the abbreviated set of questions (similar to that of the service statistics), again a 10% deduction was made from the intermediate consumption figures. Intermediate-consumption ratios were calculated by interpolation going back as far as 1995. The original figures (estimated intermediate-consumption ratios based on the cost-structure statistics for doctors) were retained for the years 1994 to 1991.

Psychotherapists recorded an intermediate-consumption ratio of 26.0% for the year 2000, whilst masseurs and midwives recorded 23.6% and other independent activities n.e.c. 24.0%. The overall intermediate-consumption ratio for the combined items (WZ 85.14.1, 2 and 4) was 23.8%.

b) Paramedical activities

Output

This domain was revised entirely as part of the revision of the German national accounts for 2005. This was instigated by the basically unsatisfactory situation relating to the calculation of the output of practices run by paramedical practitioners, which was based on the 1987 census of workplaces.

The revised calculation of the output of paramedical practitioners is based on data from the income tax statistics (EVAS 73111) and VAT statistics (EVAS 73311). The new figure for output is derived by multiplying the average turnover by the average number of practices/enterprises. Overall, the outcome of the recalculation is slightly lower than the earlier calculations. The curve (not the height) of the growth rates from 1997 onwards basically agrees with the weighted rate of development of the statutory/private health-insurance funds for the medical services domain, for which reason the weighted statutory/private health-insurance fund growth rate is also extrapolated using the latest figures.

Intermediate consumption

Intermediate consumption is assessed using intermediate-consumption ratios derived from the four-yearly cost-structure statistics for paramedical practices (EVAS 52551); the most recently published set of statistics relates to the year 2000.

c) Ambulance and rescue services as well as other healthcare facilities and institutions

Output

The **output** for the domain of ambulance and rescue services as well as other healthcare facilities and institutions is derived from the **VAT statistics**. In addition, a 60% allowance is added to cover VAT-exempt turnover, which is quite substantial in this area, as in the national satellite account for health services¹.

Intermediate consumption

Originally the **intermediate-consumption ratio** was based on old information. The entry recorded for the years 1991 to 1995 was kept in the 2005 revision with only minor adjustments. For 2000 the value was taken from the cost-structure statistics for doctors (EVAS 52551) and the intermediate years (1996 to 1999) were interpolated.

	2000
	EUR m
Turnover as per 2000 VAT statistics	1 843
60% allowance	<u>1 106</u>
Output (balance-sheet figure)	2 949

Summary for other human health activities (WZ 85.14)

2000

WZ 2003 No.	Output	Intermediate consumption	Intermediate consumption ratio	Gross value added
	EUR m		%	EUR m
85.14.1 and 2 and 4	4 985	1 189	23.8	3 796
85.14.3	1 094	362	33.1	731
85.14.5 and 6	2 949	651	22.1	2 299
85.14, total	9 028	2 202	24.4	6 826

3.20.5 Veterinary activities (WZ 85.2)

Output

The output generated by veterinary activities is assessed from the figures for taxable turnover derived from the **VAT statistics**. To these is first added a slight allowance of 0.5% because the VAT statistics have a data collection threshold of EUR 17 500 annual turnover. A further increase is made to the figure to take account of other undercoverage such as activities in the hidden economy. The total allowances from the reference year 1997 onwards is around 12.5%, a higher figure than found in the human-medicine activities such as other independent activities not elsewhere classified in the domain of healthcare, or dentists. The reason for this is that it is considered that there might be a wide spectrum of activities among veterinary surgeons that are not adequately covered. The amount of the allowance agrees with comparable allowances in other countries of Europe.

The sharp rise in turnover with a growth rate of 20% over the previous year, apparent from the VAT statistics for the reference year 2000, is largely due to a change in the law which brought in a new charging code for veterinary surgeons which came into effect as of August 1999; this affected the VAT statistics for the year 2000 after a certain delay.

¹ See Satellitensystem für das Gesundheitswesen zu den Volkswirtschaftlichen Gesamtrechnungen, final report commissioned by the BMA, prepared by the Bonner Forschungsgruppe and the Federal Statistical Office, Bonn/Wiesbaden, October 1992.

Intermediate consumption

The intermediate-consumption ratio is obtained from the official **cost-structure statistics** for veterinary surgeons (EVAS 52551), which were last published for the reference year 2000. Owing to the relatively large difference in the intermediate-consumption ratios derived from the cost-structure statistics between 1995 and 2000 (around nine percentage points), a large period was interpolated.

	2000
	EUR m
Output (balance-sheet figure)	2 052
Intermediate-consumption ratio for 2000 in %	47.0
Intermediate consumption – absolute amount	964
Gross value added	1 088

3.20.6 Social work activities (WZ 85.3)

In the realm of social work there are statistical units in the sectors of general government (S.13), non-profit institutions serving households (S.15) and enterprises (S.11 and S.14). The results for **non-market producers** are assessed as total amounts for each of these sectors, and these amounts are merely collated in the present inventory.

The figures for output were revised during the **2005 revision** using the following classifications:

WZ 2003 No.	Activity
85.31.1	Residential care homes for young people
85.31.2	Educational homes for young people
85.31.3	Warden-assisted housing
85.31.4	Old people's homes
85.31.5	Nursing homes
85.31.6	Maternity homes and homes for single parents and children
85.31.7	Institutions caring for the physically/mentally handicapped and helping them become independent
85.31.8	Homes for the physically/mentally handicapped
85.31.9	Other homes (excluding convalescent and holiday accommodation)
85.32.1	Day centres, excluding crèches, nurseries and youth centres
85.32.2	Crèches and non-domestic childcare not elsewhere classified
85.32.6	Visiting social services
85.32.9	Other social work activities not elsewhere classified

In nearly all cases the **VAT statistics** (EVAS 73311) provide source values for assessing **output** (WZ 85.31.1, 2, 3, 4, 6, 7, 8 and 9; WZ 85.32.1 and 9). Because of the special features of social work, two modifications are required. First of all, the data are broken down by institutional sector to avoid double counting; secondly, an estimated supplement is added in those areas where most services are VAT-exempt to bring the valuations into line with the assessment of private consumption expenditure.

In the care sector (in-patient and day-case care) the **care statistics** (EVAS 22412 and 22411) were taken into account in the 2005 revision, being first available for the reporting year 1999.

- **Old people's homes (WZ 85.31.5)**

The figures for output are based from the 2005 revision onwards on data taken from the care statistics for 1999 and 2001 and were determined in connection with a Eurostat project measuring the volume¹. Starting in 1999, the years 1996 to 1998 are derived on the basis of care statistics for homes using the growth rate of benefits recipients according to the Federal Ministry for Health and Social Security (*Bundesministerium für Gesundheit und soziale Sicherung*). Data from this study are also available for the intermediate years (2000, 2002).

Long-term care insurance was introduced on 1 July 1996 for the in-patient sector. In that year, there was input from the project report although it only referred to the second half of the year. In line with the use-of-income account, this figure was doubled in the 2005 revision in order to cover the entire year (problems with transition).

In the 2005 revision, all homes are assigned to the **enterprise sector** because it is assumed that the costs are to a large extent covered and there is an obligation to keep accounts. The outcome was that it necessitated a correction to the estimates for non-profit institutions serving households, because the value added of non-market producers is found by addition. Therefore the individual components, i.e. mainly employee remuneration, had to be reduced correspondingly to prevent double counting. Employee remuneration is based on the number of employees. It was thus necessary to make a corresponding sector adjustment in the figure for the employed.

- **Visiting social services (WZ 85.32.6)**

Figures taken from the use-of-income account on material purchases are increased by 10% to allow for the probability of undercoverage.

As in the case of in-patient care, as part of the Eurostat project on measurement of volumes in the social work sector for the 2005 revision, output is determined for all three sectors going back to 1995 on the basis of the 1999 and 2001 care statistics. However, the sector output figures obtained from the care statistics only represent the lower limit of output. The basis for determining output is the total of material purchases as determined in the context of the use-of-income account. This source value is raised by 10% because of the probability of undercoverage. The scant information contained in the VAT statistics for this area has not been taken into account since the 2005 revision.

The assessment of output in the area of crèches and non-domestic childcare (**WZ 85.32.2**) is ultimately based on a separate account of which the figure for childminders itself is based on data from the Federal Ministry for Family Affairs, Senior Citizens, Women and Youth (*Bundesministerium für Familie, Senioren, Frauen und Jugend*) for the year 2000.

¹ Refer to: Weiterentwicklung der Methoden der Preis- und Volumenmessung in den Volkswirtschaftlichen Gesamtrechnungen – Beseitigung von C-Methoden – final report on the research project commissioned by Eurostat, 1/2004.

In assessing the **intermediate consumption** of market producers in the area of social services, estimates are used which are derived analogously to the assessment in the general government sector using the relationship between staffing and material costs. The original plan to include data on home expenditure in the care statistics was dropped during the legislative process, so that the expectation of being able to derive information on intermediate consumption from the care statistics was unfortunately not realised. During the work of checking the initial results of the production and the expenditure approach on one hand and the input-output account on the other, differences became apparent which rendered a check on WZ 85, including the areas within that classification which suffered from comparatively unreliable data. Only the social services area came into question (WZ 85.31 – homes), because the other sectors possess relatively good bases in terms of intermediate consumption.

In view of the absence of reliable sources, the intermediate consumption of the area WZ 85.31 has so far been based on assumptions from the 1980s and 1990s. A sounder approach now appears to be to equate the ratio to that of hospitals, because hospitals and homes should have much in common in respect of expenses. This results in a noticeable reduction of intermediate consumption.

Summary for the social work activities sector (WZ 85.3)

WZ 2003 No.	VAT statistics 2000, care statistics, separate account	Proportion	Value entered for 2000	Output 2000	Intermediate consumption		Gross value added
	EUR m	%	EUR m			%	EUR m
85.31.1.....	174	70	122	134			
85.31.2.....	107	70	75	82			
85.31.3.....	422	70	295	325			
85.31.4.....	537	70	376	414			
85.31.5.....	14 133	100	14 133	14 133			
85.31.6.....	18	70	13	14			
85.31.7.....	2 048	70	1 434	1577			
85.31.8.....	280	70	196	216			
85.31.9.....	318	70	223	245			
85.31.....	18 037	93.5	16 867	17 139	5 928	34.6	11 211
85.32.1.....	32	100	32	35			
85.32.2.....	1 080	100	1 080	1080			
85.32.6.....	2 192	100	2 192	2412			
85.32.9.....	412	100	412	453			
85.32.....	3 716	100	3 716	3 980	897	22.5	3 083
85.3.....	21 753	94.6	20 583	21 119	6 826	32.3	14 294

Derivation of the national accounting results in the production approach

Summary for health and social work (WZ 2003: N)

Figures for 2000 in EUR m

	Output	Intermediate consumption	Gross value added
(1) Source statistics.....	163 533	55 211	108 322
+ Validation of statistical data.....	1 106	0	1 106
+ Threshold.....	2 412	0	2 412
= Subtotal.....	167 051	55 211	111 840
(2) + Allowances and adjustments.....	16 215	4 035	12 180
(3) = Balance sheet result.....	183 266	59 246	124 020
(4) + Conceptual reclassification	- 426	- 256	- 170
(5) = National-accounting result (rounded)	182 840	58 990	123 850
(6) + Macroeconomic balancing adjustment	-	- 1 650	1 650
(7) = Adjusted figure (FISIM not allocated)	182 840	57 340	125 500
(8) + FISIM.....	0	1 430	- 1 430
(9) = Result for publication (FISIM allocated).....	182 840	58 770	124 070

The figures for the activity classifications of sector N in 2000 may be summarised as follows (balanced published figure for 2000, FISIM allocated):

Sector	Output	Intermediate consumption	Gross value added (GVA)	Sectoral share of GVA
	EUR m			%
S.11/14	153 480	48 630	104 850	84.5
S.13	5 230	2 130	3 100	2.5
S.15	24 130	8 010	16 120	13.0
Total	182 840	58 770	124 070	100.0

Because of the form in which the relevant data are available, the calculations for non-market producers lump all of these sectors together (see sections 3.18 and 3.21.2).

3.21 Other community, social and personal service activities (WZ 2003: O)

Gross value added, 2000 (FISIM allocated): EUR 91.24 bn (4.9% of total GVA)

In section O, **gross value added** is assessed for 22 categories of economic activity, and the results are published for the following four divisions:

WZ 2003 No.	Activity	2000 EUR m
90	Sewage and refuse disposal, sanitation and similar activities	12 660
91	Activities of membership organisations not elsewhere classified	15 800
92	Recreational, cultural and sporting activities.....	37 430
93	Other service activities	25 350
O	Other community, social and personal service activities.....	91 240

3.21.1 Sewage and refuse disposal, sanitation and similar activities (WZ 90)

Gross value added, 2000 (FISIM allocated): EUR 12.66 bn (0.7% of total GVA)

This division contains units from the 'enterprise' (S.11 and S.14) and general government (S.13) sectors.

Because of the form in which the relevant data are available, the calculations for the general government sector lump these sectors together (see section 3.18); afterwards the figures are attributed.

The table below summarises the sources of source statistics as well as indicating the source figures for output and for the intermediate-consumption ratios of the year 2000 (balance-sheet results) for the market producers.

Output

The assessment is based on the VAT statistics (EVAS 73311). However, some adjustments, and in particular allowances, need to be made to arrive at the national accounts figure. This takes into account on the one hand the shortcomings of the allocations in the VAT statistics which arose during the process of transition to the classification of economic activities (WZ 93). On the other hand, the figures taken from statistics drawn from the published accounts of public funds, establishments and enterprises from 1997 onwards are higher than those of the VAT statistics. Assuming, quite plausibly, that the general government sector only generates non-taxable or exclusively VAT-exempt turnover, the figures taken from the annual statistics may be regarded as the lower limit for the enterprise sector. The figures taken from the VAT statistics are therefore increased by the difference between the figures for public funds, establishments and enterprises and the VAT statistics (allowance of 10%). (De facto, the published accounts of public funds, establishments and enterprises are taken as basis for the assessment of the enterprise sector.) In addition, from 1992 onwards a further allowance of 5% is made for activities which have not been included, because even in these cases there may still be activities in the hidden economy.

Turnover as per 2000 VAT statistics: (balance-sheet figures).....	EUR 14 500 m
+ Allowance for undercoverage:.....	EUR 735 m
+ Allowance for non-taxable turnover.....	EUR 1 469 m
+ Portions of the classification WZ 45.11.1 Demolition, explosion and clearance	EUR 189 m
= Total output	EUR 16 893 m

Intermediate consumption

The assessments were based on a mixture of data from the annual survey of public funds, establishments and enterprises and information from profit and loss accounts originating from the Federal Gazette (*Bundesanzeiger*). As the former government institutions, which are now incorporated into the statistics on public funds, establishments and enterprises, make use of 'agents' in the performance of their obligations, and such agents may well comprise private firms and are therefore included in the VAT statistics, they represent intermediate consumption in the statistics on public funds, establishments and enterprises. All intermediate consumption from 1992 onwards is therefore reduced across the board by 2% in order to avoid duplication of the figures recorded.

WZ 2003 No.	Activity	Output	Intermediate-consumption ratio (with details of source)
90	Sewage and refuse disposal, sanitation and similar activities	Turnover: VAT statistics, 2000: EUR 14 500 m National accounting valuation, 2000: EUR 16 900 m	Statistics drawn from published accounts of public institutions (public funds, establishments and enterprises) and single analyses of profit and loss accounts in the Federal Gazette, 2000: 51.9 %

The **WZ 90** classifications result in the following figures for the year 2000 (in EUR m):

Sector	Output	Intermediate consumption	Gross value added
S.11/S.14	16 900	8 730	8 170
S.13	9 900	5 410	4 490
Total	26 800	14 140	12 660

3.21.2 Activities of membership organisations n.e.c. (WZ 91)

Gross value added, 2000 (FISIM allocated): EUR 15.80 bn (0.9% of total GVA)

Most of the organisations in this division are **non-profit institutions serving households** as non-market producer units and are therefore assignable to institutional sector S.15 (see ESA 1995, paragraphs 2.87 et seq.).

Since the bases and methods of assessment for private organisations are very similar and can be examined without reference to specific categories of industrial and commercial activity, they are initially treated as a single entity in the following paragraphs.

The entire sector is then apportioned into areas of activity as follows:

WZ 2003 No.	Activity
73	Research and development
80	Education
85	Health and social work
91	Activities of membership organisations not elsewhere classified
92	Recreational, cultural and sporting activities

Where no other activities are statistically identifiable, non-profit institutions serving households are classified by the main activity of their respective statistical units.

It should also be noted that housing services provided by non-profit institutions are systematically regarded as market production and recorded in 'real estate, renting and business activities' (WZ 70).

Calculation process

As is normal practice for non-market producer units, gross value added and output are calculated for non-profit institutions by adding together their expenditure, since some of their services are provided free of charge.

The **gross value added** of non-profit institutions in any case results from adding compensation of employees, consumption of fixed capital and the balance of other taxes on production minus other subsidies. Subsidies have to be deducted from this expenditure if their payment depends on general regulations applicable to both market and non-market producers (ESA 1995, paragraph 4.36). In the present case, this applies to payroll grants awarded in connection with job-creation measures; these are recorded as part of non-profit institutions in connection with the concept reallocations.

If intermediate consumption is added to the aforementioned items of expenditure, the result is the amount of **output**. This is divided according to purpose into own-account fixed-capital formation, sales to other institutional sectors (national, regional and local authorities, social insurers, companies and households) with the rest allocated to own-account use (consumption) by the non-profit institutions themselves.

**Overview 3—11: Generation and use of output by
non-profit institutions serving households (FISIM not allocated)**

Figures for 2000 in EUR m

Intermediate consumption	19 099		Own-account fixed-capital formation	870	Output
			Sales to the social-security fund	3 460	
Consumption of fixed capital	2 350	Gross value added	Sales to regional and local authorities	9 610	
Other taxes on production	0		Sales to enterprises	1 904	
minus other subsidies	1 550		Sales to households	11 793	
			Expenditure on consumption by non-profit institutions	33 192	
Compensation of employees	40 930	41 730			60 829

Each of the following items is assessed by activity category as shown in the list of divisions above.

Compensation of employees paid by non-profit institutions serving households is assessed as part of the income valuation and consists of the following elements:

	2000
	EUR m
Gross wages and salaries.....	33 320
+ Employers' social contributions	<u>7 610</u>
= Compensation of employees.....	40 930

The gross wages and salaries paid by the non-profit institutions serving households comprise all wages and salaries paid to their employees, whatever their status and working hours. The wages and salaries of these employees are assessed separately for each of the five divisions in which non-profit institutions serving households operate by multiplying the number of employees in each status category by the pay level that is appropriate to the employment status and industry in question (gross wage or salary per employee).

- The wages and salaries of **employees other than those with the status of established civil servants and marginal part-time workers** (i.e. workers earning less than a fixed minimum amount per month) account for more than 90% of the non-profit institutions' total wage bill.

The number of employees in this institutional sector can essentially be obtained from the employment statistics¹ which show the total number of employees for whom social contributions are assessable. The amount of these emoluments is indicated in the employment statistics; if such statistics are not yet available, the relevant amount is extrapolated with the aid of the rate of growth in public-sector pay.

- Since the last blanket survey, namely the 1987 census of workplaces², the number of employees with the status of **established civil servants (*Beamte*)** and their remuneration have been extrapolated with the aid of the microcensus results³ and the rate of growth in public-sector pay.
- Since 1999, the number of **marginal part-time workers** has been included in the employment statistics as well. The size of this workforce in earlier years is extrapolated from the annual microcensus results and from the findings of studies on non-assessable employment; these were conducted by the Social Research and Policy Institute (*Institut für Sozialforschung und Gesellschaftspolitik*) for the years 1987, 1992 and 1997. The assessed earnings of marginal part-time workers are based on the 1997 study, and the forward and backward extrapolations follow the changes in the statutory income ceiling for marginal part-time workers.

Employers' social contributions are divided into actual and imputed contributions. The actual social contributions chiefly comprise contributions to the statutory health, pension and unemployment schemes, to the civil-service superannuation scheme and to an accident-insurance fund. The contributions to all of these insurance schemes, apart from accident insurance, are calculated by multiplying each contribution rate by the gross wages and salaries of employees other than those with the status of established civil servants and marginal part-time workers. The rate that is used in the calculation is slightly below the applicable statutory rate of earnings-related social contributions, because gross wages and salaries contain some non-assessable elements. Contributions to accident-insurance funds are calculated on the basis of data from the associations providing employers' liability insurance (*Berufsgenossenschaften*). For marginal part-time workers the statutory rates of the contributions to the statutory pensions and health insurance schemes are added to this group's total gross wages and salaries. To estimate the imputed social contributions for civil servants, the ratio of imputed social contributions to the gross wages and salaries of civil servants in general government is applied to the gross wages and salaries of the civil servants in non-profit institutions.

Consumption of fixed capital is assessed in the framework of the fixed-assets account in accordance with the perpetual-inventory method. Section 4.12 contains a full description of this. Consumption of fixed capital in the overall sector S.15 amounted to EUR 2 350 m in 2000. The way in which this consumption of fixed capital is distributed among the relevant economic activities is determined by examining the vertical structure of investment activity.

Data on **subsidies** are obtained from a special subsidisation assessment in which all the types of subsidisation are assigned to particular industries. Here, the data on subsidies are only available

¹ See Fachserie 1 (Bevölkerung und Erwerbstätigkeit), Reihen 4.2.1 und 4.2.2.

² See Fachserie 2 (Unternehmen und Arbeitsstätten) - census of workplaces of 25 May 1987, volumes 1 to 16.

³ See Fachserie 1 (Bevölkerung und Erwerbstätigkeit), Reihe 3.

for the sector non-profit institutions. The allocation to industries covered by these institutions follows the structure of the employees' compensation.

Output, intermediate consumption and gross value added

As we have shown, the output of non-profit institutions serving households is obtained by adding intermediate consumption to gross value added.

Intermediate consumption is estimated on the basis of relevant data (ratios of material costs to labour costs) derived from the financial statistics (accounting statistics relating to public budgets)¹.

It is also based on information received from various churches, trades unions and political parties.

The following values therefore result for non-profit institutions serving households for the year 2000:

**Summary of the sector non-profit institutions serving households
(FISIM not allocated)**

WZ 2003 No.	Net value- added	Consumption of fixed capital and taxes on production ¹⁾	Gross value added	Intermediate consumption ratio ²⁾	Intermediate consumption	Output
	1	2	3 (1+2)	4	5 (1*4/100)	6 (3+5)
	EUR m			%	EUR m	
73.....	1 920	137	2 057	48.2	925	2 983
80.....	10 460	44	10 504	19.5	2 040	12 544
85.....	16 020	103	16 123	50.0	8 010	24 133
91.2 and 91.3	9 910	165	10 075	42.4	4 199	14 273
92.....	2 620	351	2 971	³⁾	3 925	6 896
Total.....	40 930	800	41 730	46.7	19 099	60 829

¹⁾ Less subsidies

²⁾ Material costs divided by labour costs

³⁾ The special assessment for sport (WZ 92) renders such a ratio meaningless in this case

These results are then integrated into the figures for the relevant activities.

Addition for WZ 91.1

WZ 91 – Activities of membership organisations not elsewhere classified – also contains non-profit institutions which operate in the service of non-financial corporations and which are treated as a special case. These are the business, employers' and professional organisations whose activities fall within the classification 91.1. These non-profit institutions are assigned to institutional sector S.11 (**non-financial corporations**). In this case, the member companies' subscriptions are to be treated as purchases of marketable services (see ESA 1995, paragraph 2.23(d)). Since the source data required for this assessment are unavailable, however, it is necessary to resort to the **addition method**, as in the case of non-market production. The starting point is compensation of employees, which is calculated as part of the income valuation on the basis of the number of employees and average earnings, consumption of fixed capital and other

¹ See Fachserie 14 (Finanzen und Steuern), Reihe 3.1.

net taxes on production. This results in the **gross value added**. The taxes are calculated in proportion to the compensation of employees. **Intermediate consumption** is estimated, in the absence of specific data, with the aid of ratios from the cost-structure statistics for auditors¹. Gross value added and intermediate consumption are added to give a figure for **output**.

	2000 EUR m
Compensation of employees for WZ 91.1	5 647
+ Consumption of fixed capital	120
+ Other net taxes on production (0.5% of compensation of employees)	28
= Gross value added	5 795
+ Intermediate consumption (ratio: 20%)	1 449
= Output (balance-sheet figure)	7 244

Summary: WZ 91 by sector

The final balanced national accounting figures for the activities of membership organisations not elsewhere classified (WZ 91) may be summarised as follows for the year 2000 (FISIM allocated):

Sector	Output	Intermediate consumption	Gross value added (GVA)	Sectoral share of GVA
	EUR m			%
S.11/S.14	7 270	1 540	5 730	36.3
S.15	14 910	4 840	10 070	63.7
Total	22 180	6 380	15 800	100.0

3.21.3 Recreational, cultural and sporting activities (WZ 92)

Gross value added, 2000 (FISIM allocated): EUR 37.43 bn (2.0% of total GVA)

In this group there are statistical units in the sectors of general government (S.13), non-profit institutions serving households (S.15) and enterprises (S.11 and S.14).

In the calculations for non-market producers, all of these sectors are lumped together (see sections 3.18 and 3.21.2) and simply added to the final result.

In the case of market producers, output, intermediate consumption and gross value added are calculated for 14 different accounting categories. The table below summarises the sources of source statistics as well as indicating the source figures for output and the intermediate-consumption ratios of the year 2000 (balance-sheet results):

¹ See Fachserie 2 (Unternehmen und Arbeitsstätten), Reihe 1.6.2.

WZ 2003 No.	Activity	Output	Intermediate-consumption ratio (with details of source)
92.11	Motion-picture and video production	Turnover: VAT statistics, 2000:..... EUR 5 355 m National accounting valuation, 2000: EUR 5 355 m	'Filmstatistisches Taschenbuch' in conjunction with the 2000 pilot study on the audiovisual sector: 34.2 %
92.12	Motion-picture and video distribution	Turnover: VAT statistics, 2000:..... EUR 3 290 m National accounting valuation, 2000: EUR 3 293 m	'Filmstatistisches Taschenbuch' in conjunction with the 2000 pilot study on the audiovisual sector 49.4 %
92.13	Motion picture projection	Turnover: VAT statistics, 2000:..... EUR 1 355 m National accounting valuation, 2000: EUR 1 317 m	'Filmstatistisches Taschenbuch' in conjunction with the 2000 pilot study on the audiovisual sector 60.2 %
92.2	Radio and television activities	Special account (see below) 2000: EUR 14 532 m	Special account (see below) 2000: 73.0 %
92.31 and 92.32	Artistic and literary creation and interpretation; operation of arts facilities	Turnover: VAT statistics, 2000:..... EUR 4 249 m National accounts figure, 2000: (share of sector S.11/S.14)..... EUR 4 017 m	Estimate based on cost-structure stats for the independent professions, 2000 30.0 %
92.33	Fair and amusement-park activities	Turnover: VAT statistics, 2000: EUR 811 m National accounting valuation, 2000: EUR 815 m	Estimate based on cost-structure stats for the independent professions, 2000 30.0 %
92.34	Other entertainment activities not elsewhere classified	Turnover: VAT statistics, 2000:..... EUR 619 m National accounting valuation, 2000: EUR 622 m	Estimate based on cost-structure stats for the independent professions, 2000 30.0 %
92.4	News-agency activities, independent journalists	Turnover: VAT statistics, 2000:..... EUR 1 667 m National accounting valuation, 2000: EUR 1 670 m	Estimate based on cost-structure stats for auditors, 2000 35.0 %
92.5	Libraries, archives, museums and other cultural activities	Turnover: VAT statistics, 2000:..... EUR 432 m National accounting valuation, 2000: EUR 296 m	Estimate based on cost-structure stats for the independent professions, 2000 30.0 %
92.6	Sporting activities	Turnover: VAT statistics, 2000 + special account: EUR 5 074 m National accounting valuation, 2000: EUR 5 268 m	Extrapolated using growth rates from 1992 onwards for non-profit sports institutions, 2000: 33.5 %
92.71.1	Amusement-arcade and gaming-machine activities	Turnover: VAT statistics, 2000:..... EUR 2 308 m National accounting valuation, 2000: EUR 2 308 m	Special account (see below) 2000: 41.2 %

92.71.2	Casino and gaming-club activities	Special account (see below) 2000: EUR 1 298 m	Special account (see below) 2000: 16.0 %
92.71.3	Turf accountancy, football pools and lotteries	Special account (see below) 2000: EUR 6 308 m	Special account (see below) 2000: 21.5 %
92.72	Other recreational activities not elsewhere classified	Turnover: VAT statistics, 2000:..... EUR 1 162 m National accounting valuation, 2000: EUR 422 m	Estimate based on cost-structure stats for the independent professions, 2000 30.0 %

Special account: radio and television activities (WZ 92.2)

The amount of **output** is determined with the aid of the public broadcasters' licence revenue, supplemented by data from the VAT statistics on private broadcasters' taxable turnover from advertising and other activities. Licence revenue is derived from data made available by the Centre for the Collection of Radio and Television Licence Fees (*Gebühreneinzugszentrale (GEZ)*) in Cologne and comprises the fees paid for both radio and television licences.

Output in 2000 in EUR m according to this calculation:

National accounts figure for WZ 92.2 derived from VAT statistics	5 918
Licence fees paid to GEZ	8 614
Output.....	14 532

Data on **intermediate consumption** are derived from the yearbooks of the Association of Public Broadcasting Organisations of the Federal Republic of Germany (ARD) and of German Television, Channel Two (ZDF).

Gross value added, 2000 in EUR m:

Output.....	14 532
– Intermediate consumption (ratio: 72.95%) ..	10 601
= Gross value added	3 931

In the motion picture projection industry (**WZ 92.13**) the earliest official cost structure is for the reporting year 2002; in future it is to be produced at four-yearly intervals, unless the EU Structural Business Statistics Regulation prescribes annual surveys. As the material costs contain some items not affecting intermediate consumption, such as travel costs, interest on borrower capital and equity, some general expenses, sundry costs and all other costs, a blanket deduction of 10% of the material costs is made. Because of the relatively large differences between the new data source and the previous estimates, these were interpolated retrospectively from 2001 as far back as 1992. Because of the change of territory, the year 1991 and the preceding years were not altered.

For the remainder of **WZ 92.1**, intermediate-consumption ratios are calculated using the *Filmstatistisches Jahrbuch*. In **WZ 92.4** (news agency activities, independent journalists) a constant intermediate-consumption ratio of 35% has been assumed. For **WZ 92.6**, the growth rates of the intermediate-consumption ratios for non-profit institutions serving households are taken from the intermediate-consumption ratios of enterprises. Various calculations are used for **WZ 92.7**. For **WZ 92.71.1** (amusement-arcade and gaming-machine activities), the first information on intermediate consumption is available for the year 2001 based on a study carried

out by the company FfH Institut für Markt- und Wirtschaftsforschung GmbH, which is to be updated annually. An intermediate-consumption ratio can be derived from this report. Because of the differences between the previous data and the new source, the figures for the years back to 1995 were interpolated for the 2005 revision. In **WZ 92.71.2** (casino and gaming-club activities) the intermediate-consumption ratio according to the 2005 revision is available based on the relevant sets of accounts. **WZ 92.71.3** (turf accountancy, football pools and lotteries) comprises three subdivisions. The intermediate-consumption ratio for the national lottery is taken from relevant sets of accounts whereas the other divisions (tote payments, payouts made by bookmakers) were reviewed and re-assessed during the 2005 revision. In all other divisions, the intermediate-consumption ratios were checked and ultimately assessed similarly to previous years (30%).

Special assessment for sporting activities (WZ 92.6)

The VAT statistics are the source from which the output of market producers is obtained. These, however, do not provide blanket coverage, because a certain proportion (about 34%) of total output has to be assigned to the non-profit institutions serving households. A supplement is also estimated in the realm of sporting activities to allow for factors such as coaches who work on a more or less freelance basis.

Special assessment for casinos and gaming clubs (WZ 92.71.2)

The **output** is derived from the tax revenue statistics of the Federation and Federal States through the tax network, broken down into tax types and distribution (EVAS 71211). This calculation is indirectly based on the revenue from the casino gaming levy which is payable on 80% of gross proceeds from gaming activities. Secondary turnover is then assessed with the aid of data on taxable turnover from the VAT statistics. In addition, a 35% supplement is added to gross proceeds to allow for the content of the staff *tronc* along with an estimate of the value of the pages' *tronc*, based on a sample survey. A further amount, representing 5% of taxable turnover is added to cover tips.

Balance sheets from casinos and gaming clubs are available for assessing **intermediate consumption** according to the 2005 revision.

	2000 EUR m
Casino gaming levy	EUR 744 m
Gross proceeds	930.0
+ 35% of gross revenue as staff <i>tronc</i>	326.0
+ Pages' <i>tronc</i>	0.3
+ Tips (5% of taxable turnover)	2.0
+ Taxable turnover from secondary activities	40.0
= Output	1 298.3
– Intermediate consumption(ratio: 16.0%)	208.0
= Gross value added	1 090.3

Special assessment for turf accountancy, football pools and lotteries (WZ 92.71.3)

The amount of **output** is derived indirectly from the collected revenue from betting and lottery tax as shown in the national fiscal statistics. The first step in the calculation involves multiplying this revenue by the applicable rate of taxation in order to obtain total turnover, and the second step involves subtracting winnings paid out, which are divided into tote payments, payments made by bookmakers, etc., payouts from other racing bets and payments made by pools and lottery companies. This amount is then increased by the total value of taxable turnover.

The **intermediate-consumption ratio** is determined from the business reports of various lottery organisers and trust companies.

	2000
	EUR m
Turnover less winnings paid out.....	5 368
+ Taxable turnover.....	<u>940</u>
= Output.....	6 308
– Intermediate consumption.....	<u>1 355</u>
= Gross value added.....	4 953

The classifications of **WZ 92** result in the following figures for the year 2000 (in EUR m):

Sector	Output	Intermediate consumption	Gross value added
S.11/S.14.....	47 980	20 320	27 660
S.13.....	11 070	4 270	6 800
S.15.....	6 900	3 930	2 970
Total.....	65 950	28 520	37 430

3.21.4 Other service activities (WZ 93)

Gross value added, 2000 (FISIM allocated): EUR 25.35 bn (1.4% of total GVA)

Output and **intermediate consumption** are calculated for five different activity categories. The table below summarises the sources of source statistics as well as indicating the source figures for output and for the intermediate-consumption ratios of the year 2000 (balance-sheet results):

WZ 2003 No.	Activity	Output	Intermediate-consumption ratio (with details of source)
93.01	Washing and dry-cleaning of textile and fur products	Turnover: VAT statistics, 2000: EUR 2 632 m National accounting valuation: 2000: EUR 2 650 m	Cost-structure statistics for crafts and trades 1998; 2000: 44.9 %
93.02	Hairdressing and other beauty treatment	Turnover: VAT statistics, 2000: EUR 6 050 m National accounting valuation: 2000: EUR 6 655 m	Cost-structure statistics for crafts and trades 1998; 2000: 34.8 %
93.03	Funeral and related activities	Turnover: VAT statistics, 2000: EUR 1 175 m National accounting valuation: 2000: EUR 1 175 m	Estimate based on cost-structure stats for auditors, etc., 2000: 20.0 %
93.04	Physical well-being activities	Turnover: VAT statistics, 2000: EUR 1 449 m National accounting valuation: 2000: EUR 1 492 m	Cost-structure statistics for crafts and trades 1998, modified 2000: 36.6 %
93.05	Other service activities n.e.c.	Turnover: VAT statistics, 2000: EUR 18 487 m + <i>special assessment</i> National accounting valuation: 2000: EUR 22 257 m	Estimate based on cost-structure stats for auditors, etc., 2000: 22.9 %

Special account for parliamentarians' emoluments

For the emoluments paid to members of the national and regional parliaments and of local legislative assemblies, as well as to persons in honorary positions, the figures are obtained from sources of fiscal statistics and recorded as output. By analogy with activity subclass WZ 93.05.3 (other service activities not elsewhere classified), the intermediate-consumption ratio was set at 25%.

	2000
	EUR m
Output	498
– Intermediate consumption (intermediate-consumption ratio: 25%)	<u>125</u>
= Gross value added	373

The following national accounting source figures result for **WZ 93** for the year 2000:

Output	Intermediate consumption	Intermediate consumption ratio	Gross value added
EUR m		%	EUR m
33 760	8 410	24.9	25 350

On the basis of the 'balance-sheet' assessments for the various accounting categories, including actual statistical source values as well as allowances for undercoverage, prostitution, etc., the published result for the reference year is determined with the aid of the necessary reallocations, relating in classes 91 and 92 to the sectors non-profit institutions serving households as well as enterprises, and balancing adjustment for national accounting.

Derivation of the national accounting results in the production approach
 Summary of other community, social and personal service activities (WZ 2003: O)
 Figures for 2000 in EUR m

	Output	Inter- mediate consump- tion	Gross value added
(1) Source statistics	132 422	51 422	81 000
+ Validation of statistical data	- 3 076	0	- 3 076
+ Thresholds.....	2 770	0	2 770
= Subtotal	132 116	51 422	80 694
(2) + Allowances and adjustments	16 121	7 422	8 699
(3) = Balance sheet result	148 237	58 844	89 393
(4) + Conceptual reclassification	- 177	- 1 764	1 587
(5) = National-accounting result (rounded)	148 060	57 080	90 980
(6) + Macroeconomic balancing adjustment.....	-	- 1 050	1 050
(7) = Adjusted figure (FISIM not allocated).....	148 060	56 030	92 030
(8) + FISIM	630	1 420	- 790
(9) = Result for publication (FISIM allocated)	148 690	57 450	91 240

The combined sectors for the WZ section O in 2000 are as follows:

Sector	Output	Intermediate consumption	Gross value added (GVA)	Sectoral share of GVA
	EUR m			%
S.11/14	105 910	39 000	66 910	73.3
S.13	20 970	9 680	11 290	12.4
S.15	21 810	8 770	13 040	14.3
Total	148 690	57 450	91 240	100.0

3.22 Private households with employed persons (WZ 2003: P)

Gross value added, 2000 (FISIM allocated): EUR 6.22 bn (0.3% of total GVA)

The **output** of domestic services is, by agreement, measured on the basis of the remuneration of paid household employees, including benefits in kind (ESA 1995, paragraph 3.68). **Intermediate consumption** is zero, since the relevant material expenditure is regarded as part of the final consumption of the employers' households.

To assess the compensation of employees within the industry of domestic services, the number of employees is multiplied by the corresponding average earnings (gross wage or salary per employee). This shows the gross wages and salaries to which employers' social insurance contributions are added to arrive at the compensation of employees.

In calculating the **number of employees** and jobs, the following groups of employees are considered:

Employees liable for payment of social insurance contributions and exclusively marginal part-time workers according to social insurance records

- + Allowance for undercoverage of employees liable for payment of social insurance contributions
- + Allowance for exclusively marginal part-time workers
- + Allowance for marginal auxiliary workers
- = Total employees

The number of officially registered employees liable for payment of social insurance contributions and exclusively marginal part-time workers is obtained from the employment statistics (EVAS 13111). The allowance for undercoverage of both groups of employees is calculated with the aid of data from the 2001/2002 time use survey (EVAS 63911) and supplemented by referring to current figures from the ILO telephone survey concerning marginal part-time employment (EVAS 13231). The time use survey assessed demand among households for paid domestic services, distinguishing between 13 types of assistance. The application of these allowances to the employment statistics is oriented to the development of the employment rate for married women as observed in the microcensus (EVAS 12211). The estimate for marginal part-time workers in secondary activities is based on a study conducted by Infratest Sozialforschung (VSE 001) in 2003. The allowances for employees with a second or third line of employment become apparent in the compensation of employees in the household sector. To avoid counting them twice, however, they are assigned to the area of activity in which their primary employment resides.

The total allowance made on the source value is 210%.

Gross wages and salaries are calculated by multiplying the number of employees by the appropriate amount of earnings:

- The earnings of employees (excluding marginal part-time workers) are oriented to the collective agreement for domestic employees.
- The earnings of marginal part-time workers are based on the development of the statutory ceiling which marks the dividing line between marginal and normal part-time work.

The output level of the households sector is assessed by reference to the hours of work spent and the aforementioned collectively agreed pay levels. Therefore no explicit allowance should be made for **benefits in kind**.

Employers' social contributions are only paid in respect of employees who are registered with the social-security authorities. The amount of these contributions is assessed by applying the average rate of social contribution to the gross wages and salaries of registered employees as set out in the employment statistics.

This gives the **compensation of employees** for the year 2000 as follows:

	EUR m
Gross wages and salaries	6 060
+ Employers' social contributions.....	160
= compensation of employees.....	6 220

The official statistics of the Federal Employment Agency (*Bundesagentur für Arbeit*) on domestic employment certainly does not provide a complete picture of the situation in this sector. Often neither the employee nor the employer want the employee to be registered for social insurance

purposes. Data obtained from surveys may compensate for the missing figures. The time use survey mentioned above portrays the range of employment in households, subdividing it into 13 categories of work. The level of domestic activities found in the time use survey and the proportion of households employing cleaners or housekeepers is confirmed by other national and international surveys. The low ratio of 2.6% between the social insurance contributions of employers and employee remuneration, the overall economic average being 19.7%, highlights the high implicit allowance on the source values and should therefore also be taken as a sign of the extent of the problems in determining the level of output in this area.

The time use survey is only conducted at long, irregular intervals. In addition, compared with the last survey which was conducted in 1991, the range of questions relating to domestic help has been significantly broadened. It was therefore not possible to perform a simple extrapolation backwards or forwards with the figures determined for 2001 or 1991. The chosen approach to use the development of the employment rates of married women as an indicator delivers plausible results. In future, it will need to be checked whether new surveys with a similar range of questions confirm the results of the extrapolated figures or whether other indicators would bring better results.

3.23 Extra-territorial organisations and bodies (WZ 2003: Q).

In the assessment of a nation's gross domestic product, extraterritorial organisations are irrelevant because, by definition, they are not part of the economic territory of that nation (ESA 1995, paragraph 2.06). In contrast, the compensation of employees earned by residents from employment at extraterritorial organisations are recorded in gross national income (see section 8.1).

3.24 Taxes on products excluding VAT

Among the taxes on products (apart from value added tax) are all taxes and similar levies that are payable per unit of some goods or services produced or transacted. They include taxes and duties on imports and other taxes on products. According to the definition in paragraph 4.16 of ESA 1995, the following are unquestionably taxes on products:

Type of tax	2000 EUR m
Taxes on products (excl. VAT) payable to the general government.....	72 850
Excise duties on imports.....	15 470
Other taxes on products.....	57 380
Excise duties, except excise duties on imports	42 500
Insurance tax.....	7 200
Fire-protection tax.....	290
Real estate transfer tax	5 250
Betting and lottery tax.....	1 810
Other local taxes on products	330
+ Taxes on products (excl. VAT) payable to the European Union.....	3 820
Taxes and duties on imports, except excise duties on imports.....	3 410
Customs duties.....	3 400
Agricultural levies and monetary compensatory amounts	10
Other taxes on products.....	410
Production levy on sugar, etc.	350
Co-responsibility levies on milk and cereals.....	60
= Total taxes on products (excl. VAT).....	76 670

The sources of data on taxes on products (apart from VAT) are the tax reports of the Federal Ministry of Finance and – for the EU quota – the balance-of-payment statistics compiled by the Deutsche Bundesbank. In accordance with European Parliament and Council Regulation (EC) No. 2516/2000 of 7 November 2000 modifying the common principles of ESA 1995 as concerns taxes and social contributions, the recording of cash receipts is time-adjusted where necessary, depending on the type of tax. The deferred date of recording is determined by the payment date prescribed in the Finance Act. The following table shows by how many months the cash receipts of each type of tax are time-adjusted.

Type of tax	Month(s)
Insurance tax	1
Tobacco tax.....	1
Beer tax	1
Electricity tax.....	1
Excise duty on mineral oil.....	2
Excise duty on coffee.....	2
Sparkling wine tax.....	2
Excise duty on spirits	2
Customs duties	1

At the present time, excise duties are payable on electricity, mineral oil, tobacco, coffee, sparkling wine, beer and spirits. Some products that used to be excised, such as tea, sugar and salt, are no longer dutiable items.

For the other taxes on products levied jointly by the Central and State governments and for those which are levied exclusively by one or the other (purely central or state government taxes), the necessary data are obtained from the tax reports compiled by the Federal Ministry of Finance. For purely local taxes the public finance statistics (EVAS 71147) provide the requisite information, whereas for taxes that are payable to the European Union, the balance-of-payments statistics compiled by the Deutsche Bundesbank (EVAS 83111) are used.

The taxes on products play a twofold role within the production approach in order to compile GDP:

firstly, they are part of the adjustment process when the source 'balance-sheet' statistics are converted into national accounting categories (see section 3.3);

secondly, they serve as a general allowance (which includes VAT) which is added in the transition from gross value added for all activities at basic prices to gross domestic product.

The first of these conversions affects only the category of 'other taxes on production' and is necessary because the source statistics are generally inclusive of these taxes, and their values consequently have to be adjusted for insertion into the national accounts at basic prices. For the valuation of taxes on production, the revenue for each type of tax is distributed among the relevant economic activities and reconciled with company statistics. This conceptual adjustment has an impact on gross value added but does not affect GDP.

The valuation of taxes and duties on imports depends on a special assessment in the case of excise duties on imports, because they do not accrue together with the cash receipts. These assessments are based on the results of special statistics on excise duties and the foreign trade statistics.

3.25 VAT

The revenue from VAT (EUR 140.02 bn in 2000) flows in part to the general government (EUR 131.19 bn in 2000), while the remainder is paid to the European Union (2000 payment: EUR 8.83 bn). In the framework of the production approach, the whole amount of VAT is added to the GDP calculation, since gross value added for industries is compiled without VAT.

The sources of data on VAT are the tax reports compiled by the Federal Ministry of Finance and – for the EU quota – the balance-of-payment statistics compiled by the Deutsche Bundesbank. The payments from own resources, which are made to compensate for imbalances in the budgets in favour of the United Kingdom, have so far been recorded in own resources accruing from VAT. During the 2005 revision, this practice was altered. These payments are now recorded as other current transfers by the general government to the rest of the world, analogously the GNI own resources. VAT is correspondingly attributed to general government and to the rest of the world with adjustment for this amount¹.

In accordance with European Parliament and Council Regulation (EC) No. 2516/2000 of 7 November 2000 modifying the common principles of ESA 1995 as concerns taxes and social contributions, the recording of cash receipts is time-adjusted. The deferred date of recording is determined by the payment date prescribed in the Finance Act. Only the VAT paid to general government, however, is time-adjusted by one month. The amounts of VAT revenue paid to the European Union are for the most part monthly payments on account and clearing payments that bear no relation to the turnover figures for the previous month or months. It is therefore pointless to defer the recording of these payments.

¹ See the Council decision of 29 September 2000 on the system of the European Communities' own resources (2000/597/EC, Euratom), in: Official Journal L253 of 7 October 2000.

3.26 Subsidies on products

In 2000, the public authorities in Germany paid out EUR 34.84 bn in subsidies, with subsidies on products accounting for EUR 5.59 bn. Germany received EUR 5.85 bn in subsidies from the European Union, EUR 4.80 bn being subsidies on products:

Subsidies according to donor and nature of subsidy		
Figures for 2000 in EUR m		
Donor	Subsidies on products	Other subsidies on production
General government.....	5 590	29 250
Central government	440	10 070
State government	4 310	9 320
Local government	840	4 320
Social security funds	0	5 540
European Union	4 800	1 050
Total	10 390	30 300

The sources of data concerning **public subsidies on products** are the central government budget in the case of the central government and the public finance statistics for the state and local governments. The only subsidies paid from the social security funds are the income-support payments made by the Federal Employment Agency, which means that there are no subsidies on products in the domain of the social security funds. Data on **product subsidies paid by the European Union** are taken from Annex E (EU expenditure on market regulation) to Chapter 1004 (Market regulation; contingency measures for emergencies) of the federal budget.

In accordance with the definition of subsidies on products in paragraph 4.33 of ESA 1995, each item in the central government budget that relates to the payment of a subsidy is examined to establish whether it is a specific amount of money per unit or quantity of a good or service, whether it is calculated ad valorem as a specified percentage of the price per unit or whether it is calculated as the difference between a specific target price and the market price actually paid by a buyer. This examination also entails the identification of the budgetary items which, under paragraph 4.36 of ESA 1995, are to be assigned to other subsidies on production, such as subsidies payable on the wage bill or work force, subsidies to reduce pollution or grants for interest relief. This type of item-by-item examination is also conducted for the product subsidies paid by the EU which are covered in Annex E to Chapter 1004 of the central government budget, paying due account to the allocations in the national agricultural account.

In the case of subsidies paid by the state and the local governments, the size of the individual budgets does not permit the same process of itemised examination to be adopted for the state and local budgets. For these budgets, the first step involves the identification of the other subsidies on production, which are recorded as grants for interest relief under the budgetary systems of the Federal Republic and of the constituent states and local authorities. The remaining regional and local subsidies are then examined in order to identify the budgetary areas in which subsidies are based on quantities of goods and services and those in which they are based on unit prices, as distinguished in paragraph 4.33 of ESA 1995. As a result of this examination, the amounts of state and local subsidies on products are established for each functional classification. In the case of the state governments, the bulk of these subsidies are

paid to railway operators and transport services to subsidise local public transport, while the local-government subsidies are paid exclusively to transport services.

In the framework of the production approach to the valuation of GDP, the subsidies on products which are identified in this way are broken down and assigned to the industries of their respective recipients, then added as a reallocation to the source balance-sheet data for determining gross value added and output so as to arrive at the price concept of the basic prices (see section 3.3). During the transition to GDP, however, the subsidies on products are deducted again en masse, which means that the final GDP figure does not include subsidies and that the calculation of subsidies has no bearing at all on GDP.

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Chapter 4 The income approach

4.0 Distributive transactions in the calculation of GDP

Domestic product and national income may be calculated by considering them from the product side, in other words by assessing output or the use of goods and services; however, they can also be found via the income approach. This approach necessitates calculating the income received from employment and assets generated by involvement in the production process. In other words, income can be thought of as the reward for capital and labour which are factors of production. Looking at this from the aspect of the income generated within Germany, the following values have to be determined:

Compensation of employees (domestic)
 + Operating surplus/mixed income
 = Net domestic product at factor cost
 + Taxes on production less subsidies
 = Net domestic product at market prices

Although the compensation of employees generated within the country can be determined from a large variety of source statistics (see section 4.7), it is impossible to make an original calculation of the net operating surplus. The net operating surplus which includes mixed income is determined residually for the entire economy with the help of the production approach. Intermediate consumption, compensation of employees, consumption of fixed capital and other taxes on production less other subsidies are subtracted from the figure for output for the calculation of net operating surplus used in the income approach. The operating surplus including mixed income is assessed in the production approach for 60 economic activities. The distribution-of-income approach entails the distribution by sector of the operating surplus/mixed income and components as well as the following transactions entailed by the distribution of the income.¹ The calculations for the sectors S.12 (financial corporations) and S.13 (general government) are based on original statistics (on this refer also to sections 3.16 and 3.18). Parts of the production account and the generation of income account for the sectors non-financial corporations (S.11) and households, including non-profit institutions servicing households (S.14/S.15), can only be calculated by way of a model because of the inadequacy of the source data.

A further way of determining national income is to find the distributed income received from employment and property - in other words, the income received by Germans from productive activities. It is conventional in the German national accounts to treat employment and property income as national income (net national income at factor cost). Contrary to this, ESA 1995 prefers primary income (net national income at market prices), which includes the net taxes on production payable to public authorities.

¹ See also Federal Statistical Office: Aufbau eines Berechnungssystems und Berechnung vierteljährlicher nichtfinanzieller Sektorkonten für die Quartale ab dem Jahr 1999, Abschlussbericht einer Studie im Auftrag des Statistischen Amtes der Europäischen Gemeinschaften, Wiesbaden 2005.

From the viewpoint of the income distributed or received from employment and property, the following values would need to be determined:

- Compensation of employees (residents)
- + Company and property income
- = Net national income at factor cost
- + Taxes on production less subsidies
- = Net national income at market prices (primary income)

An original calculation is possible for compensation of employees according to the national concept. For this, the employee compensation of German outward commuters is added to that arising within Germany and that of the inward commuters is subtracted from it. To find the cross-border compensation of employees of inward and outward commuters, information is obtained from the balance-of-payments statistics (outward commuters), the statutory pension scheme relating to employees who are liable for social insurance contributions and the Federal Employment Agency (*Bundesanstalt für Arbeit*) (inward commuters) (see section 8.1).

The figures for company profits (entrepreneurial income) could give an indication of corporate income. If information were available on company profits within the definitions used in the national accounts or could be derived from the source statistics, corporate income could be determined using the following method:

Table 4—1: Entrepreneurial and corporate income
Figures for 2000 in EUR bn

Sectors	Entrepreneurial Income (National Accounts)	Dividends paid, withdrawals and reinvested earnings	Corporate income
Non-financial corporations	239.43	247.51	– 8.08
Financial corporations.....	65.21	39.97	25.24
General government.....	– 2.63	0	– 2.63
Households including NPISHs	133.07	0	133.07
Total for economy	435.08	287.48	147.60

National income and domestic product can be derived from corporate income as follows:

Derivation of GDP and GNI from the figures for income received
Figures for 2000 in EUR bn

Corporate income.....	147.60
+ Property income	276.77
+ Compensation of employees (residents).....	1 100.06
+ Production and import taxes paid to the general government.....	245.09
– Government subsidies	34.84
= Net national income	1 734.68
+ Consumption of fixed capital.....	308.48
= Gross national income	2 043.16
+ Balance of primary income with the rest of the world	19.34
Gross domestic product	2 062.50

The national accounts system does not currently permit the calculation of national income via the distribution side, however, because there are no complete figures on company profits in the

source statistics and the existing figures on company profits which can be drawn from the tax statistics do not agree with the national accounting concepts nor are they capable of being adjusted to enable harmonisation of the relevant concepts.

Information is available from the source statistics with which to obtain transitional values for conversion from company income to gross national income and then on to gross domestic product. To calculate property income the main sources used are the monetary statistics of the Deutsche Bundesbank and the balance-of-payments statistics in the case of cross-border property income.

The data needed in order to assess the taxes on production, subsidies and consumption of fixed capital, which are also required, are described in detail later in this chapter whilst the methods have already been described in Chapter 3.

The conclusion to be drawn is that it is not currently possible to make a full calculation of GDP and GNI in the German national accounts using the income approach as insufficient original data are available on the operating surplus or company profits generated within the country. For this reason, the production and expenditure approaches are used to determine the level of GDP in Germany and how it develops.

4.1 Statistical framework

As explained in section 4.0, it is currently not possible to make a complete, original calculation of German GDP by applying the income approach. To apply an independent income approach, either direct figures on the operating surplus would have to be provided or details of the company profits would need to be available which accorded with the concepts used in the national accounts or could be derived from source statistics.

Despite the fact that the required information on company profits is not available, regular checks are made on how the company profits determined for the national accounts develop compared to other statistics which are based on corporate accounting. This information is found primarily from the statistics on company accounts which are compiled by the Deutsche Bundesbank. The statistics on corporation tax compiled by the Federal Statistical Office, which are only produced at intervals of several years, are also viewed with reservations. Besides the differences in concept outlined below between entrepreneurial income as shown in the national accounts and company profits as shown on a commercial or tax balance-sheet, the corporation tax statistics are of limited value because they only cover genuine corporations (limited liability companies (AG and GmbH), and cooperatives). However, the corporations included in the national accounts also include quasi-corporations such as limited partnerships and general partnerships whose profits are not liable for corporation tax.

Part of the residually determined entrepreneurial income recorded in the national accounts belongs to the operating surplus which is generated within the country as a result of the income derived from the production process and the received less paid property income in connection with business activities. The main source of received property income is income on bank deposits and other monetary investments as well as dividends from shareholdings. Paid property

income includes payments of interest in particular and, in the case of financial corporations, property income owed to policyholders based on insurance policies. Distributions paid are not included because they are a way of distributing company profits.

Starting with the net operating surplus, the following entrepreneurial income results for the entire economy for the year 2000 (in EUR bn):

Net operating surplus	435.31
+ Property income received	455.65
– Property income paid.....	455.88
= Entrepreneurial income	435.08

In concept, entrepreneurial income as recorded in the national accounts may correspond approximately to balance sheet profit in company accounts, but there are still some important differences. Whereas creditor protection (lowest value principle) plays a central role in German commercial law in the determination of profit, in the national accounts it is assumed that the actual depletion of material assets has to be subtracted when calculating income for the period. For this reason, consumption of fixed capital is not applied at acquisition prices in the national accounts as it would be in company accounts, but at replacement cost. In general, the national accounts entail considering a longer economic service life of fixed assets than for the calculation of tax depreciation, because they work on the basis of the actual economic life. In valuing inventories, too, the national accounts entail other concepts than those of commercial accounts. Output stocks are valued at basic prices for national accounts purposes and input stocks at replacement cost for use in production. Paper profits, which can arise in commercial accounts when the price of stocks rises, are eliminated in the national accounts by this means. Extraordinary income as well, for example arising from the sale of parts of companies, and extraordinary losses, for example arising from special depreciation of acquired shareholdings or real estate, do not form part of entrepreneurial income in the national accounts.

Entrepreneurial income are calculated and stated for the national economy as a whole as well as for institutional sectors. These domestic sectors comprise financial and non-financial corporations, the general government sector and households including non-profit institutions serving households. Entrepreneurial income is an informative value for both financial and non-financial corporations in particular. These include limited liability companies (AG and GmbH) and cooperative societies as well as the so-called 'quasi-corporations' (partnerships such as OHG, KG and GmbH & Co KG). In contrast, some peculiarities need to be mentioned in the case of the household sector. For example, the entrepreneurial income of individual companies and the self-employed, both being subsumed in the household sector, are stated inclusive of remuneration for the work of the company owner. Also, in accordance with the rules of ESA 1995, the profit generated by households includes, for example, imputed income from the private use of dwellings by the owner. In concept, the use of a dwelling by its owner is treated as a business activity (see section 3.17.1.2).

In a comparison of entrepreneurial income as stated in the national accounts with company profits as recorded in the statistics on company accounts it should be remembered that, in addition to the conceptual differences already mentioned, the company accounts statistics only provide data on manufacturing, the wholesale and retail trade, transport and business services,

i.e. these statistics only provide information on non-financial corporations. An examination of entrepreneurial income in the national accounts through the statistics on company accounts can only be undertaken for the domain of non-financial corporations (S.11), because entrepreneurial income among households (S.14/15) as stated in the national accounts include not only housing services (private use and letting) but also the profits of the self-employed. These groups are not included in the statistics on company accounts.¹ The conceptual limitations also mean that a comparison of the levels of entrepreneurial income among non-financial corporations according to the national accounts and the company profits from company accounts statistics is impossible and that it is only possible to compare trends. Nonetheless, particularly the depreciation on shareholdings and real estate with an impact on the balance sheet can result in different developments between company accounts statistics and non-financial corporations in the national accounts during years in which there is a high requirement for depreciation. The data in the company accounts statistics are currently available at $t + 18$ months and can therefore not be used for carrying out checks on the current accounts figures. The residually determined operating surplus and entrepreneurial income of financial corporations cannot be checked by reference to the company accounts statistics and instead are determined by way of calculations, although the accounts systems of financial corporations are well documented provided these corporations are subject to federal financial and insurance supervision (see section 3.16). The conclusion to be reached is therefore that at present the information in the company accounts statistics is generally not suitable for determining the level of entrepreneurial income for national accounts purposes, but that it is still useful for checking the plausibility of trends in the non-financial corporation sector.

There is a full description of the general conditions for the calculation of the compensation of employees in section 4.7.

4.2 Valuation

The figures for operating surplus and mixed income are determined residually and so no separate valuation is required. Extensive information on compensation of employees is provided in section 4.7, on other taxes on production and imports in section 4.8, on other subsidies in section 4.9 and on consumption of fixed capital in section 4.12.

4.3 Transition from private accounting and administrative concepts to the ESA 1995 national accounting concepts

As the figures for net operating surplus/mixed income are determined residually, there is no transition from the private accounting and administrative concepts to the national accounting concepts of ESA 1995. Due to a lack of information, it is not possible to quantify the conceptual differences between the national accounts system and the company accounts statistics, a private accounting concept (see section 4.1). The data from the source statistics for calculating gross

¹ For information about the company accounts statistics, see, inter alia, the following Deutsche Bundesbank monthly reports: June 2006 monthly report on the earnings and financial situation of German companies during 2004; October 2005 monthly report on the earnings and financial situation of German companies - an investigation based on new data.

wages and salaries have in part to be adjusted to fit the definitions in national accounts. For example, wages and salaries according to the definitions used in the labour cost survey do not include family benefits, severance pay or topping-up payments in the case of partial retirement. By special treatment of the labour cost surveys these pay components have been included in the calculation of source data for the national accounts. Conceptual adjustments of the initial data for calculating other taxes on production and imports consist in particular of an adjustment with regard to the recording date. No other adjustments are necessary in this case, as in the calculation of the other subsidies. The initial value of the calculations of consumption of fixed capital is not the figure for depreciation recorded in company accounts. By applying the perpetual-inventory method no transition between concepts is required in order to calculate consumption of fixed capital.

4.4 The roles of direct and indirect estimation methods

The figures for compensation of employees, other production and import taxes and other subsidies are mainly calculated by direct estimation methods. As net operating surplus/mixed income is determined residually, no use of estimation methods is required in the income approach. Similarly to depreciation figures for company accounts, it is not possible to directly measure consumption of fixed capital for national accounts purposes. This consumption is effectively an imputed cost and is calculated in the framework of the assets accounts in accordance with certain established principles. The calculation of consumption of fixed capital is described in detail in section 4.12.

4.5 The roles of baseline values and extrapolations

In the calculation of compensation of employees the basic earnings in individual industries cannot be re-assessed for each reporting period since a large proportion of the necessary information is not available. Therefore it is necessary to use an extrapolation method in which the baseline value can be extrapolated by applying the current rates of change. The extrapolation indicators can be derived from the statistics on earnings and agreed wages and salaries or may be taken straight from the details of collectively agreed wage increases. Other information regarding the extrapolation of source data in the calculation of the compensation of employees can be seen in section 4.7.1.1. However, a second method of calculating compensation of employees is also used which is based on the social security contributions received by the social insurance carriers. As these figures are always current, there is no need to extrapolate these source data. Operating surplus and company profits are residually determined. The figures on other production and import taxes, other subsidies and consumption of fixed capital all do not require the baseline values to be extrapolated.

4.6 The main approaches taken with respect to exhaustiveness

Wages and salaries are always determined by multiplying average earnings by the number of employees. The calculations of average earnings in a single industry therefore cover the entire industry per se. Information on the coverage of the calculations therefore mainly focuses on the

degree of coverage for the employment account. In terms of all industries, the degree of coverage of the employment account revealed by the source statistics is almost 100%. Noticeably additions in the employment account are only obtained for the construction industry and domestic services..

Where the calculation of average earnings relies on social insurance data, allowances are included for remunerations which are higher than the threshold for the payment of social contributions.

Allowances are made for auxiliary workers, which increase the average earnings of the relevant industries. These are determined on the basis of statistical data from the Federal Employment Agency (*Bundesagentur für Arbeit*).

Some remuneration in the form of income in kind is already included in the source data, because employers are required to include these portions in their regular returns to the statistical institutions. As most 'non-cash benefits' of employees are liable for social contributions, the liable pay includes these components. Upward estimates are made as well. Supplementary special calculations chiefly take into account tips, subsidised meals in works canteens and free road travel and flights for the employees of transport enterprises.

The method of residual calculation implies that the operating surplus so obtained is implicitly complete. When calculating the figures for other production and import taxes and other subsidies, the exhaustiveness of the source data and, in the case of the calculation consumption of fixed capital owing to the application of the perpetual inventory method, no further explicit measures to achieve exhaustiveness are required.

4.7 Compensation of employees

Compensation of employees is defined as the total remuneration, in cash or in kind, payable by an employer to an employee in return for work done by the latter. This therefore represents a measure of the remuneration or costs of the production factor labour.

Compensation of employees comprises the gross wage and salary as well as the actual and imputed social insurance contributions paid by the employer. According to the national concept, it includes the remuneration earned by German employees for German and foreign employers, including according to the domestic concept inward commuters to Germany and excluding outward commuters.

The compensation of employees according to the domestic concept amounted in the year 2000 to EUR 1 101.66 bn and therefore makes up 53.4% of GDP. Of this around 80.3% comprised wages and salaries and 19.7% comprised employers' social security contributions.

Compensation of employees (domestic concept)		2000
		EUR bn
	Gross wages and salaries.....	884.52
+	Employers' actual social contributions	192.97
+	Employers imputed social contributions.....	24.17
=	Compensation of employees.....	1 101.66

The employer's social contributions make up the value of claims for welfare benefits to which employees gain a claim on the basis of the actions taken and payments made by their employer. This includes the rights accrued to statutory or occupational pensions, benefits in case of nursing care or sickness and unemployment. The structure of the social protection systems in the context of ESA 1995 is shown in Overview 4—1.

Gross wages and salaries form the major constituent of compensation of employees. This income aggregate includes all remuneration paid to employees in return for employing them. Employees are defined as manual workers, salaried workers, civil servants, soldiers including those performing national service, and among them those who elect to perform alternative non-military service, apprentices, employees in Germany's 'one-euro jobs' part-time work programme, trainees and similar groups of employees.

In addition to basic wages and salaries, gross wages and salaries are defined to include the following components:

- Allowances for overtime, night work and Sunday work as well as allowances for unpleasant, difficult or dangerous conditions,
- Performance bonuses, profit-sharing, additional monthly salaries, commission, attendance allowances, bonuses, special payments outside the agreed scale when an employee leaves a job, tips, etc.,
- Payments by employers to their employees for the purpose of building up capital,
- Payments in lieu of public holidays, holidays, sickness, etc., statutory contributions of the employer to private health insurance schemes of employees not in the statutory insurance schemes,
- Wages from dependent employment as a secondary occupation or marginal dependent employment, such as payments to persons taking second jobs as caretakers or barmen,
- Cost-of-living allowances and allowances paid for employment abroad, housing subsidies and travel subsidies.

However, the figures for gross wages and salaries do not include compensation paid for the costs of travel, separation, removal and representation by employees in the exercise of their duties. These are purchases by corporations of intermediate inputs. The same may be said of food and drinks, which are paid for on the basis of special terms of employment. Such goods or services also primarily serve to help the employer's production process and therefore count as part of the employer's purchases of intermediate inputs.

Overview 4—1: Social insurance schemes

Social insurance schemes	
<p>'insure' (acc. to agreement) against the following risks and needs</p>	<p>sickness, invalidity, disability work accidents, occupational sickness old age, surviving dependants maternity, family job creation unemployment housing education general needs</p>

The term 'scheme' is generally used to denote the nature of the insurance product rather than an institution, although special units do exist to provide social protection.

Social security systems	Private funded social insurance schemes	Unfunded social insurance schemes
<ul style="list-style-type: none"> * Benefits of the statutory ** Pensions insurance, ** Health insurance ** Long-term care insurance ** Unemployment insurance ** Accident insurance * Benefits paid by agricultural pension funds 	<ul style="list-style-type: none"> * Direct pension commitments from employers (company pensions) * Independent pension funds * Life assurance schemes of insurers which are integrated into a social protection system, because <ul style="list-style-type: none"> ** this fulfils a statutory obligation to participate in a social protection system ** this is a collective system for the benefit of a particular group of the labour force ** the conditions of employment applying to a group of employees are fulfilled ** the employer makes a direct contribution to the system (e.g. direct insurance) 	<ul style="list-style-type: none"> * Pensions of established civil servants * Benefits paid by dependent benevolent funds * Benefits, income support paid by public and private employers * Other social benefits, such as <ul style="list-style-type: none"> ** social assistance ** unemployment benefit ** state child benefit, schooling benefit, housing benefit

The allocation of individual service components of social benefits or the gross wages and salaries is also not always clear. For example, payments for public holidays and paid holiday periods count as part of gross wages and salaries. In contrast, under ESA 1995 the continuing payment of wages and salaries by the employer for a certain length of time in the case of sickness, maternity, occupational accidents, invalidity, etc. is, where possible, part of the social benefits paid by the employer and is accordingly allocated to the employer's social insurance contributions and so is not part of gross wages and salaries. In Germany this is unfortunately impossible because of the data situation: these payments are counted as part of gross wages and salaries instead. The German national accounts therefore only include social benefits paid by employers to their employees for child benefit, spouse benefits, educational benefits or other allowances for relatives. Social benefits paid by the employer are recorded as imputed social contributions of the same amount and so also count as part of compensation of employees.

In addition to cash benefits, the gross wages and salaries include benefits in kind. These non-cash benefits for employees through unpaid or subsidised goods and services from the employer are measured. Examples of gross wages and salaries paid in the form of non-cash benefits are the use of company cars, subsidised or free accommodation and leisure amenities or subsidised catering.

4.7.1 Calculation of gross wages and salaries

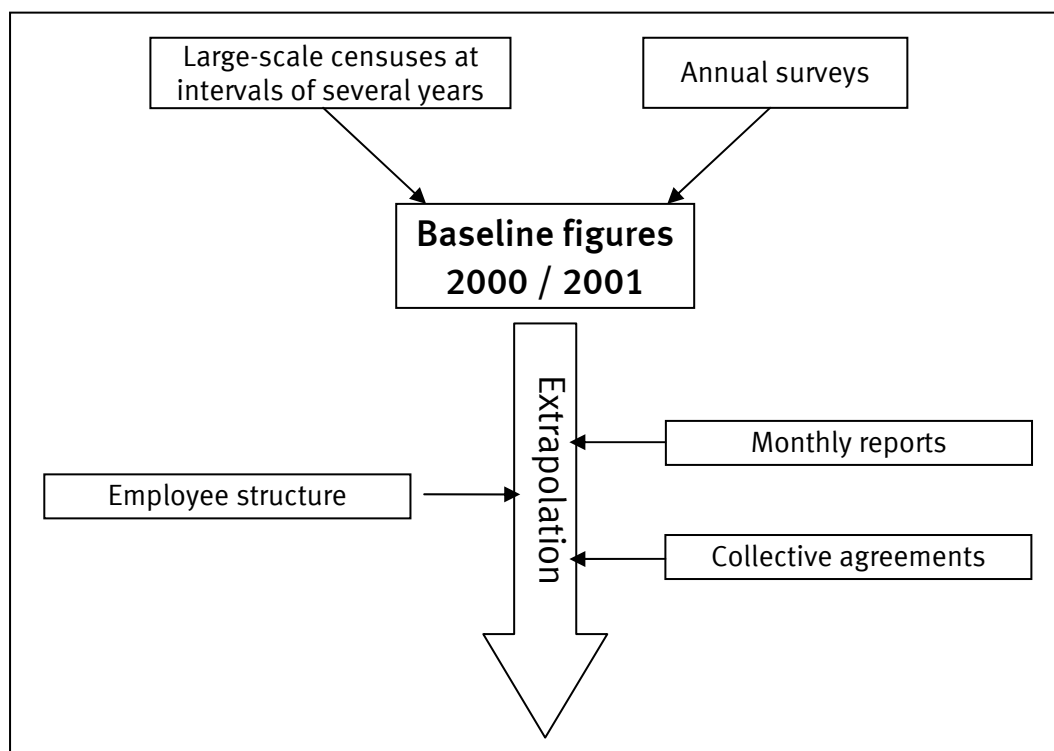
Gross wages and salaries are calculated using data from a variety of different sources and combining this to form an overall picture. The primary data source is figures recorded from employers' monthly, quarterly and annual returns, as well as special surveys carried out at intervals of several years. For those industries for which there is little or no information, a good basis for estimates of current wage development is found in collectively bargained wage agreements. Figures on pay subject to the statutory social insurance contributions and the rates in application can also be obtained from the social security statistics. Figures from the fiscal statistics and household surveys are only of marginal benefit. The usefulness of the various data resources varies according to the nature of the information, its reference date and the level of coverage.

Gross wages and salaries are calculated in a two-stage procedure:

- The first stage comprises calculating the baseline values for average earnings in various industries using all available information for a particular base year.
- In a second stage these baseline values are extrapolated using suitable indicators. It is impossible to calculate the average current earnings directly, because normally there are no actual detailed current figures available. Overview 4—2 below shows this procedure.

Current gross wages and salaries are calculated quarterly and annually for the various sectors in up to 46 industries or accounting segments. Distinctions are drawn between the sectors of 'enterprises' (S.11, S.12, S.14), general government (S.13) and non-profit institutions serving households (S.15). For each sector and industry, the employee groups of civil servants, salaried employees, manual workers, marginal part-time employees and employees in Germany's work opportunity programme are all considered.

Overview 4—2: Method of calculating gross wages and salaries



This information enters two sets of calculations which supplement each other and can be used in cross-checking. These calculations rely on the approach by industry and the social contribution approach. The first method of calculation by industries provides the main sector data down as far as the unit wage costs of individual segments. The second is a global approach that takes the social security contributions paid and the levels of remuneration which are liable for such contributions as evidenced by the social security reporting procedures, and is mainly used for cross-checking the aggregate amounts of gross wages and salaries.

4.7.1.1 The approach by industry to determine gross wages and salaries

The breakdown of the industries and accounting categories basically complies with the two-digit categories of economic activity recorded in NACE Rev. 1. In principle, the figures for gross wages and salaries are determined for all industries by taking the number of employees and the average earnings per employee:

$$\text{average earning}_{\text{industry}} * \text{total employees}_{\text{industry}} = \text{gross wages and salaries}_{\text{industry}}$$

This method ensures consistency between the figures for the number of employees and the gross wages and salaries. Also the information on earnings and numbers of employees which may well originate from different sources applying different definitions can be coordinated and extrapolated better with this approach than in the case of an aggregate estimate of the total wages and salaries figures for one industry.

Only the calculation of gross wages and salaries in the general government sector will deviate from this general method: For general government, first of all the compensation of employees is determined on the basis of the cash and accounting results in the public budgets. The figures for gross wages and salaries are then found by subtracting the employers' social contributions from the employees' pay. This applies not just to the domain of public administration, but to all industries, ranging from agriculture to other services, in which government employees work.

The calculations to determine the baseline values for average earnings are based, as far as possible, on large-scale censuses. Some of the data from the source statistics need to be adjusted to the definitions of earnings used in the national accounts. For example, wages and salaries according to the definitions of the labour cost survey do not include family benefit, employment severance pay or topping-up amounts in the case of partial retirement. The labour cost surveys were specially treated to incorporate these pay components into the calculation of source data since they are relevant to the national accounts.

In calculating compensation of employees, information is primarily obtained from the labour cost survey, the monthly reports on employment and turnover of manufacturing, mining and quarrying enterprises, the services statistics, the censuses on the wholesale and retail trade, hotels and restaurants and of crafts and trades. More information is found from the data on earnings-related social contributions contained in the employment statistics. The 1998 statistics on income taxes were used in order to ascertain those portions of wages and salaries exceeding the threshold for payment of social contributions. Overview 4—3 combines the relevant source statistics for the various industries. As Overview 4—3 shows, the baseline values for average earnings are derived from various sources. These describe the economic situation in a particular industry with varying thresholds or definitions of employment and turnover. Table 4—2 quantifies by way of example the most important information that is available for the domain of hotels and restaurants.

Table 4—2: Earnings in the hotels and restaurants industry derived from various sources

	Year-based material, 2000 (Federal Employment Agency)	Labour cost survey, 2000	Wage and salary structure survey, 2001	Annual survey of hotels and restaurants, 2000
	Average earnings in EUR:			
Total	13 500	14 000	21 300	10 300
including:				
Full-time	15 300	19 400	25 300	—
Part-time	7 700	8 600	12 300	—
	Number of employees in 1000			
Total	790	400	200	870 ¹⁾
including:				
Full-time	600	210	140	—
Part-time	190	150	60	—
Special features of the survey	Earnings liable for social security contributions up to threshold; excl. marginal part-time employment	Enterprises with 10 or more employees are surveyed; includes marginal part-time workers	Enterprises with 10 or more employees are surveyed; includes marginal part-time workers	Enterprises with turnover of over DM 25 000; including marginal part-time workers

¹⁾ The average for the year is calculated using indices from the monthly survey of hotels and restaurants

Overview 4—3: Industries and data sources used to determine gross wages and salaries

Areas of activity (WZ 2003)	Primary data source (EVAS no.)
A – B Agriculture, hunting and forestry	<ul style="list-style-type: none"> – Expenditure and revenue of public budgets (711) – Year-based material, 2000 from the statistics of employees subject to social insurance contributions (13111) – Income tax statistics, 1998 (73111)
C – F Industry (incl. construction)	<ul style="list-style-type: none"> – Cost-structure survey of manufacturing, mining and quarrying (42251) – Labour-cost survey, 2000 (62411) – Year-based material, 2000 from the statistics of employees subject to social insurance contributions (13111) – Monthly report on manufacturing, mining and quarrying (42111) – Monthly report on primary construction (44111) – Monthly report on electricity, gas and water supplies (43111)
G – I Services	<ul style="list-style-type: none"> – Year-based material, 2000 from the statistics of employees subject to social insurance contributions (13111) – Income tax statistics, 1998 (73111) – Service statistics according to NACE I (47411) – Expenditure and revenue of public budgets (711) – Regular pay survey of manufacturing, wholesale and retail trade and activities auxiliary to financial intermediation (62321)
J – K Financing, letting and business services	<ul style="list-style-type: none"> – Year-based material, 2000 from the statistics of employees subject to social insurance contributions (13111) – Income tax statistics, 1998 (73111) – Regular pay survey of manufacturing, wholesale and retail trade and activities auxiliary to financial intermediation (62321) – Service statistics according to NACE K (47412)
L – P Public and private service providers	<ul style="list-style-type: none"> – Year-based material, 2000 from the statistics of employees subject to social insurance contributions (13111) – Income tax statistics, 1998 (73111) – Statistics of public service personnel – Expenditure and revenue of public budgets (711) – Service statistics by NACE sections M,N,O (47413) – Internal administrative figures – Time use survey, 2000/2001 (63911)

To calculate the baseline figure for average pay in the domain of hotels and restaurants, the earnings of full- and part-time employees were taken from the labour cost survey of the year 2000. A comparison of the numbers of employees from various sources nonetheless shows that the labour cost survey is only representative of half the industry. With regard to the portions of the labour force that are not covered, the basic assumption was that the labour cost survey represented the pay of full- and part-time employees well, but that parts of the labour force, particularly marginal part-time workers, were obviously underreported. The structure of employees from the year-based material was therefore used in order, in conjunction with the earnings from the labour cost survey, to determine the earnings for employees according to the definitions used for national-accounts purposes. The earnings of marginal part-time workers are

defined separately on the basis of data from the studies of marginal part-time employment conducted by ISG Sozialforschung und Gesellschaftspolitik. The published figure for remuneration in this industry is ultimately calculated from the weighted contributions for full- and part-time employees including marginal part-time workers.

Data from the other surveys was not entered straight into the calculations, but was used as a means of cross-checking the results. The results of all calculations of compensation of employees in the national accounting system are also checked. To do this, the level as well as development of gross and net operating surpluses is examined in the respective industries.

The basic earnings in the individual industries calculated in this way cannot be re-assessed in the same way for each reporting period because a large part of the necessary information is unavailable. Therefore it is necessary to use an extrapolation method in which the baseline value can be extrapolated using current rates of change. The extrapolation indicators for this can be derived from statistics on agreed wages and salaries and statistics on average earnings, or taken straight from the collectively agreed wage increases. Information on the current status of collective agreements is chiefly drawn from the archive of the Wirtschafts- und Sozialwissenschaftliches Institut (WSI) in Düsseldorf. The Deutsche Bundesbank also draws up an index of collectively agreed earnings which can be used as a benchmark for comparison. All existing information about the differences in wages actually paid compared with collectively agreed wages is taken into account when extrapolating earnings in accordance with the development of collectively agreed earnings. The German national accounts make particular use of additional information obtained from the employment statistics and the year-based material on part-time employment. Overview 4—4 lists the most important sources of data for extrapolating average earnings in various industries.

Various special calculations supplement the approach by industry described here:

- The gross wages and salaries in manufacturing can only be determined as an aggregate figure for the latest period. There are no current figures regarding the earnings or numbers of employees of the roughly 20 industries within this sector. The aggregate figure can therefore only be subdivided using the cost-structure statistics data (EVAS 42251) which become available later.
- Figures on pay trends such as in the public service are used to gauge the remuneration of established civil servants outside the general government sector (particularly those employed by the post office, central bank and churches).
- The earnings of employees in second jobs are not represented fully by the normal calculations. We have therefore added allowances for such persons. These are based on analyses of employees pursuing secondary activities (EVAS 13111) by the Federal Employment Agency (*Bundesagentur für Arbeit*).
- For periods after 1.1.2005, information on the number of employees in work opportunity programme 'one-euro jobs' is published by the Federal Employment Agency (EVAS 13211). For periods further back in time it was necessary to resort to the survey results of the German Association of Cities (*Deutscher Städtetag*). The pay for persons in 'one-euro jobs' is determined on the basis of the amount of compensation paid for additional expenses (*Mehraufwandsentschädigung*) and is recorded as part of compensation of

employees. Payments of income support (*Arbeitslosengeld II*) also accruing to one-euro job employees are made independently of their employment as a government transfer and are not taken into account in the figures for compensation of employees.

- Wages and salaries in kind are liable for social contributions. Therefore the liable pay includes these components. Higher estimates are also made. The most important basis for the higher estimates is the labour cost survey (EVAS 62411). Supplementary special accounts primarily take into account tips, subsidised meals in works canteens and free travel and flights for the employees of transport enterprises.

Overview 4—4: Industries and data sources for extrapolating gross wages and salaries

Areas of activity (WZ 2003)	Primary data source (EVAS no.)
A – B Agriculture, hunting and forestry	<ul style="list-style-type: none"> – Collective agreements – Expenditure and revenue of public budgets (711)
C – F Industry (incl. construction)	<ul style="list-style-type: none"> – Cost-structure survey of manufacturing, mining and quarrying (42251) – Monthly report of manufacturing, mining and quarrying (42111) – Monthly report on primary construction (44111) – Monthly report on electricity, gas and water supplies (43111) – Quarterly survey of secondary construction (44131)
G – I Services	<ul style="list-style-type: none"> – Collective agreements – Service statistics according to NACE I (47411) – Expenditure and revenue of public budgets (711) – Regular pay survey of manufacturing, wholesale and retail trade and activities auxiliary to financial intermediation (62321) – Statistics on collectively agreed wages and salaries (62211)
J – K Financing, letting and business services	<ul style="list-style-type: none"> – Collective agreements – Regular pay survey of manufacturing, wholesale and retail trade and activities auxiliary to financial intermediation (62321) – Statistics on collectively agreed wages and salaries (62211)
L – P Public and private service providers	<ul style="list-style-type: none"> – Collective agreements – Expenditure and revenue of public budgets (711) – Internal administrative figures

4.7.1.2 Calculating the number of employees for the social contribution approach

The level as well as the development of gross wages and salaries is affected to a great extent by the results of the employment account. At the start of 2005 the Federal Statistical Office launched new monthly statistics on the labour market (EVAS 13231) to supplement the traditional reporting by the Federal Employment Agency and comply with the standards of the International Labour Organization (ILO) in Germany. Under the ILO employment market statistics, internationally comparable monthly employment and unemployment figures are published approximately 30 days following the end of the relevant month. The data on employment provided by the ILO statistics are provided by the employment account which is embedded in the national accounts of the Federal Statistical Office.

Using all the sources of employment statistics available at the reporting date, the number of employed for national accounts purposes is obtained with the aid of special calculations,

involving in particular the conversion of values at key dates to the corresponding period averages, and supplementing missing data or making adjustments to cut out double reporting. Currently 48 sets of statistics enter the employment account by different routes. As well as the separate monthly, quarterly and annual statistics referring to individual industries, particular important sources of employment statistics are the statistics of the Federal Employment Agency on employees who are liable for social insurance contributions and on marginal part-time workers, the monthly telephone survey on ILO employment status, the payroll statistics on personnel in the public service, the results of the microcensus and other returns by individual institutions (e.g. monthly returns of the Federal Ministry of Defence (*Bundesministerium für Verteidigung*) on the number of soldiers). In addition to this, regular checks are made for consistency with other results of the national accounts and the labour market statistical and demographic reporting.

As the source data required for the employment account only appear progressively over time, the missing parts of the current data are estimated. The exhaustiveness and reliability of the source data, and thus the accuracy of the estimates, are augmented as the interval from the relevant reporting period lengthens.

Overview 4—5 sets out the basic data sources used to determine the numbers of persons in employment.

4.7.1.3 The contribution approach to determining gross wages and salaries

The contribution approach to determining gross wages and salaries is chiefly used for checking the results of the sector account. This approach uses the fact that it is possible to determine the basis for assessment, i.e. the remuneration that is liable for contributions, very near the actual date by means of information on the contributions paid into the statutory pension scheme and the underlying proportional contribution rate. Since the 2nd quarter of 1999 this has also been applied to marginal part-time workers for whom a separate contribution rate is applied. On this basis, the total remuneration which is liable for pensions contributions can be determined. To obtain a figure for total gross wages and salaries, estimates of further components have to be added according to the following formula:

Remuneration liable for payment of statutory pension insurance contributions

- + *Gross wages and salaries above the payment threshold (of all employees liable for statutory insurance contributions) on the basis of the income tax statistics.*
- + *Gross wages and salaries of blue-collar/white-collar workers not liable for payment of statutory pension contributions (board members, employees insured in professional pension funds, marginal part-time workers).*
- + *Severance payments, remuneration for secondary activities (as long as they are not liable for payment of statutory social insurance contributions), clandestine work, wage components not liable for payment of statutory pension insurance contributions (e.g. holiday premiums).*
- + *Gross wages and salaries of established civil servants (results from financial statistics, plus the number of established civil servants outside general government, multiplied by the corresponding earnings).*
- = ***Gross wages and salaries of all employees.***

Overview 4–5: Industries and data sources for extrapolating the numbers of employees

Areas of activity (WZ 2003)	Primary data source (EVAS no.)
A – B Agriculture, hunting and forestry	<ul style="list-style-type: none"> – Labour force survey (13221) – Employee statistics (13111) – Microcensus (12211) – Statistics of personnel om the public service (74111, 74121) – ILO telephone survey (13231)
C – F Industry (incl. construction)	<ul style="list-style-type: none"> – Employee statistics (13111) – Microcensus (12211) – Monthly report on manufacturing, mining and quarrying (42111) – Monthly report on primary construction (44111) – Monthly report on electricity, gas and water supplies (43111) – Cost-structure survey of manufacturing, mining and quarrying (42251) – Cost-structure survey on electricity, gas and water supplies (43221) – Structure survey for small enterprises in manufacturing, mining and quarrying (42252) – ILO telephone survey (13231) – Crafts and trades reports (53211) – Quarterly survey of secondary construction (44131)
G – I Services	<ul style="list-style-type: none"> – Employee statistics (13111) – Microcensus (12211) – Crafts and trades reports (53211) – Company returns – Annual survey in wholesale and retail trade and in maintenance and repair of motor vehicles and personal goods (42251) – Annual survey of hotels and restaurants (45421) – ILO telephone survey (13231) – Monthly return of railways and post office – Service statistics (47415) – Transport statistics (46)
J – K Financing, letting and business services	<ul style="list-style-type: none"> – Employee statistics (13111) – Microcensus (12211) – Deutsche Bundesbank – Federal Insurance Office – Statistics of public service personnel (74111, 74121) – ILO telephone survey (13231)
L – P Public and private service providers	<ul style="list-style-type: none"> – Employee statistics (13111) – Microcensus (12211) – Statistics of public service personnel (74111, 74121) – Internal administrative figures – ILO telephone survey (13231)

By far the largest component of this calculation is the remuneration which is liable for social insurance contributions. Data from the employment statistics and the contribution revenue of the statutory pension insurance scheme provide information on this. The employment statistics show, on the basis of the social insurance accounts, the remuneration paid by employers on which social insurance contributions are also paid. The remuneration liable for social insurance contributions can also be extrapolated from the contributions to the statutory pension scheme, so this component is based on reliable statistics.

The second largest single item is remuneration which lies above the payment threshold. The income tax statistics only provide data on this once every three years. The last set of available data came from the income tax statistics for 1998. The results for the years between the survey dates are interpolated on a straight-line basis, and for the most recent period a trend similar to that of remuneration subject to social insurance contributions is assumed to prevail. Extrapolation of the last observed structures may not provide satisfactory results, because there are likely to be considerable fluctuations in this component of the gross wages and salaries in particular. Since that year, however, initial results from the annual business statistics have been available regarding income tax (EVAS 73111). This information shortens the time span significantly on which there is no information.

Various sources are available for the remaining components of the calculation, which, apart from the remuneration of marginal part-time workers and that of established civil servants, tend to be based on less reliable data. However, this portion represents only a small fraction of total gross wages and salaries.

Because of the existing estimation risks and lack of distinctions between industries, this method of calculation is only used to gain comparisons and to cross-check the primary sector account.

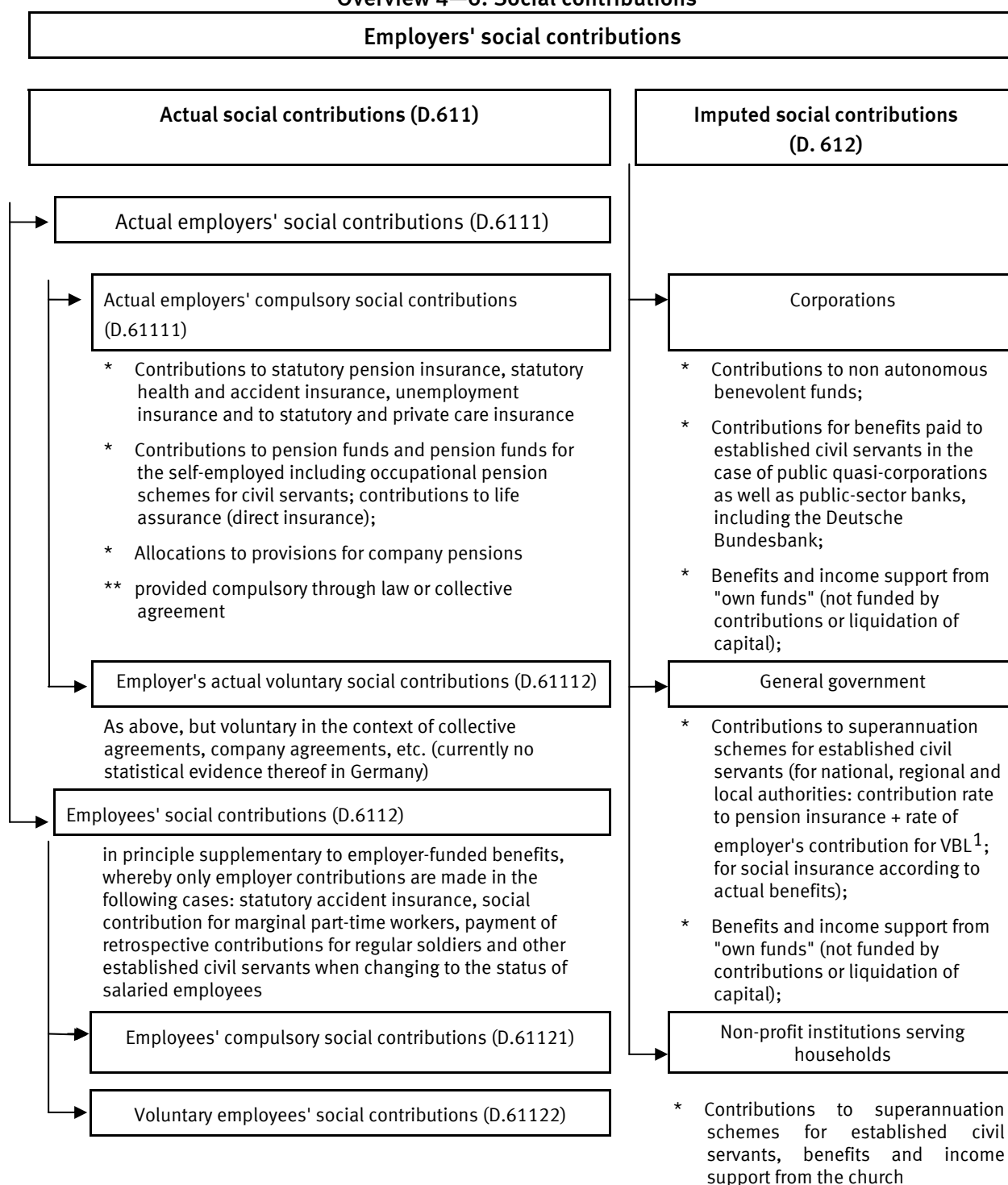
4.7.2 Employers' social contributions

In this case of employers' social contributions, the remuneration received by employees includes components representing expenditure borne by employers in order to secure their employees a claim to social benefits. Overview 4—6 accounts for the actual social contributions by employers and, for the sake of completeness, it includes the employees' contributions as well. These may comprise the actual or imputed contributions made by employers.

Although employers often pay contributions direct into the social protection systems, in the national accounts system these initially go to the employees, and from there they are passed on to the social insurance schemes or insurance companies. In 2000, the social contributions of employers amounted to EUR 217.14 bn, of which 88.9% comprised actual social contributions, with a figure of 11.1% for imputed contributions.

The actual social contributions are paid by households in Germany and the rest of the world in order to earn or receive claims to the benefits. Social contributions are paid to institutions such as the social insurance scheme or insurance corporations which grant social benefits and social benefits in kind.

Overview 4—6: Social contributions



Imputed social contributions represent the equivalent of social benefits paid by employers direct to the beneficiary, without intermediation by others. Examples of this are pensions for

¹ Pension Institution of the Federal Republic and of the Federal States, a central organisation in Germany that provides supplementary pensions for federal and state government employees.

established civil servants or occupational pensions. The beneficiaries may be current or former employees or other persons with entitlements, such as surviving dependants.

4.7.2.1 Employers' actual social contributions

The actual social contributions of employers comprise payments made by them to the social security schemes as well as to insurance corporations. The actual social contributions by employers amounted to EUR 192.97 bn in 2000. Table 4—3 shows the extent of the individual components. This shows not just the statutory payments, but also the contributions normally made, those which are promised by contract and the voluntary contributions paid as security against social risks or needs.

Table 4—3: Actual social contributions
Figures for 2000 in EUR bn

	Employers' contributions	Employees' contributions	Other contributions
Statutory pension insurance.....	70.51	66.89	14.65
Statutory health insurance	43.62	43.75	41.80
Statutory care insurance	5.36	5.55	5.38
Statutory accident insurance.....	9.07	—	1.07
Unemployment insurance	24.30	22.75	0.55
Pension funds	3.31	0.52	—
Pension funds for self-employed	0.42	0.42	3.67
Public supplementary pension	3.45	0.86	—
Life assurance corporations	6.16	0.52	
Private care insurance.....	0.37	0.93	0.71
Net allocation to provisions for occupational pension schemes.....	14.68	—	—
Occupational pensions	10.96	—	—
Commuter balance.....	0.76	0.73	—
Combined (domestic concept).....	192.97	142.92	67.83

These employers' contributions are only recorded by the specialised statistics at considerable intervals. The four-yearly labour cost surveys (EVAS 62411), the surveys of the nature and extent of occupational pension provision (EVAS 62911; last conducted in 1990) and the survey conducted by Infratest Sozialforschung on the situation and development of occupational pensions from the year 2003 provide important structural information regarding the types of benefit and industrial classifications and are chiefly used for checking the plausibility of the data series. For the most recent data it is necessary to use data from the private and public insurance funds on social contribution receipts.

ESA 1995 does not break social contributions down according to the social security institutions, but according to the groups of contribution payers. The social contributions of employers, employees, self-employed and non-employed persons are distinguished. The German statistics,

however, do not record social contributions for these defined groups of persons, but only record the revenue of the social insurance schemes. Because the insurance figures do not give clear enough information to identify the payers of contributions, it is necessary to subdivide them by means of estimates.

The allocation of social contributions to the groups of payers accords with the statutory rules on payment of the contributions or with the actual circumstances. For example, provisions for occupational pensions have so far been allocated by employers and have been attributed solely to them as employer contributions. In contrast, the state-subsidised, additional pension in accordance with the Retirement Savings Law (*Altersvermögensgesetz*) depends on greater participation by employees in providing for old age and basically leads to social contributions by employees¹. This also becomes clear when considering the entitlement of employees to have part of their salary diverted into a pension fund (salary sacrifice), which is now enshrined in law.

In respect of the pension insurance contributions which are retained in the payroll deductions procedure, just as for other branches of social insurance - the calculation of employers' and employees' contributions follows the method outlined below:

Monthly returns of German Pension Fund (Deutscher Rentenversicherung Bund) recording target contribution amounts for the collection offices (statutory health insurance funds)

- *Contributions paid only by the employer (e.g. for marginal part-time workers, for armed forces conscripts, retrospective contributions paid for regular soldiers and other established civil servants by national, regional and local authorities)*
 - *Contributions not involving the employer (e.g. contributions in connection with payment of bankruptcy support benefits by the statutory unemployment insurance scheme or contributions to pension insurance from sick pay by the health insurance scheme)*
- = Target contributions retained within the payroll deductions procedure, and paid by employee and employer in equal shares*

The entire social contributions of the employer to statutory pension insurance comprise half this amount as well as the contributions allocated exclusively to employers.

In accordance with ESA 1995, social contributions are entered into the accounts not after payment is received, but at the same time as the underlying wages and salaries. This conceptual requirement is fulfilled by the practice of accounting on an accruals basis in respect of returns submitted to the German pension insurance scheme. In the case of other insurance providers (e.g. the Federal Employment Agency), incoming payments are all deferred by one month, in order to facilitate the best possible synchronisation with wages and salaries.

¹ The provisions on additional funded pension provision form a collective pension system as defined in ESA 1995, because employees can insure themselves, or their dependants, against certain risks - in this case, old age. For this reason, the contributions of employees to building up capital for a later pension are stated as employees' social contributions (D.6112) and subsequent payments of pensions as social benefits from private pension schemes (D.622).

Employers' social contributions for occupational pensions are not recorded in the statistics in the same way as contributions to the statutory pension scheme and cannot be calculated by the method described for the statutory scheme.

The most important form of occupational pension takes the form of a direct pension commitment from the employer to the employee. Companies allocate provisions in their accounts in order to cater for the commitment to provide occupational pensions. These provisions are retransferred when occupational pension payments start in the amount of the relevant pension expense. The amount of employers' social contributions entered in the national accounts which flow to employee households (household sector) as compensation of employees (labour costs) is recorded as the same amount as the current provisions allocated, being posted back from there in the same amount as social contributions paid by households to enterprises.

There are no statistical results available on current pension provisions, which could be directly used for calculating the employers' social contributions in the national accounts. However, it is convenient to determine the social contributions as the total occupational pension benefits and the change in occupational pension rights. There are statistical data to support these values:

- Data on the change in occupational pension rights, or 'net allocations', are found in the pension commitments reported to PSVaG (*Pensions-Sicherungs-Verein auf Gegenseitigkeit*) and insured by it against insolvency. The increase, or rather the change, in pension rights is determined by comparing the figures for the start and end of the year, necessitating the subtraction of other withdrawals¹ that are not based on pension payments. Yearbooks or financial reports and Deutsche Bank's internal information are used as a source of data for companies and institutions not subject to mandatory insurance because they cannot go bankrupt or because regional authorities cover the risk of insolvency (e.g. public radio and television stations, savings banks).
- The social benefits, i.e. the occupational pensions that are paid, are also determined on the basis of information from PSVaG. The data obtained from PSVaG essentially comprise the net present values of accrued pension rights and the net present values of current benefits for all insured companies in a particular industry at year-end. So the data for the national accounts concerning the actual occupational pensions of a single period are not directly available. These are estimated using a calculation model, which in principle implements in the reverse direction the actuarial calculations of the net present value of employers. Such a way is possible because the calculations for the tax-effective allocation of pension provisions in the accounts are standardised by law.

If and insofar as employers do not wish to commit to occupational pensions themselves, they have the option of making payments to insurance corporations or pension funds on their employees' behalf, thereby establishing pension rights for their employees. The payments made and contributions received are shown in the aggregated statistics of the Federal Financial Supervisory Authority. While the pension funds are attributable in full to the occupational pensions sector, life insurers must separate this part of their business from the significantly larger area of private individual policies. Since no first-hand data are available, quotas calculated

¹ Examples of such withdrawals may be bankruptcies or the transfer of the relevant accrued rights to an insurers' syndicate.

by the Federal Financial Supervisory Authority are used for this purpose. This heading is also used for employee contributions to professional pension funds for the self-employed. Welfare budget figures provided by the Federal Ministry of Labour and Social Affairs are the sources of data used here, although information from industry associations is also consulted.

The sources of data and allocation of contributions to various groups of payers are illustrated in Overview 4—7 as follows:

Overview 4—7: Data sources and basis for the calculation of actual social contributions

Statutory pension insurance

Data basis: Information from the German Pension Fund (*Deutscher Rentenversicherung Bund*).

Responsibility for payment of contribution: In compliance with legal provisions. In special cases, the employer pays the entire contributions. Otherwise each party bears half the contribution.

Statutory health insurance

Data basis: Information from the Federal Ministry for Health and Social Security.

Responsibility for payment of contribution: In compliance with legal provisions. Contributions for recipients of bad-weather compensation, low earners and conscripts are paid by the employer. The government bears the contributions for recipients of bankruptcy support benefits. Otherwise each party bears half the contribution.

Statutory care insurance

Data basis: Information from the Federal Ministry for Health and Social Security.

Responsibility for payment of contribution: Payment of half the contribution

Private care insurance

Data basis: Business reports from the Private Health Insurance Association (*Verband der privaten Krankenversicherung*).

Responsibility for payment of contribution: Contributions are charged according to information provided by the Private Health Insurance Association.

Statutory accident insurance

Data basis: Annual account of the Federal Ministry for Health and Social Security and figures provided by the employers' liability insurance funds.

Responsibility for payment of contribution: Contributions are charged according to information provided by the employers' liability insurance funds and the Federal Ministry for Health and Social Security.

Statutory unemployment insurance

Data basis: Information provided by the Federal Employment Agency

Responsibility for payment of contribution: Contributions for low earners and conscripts are paid in full by the employer, otherwise each party bears half the contribution.

Overview 4–7 continued

Occupational pension schemes: Pension funds

Data basis: Data provided by the Federal Financial Supervisory Authority. Statistical data recording contributions made to the post office benevolent funds (*Post-Unterstützungskassen*) treated as pension funds are provided by the Federal Ministry of Finance.

Responsibility for payment of contribution: Separation into employers' and employees' social contributions in a model account.

Occupational pension schemes: Direct insurance

Data basis: Statistics on the nature and extent of occupational pension schemes (EVAS 62911), Infratest Sozialforschung (2003), Ifo studies on occupational pensions.

Responsibility for payment of contribution: Separation into employers' and employees' social contributions according to the records.

Occupational pension schemes: Employer's pension commitment

Data basis: Contributions based on information from the PSVaG and supplementary sources

Responsibility for payment of contribution: Contributions made by employer

Occupational pension schemes: Occupational pension schemes for civil servants

Data basis: Business reports of the supplementary pension funds

Responsibility for payment of contribution: Determination of employers' and employees' contributions with data from the pension funds

Occupational pension schemes: Old-age protection through company pension systems for salaried doctors, lawyers, pharmacists, etc.

Data basis: Information on the welfare budget of the Federal Ministry for Health and Social Security.

Responsibility for payment of contribution: Contributions are charged according to information provided by the Federal Ministry for Health and Social Security.

4.7.2.2 Imputed social contributions of employers

Under ESA 1995, imputed social contributions must, in order to show the full labour costs, be entered in the accounts as part of compensation of employees if employers pay social benefits 'out of their own funds' which are not funded by means of contributions or the liquidation of capital or by other third-party funds (e.g. government subsidies).

By far the greatest portion of imputed social contributions is related to superannuation schemes for established civil servants as well as benefits and income support. Mention should be made of the following data sources and calculation methods for the individual areas:

- Groupings of territorial authorities: The imputed social contributions are calculated by multiplying the current rate of contribution to the statutory pension insurance plus, at present, seven percentage points (this estimate is checked at irregular intervals) by the total salaries of currently employed civil servants. The allowance added to the contribution rate is treated as the cost equivalent of the benefits paid to pensioners as well as of the additional expenses of employers in the context of the occupational pension schemes for public employees. To this are added imputed contributions for

benefits paid to currently employed civil servants equivalent to the paid benefit expenditure. This information on the Federation and Federal States can be found from the financial statistics. A proportion of the entire volume of benefits is determined for the local authorities.

- In the domain of social security, the imputed social contributions correspond to the actual social benefits paid (pensions, support) to established civil servants as shown by the records of the social-security providers. Among non-profit institutions (church officials) the percentage relating to general government is added to the civil servants' salaries. The Deutsche Bundesbank provides internal figures as the basis of the imputed social contributions recorded for its officials.
- Among non-profit institutions (church officials) the percentage used in general government is added to the civil servants' salaries. The Deutsche Bundesbank provides internal figures as the basis of the imputed social contributions recorded for its officials.
- Contributions for those officials attributed to Deutsche Bahn AG are calculated in the same way as for national, regional and local authorities. Note: In the case of railway officials who are assigned to work for Deutsche Bahn AG and whose employer is the special railway fund (*Eisenbahn-Sondervermögen*), a special asset of the Federal government, the national accounts show the paid compensation of employees including the imputed social contributions of the employers among the non-financial corporations (Deutsche Bahn AG) and subsidies to the railway as the amount of the difference between the recorded compensation of employees and the actual reimbursements by the railway to the special fund. The imputed social contributions for civil servants at Deutsche Bahn AG flow back to the general government in the national accounts, which then bears the expense of pensions for railway officials.
- In the domain of non-financial corporations other than Deutsche Bahn and Deutsche Post, there are payments to dependent benevolent funds and low direct voluntary social benefits. The calculations are based, for the benevolent funds sector, upon the figures produced by the PSVaG and upon the surveys of labour costs for voluntary social benefits. Furthermore, estimates are made with the aid of quotas in relation to gross wages and salaries.

4.7.3 Quality, exhaustiveness and allowances in respect of calculations of compensation of employees

To gain an assessment of the quality and exhaustiveness of allowances, as well as how essential they are, it is necessary to consider the components which make up compensation of employees in detail. In order to calculate compensation of employees it is necessary to determine the social contributions of the employers and then to consider three basic elements relating to gross wages and salaries:

- The level of employers' social contributions is to a large extent determined by the levels of the statutory social contributions. The data on contribution levels are largely reported direct by the collection offices and so form a good picture of the actual payments made. No allowances need be calculated.

A large portion of the further contributions by employers, and particularly provision for occupational pensions in the form of the employer's pension commitment, can only be calculated by using models. To be valid, a model calculation depends on the enterprises making full use of the statutory scope for forming provisions. Assuming an economically rational approach, the figures for this portion of the social contributions should also be classified as reliable.

However, it is only possible to allocate figures for the overall social insurance contribution to the various groups of payers by making estimates. Particularly the new dynamics of the occupational and private pension schemes since the Retirement Savings Law (*Altersvermögensgesetz*) was introduced make it difficult to accurately attribute contributions to employers and employees. However, in future the national accounts will benefit from having better information on the breakdown of social contributions through the enlarged occupational pension questionnaire for the labour-cost survey.

- The calculations for the general government sector, which covers around 15% of the total compensation of employees in the economy, can be considered very reliable and exhaustive. These calculations make use of data taken from the financial statistics. The proportion that is estimated in the transition to gross wages and salaries is also low. The estimates for employers' social contributions are based on the statutory contribution rates and information from payroll offices on the structure of compensation of employees. No allowances are included for this sector.
- The calculations for the enterprise sectors in industries C–F, for which an extended system of regular large-scale censuses and current monthly reports exists, are also of very high quality. The compensation of employees for these industries amounts to 35% of total remuneration.

The baseline values for average earnings can generally be found by examining the large-scale census results. Only the average earnings of enterprises with fewer than 10 employees had to be estimated. In future, information will be available to us on these employees from the structural business statistics. The results for the most recent end of the time series are also relatively reliable and the baseline values are extrapolated using the results of the monthly reports, which relate mainly to enterprises with 20 and more employees. This could give too high an estimate of compensation of employees if above-average pay rises prevailed in these enterprises. However, because of the ability to specify the contribution rate and the regular recalculation of the baseline values, it is unlikely that there will be any lasting overestimation of pay trends.

Wages and salaries are basically determined by multiplying average earnings by the numbers of employees. The calculations of average earnings can thus be related to specific industries. Information on level of coverage of the calculations therefore mainly focuses on the degree to which the employment account is covered. Considering all industries together, the level of coverage for the employment account lies at almost 100%. Only the construction industry entails noticeably higher estimates. The increasing attractiveness and significance of a second occupation has been taken into account in our calculations from the second quarter of 2003 onwards. The allowance for auxiliary workers raises the average remuneration of the relevant industries and is determined on the basis of statistical data from the Federal Employment Agency.

- In the other industries, large-scale censuses or special surveys are also used wherever possible to find the baseline values for average earnings. However, the quality of the surveys is not equal in all industries. The results of the new annual service statistics still contain some obvious big variations. In other industries, the year-based material of the Federal Employment Agency had to be used.

The extrapolation of baseline values is also less reliable than in the sectors described above. Collective agreements, which are used in extrapolations, conceal structural effects such as increased part-time employment or the impact of a reduction of compliance with such agreements. Part-time effects are taken into account in our calculations using data from the employment statistics relating to the development of full-time and part-time employment.

In these industries as well, wages and salaries are basically determined by multiplying average earnings by the number of employees. In this case as well, information on the coverage of the calculations therefore mainly focuses on the degree of coverage of the employment account. In the industries in which data from the year-based material of the Federal Employment Agency is used, the effects of the threshold for payment of social contributions have to be considered as well.

The domain of domestic services needs to be noted, for it is covered to only a small extent by the data from the employment statistics and the year-based material. Allowances for multiple employments are added to the remuneration and allowances for the numbers of employees. The overall level of wages and salaries for this industry was determined with the help of a model calculation based on the time use survey of 2000/2001.

4.8 Other production and import taxes

Other production and import taxes include local trade tax, taxes 'A' and 'B' on real estate, road tax and administrative charges payable by enterprises, revenue from the national lottery and such like, which is similar to a tax, and undercompensation for VAT.

Revenue during the year 2000 in EUR bn:

Type of tax	EUR bn
Local trade taxes	27.03
Tax on real estate ' <i>Grundsteuer A</i> '	0.34
Tax on real estate ' <i>Grundsteuer B</i> '	8.52
Road tax payable by enterprises	1.62
Administrative charges payable by enterprises	0.14
Revenue similar to tax	3.12
Undercompensation of VAT	0.28
Other taxes on production.....	41.05

The other taxes on production are payable to general government out of net value added (at basic prices), those payable to the rest of the world being at present unknown. As the overview shows, local trade tax and real estate tax '*Grundsteuer B*' are currently the most important types of levy. As over recent years local trade tax has developed more and more from a traditional cost-related tax into an earnings-related tax, it could become necessary for a reallocation to be made in the national accounts once this tax has found its final form. The sources of information on other

taxes on production are the data on income as recorded in the public finance statistics. A time adjustment of the cash figures on the basis of the accruals principle has little sense, and will not take place, particularly in the case of the revenue from trade tax, since this consists of prepayments, adjustment payments relating to prepayments and settlement payments.

Administrative charges are then included as part of taxes on production rather than as part of the intermediate consumption purchases of companies, if the charges specified "are not related to the costs of those verifications conducted by the general government". As part of the conversion of the national accounting system to ESA 1995, all public areas of activity which involve revenue in the form of fees have been checked and allocations have been made to taxes on production and to intermediate consumption goods. The amount of VAT undercompensation to be included under other taxes on production is taken from the national accounts for agriculture and forestry. No source information is available for the allocation of other taxes on production to corporations or to individual companies included in the households sector. The ratio of the division between the two areas is governed by the respective production values.

4.9 Other subsidies on production

Section 3.26 has already described the calculation of other subsidies on production by the general government and by the European Union (2000: EUR 30.3 bn).

Data on other subsidies on production are obtained from the central government budget and the Federal Employment Agency (job-creation measures) as well as from the public finance statistics for state and local governments. As part of the ESA revision, the list of budget items relevant for payment of subsidies was rewritten for the central government and a special analysis was made of the initial materials for public finance statistics for the grouping figures of auxiliary debt servicing, contributions to state and local government special assets (e.g. hospitals) and other contributions for the state and local government. Based on extensive analysis of this material, the results were allocated in line with the type of subsidy and the recipient's sector and industry. Corresponding additional processing of the public finance statistics is conducted on a regular basis, in order to project the assumptions in the national accounts.

The subsidies granted by the European Union are apparent from the central government budget, whether they are handled as regular expenditure (with corresponding revenue budget items) or are recorded in an appendix to the budget.

Social security funds: expenditures under particular expense items are allocated to the other subsidies on production from the budget of the Federal Employment Agency. This comprises subsidies for staff costs, some of which are related to job-creation measures and the reintegration of the long-term unemployed.

4.10 Gross operating surplus

The gross operating surplus is determined residually in the German national accounts. This applies to the calculation by industry as well as by sector. In the households sector, there is a

distinction between the (gross) income of the self-employed (mixed income) and the gross operating surplus. The households sector includes non-market production for own use in the form of agricultural production in domestic gardens, building work undertaken by households and imputed income from the occupation of own dwellings.

Market producers which are unincorporated enterprises, provided they are not quasi-corporations, are also included in the households sector. In Germany, these include sole proprietorships, the self-employed, self-employed farmers and forms of cooperation below the status of a partnership, such as civil-law associations and collectives such as doctors', lawyers' and architects' practices or similar. In these legal forms of enterprise, their business transactions cannot be separated - at least not entirely - from the other transactions of their proprietors. The services of paid domestic employees (domestic services) and the letting of accommodation by households belong to the households sector. This sector also includes non-profit institutions serving households.

The gross operating surplus of the households sector comprises the gross operating surplus arising from owner-occupation of dwellings. The calculations on owner-occupation of dwellings use the stratification method (see section 3.17). To this is added the gross operating surplus of the domain of non-profit institutions serving households. The economy's gross operating surplus therefore consists of the gross operating surplus of the households sector and that of the non-financial and financial corporations sector and of general government.

4.11 Mixed income

As with the operating surplus, mixed income is also calculated residually in the German national accounts, while only occurring in the household sector. The delimitation of the household sector is described in section 4.10. Mixed income includes non-market production for own use in the form of agricultural production in domestic gardens and own-account building work. To this is added market production by market producers which are unincorporated enterprises, provided they are not quasi-corporations. In Germany, these include sole proprietorships, the self-employed, self-employed farmers and forms of cooperation below the status of a partnership, such as civil-law associations and collectives such as doctors', lawyers' and architects' practices or similar. The services of paid domestic employees (domestic services) and the letting of accommodation by households, for example, are also components of mixed income.

4.12 Consumption of fixed capital

Consumption of fixed capital in 2000: EUR 308.48 bn

4.12.1 Overview

Consumption of fixed capital (K.1) represents the amount of fixed assets used up, during the period under consideration, as a result of normal wear and tear and foreseeable obsolescence, including a provision for losses of fixed assets as a result of accidental damage which can be insured against (ESA 6.02). In 2000, the consumption of fixed capital in Germany amounted to EUR 308.48 bn, representing 15.1% of gross national income.

As in business accounting, consumption of fixed capital is not directly measurable in the national accounts either. It is effectively an imputed cost and is calculated in the framework of the capital stock estimations in accordance with certain established principles. The amount of consumption of fixed capital depends on the following factors:

- a) the precise definition of the fixed capital in question,
- b) the way in which the stock of fixed capital is assessed,
- c) the estimated service life of the specific type of consumable fixed capital,
- d) the selected depreciation method, and
- e) the valuation method.

In all points the calculation of consumption of fixed capital in Germany follows the recommendations of ESA 1995¹.

Point (a):

Consumption of fixed-capital in the national accounts applies to the **entire fixed assets**, in other words both to tangible fixed assets and to intangible fixed assets such as mineral exploration and computer programs. By definition, **livestock** are excluded². Major improvements to land are not estimated separately in Germany. They are included in gross fixed capital formation on buildings and structures. Costs of ownership transfer for undeveloped land are written down together with the corresponding construction categories.

Consumption of fixed capital by types of fixed assets:	2000
	EUR bn
Buildings (including costs of ownership transfer for undeveloped land)	145.50
Machinery and equipment	145.38
Intangible fixed assets.....	17.60
Total consumption of fixed capital.....	308.48

Point (b):

As no comprehensive direct data is available on the stock of fixed assets in Germany, it is assessed by means of the **perpetual inventory method (PIM)**. This approach is based on the idea that today's stock of fixed assets is composed of assets that were added to the stock at some time in the past. Taking into account the service life of fixed assets, we can calculate the percentage of assets added in past years, which are still operational in the stock at start of the year under consideration, and determine the time when these assets will be retire from the stock. If the depreciation method is applied, we can use this information to derive data on consumption of fixed capital for every reference period. The use of the Perpetual Inventory Method requires the following conditions to be fulfilled: (1) data series on gross fixed capital formation are available, which reach far back into the past, and (2) it is possible to estimate the average service life for the various types of fixed assets.

¹ Cf. Eurostat, ESA 1995, paragraphs 6.03 and 6.04.

² No consumption of fixed capital is stated for crops either, because it is not included in the calculations for the agricultural account of the Ministry of Food, Agriculture and Consumer Protection and for current accounting purposes consistency has to be maintained. Because of the minimal amounts involved, however, this does not affect the levels and development of national consumption of fixed capital.

Point (c):

The **average economic service life** is estimated for all goods which are subject to consumption of fixed capital. This is done, assuming normal wear and tear and foreseeable obsolescence as a result of technological progress. The estimation also covers the risk of losses due to insurable accidental damage. As it is unrealistic to assume that all goods with the same average service life and added in the same year will also retire at the same time, we use a *mortality (retirement) function* to distribute retirements so that they scatter around the average service life in a roughly bell-shaped manner. The **density function of the gamma distribution** is used as the mortality function.¹

Point (d):

Straight line depreciation is applied to assess consumption of fixed capital. The value of gross fixed capital formation for one year is distributed over the overall period of use in equal annual amounts according to the expected service life. The annual **depreciation rate** of a capital good is therefore the reciprocal of its service life in years, except in the investment year and in the year of retirement, when only half of the rate is applied – see mathematical model in section 4.12.2.1.

Point (e):

As in business cost accounting, the recording of consumption of fixed capital in the national accounts is supposed to ensure that real productive capacity is preserved. The consumption of fixed capital is therefore assessed on the basis of current replacement prices (costs) corresponding to **current prices**. This is in accordance with the valuation of fixed assets at current replacement costs (prices), i.e. at the purchasers' prices of the current period.

To sum up,

- if the perpetual inventory method (PIM) is used to calculate the stock of fixed assets,
- if linear depreciation is used to assess the consumption of fixed capital for the stock of fixed assets including the costs of ownership transfer on land, and
- if consumption of fixed capital is calculated at current prices for the reference period,

the amount of consumption of fixed capital will depend on the following two factors:

- (1) time series on **gross fixed capital formation** which reach far back into the past, and
- (2) estimates of the **service life** of each type of fixed asset.

4.12.2 Calculation with the perpetual inventory method (PIM)

4.12.2.1 Mathematical model

If the PIM is applied, the following **mathematical model** can be used to determine the consumption of fixed capital directly from these two basic pieces of information without first having to assess the total value of fixed assets:

¹ See H. Lützel, 'Das reproduzierbare Anlagevermögen in Preisen von 1962', in WiSta 10/1971, pp. 593 et seq.

For each investment year i , there is a mortality function $f_i(n)$, which is calculated as follows:

$$f_i(n) = \sum_{\tilde{n}} f_{\tilde{n}}(n) \cdot \frac{I_{i,\tilde{n}}}{I_i},$$

where n is the service life of a fixed asset in years, \tilde{n} is the average service life in years, $f_{\tilde{n}}(n)$ is the mortality function for assets with an average service life of \tilde{n} years, I_i represents the gross fixed capital formation in year i , and $I_{i,\tilde{n}}$ represents the gross fixed capital formation for year i with an average lifespan of \tilde{n} years.

The retirements for the reference year t (A_t) are obtained as the sum of assets added during the past years i and having a service life of $n = t - i$ years:

$$A_t = \sum_{i < t} I_i \cdot f_i(t-i).$$

On the basis of the mortality function, the depreciation function $g_i(t)$ can be calculated. For each investment year i , the depreciation function indicates the percentage of all gross fixed capital formation to be written off in reference years $t \geq i$:

$$g_i(t) = \sum_{n \geq t-i} d_t(n) \cdot f_i(n).$$

The last year of depreciation is the year in which the final asset acquired in the investment year under examination is withdrawn from the stock of fixed assets.

Where $d_t(n)$ is the rate of depreciation in reference year t for capital goods with a service life of n years, **straight line depreciation** may be expressed in the following equation:

$$d_t(n) = \frac{1}{2n} \text{ for } t = i \text{ and } t = i + n,$$

$$d_t(n) = \frac{1}{n} \text{ for } i < t < i + n.$$

The rate of depreciation is only half as high in investment year i and in the year of retirement $i + n$ as in the intervening years, because it is assumed that in the first and last years the assets are included in the stock for half a year on average.

The **consumption of fixed capital** in a reference year **for assets added in a given investment year** is obtained by multiplying the respective share of depreciation with the value of gross fixed capital formation. The following applies to consumption of fixed capital in the reference year t related to the additions of the year i ($D_{i,t}$):

$$D_{i,t} = I_i \cdot g_i(t) = I_i \cdot \sum_{n \geq t-i} d_t(n) \cdot f_i(n).$$

The consumption of fixed capital in reference year t (D_t) is the aggregate consumption of fixed capital for the various investment years:

$$D_t = \sum_{i \leq t} D_{i,t}.$$

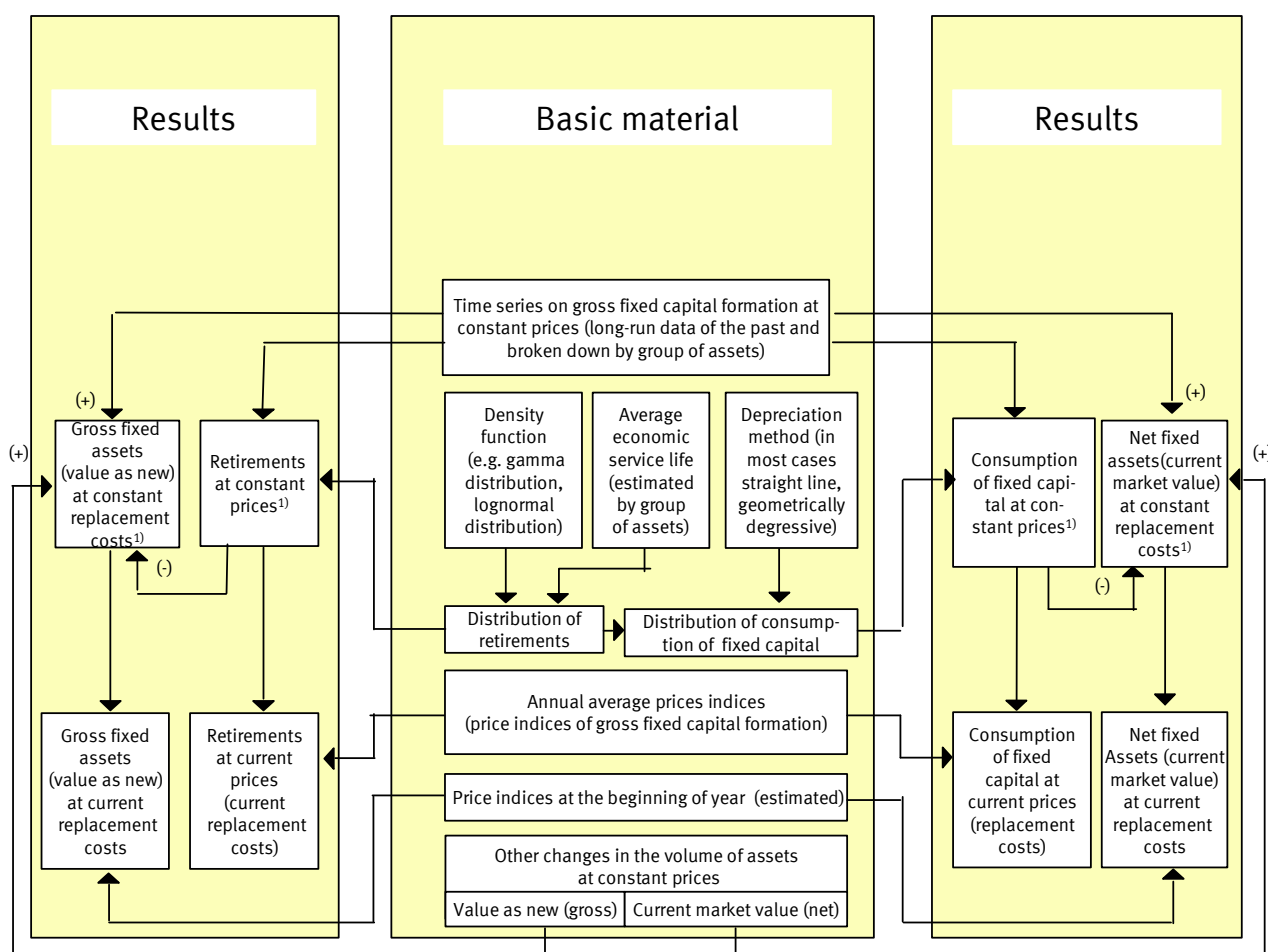
This model is used to calculate the **consumption of fixed capital at constant prices** for each reference year on the basis of a **time series of annual gross fixed capital formation at constant prices** and of the distribution of consumption of fixed capital. These are finally converted into **current prices**, i.e. the acquisition prices of the capital assets in the reference year, with the aid of highly detailed average annual price indices for the various types of capital goods.

4.12.2.2 Schematic representation

Overview 4–8 schematically outlines the use of the perpetual inventory method for the calculation of fixed assets and consumption of fixed capital. This description clarifies the essential points of the method used:

- To begin with, we need some basic information, including long-term series of data on gross fixed capital formation (at constant prices for calculations at constant and current prices), approaches to service life determination and corresponding price indices for the various fixed assets needed for calculations at current price, provided that the depreciation method and the distribution of retirements are taken for granted.
- Consumption of fixed capital is calculated in a self-contained way, which does not require fixed assets to be calculated in an intermediate step (“inner circle”).
- Any deviations from the normal economic trend that this model imputes can be recorded as other changes in the volume of assets (see section 4.12.2.5). This item enables us to ensure that exceptional, unanticipated events, which have an impact on the value of fixed assets and, as a later consequence, on the size of consumption of fixed capital, are included in the calculation.

Overview 4—8: Calculation of fixed assets and consumption of fixed capital using the Perpetual Inventory Method (PIM)



1) The respective data on historic cost value can be derived from the time series on gross fixed capital formation at current prices.

4.12.2.3 Long time series of gross fixed capital formation

Time series of gross fixed capital formation under ESA 1995 are available for Germany for the years from 1991 onwards according to the revised 2005 status. For the pre-1991 period, only data on the former Federal Republic are included in the national accounts. The old stocks of the former GDR and the relevant consumption of fixed capital are added to the PIM results in a separate calculation. At the time of the calculations, only revised data on buildings and structures were available for the former FRG between 1970 and 1991, because only the period from 1991 onwards was initially revised. For this reason, machinery and equipment and intangible assets had to be recalculated for the period prior to 1991 in 2000 prices on the basis of the backward calculations in 2002 and the revision in 2005. The internal time series of gross fixed capital formation used in the PIM start for buildings in 1799, for machinery and equipment in 1899 and for intangible assets in 1945 or even later.

Gross fixed capital formation is broken down by

- more than 200 types of machinery and equipment, eight kinds of buildings and four types of other fixed assets,

- 60 industries¹,
- institutional sectors of the national accounts (five sectors and seven subsectors) and
- market producers and other non-market producers,

in other words according to four different classification features. For the purposes of the calculation of fixed assets and consumption of fixed capital, the already highly detailed capital investments need in part to be differentiated to an even greater extent according to their service life (see the example of roads in section 4.12.3.3). Also, in the case of machinery and equipment, the balance of acquisitions less disposals of existing equipment has to be distributed over industries, because only gross fixed capital formation in new assets is shown for industries in national accounts. Ignoring the balance of existing machinery and equipment in the calculation of fixed assets and consumption of fixed capital would result in excessive levels of consumption of fixed capital and fixed assets being recorded for machinery and equipment. Considerable amounts of sales are recorded, particularly in the case of used ship exports and used motor vehicles sold to households, as well as in the process of scrapping of machinery and equipment. Nonetheless, genuine data sources are only available for the sales of used machinery and equipment by general government, which are included as such in the general government account. For this reason, the overall figure is distributed over the industries for the recorded categories of assets in line with the industry structure of new machinery and equipment for each reported kind of equipment. The data of the general government sector are included for the industries concerned (see Overview 4—10 in section 4.12.3.1). The consumption of fixed capital and fixed assets for buildings by industry are calculated with the new buildings data because the balance for the national economy is zero and there are no data on acquisitions less disposals between industries available.

4.12.2.4 Service life approaches

A category which is to be determined for all series of data on gross fixed capital formation is **average (economic) service life** – the second major input needed for the perpetual inventory method. Service life is the period, during which an asset's consumption is recorded. This value is insecure, because it is geared to the future. In order to determine it in line with the ESA-1995, it is necessary to take into account normal wear and tear as well as economic obsolescence and losses of fixed assets as a result of accidental damage which can be insured against. It is assumed that the assets are correctly maintained and minor repairs are continuously made. Service life approaches are determined by breaking down gross fixed capital formation by type of asset in as much detail as possible. The 2005 revision brought about minor modifications in the assumptions on the assets' average service lives, as they were adapted to the new asset structures.

The main reference points for the establishment of average service life for the various types of **machinery and equipment** and **part of the buildings** are set out in the **tables of capital allowances** published by the Federal Ministry of Finance. These tables contain detailed lists showing the service life that may be assigned to the various types of fixed asset for the calculation of capital allowances in tax returns. As the determination of an asset's fiscal life is based on the assumption that individual businesses act according to the principle of precaution,

¹ A60 in the German national accounts corresponds to the two-digit categories in the classification of economic activities, edition 2003 (WZ 2003).

an asset's real life is, as a rule, longer than its fiscal life. That is why the figures of the tables of capital allowances are augmented by an average 20 to 100%, when determining the average (economic) service life for the purpose of national accounts. The information used for that purpose was provided by enterprises and associations (expert assessments). Service life data of equal asset groups is sometimes differentiated by industry. For example, lorries operated in construction are supposed to have shorter service lives than those operated in other industries. To determine the service life by industry a cross-classification of gross fixed capital formation is applied as described in section 5.10.3.

The service lives for **buildings and structures**, particularly residential buildings, commercial buildings and public buildings, were taken from the long-term accounts without major modification. Information from other sources was required when it came to determining average service lives for **roads and structures of general government and military fixed assets**, since these were not included in the capital-allowance tables. In the case of roads and waterways, comprehensive valuations were taken over from DIW, the German Institute for Economic Research (*Deutsches Institut für Wirtschaftsforschung*),¹ which in addition to analyses of the financial statistics also provided an important basis for the detailed identification of the time series of gross fixed capital formation in these areas. For hydrological works in the care of local authorities, the Association of Regional Water Authorities (*Ländergemeinschaft Wasser*) has produced guidelines on average service lives.² In addition, the results of a statistical survey conducted by the Ifo Institute for Economic Research (*Ifo-Institut für Wirtschaftsforschung*) on the service lives of infrastructural works³ and technical data relating to the service lives of outdoor installations from the official guidelines for the estimation of the market value of land⁴ were also used to estimate average service lives. The main basis for the estimation of the average service lives of military equipment is the 1998 edition of the Public Expenditure Guidelines (*Kostenrichtlinie*) issued by the Federal Ministry of Defence. The estimates for military buildings were made similarly to those for civilian buildings.

In order to determine the service life of **intangible fixed assets**, it was also necessary to analyse a number of sources. In the case of mineral exploration data was taken from the capital allowance tables. The service life of software varies between two categories. A higher service life is applied for mainframe computer software than for PC software. In the course of the eighties, the percentage of PC software increased steadily. The percentages of both software categories were also differentiated according to industry. The average service lives of entertainment, literary or

¹ See particularly Kirner, W.: Zeitreihen für das Anlagevermögen der Wirtschaftsbereiche in der Bundesrepublik Deutschland, DIW-Beiträge zur Strukturforchung, Heft 5, Berlin 1968; Bartholmai, B./Enderlein, H./Niklas, J.: Vorausschätzung des Ersatzinvestitionsbedarfs für die Bundesverkehrswege, DIW-Beiträge zur Strukturforchung, Heft 83, Berlin 1985; Enderlein, H./Kunert, U./Link, H.: Berechnung und Bewertung der Verkehrsinfrastruktur in den neuen Bundesländern, DIW-Beiträge zur Strukturforchung, Heft 149, Berlin 1994.

² Ländergemeinschaft Wasser, Leitlinien zur Durchführung von Kostenvergleichsrechnungen, guidelines compiled by the LAWA working party on cost-benefit studies in water-resources management, 1993, Annex 1.

³ M. Richter, Herstellungskosten und Folgelasten kommunaler Investitionen, text volume, Ifo-Studien zur Finanzpolitik, No 52, Munich, 1992, p. 109.

⁴ W. Kleiber (ed.), 'Sammlung amtlicher Texte zur Wertermittlung von Grundstücken in den alten und neuen Bundesländern', in Bundesanzeiger (Official Gazette of the Federal Republic), No 221a, Cologne, 1992, Annex 7, p. 83 et seq.

artistic originals were estimated on the basis of detailed information on films, TV productions, sound recordings, musical compositions, artistic interpretations and text.¹

Different average service lives result **for each year of capital investment** according to the type of asset, industry and sector concerned. The estimates of service life according to the type of asset are revised at relatively long intervals approximately every 10 to 15 years. This is based on various considerations. For example, during recent decades of the last century the fiscal service lives were reduced several times, but some were lengthened in 2001. However, not every change in the fiscal service life will also affect economic service life. The service lives used for tax purposes are only one source among several and may provide an indication of the fact that the length of economic service life might have changed. For example, economic service life is modified on the basis of expert assessment and checks on the plausibility of the results. But structural effects may occur even if the service life approaches in the most detailed breakdown by asset do not change at all. Each capital investment year therefore has its particular service life distribution. The average service lives by type of asset and the range of the most detailed underlying average service lives are presented in Overview 4–9.

**Overview 4–9: Average service lives and range of average service lives
within the group by type of asset for the 2000 investment year
in years**

Type of asset	Average service life	Range of average service lives by group
Buildings and structures	66	15–150
– Dwellings	74	40–95
– Roads.....	57	35–116
– Other structures of general government	47	25–150
– Non-residential buildings of general government	66	25–68
– Other non-residential buildings and structures	53	15–100
Machinery and equipment (according to CPA)	12	5–30
– Transport equipment	11	8–25
Motor vehicles, trailers and semi-trailers (34).....	9	8–15
Other transport equipment (35).....	21	12–25
– Other machinery and equipment.....	12	5–30
Fabricated metal products (28)	18	14–22
Machinery and equipment n.e.c. (29)	13	8–30
Office machinery and computers (30).....	5	5–9
Electrical machinery and apparatus not elsewhere classified (31).....	18	8–22
Radio, television and communication equipment etc. (32).....	10	5–17
Medical, precision and optical instruments, watches and clocks (33).....	15	10–22
Furniture, musical instruments, sports goods, etc. (36)	16	8–30
Other machinery and devices (parts from 17 – 27)	13	7–20
Cultivated assets		
– Vineyards	20	
– Hop fields.....	15	
– Asparagus fields.....	8	
– Fruit trees plantations.....	10	
Intangible fixed assets	5	5–30

¹ See also Frankford, L.: 'Urheberrechte in den Volkswirtschaftlichen Gesamtrechnungen' in WiSta 5/2000, p. 320 et seq.

4.12.2.5 Effects of other changes in the volume of assets on consumption of fixed capital

Under ESA 1995, changes in value caused by extraordinary events which deviate from the original assumptions used in the PIM are recorded as **other changes in volume of assets**. This heading covers **special retirements** from the fixed assets which were formerly taken into account in the German national accounting system. This item relates in particular to the reduction of refinery capacity and of the iron and steel industry and shipbuilding due to the shipyard crisis as well as incorporating adjustments to the gross stock, when used ships are sold abroad.¹ Furthermore, this item has been used to record special retirements of old assets from the former GDR which are no longer usable from an economic point of view, provided that these assets were not already excluded when determining the initial stocks as of 1 July 1990. Correction is also required in the case of repeated sales of real estate within short intervals of time: It is assumed that real estate is sold at market prices and that it is not possible, as a rule, to realise the full costs associated with the transfers of ownership (tax on purchase of real estate, fees of estate agents, notaries and courts). The respective amount should be considered for buildings under special retirements caused by costs associated with the transfers of ownership. And, finally, the high losses of fixed assets, which were caused by the flood in August 2002, were also recorded in this category as catastrophic losses.

The perpetual inventory method predetermines all effects that gross fixed capital formation of a given year exerts on all elements of fixed assets calculations, until the last asset resulting from that investment year will be withdrawn from the stock. That means that whenever special retirements of fixed assets are recorded it is necessary to make the corresponding **counter entries for consumption of fixed capital** and retirements in the following years. Otherwise, for example, consumption of fixed capital would be recorded for assets, which are no longer in the stock.

The consumption of fixed capital is therefore determined as follows:

- Consumption of fixed capital from the PIM
- + Consumption of fixed capital on old assets from the former GDR
- Counter entries for consumption of fixed capital corresponding to other changes in the volume of fixed assets
- = Total consumption of fixed capital

4.12.3 Consumption of fixed capital of other non-market producers

Consumption of fixed capital of other non-market producers, 2000: EUR 31.77 bn

4.12.3.1 Overview and significance

Only the **consumption of fixed capital of other non-market producers of the general government (S.13)** and of the **non-profit institutions serving households (S.15)** has a direct influence on the level of gross domestic product and gross national income. The output of other non-market

¹ See Schmidt, L.: „Reproduzierbares Anlagevermögen in erweiterter Bereichsgliederung“ in WiSta 5/1986, p. 503 et seq.

producers is to be valued as the sum of their production costs, in which consumption of fixed capital is included (see also ESA 1995, paragraph 3.53).

Overview 4–10 provides a tabular synopsis of the market and non-market producers in these two sectors, broken down by industry.

Overview 4–10 Industries in which general government (S.13) and/or non-profit institutions serving households (S.15) are involved

WZ 2003 No.	Industry	S.11/S.12/ S.14	S.13	S.15
01	Agriculture, hunting and related service activities	MP	MP	
02	Forestry, logging and related service activities	MP	MP	
41	Collection, purification, distribution of water.....	MP	MP	
63	Supporting and auxiliary transport activities	MP	MP/NMP	
70	Real-estate activities.....	MP	MP	MP
73	Research and development.....	MP	NMP	NMP
75	Public administration and defence; compulsory social security		NMP	
80	Education	MP	NMP	NMP
85	Health and social work	MP	NMP	NMP
90	Sewage and refuse disposal, sanitation and similar activities	MP	MP	
91	Activities of membership organisations not elsewhere classified...	MP		NMP
92	Recreational, cultural and sporting activities.....	MP	NMP	NMP
MP	Market production			
NMP	Other non-market production			

The consumption of fixed capital of other non-market producers in Germany fully adheres to the recommendations of the Task Force 'Consumption of fixed capital on roads, bridges, etc.'¹. This is already clear from Overview 4–10 in the case of **recommendation 1** which shows the clear distinction that is required between market and non-market production according to industries. Overview 4–11 documents the amount of detail in the calculation of consumption of fixed capital of non-market producers of the general government sector by type of asset, subsector and industry. This detailed calculation is relatively well supported by source data drawn from the financial statistics and other sources (see section 4.12.2.3). The accounting categories for roads and other structures of the general government exceed the distinctions for roads and further parts of the public infrastructure required by **recommendations 2 and 3** in terms of complexity. Significant parts of the infrastructural works contained in the checklist within recommendation 2 are also deemed to be market producer units in Germany, e.g. water supply infrastructure, sewage and refuse disposal systems, railway lines, airports.

¹ See Eurostat: document GNIC/011/Rev. 1, 2003.

Overview 4—11: Calculation of consumption of fixed capital for the non-market producers of the general government sector
– Coordination chart (cross classification) –

Activity	Type of asset			Sectors S.13...				Economic activities					
	Machinery and equipment	Buildings and structures	Intangible assets	Central government	State government	Local government	Social security funds	Transport, storage & communication	Research and development	Public administration & defence; compulsory social sec.	Education	Health and social work	Recreational, cultural and sporting activities
Non-market producers				11	12	13	14	WZ63	WZ73	WZ75	WZ80	WZ85	WZ92
Buildings and structures													
Roads (WZ 75)													
Federal government													
Federal motorways		x		x						x			
National roads		x		x						x			
State government													
Trunk roads		x			x					x			
Urban roads		x			x					x			
Local governments													
National and regional trunk roads		x				x				x			
Local major roads		x				x				x			
District roads		x				x				x			
Other public civil engineering works													
Federal government													
Transport (WZ 63) - water ways -		x		x				x					
Research and development (WZ 73)		x		x					x				
Public administration (WZ 75)		x		x						x			
State government													
Transport (WZ 63) - ports -		x			x			x					
Research and development (WZ 73)		x			x				x				
Public administration (WZ 75)		x			x					x			
Education (WZ 80)		x			x						x		
Health care (WZ 85)		x			x							x	
Cultural activities (WZ 92)		x			x								x
Local government													
Transport (WZ 63) - road lighting, water courses-		x				x		x					
Public administration (WZ 75)		x				x				x			
Education (WZ 80)		x				x					x		
Health care (WZ 85)		x				x						x	
Cultural activities (WZ 92) - sports facilities, gardens		x				x							x
Non-residential Buildings													
Federal government													
Research and development (WZ 73)		x		x					x				
Public administration (WZ 75)		x		x						x			
State government													
Research and development (WZ 73)		x			x				x				
Public administration (WZ 75)		x			x					x			
Education (WZ 80)		x			x						x		
Health care (WZ 85)		x			x							x	
Cultural activities (WZ 92)		x			x								x
Local government													
Public administration (WZ 75)		x				x				x			
Education (WZ 80)		x				x					x		
Health care (WZ 85)		x				x						x	
Cultural activities (WZ 92)		x				x							x
Social security funds		x					x			x			
Military buildings and structures													
Buildings		x		x						x			
Other structures		x		x						x			
Machinery and equipment													
Federal government													
Transport (WZ 63)	x			x				x					
Research and development (WZ 73)	x			x					x				
Public administration (WZ 75)	x			x						x			
Military	x			x						x			
State government													
Transport (WZ 63)	x				x			x					
Research and development (WZ 73)	x				x				x				
Public administration (WZ 75)	x				x					x			
Education (WZ 80)	x				x						x		
Health care (WZ 85)	x				x							x	
Cultural activities (WZ 92)	x				x								x
Local government													
Transport (WZ 63)	x					x		x					
Public administration (WZ 75)	x					x				x			
Education (WZ 80)	x					x					x		
Health care (WZ 85)	x					x						x	
Cultural activities (WZ 92)	x					x							x
Social security funds	x						x			x			
Intangible fixed assets (software)													
Federal government													
Transport (WZ 63)			x	x				x					
Public administration (WZ 75)			x	x						x			
State government													
Research and development (WZ 73)			x		x				x				
Public administration (WZ 75)			x		x					x			
Education (WZ 80)			x		x						x		
Local government													
Public administration (WZ 75)			x			x				x			
Education (WZ 80)			x			x					x		
Health care (WZ 85)			x			x						x	
Cultural activities (WZ 92)			x			x							x
Social security funds			x				x			x			

For the non-market producers in the sector of non-profit institutions serving households, cumulative valuations are made for each of the following categories: buildings and structures (including a separate assessment for own-account building), machinery and equipment, and software. The consumption of fixed capital, distributed by type of fixed asset, is then broken down into the economic activities listed in Overview 4—10 above with the aid of the investment ratios. These calculations reveal the following values:

Consumption of fixed capital for non-market producers in the sectors of general government (S.13) and non-profit institutions serving households (S.15) by category of fixed asset

Figures for 2000 in EUR bn

Consumption of fixed capital by types of fixed assets:	S.13	S.15
Buildings and structures (including costs of ownership transfer for undeveloped land)	22.97	1.39
Machinery and equipment	5.17	0.71
Intangible fixed assets (software).....	1.28	0.25
Total	29.42	2.35
Of which: Public administration (NACE Div. 75)	19.05	

4.12.3.2 Long time series of gross fixed capital formation

Recommendation 4 on ensuring consistency of time series of gross fixed capital formation also for the early years is complied with by the German calculation of fixed assets. Long-term series for gross fixed capital formation in the general government sector were traditionally available in the German national accounts in respect of machinery and equipment, public buildings and public civil engineering works, including roads. Although not written down prior to the introduction of ESA 1995, figures for the gross stocks of public civil-engineering works were calculated and published. In the transition to ESA 1995, these long-term series were used and adapted correspondingly. This included identifying market producers, such as for instance communal waste disposal facilities, and allocating them to the market producers of the general government sector.

In addition, time series for gross fixed capital formation were created for software and military equipment and buildings which can be used for civilian purposes, although data collection difficulties meant that initially they did not go back far enough into the past in order to yield sufficiently reliable data on fixed assets and consumption of fixed capital for the years prior to 1991. In order to generate backward data, artificial time series on gross fixed capital formation were therefore constructed for military facilities in years prior to 1960 and 1967 by taking into account civilian public investment, because no figures were available on the extent to which buildings (barracks, airfields, etc.) and machinery and equipment (unarmoured vehicles, communications technology, etc.) were taken over from the Allies or from other interim uses by the Federal Armed Forces. In the 2005 revision, these series were adjusted to the revised results of the assessment by building types, whose data go back as far as 1970.

The 2005 revision included for the first time figures from 1970 onwards for the balance of sales and purchases of developed land for buildings of the general government. This means that at least the purchases and sales of buildings recorded in the financial statistics are included in the consumption and stock of fixed capital. In the absence of appropriate sources of data, disposals other than via sales recorded in the financial statistics (including outsourcing and sell and

leaseback operations) are not taken into account in the calculations so far. Since in many instances the general government sector is likely to remain economic owner of these assets, however, the fact that these cases are not taken into account would be covered in the discussions concerning the revision of the SNA with respect to the distinguishing clearly between legal and economic owners.

For the year 2000, the additions of depreciable fixed capital were as follows:

Additions to the stock of fixed assets by non-market producers from the sectors of general government (S.13) and non-profit institutions serving households (S.15) by asset category
Figures for 2000 in EUR bn

Additions to the stock by types of fixed assets	S.13	S.15
Buildings and structures (including costs of ownership transfer for undeveloped land).....	27.66	1.53
Machinery and equipment	5.07	0.96
Intangible fixed assets (software)	1.54	0.34
Total.....	34.27	2.83

4.12.3.3 Service life approaches: the case of roads

Where necessary, in estimating the service life approaches for the time series of gross fixed capital formation in the accounting categories shown in Overview 4—11 a further breakdown is applied if it is necessary and possible. This can be illustrated in the example of roads:

Most of the data on roads are drawn from studies conducted by DIW. As in DIW, a road is not considered to be a homogeneous asset; instead it is considered in terms of the following three investment aggregates which all have different average service lives¹ :

Earthwork	116 years
Road surface	35 years
Civil engineering structures (e.g. tunnels and bridges)	70 years

In the case of roads built in the era of the former GDR, DIW has estimated shorter service lives due to the poor state of maintenance².

The financial statistics for the Federal, state and local government contain information on road construction work which is subdivided according to the following types of road:

- Federal motorways
- National roads and regional trunk roads
- Local major roads
- District roads

¹ As an example, refer to Enderlein, H., Kunert, U., Ermittlung des Ersatzinvestitionsbedarfs für die Bundesverkehrswege, DIW-Beiträge zur Strukturforschung, Heft 134, Berlin 1992, pp. 68 and 80.

² Enderlein, H. /Kunert, U./Link, H.: Berechnung und Bewertung der Verkehrsinfrastruktur in den neuen Bundesländern, DIW-Beiträge zur Strukturforschung, Heft 149, Berlin 1994, p.51 et seq.

Based on the DIW studies, differences in composition from one road type to another and over time were taken into account for capital formation aggregates¹. This becomes clear when examining the distribution of service lives for the Federal motorways.

Distribution of service lives of Federal motorways for selected benchmark years				
Component	Service life in years	Shares of components as a percentage of all additions to the stock		
		1970	1985	2000
Earthwork.....	116	27	19	16
Road surface	35	35	46	51
Civil engineering structures	70	38	35	33
Total motorways.....		100	100	100
		Average service life in years		
		70.2	62.6	59.5

The calculation of consumption of fixed capital for roads in Germany according to the DIW studies formed part of the basis for the ideal model described in the Task Force **recommendation 5**. The high degree of compliance with this recommendation within Germany therefore renders it unnecessary to apply the specifications to countries with less detailed calculations. According to **recommendation 6**, the assumed service lives should be checked every 5 to 10 years, taking into account the changes occurring between new construction and reconstruction. This is also being implemented fully by means of regular adjustments to the composition of the components.

A separate mortality distribution is calculated for each individual service life group. Consequently, separate retirement and consumption of fixed capital percentages are calculated for each service life group based on the gamma function which are then added. According to **recommendation 7**, a mortality function in the form of a bell-shaped curve should be used for the public infrastructure. The density function of the gamma distribution is similar and is used in the entire calculation of fixed assets and consumption of fixed capital for Germany (see section 4.12.1). The German capital stock calculations therefore also corresponds in general, including the public infrastructure calculations, to the final recommendation of the Task Force.

4.12.3.4 Service life approaches: the case of machinery and equipment for public administration and defence, and compulsory social security

The consumption of fixed capital of machinery and equipment in the general government sector has not been determined in the way used previously which entailed applying a standard service life distribution to the civilian sector; instead, the distributions used have been taken from the corresponding industries which result from the cross-classification of gross fixed capital formation. As there is no information on the extent to which the product structure of investment in machinery and equipment in the general government sector differs from that in the respective industries overall, the product structure of the relevant industries (Overview 4–10) has been applied. Taking as example the data for public administration and defence, and compulsory social security from WZ 75, the distribution of service lives for machinery and equipment is as follows:

¹ Cf., for example, Enderlein, H., Kunert, U., loc. cit., pp. 61 and 79.

Distribution of service lives of machinery and equipment in the domain of public administration and defence, and compulsory social insurance for selected benchmark years by product groups with matching average service lives:

Service life in years	Shares of each group of assets as a percentage of all additions to the stock as a percentage		
	1980	1990	2000
5	0.1	0.1	8.9
6	–	18.5	–
7	–	–	0.9
8	26.4	10.0	17.0
9	3.8	1.8	2.0
10	13.7	14.1	24.1
11	–	–	0.5
12	2.0	7.1	3.8
13	2.1	2.0	4.4
14	–	2.7	6.0
15	18.3	11.8	12.4
16	–	–	1.0
17	1.6	11.8	4.0
18	0.6	0.1	1.0
20	31.4	20.0	9.9
22	–	–	1.3
25	–	–	2.5
30	–	–	0.1
Total	100	100	100
	Average service life in years		
	13.7	12.8	12.2

4.12.3.5 Final remarks regarding the accounting method

On the basis of the time series of gross fixed capital formation and service life approaches for the various components of fixed assets, the compilation of which has been described above, the consumption of fixed capital for the other non-market producers is calculated at 2000 prices in accordance with the mathematical model explained in section 4.12.2.1 above. The **total consumption of fixed capital** for one reference year is made up of the consumption in various years of investment. This consumption results from the total consumption during the reference year for the individual investment years from which fixed assets are still held in the stock.

As described before in section 4.12.2.5, the consumption of fixed capital for old stocks of the former GDR and the counter entries for the other changes in the volume of fixed assets are added to this.

Since 2000 is the base year for prices, no further calculations are necessary for that year. The consumption of fixed capital for all the other years must then be converted into current prices with the aid of the annual average price indices of gross fixed capital formation for each reference year, broken down into a detailed catalogue of defined asset types (Overview 4–11 above shows this catalogue for institutional sector S.13).

For a description of the consumption of fixed capital as real, chained values, the calculation process of inflating is repeated once again with the average annual price indices of the previous

year, so that figures for consumption of fixed capital differentiated fully by types of assets are also available at the previous year's prices. These are then applied to generate chain indices and chained absolute values for the required levels of aggregation using the general chaining method. Because of the very stable product structure, which only varies slightly from year to year through additions and retirements (withdrawals), the deviations of the chain indices from the fixed price index for the consumption of fixed capital are very slight.

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Chapter 5 Expenditure approach

5.0 Calculating GDP with expenditure aggregates (final uses)

The expenditure approach estimates the economic performance of a national economy from the expenditure side (otherwise referred to as final uses). At the core of this approach is the value of the final use of domestic goods and services. Figures for final consumption expenditure, fixed capital formation and exports (minus imports) therefore have to be determined. These aggregates are sometimes also known as categories of final use. The composition of gross domestic product by categories of use is shown in the following table.

Breakdown by category of use

Figures for 2000 in EUR bn

Consumption expenditure	1 606.07
of private households.....	1 180.33
of non-profit institutions.....	33.83
of the general government.....	391.91
Gross capital formation	449.18
Machinery and equipment.....	176.66
Construction.....	241.85
Other fixed assets*).....	23.92
Changes in inventories and net acquisitions of valuables	6.75
Net exports of goods and services	7.25
Exports.....	688.39
– Imports	681.14
Gross domestic product	2 062.50

*) Livestock and crops, intangible assets, cost of ownership transfer for undeveloped land

The proportion of consumer expenditure in the gross domestic product was 77.9% in 2000, with 58.9% expended as household final consumption expenditure and 19.0% as general government final consumption expenditure. Gross fixed-capital formation amounted to 21.8% of GDP (gross fixed-capital formation 21.5%, changes in inventories and net acquisitions of valuables 0.3%). Net exports of goods and services amounted to 0.4%, with exports making up 33.4% of this, and the ratio between imports and GDP was 33.0%. The structure for the year 2000 is not absolutely typical of the full time series. In fact, the share of GDP represented by net exports of goods and services during recent years has been considerably higher (for example, 5% in 2005).

5.1 Statistical framework

Three main approaches can be used to find the gross domestic product (GDP) via the expenditure side. Firstly, the buyers or users of goods can be asked about their expenditure. Secondly, the producers of goods and services can be asked about their deliveries to consumers, investors and the rest of the world. Thirdly, the consumption structures for goods and services (commodity flow method) can be estimated. In theory, all three approaches lead to the same result, which means that the decision about which one to use in practice mainly depends on the statistical circumstances and the timeliness required by users.

Many statistical sources are used to calculate the various categories of use. Although the emphasis is on official sources, non-official sources are also used. Some basic statistics come from specific annual surveys, whilst others are based on the aggregated totals of quarterly or monthly figures. The main statistical sources for the different categories of use as well as the calculation methods are summarised below:

a) Household final consumption expenditure

A combination of methods is used for calculating the consumption expenditure of households in the German national accounts. In the routine calculation process, consumption expenditure is chiefly assessed by means of the 'supplier method'. In this method, data on the sales and the marketing orientation of suppliers to households, particularly commercial establishments, are used to determine the level of consumption expenditure. These results are complemented by special product assessments, e.g. for tobacco goods, motor vehicles and fuels. Also, the results are integrated using the commodity-flow method (input-output framework) during the final calculations and major revisions of the national accounts. Additionally, the results of the five-year household surveys are used in major revisions for checking and adjusting calculations of consumption.

The primary source of data on the turnover of the various supply categories is a wide range of official statistics. Foremost among these are the annual company surveys in the domains of manufacturing and commerce and in most branches of the transport and communications industries. Information from secondary statistics is useful for turnover data in the areas of credit institutes and insurance companies (e.g. information from the respective monitoring authorities) and in the area of other services (VAT statistics). Sub-annual statistics are used in particular for calculating annual turnover where, in exceptional cases, there are no specific annual figures available (e.g. quarterly craft reports) or for plausibility checks. Multi-annual surveys, such as the 1993 census of distributive trade and hotel and restaurant industry or the 1995 census of crafts, were also taken into account in the major revision effected in 1999.

Information on private-consumption ratios, i.e. the proportion of turnover from sales to households, is available from annual surveys for wholesale and retail trade - at 45% of consumer expenditure the largest supply category. The private-consumption ratios of the crafts supply sector are taken from the census of crafts of 1995. In some service sectors, the ratios are based on analogies from areas that have better statistical coverage or surveys of the relevant trade associations and experts. For the domain of public administration very detailed individual items from the financial statistics of the central government, the Länder and local authorities are available for determining sales to private households.

As far as special product assessments are concerned e. g. data about new registrations of motor vehicles for private households from the Federal Office for Motor Traffic (*Kraftfahrtbundesamt*) are used. The sales of electricity and gas to private households can be derived from the differentiated rates provided in the information from power supply enterprises. The easiest supply sector to deal with is housing services, as its entire output can be recorded as consumption expenditure.

b) Final consumption expenditure of non-profit institutions serving households

The final consumption expenditure of non-profit institutions serving households in accordance with the concepts, is estimated as a balancing item. Starting from the output of such institutions (total of intermediate consumption, compensation of employees, other net taxes on production and fixed capital consumption), the figure for consumption expenditure is found by deducting sales to other sectors and own-account fixed-capital formation¹.

c) Government final consumption expenditure

Final consumption expenditure of the government is calculated according to the concept by deducting the sales proceeds of non-market production and own-account fixed-capital formation, from current expenditure on non-market production in this sector (intermediate consumption, compensation of employees, fixed-capital consumption and other net taxes on production), to which social benefits in kind are added.

The statistical sources for calculating final consumption expenditure are, for central government, the results for the central government budget, including its special assets, prepared by the Federal Ministry of Finance and, for the state and local governments, including their special assets, the results of the public finance statistics, broken down in detail according to types of revenue and expenditure. In addition, statistics are incorporated which are compiled by the social security funds (the German Pension Fund (*Deutsche Rentenversicherung*), the miners' pension insurance scheme, agricultural pension funds, statutory health insurance schemes, statutory long-term care insurance schemes, statutory accident insurance schemes and unemployment insurance schemes). The statistical sources cover all public budgets in Germany, of which there are nearly 20 000, in their entirety. The consumption of fixed capital is derived from the fixed asset account, in accordance with the perpetual inventory method of national accounts.

d) Gross fixed-capital formation

Various approaches are used to calculate gross fixed-capital formation.

- **Capital formation in machinery and equipment**

The commodity-flow method is the dominant method used when assessing capital formation in machinery and equipment. It relies on extensive, largely complete information about goods that are produced, exported and imported as well as detailed estimates of capital-formation ratios. This (production-side) basis is then transformed into the user-side aggregate value by means of a wide number of supplemental details (e.g. inventory movements, ancillary investment services, and trade and transport margins). The monthly foreign trade statistics and the quarterly production statistics (in manufacturing industry) are used as the main bases for estimating GFCF in equipment. The monthly sales surveys in the capital goods production sector are also used. In principle, product-specific investment ratios are applied in order to obtain figures for capital formation in machinery and equipment from the available supplies of potential capital goods.

¹ On this also refer to Summary 3–11 in section 3.21.2.

- **Capital formation in construction**

The value of capital formation in construction is also mainly determined by applying a commodity-flow approach. The starting point for calculating capital spending on new construction is the information from companies and businesses providing building and allied services. Own-account house and building construction is estimated. The annual survey of companies employing 20 or more workers and the annual full survey in the construction industry proper are important bases for calculating capital formation in construction. The value of secondary construction output is regularly based on the annual VAT statistics. The cost-structure statistics also provide information about companies' own-account additions to fixed assets. The VAT statistics and the results from local governments' budgets are used to calculate ancillary construction costs. Investors' own construction output plays an important role and also provides a model-based estimation of the construction output provided by neighbourly assistance and clandestine work.

- **Investor accounting**

A second pillar of the calculations relies on the direct calculation of annual fixed capital formation on the basis of information provided by the investor as part of annual investment surveys (investor accounting). These surveys are available for manufacturing and the majority of service branches, providing detailed information of investments classified by the investing industries. This information is finally combined and compared with the results obtained through the commodity-flow method in a coordination chart (cross calculation).

- **Capital formation in intangible fixed assets**

Capital formation in intangible gross fixed assets are typically estimated using a model, as surveyed values are often not available, in particular for self-produced software or the value of literary or artistic originals. The data used for estimating purchased software are the results of samples in the context of ifo economic tests, which are then extrapolated to the overall economy using various factors. Self-produced software is evaluated on the basis of varied estimates by the employees in occupations typical of IT (source: microcensus) and the valuation of such activities. In some cases, production costs and, in other cases, the current value of expected revenue is estimated in order to determine the value of artistic originals. The statistics used for calculating the value of artistic originals (copyright) rely on information from the VAT statistics on film and video production and the production of radio and television programmes, data from companies exploiting third-party rights and the Artists' Social Fund (*Künstlersozialkasse*) as well as details of book sales obtained from the Association of the German Book Trade (*Börsenverein des Deutschen Buchhandels e.V.*).

- **Changes in inventories**

Changes in inventories are generally defined as the difference between additions and withdrawals (as well as other losses) of stocks. The German national accounts follow practicable methods of calculation which rely on stock comparisons. A distinction has to be made, however, between two options that vary in quality. The better, albeit rarer option, which is used, for example, in agriculture and in the domain covered by the German Oil Storage Association (*Erdölbevorratungsverband*), uses genuine volume figures, the value of which can be fairly reliably assessed with the aid of market prices. On the other hand, in the industries in which stock-keeping features most prominently, statistically surveyed book values have to be used which are then converted to constant prices using appropriate price indices, from which the differences give the changes in

inventories at constant prices. Ultimately these 'real' changes in inventories are valued at average annual prices so as to obtain the changes in inventories which are relevant to the national economy (conforming with ESA). These differ from the figures shown by company accounting practices by virtue of the elimination of paper profits (or losses). The calculations at current prices and constant prices are thus closely interlinked, and the results in constant prices are found by this method simultaneously virtually at the same time. Important statistical baseline information for calculating changes in inventories is provided by the cost-structure statistics in the various economic sectors (supplemented by information from business reports) and price indices derived from the price statistics.

e) Net exports of goods and services

Net exports of goods and services are calculated by subtracting imports from exports. A distinction is made between goods transactions and service transactions. The results of the external-trade statistics are used as evidence of cross-border goods transactions (special trade and supplementary information on general trade). Cross-border service transactions are derived from the balance on current account as part of the balance of payments statistics and from other internal Deutsche Bundesbank documentation. However, not all of the information shown in these basic statistics is consistent with the definitions used in the national accounts, which means that a series of modifications are made. A distinction is drawn between modifications which affect the total net exports of goods and services and those which constitute only changes between the statistics on goods and services.

5.2 Valuation issues

Before a statistical source can be used for calculation purposes of national accounts, the need for conceptual adjustments must be investigated. In the case of official primary surveys, it may be possible, on the basis of close collaboration between statisticians and national accountants, to introduce the national accounts definitions in the special statistics themselves, in order to keep on the need for additional calculations as low as possible. However, the opportunities to influence the definition and concepts of secondary statistics, i.e. surveys performed on the basis of administrative regulations, are usually very restricted. As the statistics used do not always correspond to the concepts and definitions of ESA 1995, the source data often need to be completed and adjusted (on this refer to section 5.3). Examples of orientation of the specialised statistics to national accounting concepts could be, for example, the question of the marketing orientation in the annual surveys of trade (to determine the private consumption ratios during calculation of household final consumption expenditure) or the concept of 'annual construction output' in the annual surveys of the construction industry (for accrual-based accounting of construction output) as well as the question of purchased software in the annual service statistics.

In addition, the assessment of purchasers' prices plays a role for the GDP final use aggregates in particular, whereas output is assessed at basic prices. In the respect non-deductible VAT is generally included on the basis of imputed legal tax rates.

5.3 The transition to the national accounting concepts of ESA 1995

A number of important conceptual additions and adjustments relating to the final use aggregates of GDP are described below by way of example:

a) Household final consumption expenditure

An important conceptual difference is the inclusion of assumed rents for owner-occupied dwellings. A second conceptual difference in the case of insurance is the recording of a so-called 'service charge', instead of the insurance premium. Other conceptual differences can be seen for gratuities and payments in kind, or own consumption and drawings by entrepreneurs for private purposes. In addition to these more system-related conceptual adjustments to ESA 1995, there may also be adjustments specific to the statistics. For example, in the case of the supplier approach, it is important to check whether all sales to private households constitute consumption expenditure, or whether some may represent the intermediate consumption of sole proprietorships or of non-profit institutions. As the supplier approach records consumption expenditure in Germany (domestic concept), the expenditure of resident households abroad have to be added and those of non-resident households in Germany must be deducted for the estimate of consumption expenditure in accordance with ESA 1995 (residence concept).

b) Consumption expenditure of general government and NPISH

The most important conceptual differences between the accounting data in these sectors and national accounts are the inclusion of imputed social contributions for the insurance scheme for civil servants and the estimation of capital consumption.

c) Capital formation in tangible fixed assets

In terms of tangible fixed assets, the work featuring the concept is directed at, for example, ensuring full inclusion of own-account fixed capital formation, or adhering to the ESA 1995 value limit of EUR 500 in 1995 prices. The inclusion of investment services and ancillary services, to be added to recorded output of goods, can be considered an example of concept adjustment for statistical purposes. The addition of trade and transport margins can also be construed as a statistics-related addition for the commodity-flow method. The explicit addition of a profit mark-up in calculating own-account fixed capital formation also needs to be mentioned.

d) Capital formation in intangible fixed assets

A clear conceptual distinction exists in Germany and in many other countries between business accounting and the ESA 1995 regulations particularly when it comes to including the value of self-produced software in national accounts.

e) Changes in inventories

The valuation rules in particular differ between business accounting and ESA 1995 on the topic of inventories and changes in inventories, with the result that a conversion is necessary for national accounts purposes. ESA 1995 also records crops before harvesting (or logging) as a change in inventories (natural growth, growing crops or standing timber). In business accounting on the other hand, production is not recorded until after the harvest, so this is a difference of concept due to the system.

f) Net exports of goods and services

There are system-related differences between the balance of payments and ESA 1995. In connection with the new treatment of cross-border banking services (FISIM), (imputed) service flows are entered in the national accounts which necessitate analogous adjustments to the cross-border interest flows. Contrastingly, the actual interest flows are still shown in the statistics on the balance of payments. In addition to this, parts of these flows are classified in the national accounts as cross-border property income in connection with payments for cross-border construction work, whilst this is not the case in the balance-of-payments statistics.

5.4 The roles of direct and indirect estimation methods

Direct and indirect methods of estimation are used within the expenditure approach of GDP. Direct estimation methods are considered here to be those where the required figures (consumption expenditure, fixed capital formation, exports and imports) are recorded directly as statistical data. Conversely, these figures are not collected directly in the case of indirect estimation methods, but are derived indirectly from other values. However, the use of direct or indirect methods per se cannot be interpreted as a quality feature. In some cases, an indirect estimate may even be more reliable than data collected in a survey.

Direct methods of estimation are primarily used for the aggregates of final uses when calculating general government consumption expenditure (chiefly based on data from the finance statistics) as well as in the calculation of imports and exports on the basis of information from the external-trade and balance-of-payments statistics.

Conversely, when calculating gross-capital formation, indirect estimation methods are mainly used, although they are reconciled against direct information from the investment surveys. Were it made compulsory to use direct methods alone (investor accounting), neither the quarterly nor the annual investment figures could currently be calculated for Germany, and the results would not be available for around one and a half years. The calculation of changes in inventories in the annual account, however, should be classified more as a direct method (on the basis of company surveys).

The calculation of household final consumption expenditure could serve as an example of a rather more mixed (direct and indirect) method of estimation. In cases where the results are determined according to the supplier approach, an indirect method is mostly being used, but when specific product assessments are incorporated a direct method tends to be used.

5.5 The roles of source values and extrapolations

In principle, both approaches arise in parallel in the aggregates of the final uses. Parts of the aggregates are calculated using source values which are available each reporting year, whilst other parts are determined by means of extrapolation.

It is possible to use source values with direct or indirect methods of estimation, provided the baseline data are available each year. Direct estimation methods are defined here as those methods by which the required indicators are collected directly in the form of statistical values. Indirect estimation methods, on the other hand, are those in which these indicators are not directly collected but are derived indirectly from other values, generally on the basis of a calculation model.

Both direct and indirect methods can also involve extrapolation from a benchmark year if a particular benchmark year is updated. The issue of whether to use source values or extrapolation is therefore in principle independent of the application of direct or indirect methods of estimation.

Final use aggregates of gross domestic product
Application of source values or extrapolation

	Source values	Extrapolation (benchmark year)
Consumption expenditure of private households	X	[X (1994)]
of non-profit institutions	X	
of the general government	X	
Gross fixed-capital formation		
Machinery and equipment	X	
Construction	X	
Intangible assets and equipment	X	
Changes in inventories and net acquisitions of valuables	X	
Net exports of goods and services		
Exports	X	
Imports	X	

The figures for the expenditure approach are mainly based on annual statistics, monthly and/or quarterly figures totalled to make annual results and also on information from the business register. As well as this, extrapolations may be significant, provided large-scale censuses carried out at intervals of several years still have a role. For example, the consumption expenditure of households is estimated in part on the basis of the 1995 census of crafts and extrapolates from the figures for 1994 using the results of the quarterly crafts reports. In the case of housing rents, too, the quantitative housing stock in a particular reference year in the past is extrapolated using relevant information. In addition, however, contemporary annual figures chiefly provide the basis for calculation of household as well as government consumption expenditure, gross fixed-capital formation and imports and exports.

The following table shows the role of source values (without extrapolation) and extrapolations in combination with direct or indirect methods of estimation for the expenditure approach of GDP:

Estimation methods and extrapolation
2000 in % (of GDP)

	Source values	Extrapolation
Direct methods	60	2
Indirect methods	27	11

5.6 The main approaches of ensuring exhaustiveness

Ensuring the exhaustiveness of the statistics on gross national income (and GDP) is one of the European Commission's and the GNP Committee's main concerns as part of the European-level national accounts harmonisation, particularly in respect of the EU's own resources. As a result, it was also a **key point** in the previous (1999) revision of the national accounts in Germany for the transition to the revised ESA 1995. To this end, a whole package of measures was used, and these measures are to be summarised again in this section in relation to the 2005 national accounts revision for the expenditure approach. The various allowances are described at length and quantified in Chapter 7.

a) Comparison with household budget surveys

To find household final consumption expenditure, the results of the supplier method classified by purpose have already been compared several times against the results of the multi-year income and consumption sample surveys (for 1993, 1998 and most recently 2003). For this, the results of these household surveys of income and expenditure are converted to fit in with the national accounting concepts or, due to the nature of the statistics, the national accounts results are adapted for comparison purposes. Any major divergences are then investigated and necessary adjustments are made to the national accounting figures. Among household purchases of services in particular, the results of the household income and expenditure sample surveys may help to improve the basis of the estimates and result in corrections to the corresponding private-consumption ratios.

b) Comparison with the investor accounting

The results of product-related capital formation in construction and equipment (commodity flow approach) are compared with the data on fixed capital formation obtained from investor information (business statistics), which in some cases may result in adjustments to the national accounting figures. The introduction of the annual service statistics (for the first time in the year 2000) has brought about an obvious improvement to the data. In the investor accounting, however, there are still gaps in the data concerning some areas of activity, which can only be closed by means of supplementary estimates.

c) Comparison of production and sales

As part of calculating fixed-capital formation in machinery and equipment by the commodity-flow method, consideration is given to the question of whether, in addition to the (material) production recorded in the production statistics, other investment services and ancillary services should be taken into account. Fundamental to the estimated additions is the comparison between the production and sales statistics.

d) Input-output reconciliation

In the course of the 2005 revision of national accounts, the compilers also processed more information than in the past from the input-output compilation of previous years, particularly 2000, information which generally becomes available too late for inclusion in the current GDP accounts. The input-output framework is now generally integrated into the regular annual GDP calculations by the latest for all definitive reporting years (on this refer also to section 6.1).

e) Checks and special calculations

Besides the wide-ranging checks for exhaustiveness to which we have already referred, separate examinations were conducted in many areas of the national accounts to ensure that no relevant data have been omitted; to this end, recorded figures are reconciled with special data sources, some of which are unofficial, relating to activities such as DIY building work, prostitution, private tuition, gratuities and income in kind. The information gained from comparison with the household budget surveys was considered in the expenditure approach as well as in the production approach of GDP, particularly with regard to hotels and restaurants, and personal services.

5.7 Household final consumption expenditure (expenditure concept)

5.7.1 Demarcation

The final consumption expenditure of households comprises the expenditure of all resident households on goods and services for the direct satisfaction of their individual needs. These goods and services may be purchased in Germany or elsewhere.

Besides the actual purchases made by households for consumption purposes, certain imputed purchases are also included in the final figure. Farming households that consume some of their own farm produce, benefits in kind received by employees, withdrawals from company stock by entrepreneurs for household use and imputed rents for owner-occupied dwellings are also components of household final consumption expenditure. Moreover, final consumption expenditure by households also covers a number of borderline cases, which are defined in paragraph 3.76 of ESA 1995. These include, for example, interior decorative repairs to dwellings, actual bank charges (excluding interest), the service-charge element of insurance premiums, i.e. excluding claims paid out and changes in actuarial reserves, and entrance charges for museum visits and similar small purchases.

Household final consumption expenditure is recorded in principle at the time obligations are incurred. In other words, the way in which the expenditure is financed (cash sale, payment in instalments or hire purchase) does not affect the amount of final consumption expenditure. Moreover, consumer durables become part of final consumption expenditure on purchase and their value is not spread over their expected service life; the same applies to goods purchased as stock. By agreement, the consumption of goods by their producers is recorded at the time of production.

In principle, household consumption expenditure is valued at purchasers' prices. This means that all taxes on products, such as tobacco or mineral-oil duty and VAT, are to be included in the value of final consumption expenditure. Subsidies on products, on the other hand, are not part of the purchaser's price and must be deducted from household consumption expenditure.

5.7.2 Methods of calculation

There are basically three ways of establishing the value of the final consumption expenditure of households, namely:

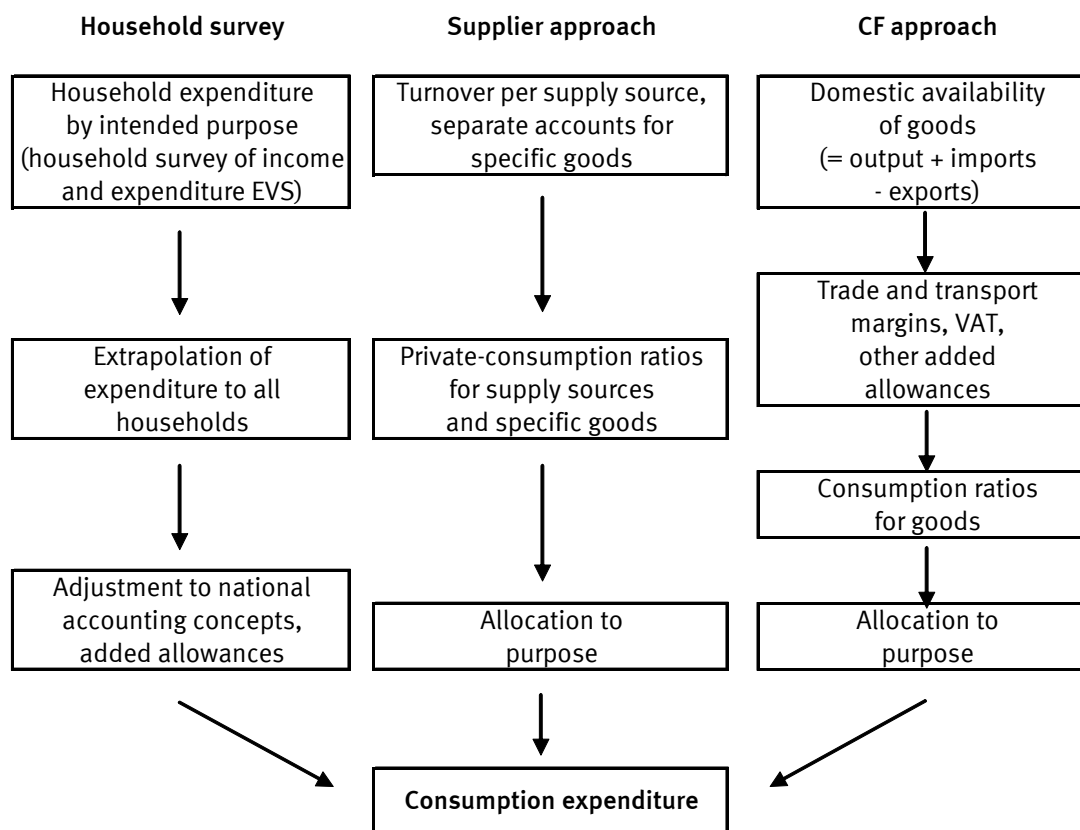
- asking households about their consumption expenditure,
- asking suppliers about the purchases made by households, and
- estimating the consumption patterns for goods and services.

In theory, all three approaches lead to the same result, which means that the decision to adopt a particular method depends primarily on the nature of the available statistics.

As part of the major revision of 1999, information obtained from a comprehensive comparison of the results of all three approaches was included for the first time in the assessment of household final consumption expenditure, and was substantially supplemented in the 2005 revision, even though supplier accounting remains the main method of assessing final consumption expenditure. The threefold accounting process is presented in schematic form in Overview 5—1.

In the first case, namely that of household surveys, direct data regarding the consumption of resident households are available, categorised by purpose (consumption expenditure measured on a residence basis). In Germany, the principal direct household surveys of this type are conducted in the framework of the five-yearly sample surveys of income and expenditure (Einkommens- und Verbrauchsstichprobe, EVS) (EVAS 632), which have been supplemented by annual information from the continuous household budget surveys (EVAS 631) since 1999. The collected data do, however, differ in some points from the concepts and definitions of the system of national accounts. The household surveys EVS, for instance, also include sales and purchases between consumer households, which are excluded from the national accounts. High-income households and households in institutions are excluded from the EVS. The household surveys are conducted as a sample survey on a voluntary basis, which could make its results less representative; moreover, doubts have frequently been voiced about the exhaustiveness of the results of household surveys. For example, the baseline figure for the final consumption expenditure of households in the national accounts exceeded the result of the EVS by more than 15% for the year 1998¹. The results of the survey are therefore of limited use when it comes to determining the absolute volume of household final consumption expenditure in the national accounts. The value of household surveys for national accounting purposes lies in the fact, above all, that individual expenditure items whose levels are determined using a different method are checked as part of major revisions.

¹ Regarding the details of the calculations, refer to Federal Statistical Office: 'Ergebnisabgleich Private Konsumausgaben 1998 der Volkswirtschaftlichen Gesamtrechnungen mit der Haushaltsbudgeterhebung (EVS 1998) (Konsumabgleich)'. A study carried out for Eurostat, the Statistical Office of the European Communities, Wiesbaden 2006.

Overview 5—1: Methods of calculating household final consumption expenditure

The second means of assessing the final consumption expenditure of households is based on the total turnover of suppliers of goods and services, to which a private-consumption ratio is applied (supplier method). The first of two key requirements for this approach is the availability of data on turnover from monthly, quarterly, annual and multi-annual surveys of the various supply and activity categories. The other requirement is the establishment of a private-consumption ratio, i.e. the value of household purchases expressed as a percentage of the total turnover of the various industries. The determination of private-consumption ratios depends on the availability of information regarding the purpose for which goods and services are sold. Since supplies to households are not automatically tantamount to final consumption expenditure as defined for national accounting purposes, as is illustrated by the purchasing patterns of owner-occupiers of dwellings or of individual entrepreneurs, there is a need for more checks and, in some cases, adjustments. One of the main advantages of this approach is that there are monthly or at least quarterly indicators for many industries, which means that up-to-date figures can be produced. Final consumption expenditure for resident households is obtained by adding the value of purchases made abroad by German-based households to the assessed value of household consumption expenditure on German products and subtracting the purchases made in Germany by non-residents.

The third way of calculating the final consumption expenditure of resident households involves assigning the available goods and services to the various use categories (commodity-flow method). This assignment of goods and services to the use categories, namely intermediate consumption, fixed-capital formation, changes in inventories, exports and consumption expenditure by general government, households and non-profit institutions serving households, presupposes

the availability of information on the use of the goods and services in question. Assignment is simplest in the case of products that can only be used for one purpose, such as tobacco products or power stations. It becomes more difficult for products with several possible uses, such as personal computers or motor vehicles. In these cases more work is needed to define a realistic utilisation structure. Help may come in such cases from administrative information about particular products, such as vehicle registrations. As a rule, this product assessment is used primarily in the input-output framework. In German input-output compilation (EVAS 815), the commodity-flow account is broken down into more than 3000 goods and service categories¹. For the goods in particular, a quite precise result is obtained by this method for both the level and the structure of final consumption expenditure. At the present time, however, the results of the complex input-output assessments, like those of the household- survey EVS, take a few years to appear and can only be used to a limited extent in the calculation of the latest figures.

A combination of methods is used to assess household final consumption expenditure for the German national accounts. Besides the demand of users for up-to-date and reliable statistics, the availability of baseline data is also an important factor in the choice of methods. In the continuous assessment of GDP, supplier accounting is the preferred method, but it is supplemented by certain special assessments relating to particular products. In the framework of major revisions, figures obtained through the commodity-flow method and input-output compilation are also used, and data from the household surveys are also used to refine and cross-check the results.

Before the statistical sources and calculation methods are presented in detail, Table 5—1 below summarises the structure of household final consumption expenditure by supply-source category. The figures include the results of special product assessments.

¹ Around 2000 categories of product could form part of household consumption.

Table 5—1: Household final consumption expenditure by supply sources

Supply source	Degree of detail	Results
	Number of sub-categories	2000 EUR m
1. Agriculture, forestry, fishery.....	13	7 956
2. Mining and quarrying, manufacturing.....	57	55 603
3. Electricity, gas and water supply.....	3	29 761
4. Construction	9	5 196
5. Sale, maintenance and repair of motor vehicles and motorcycles; re-tail sale of automotive fuel	14	106 166
6. Wholesale trade and commission trade, except of motor vehicles and motorcycles	26	18 000
7. Retail trade (excluding trade in motor vehicles and retail sale of automotive fuel); repair of personal and household goods	70	383 553
8. Hotels and restaurants	25	63 000
9. Transport, storage and communication.....	31	57 955
10. Financial intermediation.....	3	60 600
11. Real estate, renting and business activities	44	240 360
12. Education, health and social work	32	45 172
13. Other community, social and personal service activities	44	50 418
14. General government.....	11	7 243
15. Non-profit institutions and domestic services	6	18 512
Household final consumption expenditure in Germany (domestic concept)		
- Computational result.....		1 149 495
- Amount after balancing		1 149 690
+ Consumption expenditure by German residents in the rest of the world		51 780
- Consumption expenditure in Germany by residents of other countries .		21 140
= Final consumption expenditure of resident households		1 180 330

5.7.3 Calculation of household final consumption expenditure by supply source (domestic concept)

Data on turnover in the various supply categories are obtained first and foremost from numerous sets of official primary statistics, but secondary statistics, such as the business register (EVAS 52121) and the VAT statistics (EVAS 73311), also provide baseline data for the valuation process. The turnover data that are used to calculate the value of output in the production approach and the turnover figures that underlie the assessment of household consumption expenditure (excluding VAT) are largely reconciled with each other so as to preserve the consistency of the reporting system. The data sources for the assessment of turnover by industry were presented in Chapter 3, which deals with the production approach. The amount of VAT to be included in purchasers' prices is calculated on the basis of the rates of taxation set forth in the VAT statistics.

The availability of data with which the private-consumption ratio, i.e. household consumption expenditure expressed as a percentage of turnover in the various supply categories, varies from one category to another. In the domain of trade, which supplies almost 45% of the total goods and services consumed by households and is thus the main supply source, turnover figures are

available for the various kinds of sales. The respective survey divides total turnover into retail turnover, wholesale turnover, turnover from commission trade, hotel and restaurant turnover, turnover from manufacturing and repair work and turnover from other activities. In the course of this retail turnover is defined as sales revenue deriving chiefly from the supply of goods and services to private households.

In the second-largest supply source, namely housing services, which comes under the heading of real estate, renting and business activities and accounts for some 20% of household consumption in Germany, fixing a private-consumption ratio poses no problems. Since, by definition, household expenditure on the renting and owner-occupation of dwellings is assignable to final consumption expenditure, the full output of this area of activity must be recorded as household final consumption expenditure.

In the third-largest category of household suppliers, namely crafts businesses, collected data on turnover are available from the 1995 census of crafts (EVAS 53111) and are broken down into customer categories, one of which is households. These turnover figures for individual trades are included in the relevant supply categories – manufacturing, construction, repair of motor vehicles, repair of personal and household goods and other community, social and personal service activities. In many major areas of health care too, establishing the volume of supplies to households is quite straightforward, because the payments made by the general government can be deducted from the turnover of health services by reference to the relevant legal provisions.

The consumption expenditure of households can be reliably defined in most of the special product assessments. For instance, data on new registrations of motor vehicles for households are provided by the Federal Office for Motor Traffic (*Kraftfahrtbundesamt*). The sales of electricity and gas to private households can be derived from the differentiated rates obtained from the information provided by power supply enterprises. In the realm of public administration, finally, highly itemised information is available from the public finance statistics of the central government, the Länder and the local authorities (EVAS 711) on the value of services rendered to households.

This means that about 85% of the consumption expenditure of resident households is covered by well-substantiated data from which private-consumption ratios can be derived. In the remaining cases, especially household purchases from service companies, private-consumption ratios are assessed with the aid of every available official and unofficial source of data, such as companies' annual business reports and surveys conducted by the umbrella organisations for particular industries. This shows that evidence of turnover, itemised by industry, provides firm enough foundations for the assignment of goods and services to specific types of end user and for the calculation of plausible private-consumption ratios. In some cases, direct estimates of household consumption have been made with the aid of specific assumptions or after consultation with umbrella organisations for particular industries. This applies especially to direct sales to households by manufacturing companies (factory shops) and to sales to the employees of such companies. There is also a need for arbitrary estimation of some private-consumption ratios, such as those applied to sales to households by non-profit institutions serving households. An important additional cross-check of the ratios is effected through reconciliation with the input-output compilation and the household surveys.

5.7.3.1 Supply source 1: Agriculture, forestry, fishery

The combined categories of agriculture and forestry (Section A of the 2003 German classification of economic activities (WZ 2003)) and fishing (Section B of WZ 2003) are not the predominant supply source for household consumption. The amount supplied by this source to consumer households is calculated in separate assessments for several subcategories. The special assessment for fuel wood is described separately in section 5.7.4.1. Before we explain the calculations for the various subcategories, the following table shows the reconciled figure for household final consumption expenditure (HFCE) on goods and services from this supply source:

Subcategories of supply source 1	HFCE, 2000
	EUR m
Consumption of own products by farmers and foresters	2 636
Direct sales in the realms of agriculture and forestry	1 417
Growing of crops, gardening, livestock husbandry and breeding, etc.	3 584
Fishing	30
Special assessment for fuel wood	289
Total.....	7 956

a) Consumption of own products by farmers and foresters

The consumption by farmers' households of produce from their own farm is assessed by the Federal Ministry of Food, Agriculture and Consumer Protection (see section 3.7). The calculation of own-output consumption includes the products cultivated by households in their own domestic gardens and allotments. The calculation is itemised into 23 different product categories.

b) Direct sales in the realms of agriculture and forestry

Direct sales occur, for example, when households purchase agricultural produce at a farm, i.e. without a commercial intermediary. The valuation of direct sales in the agricultural domain is based on the total sales figures achieved by farms, which are assessed by the Federal Ministry of Food, Agriculture and Consumer Protection as part of the output calculation (see section 3.7). This involves the calculation of direct-sales ratios (direct sales to households as a percentage of output) for 23 product categories.

Total sales revenue for farms is assessed by the Federal Ministry of Food, Agriculture and Consumer Protection at farm-gate prices. These figures are then adjusted by allowances for subsidies.

c) Growing of crops, gardening, livestock husbandry and breeding, etc.

The main starting point is the turnover in gardening services as indicated by the VAT statistics, and this calculation is described in the section on assessing output (see section 3.7). To this figure is added the average rate of taxation from the VAT statistics. An estimated private-consumption ratio is then applied to each subclass in order to determine the value of consumer goods sold to households. These amount to 90% for the growing of crops, 1% for agricultural service activities, 10% for horticulture and landscaping and 95% in the domain of other gardening services.

Supplies to households under the subheading of livestock husbandry are calculated in the same way as gardening services and also include the imputed rate of VAT. The private-consumption ratio for 2000 is estimated at 2%.

d) Fishing

The assessment of turnover in the domain of fishing and fish farming is described in connection with the valuation of output (see section 3.8). The assessed result is increased with the aid of the imputed VAT rate from the VAT statistics. The private-consumption ratio is estimated at 10%.

5.7.3.2 Supply source 2: Mining and quarrying, manufacturing

About 5% of household final consumption expenditure goes on items supplied directly from the domains of mining and quarrying (Section C of WZ 2003) and manufacturing (Section D). The table below shows how household final consumption expenditure (HFCE) is distributed among the various supplier categories:

	HFCE, 2000 EUR m
Subcategories of supply source 2	
Crafts	35 339
Factory shops	5 684
Staff sales	3 397
Publishing houses	9 217
Benefits in kind in Sections C and D.....	294
Special assessment for second-hand vehicles	1 672
Total.....	55 603

The sources and methods for the assessment of the individual supplier categories is described below. The special assessments are outlined in section 5.7.4.1.

a) Crafts

This category comprises all businesses in the domain of manufacturing which are classifiable under the heading of crafts. The main statistical basis for the valuation of household consumption of the goods and services produced by these businesses is the 1995 census of crafts (EVAS 53111) which records turnover from the year 1994. The results of the quarterly returns submitted in the crafts sector (EVAS 53211) are used for the extrapolation of turnover to the year 2000. Since the figures in the census do not include VAT, the extrapolated turnover is increased by the average VAT rate for each industry as specified in the VAT statistics.

In the 1995 census of crafts, respondents were also asked to break down their turnover into customer categories. The percentage of turnover declared as sales to households, plus an allowance based on estimated sales by businesses too small for inclusion in the census, was set as the private-consumption ratio. The following table shows private-consumption ratios for the various crafts:

WZ 2003 No.	Crafts sector	Private- consumption ratio, 2000, in %
15.13	Production of meat and poultrymeat products.....	88
15.81	Manufacture of bread, fresh pastry goods and cakes	80
15....	Other activities in the food industry	21
17, 18, 19	Manufacture of textiles, wearing apparel and leather goods; dress- ing and dyeing of fur and tanning and dressing of leather	31
20, 21	Manufacture of wood and of wood or cork products other than fur- niture; manufacture of articles of straw and plaiting materials; manufacture of pulp, paper and paper products	15
22.2 and 22.3	Printing and related service activities; reproduction of recorded media.....	7
24, 25	Manufacture of chemicals and chemical, rubber and plastic prod- ucts.....	14
26	Manufacture of glass and glass products, ceramic goods and other non-metallic mineral products	40
27, 28	Fabricated metal products	4
29, 30, 31, 32	Manufacture of office machinery, of computers, electrical machin- ery and apparatus, of radio, television and communication equip- ment and apparatus and of other machinery and equipment not elsewhere classified	5
33	Manufacture of medical, precision and optical instruments, watches and clocks	28
34,35	Manufacture of transport equipment.....	8
36.1	Manufacture of furniture	22
36....	Manufacture of other products not elsewhere classified	37
All categories	Crafts-related industry	15

b) Factory shops

In the industrial domain, manufacturers may market their products directly through their own sales outlets, i.e. without the involvement of commercial enterprises. From the 1987 census of non-agricultural local units (EVAS 52211) it was possible to obtain the number of sales outlets that belonged to a manufacturing company and retailed the company's own products. These outlets and their employees were assigned to the relevant categories of retail trade. To estimate the turnover of these shops, we calculated the turnover per employee for each comparable category of retail trade from the annual retail survey of 1987 and multiplied it by the number of employees in the relevant sales outlets. Since these outlets do not sell exclusively to households, the private-consumption ratios for the corresponding categories of retail trade were used to calculate the value of direct sales to households. An adjustment factor was also included in the calculation, because the number of employees recorded in the workplace census includes those who work in the area of crafts. Subsequent turnover figures are extrapolated with the aid of the rates of turnover growth in the relevant categories of retail trade; each of these rates is doubled, because experts consider that direct sales from factory shops are growing faster than traditional retailing.

c) Staff sales

Companies may also sell their products to their own staff. In the calculation of household consumption expenditure, the following manufacturing activities are important sources of products which can easily be sold for consumption by staff of the manufacturing company:

- Manufacture of food products, beverages and tobacco
- Manufacture of textiles and textile products
- Manufacture of leather and leather products
- Manufacture of wood
- Manufacture of pulp, paper and paper products; publishing and printing
- Manufacture of chemicals, chemical products and man-made fibres
- Manufacture of rubber and plastic products
- Manufacture of glass and glass products, ceramic goods and other non-metallic mineral products
- Manufacture of basic metals and fabricated metal products
- Manufacture of machinery and equipment n.e.c.
- Manufacture of office machinery, computers and electrical machinery and equipment,
- Manufacture of transport equipment
- Manufacture of furniture, jewellery, musical instruments, etc.

It is assumed that the employees of companies in the activity categories listed above satisfy their needs in terms of their respective companies' products by buying these products from their employers, not only for themselves but for their entire household. The number of persons covering their own needs through staff purchases is found as the product of the number of employees in the particular industry and the average size of household given in the microcensus (EVAS 12211). A subsequent 5% reduction allows for the possibility of more than one household member working for the same company. The second element, which is the average consumption of all households, is determined by reference to the domestic turnover of the relevant industry per inhabitant, taking into account the average size of household. This average household consumption figure is then increased slightly, because it may be assumed that employees' consumption of their companies' own products will exceed the national average consumption of the products in question. An adjustment factor is estimated for each industry. The value of staff sales, which is the product of the adjusted number of employees, the average consumption of all households and the adjustment factor, must then be reduced by the total amount of discount granted to employees, and the result must be increased by the appropriate amount of VAT.

Staff purchases of private motor vehicles are accounted for separately in a special assessment and presented in section 5.7.4.1.

d) Publishing houses

Household final consumption expenditure also includes direct orders placed by households with publishing houses by mail or through the Internet and direct subscriptions to publications. The calculation of the publishers' turnover is described in connection with the valuation of output (see section 3.10); to this figure is added the imputed rate of VAT derived from the VAT statistics. Turnover is combined with private-consumption ratios which are estimated separately for each type of publishing house (book, newspaper and music publishers).

WZ 2003 No.	Type of publishing activity	Private- consumption ratio 2000 in %
22.11	Book publishing	8
22.12	Publishing of newspapers	42
22.13.1	Publishing of journals.....	10
22.13.2	Publishing of general periodicals.....	25
22.13.3	Publishing of other periodicals	20
22.14	Publishing of sound recordings	15
22.15	Other publishing	5

e) Benefits in kind

Benefits in kind are assessed as the value of goods and services produced by a company and made available free of charge by employers to their employees and the value of special reductions in the price of such goods and services for the benefit of employees. Benefits in kind are to be assessed at basic prices, including an allowance for a profit margin. In the realm of manufacturing, mining and quarrying, which we are considering here, the first step is to include the colliers' coal allowance in consumption expenditure. The valuation of this coal allowance is based on a quantity model in which prices are used to assess the value of payment in kind. The quantities are taken from the Coal Industry Association (*Kohlenwirtschaft e.V.*) statistics and are recorded separately for coal, coal briquettes, coke and lignite briquettes. The value of the total allowances in each of these categories at basic prices is assessed on the basis of the average net price per unit of measure from the price statistics and the price indices for commercial products (EVAS 61241).

The value of the so-called *Haustrunk*, the beer allowance granted to brewery workers for home consumption, is also included in the account. In its statistics, the brewing industry records all benefits in kind granted to its employees under the heading of *Haustrunk*.

In addition, the provision by employers of sporting and leisure facilities for their employees should also be included in the value of wages and salaries as benefits in kind (cf. paragraphs 4.05 et seq. and 3.71b) of ESA 1995) and should not be classified as intermediate consumption. The basis for the estimation of these benefits is the 2000 survey on labour costs (EVAS 62411), in which employers were asked to quantify their material and third-party expenditure on company healthcare services and on other staff facilities, excluding canteens. This item includes expenditure on sporting and leisure facilities. The estimated value derived from these facilities is set at 20% of the declared expenditure, including a profit-margin allowance. Subsequent figures are extrapolated by reference to employment trends in manufacturing.

5.7.3.3 Supply source 3: Electricity, gas and water supply

Households account for about 3% of the total volume of electricity, gas and water supplied by units operating in those industries. Energy, gas and water supply constitutes Section E of the 2003 German classification of economic activities, but the section is broken down into several subcategories for assessment purposes. Before we move on to describe the calculation process, the following table summarises the structure of household final consumption expenditure (HFCE) on electricity, district heating and gas. Special assessments are outlined in a separate section.

Subcategories of supply source 3	HFCE 2000 EUR m
Electricity	17 208
District heating	2 460
Gas	10 093
Total.....	29 761

a) Electricity

Household final consumption expenditure on electricity chiefly comprises the payments made by households for power supplied directly by the electricity companies. To this is added a percentage of the value of sales to farms and small business users to allow for household consumption.

The sources for the valuation of household electricity consumption are the annual surveys of electricity suppliers. Of the power supplied to farms, 68.7% is estimated to be for business use and 31.3% for domestic use. These percentages are derived from the yearbook of the Federal Ministry of Food, Agriculture and Consumer Protection on the electricity consumption of agricultural holdings in each financial year. In the case of small business users – mainly tradesmen and shopkeepers – it is estimated that 1% of their electricity consumption is assignable to household final consumption expenditure.

VAT of 16% is added to net consumption to obtain household final consumption expenditure on electricity at purchasers' prices in the year 2000.

b) District heating

The valuation of household final consumption expenditure on district heating is based on the 2000 energy balance sheets for Germany, produced by the Study Group on Energy Balance Sheets (*Arbeitsgemeinschaft Energiebilanzen*), which record the volume of household district-heating consumption in terajoules. This figure is multiplied by the average price per terajoule to give the value of net household consumption (excluding VAT). The average price is obtained from the periodical '*Fernwärme-Preisvergleich*' which is published by the Study Group on District Heating (*Arbeitsgemeinschaft Fernwärme*) of the Federation of German Power Stations (*Vereinigung Deutscher Elektrizitätswerke*). VAT is added to net consumption to obtain household final consumption expenditure on district heating at purchasers' prices.

c) Gas

The volume of gas supplied to private households is taken from the publication '*Ausgewählte Zahlen der Energiewirtschaft*'. These figures show the distribution of gas by volume in millions of kilowatt/hours and average prices, excluding VAT. The volume distributed to households is multiplied by the average price, and VAT is added at 16% to obtain the value of household final consumption at purchasers' prices.

5.7.3.4 Supply source 4: Construction

As far as household final consumption expenditure is concerned, construction, which constitutes Section F of the 2003 German classification of economic activities, is of secondary importance for conceptual reasons. Since the German system of national accounts regards housing services (in-

cluding owner-occupation) in principle as an entrepreneurial activity, most building work has to be assigned to fixed-capital formation or to intermediate consumption. Part of household final consumption expenditure in the domain of construction comprises minor interior repairs to dwellings, which are normally the tenant's responsibility. The valuation of turnover in the building trade is based on the 1995 census of crafts (EVAS 53111), which gives the turnover figures for 1994. Since the results of the census do not include VAT, the net turnover figures for each activity category were increased by the average VAT rate for that category as set out in the VAT statistics. Subsequent turnover figures are extrapolated with the aid of the quarterly returns submitted by businesses in the building trade. A separate allowance of 1% is calculated for tips from the figure for the services of craftsmen and tradesmen.

When it comes to fixing the private-consumption ratios, information from the census of crafts on households as a recipient group is of limited value, because most of the building work performed for households is classifiable as fixed-capital formation and intermediate consumption. For this reason, on the basis of a special analysis of the 1998 sample survey of income and expenditure, the results of which were coordinated with the input-output compilation, the following private-consumption ratios were calculated for the various categories of building activity:

WZ 2003 No.	Activity category	Private consumption ratio, 2000, in %
45.31	Installation of electrical wiring and fittings	2
45.33	Plumbing, gas, water, heating and ventilation installations	1.5
45.34	Other building installation.....	5
45.42	Joinery	12
45.43	Floor and wall covering, interior decoration	12
45.44.1	Painting	16
45.44.2	Glazing	1

5.7.3.5 Supply source 5: Sale, maintenance and repair of motor vehicles and motorcycles; retail sale of automotive fuel

A good 9% of household final consumption expenditure is generated by the sale, maintenance and repair of motor vehicles and the retail sale of automotive fuel (WZ 50). The first step is the valuation of total sales in each of 14 assessment categories; these figures are then multiplied by the appropriate private-consumption ratios to obtain the value of household final consumption expenditure (HFCE). The following table shows the harmonised HFCE by subcategories. WZ 50.2 even contains an assessment of the gratuities in this supply category making 1% of HFCE.

WZ 2003 No.	Subcategories of supply source 5	HFCE, 2000 EUR m
50.1	Sale of motor vehicles	52 728
50.2	Maintenance and repair of motor vehicles.....	11 588
50.3	Sale of motor vehicle parts and accessories.....	4 283
50.4	Sale, maintenance and repair of motorcycles and related parts and accessories	2 172
50.5	Retail sale of automotive fuel.....	35 395
	Total.....	106 166

Output in the motor trade is determined using data from the business register survey (EVAS 52121) combined with the VAT statistics (EVAS 73311) and the annual survey of the trade in mo-

tor vehicles (EVAS 45251). The other checks and additions are outlined in section 3.13. For the purposes of consumption assessment, VAT is added to the net turnover found in the calculations described above; the applicable taxation rates are derived from the VAT statistics for each of the relevant activity categories.

The annual survey of the motor trade for the year 2000 (EVAS 45251) formed the basis for the calculation of **private consumption ratios**. The value of retail sales and trade in motor vehicles found in the survey is used as the total value of sales to households. Direct sales of manufactured items and other types of turnover are also taken into account. In the case of petrol stations, for example, revenue from the sale of bread and cakes that are baked and sold on premises belonging to petrol stations and turnover from catering and other services provided by retailers of automotive fuel at their petrol stations have to be added to the survey figures. On the other hand, the private-consumption ratios derived from the annual statistics have to be reduced if there are grounds for assuming that the respondent traders have mistaken some business customers for private purchasers. Two areas where the possibility of deductions requires especially close examination are those of sales to non-profit institutions serving households and sales to sole-trader businesses and self-employed individuals. Valuable information for such adjustments is provided by a comparison of the special product assessments with the turnover distribution derived from the sample survey.

It should also be noted that, in the case of the private-consumption ratio for agency petrol stations, the data from these sources relate only to commission. Since both the retail-trade statistics and the VAT statistics only count the rate of commission as turnover from the sale of automotive fuel, the value of fuel sales to households by agency petrol stations is taken into account by means of the special assessment for automotive fuel. The following table shows the adjusted private-consumption ratios in detail.

WZ No.	2003 Activity category	Private consumption ratio, 2000, in %
50.10.2	Wholesale of motor vehicles	6.8
50.10.3	Retail trade in motor vehicles.....	50.4
50.20.3	Spraying and painting of motor vehicles	71.3
50.20.4	Washing and polishing of motor vehicles	72.8
50.20.51	Maintenance and repair of motor vehicles, excluding painting and washing/polishing.....	54.5
50.20.52	Electrical repairs to motor vehicles.....	67.7
50.30.2	Wholesale trade of motor vehicle parts and accessories.....	17.0
50.30.3	Retail trade of motor vehicle parts and accessories	22.0
50.40.2	Wholesale trade in motorcycle parts and accessories.....	69.4
50.40.3	Retail trade in motorcycles and related parts and accessories	67.4
50.40.4	Maintenance and repair of motorcycles.....	56.0
50.50.1	Sale of automotive fuel for another party's account (agency petrol stations).....	80.1
50.50.2	Own-account sale of automotive fuel (independent petrol stations)	78.5

5.7.3.6 Supply source 6: Wholesale trade and commission trade, except of motor vehicles and motorcycles

The relatively small percentage of wholesale trade in which the purchasers are households (about 1.6 %) reflects the role of wholesalers as middlemen. Household final consumption ex-

penditure (HFCE) in the domain of wholesaling is calculated by multiplying the turnover figures for the various groups within the wholesale categories of WZ 51 by the corresponding private-consumption ratios. The valuation of total sales is effected in each of 26 assessment categories. The table below summarises the reconciled results of these calculations.

WZ 2003 No.	Subcategories of supply source 6	HFCE, 2000 EUR m
51.2	Wholesale of agricultural raw materials and live animals.....	631
51.3	Wholesale of food, beverages and tobacco	6 887
51.4	Wholesale of household goods.....	1 347
51.5	Wholesale of non-agricultural intermediate products, waste and scrap	5 925
51.8	Wholesale of machinery, equipment and supplies	473
51.9	Other wholesale	2 737
	Total.....	18 000

The starting point for calculating **turnover** lies in the results of the business register survey combined with data from the VAT statistics and the annual survey of the wholesale trade. The other checks and additions are outlined in section 3.13. For the purposes of assessing consumption, VAT is added to the net turnover found in the calculations described above; the applicable taxation rates are derived from the VAT statistics for each of the relevant activity categories.

The annual survey of the wholesale trade for the year 2000 (EVAS 45221) formed the basis for the calculation of **private-consumption ratios**. The value of retail sales by wholesalers as set down in the results of the survey is used as the total value of sales to households. In retailing, sales of manufactured items and other types of turnover are also taken into account in the calculation of the private-consumption ratio. However, the private-consumption ratios derived from the annual statistics have to be reduced if there are grounds for assuming that the respondent wholesalers have mistaken some business customers for private purchasers. Two of the main factors for which deductions were required were sales to non-profit institutions that were not recognised as such and sales to property developers and tradesmen of the materials referred to in WZ 51.53 and 51.54. Conversely, the private-consumption ratios were increased for sales to private individuals not recognised as such, e.g. sales of coffee (WZ 51.37), foodstuffs (WZ 51.39) or electrical household appliances (WZ 51.43), and especially sales of cigarettes through vending machines (WZ 51.35). The following table shows the adjusted private-consumption ratios:

WZ 2003 No.	Activity category	Private consumption ratio, 2000, in %
51.2	Wholesale of agricultural raw materials and live animals	1.6
51.3	Wholesale of food, beverages and tobacco	4.6
51.4	Wholesale of household goods.....	0.7
51.5	Wholesale of non-agricultural intermediate products, waste and scrap	2.2
51.8	Wholesale of machinery, equipment and supplies	0.6
51.9	Other wholesale	4.7

5.7.3.7 Supply source 7: Retail trade except of motor vehicles and cycles, repair of personal and household goods

Retail trade accounts for 33% of household consumption expenditure, which makes it the main supply source for German households. WZ 52 is subdivided into 70 accounting categories, in each of which turnover data are multiplied by the corresponding private-consumption ratio to

produce household final consumption expenditure (HFCE). Special mention should be made here of the reconciliation with the product-by-product data within the input-output framework, a process which is described separately at the end of the present section.

The following table shows the reconciled aggregate HFCE figures for each of the retail trade supply categories:

WZ 2003 No.	Subcategories of supply source 7	HFCE, 2000 EUR m
52.1	Retail sale in non-specialised stores *)	159 233
52.2	Retail sale of food, beverages and tobacco in specialised stores *)	16 661
52.3	Retail sale of pharmaceutical and medical goods, cosmetic and toilet articles *)	25 362
52.4	Other retail sale of new goods in specialised stores *)	134 732
52.5	Retail sale of second-hand goods in stores *)	1 551
52.6	Retail sale not in stores	43 152
52.7	Repair of personal and household goods	2 862
	Total.....	383 553

*) in stores.

The starting point for calculating **turnover** comes from the results of the business register survey combined with data from the VAT statistics and the annual survey of the retail trade. The other checks and additions are outlined in section 3.13. For the purposes of assessing consumption, VAT is added to the results of the calculations described above; the applicable taxation rates are derived from the VAT statistics for each of the relevant activity categories.

The annual survey of the retail trade for the year 2000 (EVAS 45251) formed the basis for the calculation of the **private consumption ratios**. The value of retail sales to households comprises the turnover from retailing plus direct sales of manufactured items and other types of turnover. Direct sales of manufactured items include, for example, sales of bread, cakes and meat products that the retailers have produced on their own premises. Other types of turnover comprise revenue from in-store cafeterias and other services offered by retailers. Conversely, the private-consumption ratios used in the compilation of annual statistics are decreased if there are grounds for assuming that the respondent retailers have mistaken some business customers for private purchasers. Two of the main deductions are those which have to be made if total turnover from retail trade includes sales to non-profit institutions not recognised as such and sales to property developers and tradesmen. The private-consumption ratios reported by dispensing chemists and retailers of medical and orthopaedic goods and of optical goods (opticians) are reduced by the value of sales to the statutory health insurers. The private-consumption ratios for the repair of household goods were estimated on the basis of the percentages of turnover ascribed to households in the 1995 census of crafts, and the results were reconciled with the input-output compilation. The following list shows the private-consumption ratios derived from the annual survey and the adjusted ratios:

WZ 2003 No.	Activity category	Private-consumption ratios 2000 in %	
		Surveyed	Adjusted
52.11.1	Retail sale of food, beverages and tobacco where none of these products is particularly predominant.....	99.4	96.0
52.11.2	Retail sale of a large variety of goods in which food, beverages and tobacco are predominant.....	99.5	94.3
52.12.1	Retail sale of a large variety of goods other than food, beverages and tobacco	98.9	88.0
52.12.2	Retail sale of a large variety of goods in which products other than food, beverages and tobacco are predominant	98.3	92.7
52.21	Retail sale of fruit and vegetables	95.2	94.7
52.22	Retail sale of meat and meat products	98.4	96.0
52.23	Retail sale of fish, crustaceans and molluscs in specialised stores.....	97.8	76.9
52.24.1	Retail sales of baked goods	98.6	95.4
52.24.2	Retail sale of sugar confectionery	99.3	97.8
52.25.1	Retail sale of alcoholic beverages	93.9	91.0
52.25.2	Retail sale of other beverages	94.4	90.7
52.26	Retail sale of tobacco products	98.2	95.8
52.27.1	Retail sale of health foods	99.0	96.4
52.27.5	Retail sale of dairy produce, eggs and edible oils and fats.....	98.9	97.0
52.27.5	Retail sale of coffee, tea and cocoa	78.9	76.7
52.27.5	Retail sale of other food products n.e.c.	100.0	97.7
52.31	Dispensing chemists in specialised stores	99.1	33.4
52.32	Retail sale of medical and orthopaedic goods	99.5	46.9
52.33.1	Retail sale of cosmetics and toiletries other than pharmaceutical goods.....	90.7	83.2
52.33.2	Retail sale of pharmaceutical goods	98.9	90.9
52.41.1	Retail sale of household textiles	99.6	96.1
52.41.2	Retail sale of haberdashery and fabrics	97.5	94.4
52.42.1	Retail sale of clothing where no category of clothing is particularly predominant	98.1	96.0
52.42.2	Retail sale of gents' clothing and clothing accessories	99.8	97.7
52.42.3	Retail sale of ladies' clothing and clothing accessories	99.5	97.4
52.42.4	Retail sale of children's and infants' clothing and clothing accessories ..	100.0	97.7
52.42.7	Retail sale of fur articles	97.8	95.8
52.43.1	Retail sale of footwear	98.9	92.9
52.43.2	Retail sale of leather goods and luggage.....	99.9	85.4
52.44.1	Retail sale of furniture	99.7	92.4
52.44.2	Retail sale of articles for lighting	96.4	86.4
52.44.3	Retail sale of metal and plastic household articles.....	99.9	90.2
52.44.4	Retail sale of crockery, china, pottery and glassware	99.9	89.6
52.44.5	Retail sale of curtains, net curtains and other household furnishing articles made of textile materials	100.0	90.9
52.44.6	Retail sale of wooden, cork and wickerwork goods.....	87.1	79.2
52.45.1	Retail sale of electrical household appliances and electrical products not elsewhere classified	97.9	89.6
52.45.2	Retail sale of radio and television goods and other household audio or audiovisual equipment and accessories	98.5	87.1
52.45.3	Retail sale of musical instruments, sheet music and orchestral scores ..	97.7	73.7
52.46.1	Retail sale of ironmongery and of metal and plastic goods not elsewhere classified	94.8	53.3
52.46.2	Retail sale of paints, varnishes and lacquers	95.0	40.3
52.46.3	Retail sale of building materials and of do-it-yourself material and equipment.....	94.7	48.5

52.47.1	Retail sale of office and school stationery and supplies	97.6	89.8
52.47.2	Retail sale of books and specialised journals.....	99.5	93.9
52.47.3	Retail sale of recreational magazines and newspapers.....	99.6	94.8
52.48.1	Retail sale of wallpaper and floor coverings	98.8	80.2
52.48.2	Retail sale of artwork, paintings, craft products, stamps, coins and souvenirs	99.1	91.8
52.48.5	Retail sale of watches, clocks, products made of precious metals and jewellery.....	98.3	82.2
52.48.6	Retail sale of games and toys.....	99.6	92.5
52.49.1	Retail sale of flowers, plants, pet food and accessories, pets and seeds	98.7	90.8
52.49.4	Retail sale of photographic, optical and precision equipment, computers and software.....	98.0	85.5
52.49.8	Retail sale of bicycles, bicycle accessories, sports goods and camping goods other than camping furniture	99.1	81.7
52.49.91	Retail sale of household fuels	90.5	73.8
52.49.92	Other retail sale in specialised stores not elsewhere classified	98.5	79.7
52.50.1	Retail sale of antiques, including antique carpets	99.4	92.5
52.50.2	Retail sale of second-hand books	86.5	80.2
52.50.3	Retail sale of other second-hand goods	100.0	96.6
52.61.1	Mail-order sale of goods where no category of goods is particularly dominant	100.0	93.5
52.61.2	Mail-order sale of textiles, clothing, footwear and leather goods	98.1	93.4
52.61.3	Other specialised mail-order sale	96.0	85.5
52.62.1	Retail sale of food and beverages from stalls and at markets	98.4	95.7
52.62.2	Other retail sale from stalls and at markets	97.6	92.2
52.63.1	Retail sale of fuel from depots	92.3	76.5
52.63.4	Other retail sale from warehouses or depots	92.6	78.4
52.63.4	Other non-store retail sale not elsewhere classified	91.4	86.7
52.71	Repairs of boots, shoes and other articles of leather	-	99.0
52.72.1	Repair of electrical household appliances except radio and television goods and other household audio or audiovisual equipment	-	90.0
52.72.2	Repair of radio and television goods and other household audio or audiovisual equipment	-	90.0
52.73	Repair of watches, clocks and jewellery	-	99.0
52.74.1	Repair of bicycles	-	95.0
52.74.2	Renting of personal and household goods n.e.c.....	-	95.0

5.7.3.8 Supply source 8: Hotels and restaurants

About 5% of household final consumption expenditure goes to hotels and restaurants. This supplier category includes hotels, inns, guesthouses and other establishments providing short-stay accommodation, as well as restaurants, cafés and similar amenities and caterers and canteens (WZ 55), with commercial (franchised) canteens recorded in the hotels and restaurants category for the statistical survey and sales to non-commercial canteens (company-operated canteens) recorded in a special account.

Subcategories of supply source 8	Household con- EUR m
Hotels and restaurants.....	61 132
Works canteens	1 868
Total.....	63 000

a) Statistics on hotels and restaurants

Sales revenue and private consumption ratios are assessed for 24 categories. The following table shows the reconciled results by activity groups:

WZ 2003 No.	Activity category	Private consumption ratio in %	HFCE, 2000 EUR m
55.1	Hotels.....	55	10 793
55.2	Camping sites and other provision of short-stay accommodation	95	3 050
55.3	Restaurants	86	29 575
55.4	Bars	95	11 591
55.5	Canteens and catering	83	4 498
	Tips (voluntary).....	-	1 625
	Total		61 132

The starting point for calculating **turnover** lies in the results of the business register survey combined with data from the VAT statistics and the annual survey of the hotels and restaurants sector (EVAS 45421). These data were reconciled with the production approach (see section 3.14) and adjusted upwards on the basis of certain allowances. VAT is added to the calculated net turnover, the applicable taxation rates being derived from the VAT statistics for each of the relevant activity categories. Turnover from in-flight catering services is not counted as household expenditure on catering if the services are included in the price of the ticket, because it is recorded as part of household expenditure on transport, storage and communication.

The percentages of turnover that come from sales of goods and services to households (**private-consumption ratios**) in each activity class are estimated and reconciled with the input-output compilation.

A separate assessment of voluntary **tips** is required, because they are not included in the turnover of hotels and restaurants. The allowance for tips is based on an imputed 5% of restaurant turnover from sales of food and drink and 2% of hotel turnover from the provision of overnight accommodation.

b) Works canteens

Canteens are divisible into two categories: franchised canteens and works canteens (company-operated canteens). Franchised canteens are independent enterprises and are included under the heading of hotels and restaurants. Company-operated canteens, on the other hand, are non-independent parts of other enterprises, which means that household final consumption expenditure in those canteens has to be recorded separately. The starting point for the valuation of this expenditure is provided by the statistics on the input of kitchen and canteen equipment and supplies in the domains of mining, quarrying and manufacturing for 1998 (EVAS 42241). The net turnover of company-operated canteens can be derived from these statistics by applying the material-input ratio (ratio of the input of equipment and supplies to turnover) for franchised canteens from the cost-structure statistics for hotels and restaurants. Addition of the appropriate rate of taxation as indicated in the VAT statistics produces gross output for company-operated canteens. As this type of information on the input of kitchen and canteen equipment and supplies is not available for other industries, an extrapolation is made from the turnover in the min-

ing, quarrying and manufacturing domains to obtain the turnover in the national economy. This is done by referring to the employees in Germany by industry. Since it may be assumed that only larger companies operate their own works canteens, companies with fewer than 20 employees are not taken into account. The results of this new calculation are then cross-checked against data from the household survey EVS. The figures for 1998 were extrapolated for the 2000 result by reference to the changes in the total number of employed persons.

5.7.3.9 Supply source 9: Transport, storage and communication

Just under 5% of household final consumption expenditure is devoted to transport, storage and communication (WZ 60 to 64). Household expenditure in this domain is assessed for 31 different subcategories. The following table shows the reconciled figures for household final consumption expenditure (HFCE) consolidated into activity categories:

WZ 2003 No.	Subcategories of supply source 9	HFCE, 2000 EUR m
60.1	Rail transport.....	4 302
60.21-23	Other scheduled and unscheduled passenger land transport, including taxi operation.....	9 439
60.24	Freight transport by road.....	1 862
61	Water transport.....	839
62	Air transport	8 520
63	Supporting and auxiliary transport activities; activities of transport agencies	1 755
63.3	Activities of travel agencies and tour operators	5 436
64.1	Post and courier activities.....	2 583
64.2	Telecommunications.....	23 219
	Total.....	57 955

a) Rail transport

To assess household final consumption expenditure on the major category of rail travel, the sales revenue (**turnover**) for passenger rail traffic is used as a source of data. The **private consumption ratio** of 77% results from a separate ratio determined by German Railways (*Deutsche Bahn*) in 1995 for the various ticket categories and the findings of the household survey which took place in 1998.

Benefits in kind granted to railway staff in the form of discounts or free private travel also have to be added to total turnover. Since German Railways is unable to provide data on the number of passenger kilometres travelled by off-duty railway staff, an estimate is required. The estimate is based on the annual consumption expenditure on rail travel per household as stated in the national accounts. It is assumed that the households of railway staff (entitlement to free travel and discounts extends to serving and retired railway staff and their families) travel three times more passenger kilometres than the average household. Multiplied by the number of entitled households, the result is benefits in kind totalling EUR 197 m.

b) Other scheduled and unscheduled passenger land transport, including taxi operation

Turnover is assessed on the basis of company statistics on passenger transport by road (EVAS 46211) and the VAT statistics. The calculation of total turnover is described in more detail in section 3.15. The net turnover figures are then increased by the applicable rates of VAT as indicated in the VAT statistics.

After reconciliation within the input-output framework, the following **private consumption ratios** were estimated:

WZ 2003 No.		Private consumption ratio, 2000, in %
60.21	Other scheduled passenger land transport	90
60.22	Taxi operation	70
60.23	Other land passenger transport	95

c) Freight transport by road

Sales revenue (**turnover**) is assessed on the basis of the VAT statistics; these calculations are explained in more detail in section 3.15. The net turnover figures are increased by the applicable rates of VAT as indicated in the VAT statistics.

After reconciliation within the input-output framework, a **private-consumption ratio** of 5% was assessed.

d) Water transport

The main sources of baseline data for assessing **turnover** are the balance-of-payments statistics on sea and coastal shipping (EVAS 83111) and company statistics on inland waterway transport (EVAS 46311). More explanation is contained in section 3.15. The net turnover figures are increased by the applicable rates of VAT as indicated in the VAT statistics.

The **private-consumption ratios** were estimated at 5% for sea and coastal shipping and 23% for inland waterway transport.

e) Air transport

The calculation of household final consumption expenditure is based on the airlines' turnover figures for passenger transport, which are recorded separately for scheduled services and charter flights (EVAS 46411).

The figures included in the assessment represent the turnover of German airlines with their branch offices at home and abroad. The net turnover figures are increased by the applicable rates of VAT as indicated in the VAT statistics.

Separate private-consumption ratios are estimated for scheduled services and charter flights. The **private-consumption ratio** for scheduled services is 48%, while the ratio for charter flights is 98%. These ratios are based on data from Deutsche Lufthansa, which compiles them from the results of passenger surveys.

Finally, the value of **benefits in kind** has to be added to the total, since airline employees are normally entitled to travel at greatly reduced rates, in some cases as low as 10% of the standard fare, if seats remain uncooked. The airlines do not, however, keep separate records showing the number of passenger miles flown by airline staff. The estimation of benefits in kind is therefore based on the same method described above in the context of transport by railway. The result is

converted into basic prices with the aid of the ratio of pre-tax profits to turnover as recorded in the annual Lufthansa business report. Allowance must also be made for the amount actually paid by households in discounted fares. The assessed value of benefits in kind for 2000 amounted to EUR 72 m.

f) Supporting and auxiliary transport activities; activities of transport agencies

The **turnover** for this supply source is assessed on the basis of the VAT statistics. Section 3.15 explains the valuation process. The net turnover figures are increased by the applicable rates of VAT as indicated in the VAT statistics.

In order to determine the amount of turnover attributable to household final consumption expenditure, **private-consumption ratios** were estimated. A ratio of 1% was applied for storage, cargo handling and other supporting transport activities, while the ratio for indoor and outdoor car parks and other supporting activities for land transport has been set at 67%.

g) Activities of travel agencies and tour operators

The value of services supplied to households by travel agencies and tour operators is not assessed as a percentage of gross turnover but as a percentage of the service charge levied for the arrangement of travel and accommodation; this avoids double counting. So the value of the transport, accommodation and other services arranged by these agencies and operators in Germany is not recorded as expenditure on the agents' services but as expenditure on hotels and restaurants, transport, etc. The services purchased from foreign companies are covered by the balance of payments.

The VAT statistics can be used in the assessment of **net turnover**. These statistics show separate figures for the value of the services provided by travel agencies and of those provided by tour operators. In the case of travel agencies, only the turnover originating from services provided in arranging travel and accommodation on their own account is included.

The **private-consumption ratio** for travel agencies and tour operators amounts to almost 100%. The games of chance offered by companies to households are assessed at 1%.

h) Post and courier activities

The **turnover** of this supply source comprises the sales revenue of the German Postal Service (*Deutsche Post AG*), as shown in its annual business report, and the turnover of the private courier services, which is taken from the VAT statistics. Details of the assessment method are given in section 3.15. The net turnover is increased by adding the appropriate rates of VAT, as indicated in the VAT statistics.

This estimate of the **private consumption ratio** was based on household expenditure on postal and courier services as recorded in the results of the 1998 survey on household income and expenditure and the ratio of private consumption to total turnover which was assessed for 1998. It was 17% for the letter service and 14% for the parcel service of Deutsche Post AG and 4.5% for private postal and courier services, figures which have also been applied to 2000.

i) Telecommunications

Turnover comprises the sales revenue of the German Telecommunications Service (*Deutsche Telekom AG*), as shown in its annual business report, and the turnover of the other private telecommunications services, which is taken from the VAT statistics. Details of the assessment method are given in section 3.15. The net turnover is increased by adding the appropriate rates of VAT, as indicated in the VAT statistics. The turnover from services which were recognisable from the annual Deutsche Telekom report as exclusively available to business customers was excluded from the assessment.

The proportion of total turnover emanating from household final consumption expenditure (the private-consumption ratio) amounts to 56%. This ratio was assessed by comparing the total turnover for 1998 with household expenditure on telecommunication services as recorded in the results of the 1998 EVS survey. The ratio for 2000 is almost identical.

5.7.3.10 Supply source 10: Financial intermediation

Almost 5% of household final consumption expenditure (HFCE) goes to monetary institutions and insurance companies. This figure is calculated by multiplying the various service charges by the corresponding private-consumption ratios. The first step in this assessment culminates in the compilation of the following table, which shows the reconciled household expenditure figures for the two divisions of this supply source:

WZ 2003 No.	Subcategories of supply source 10	HFCE, 2000 EUR m
65	Financial intermediation, except insurance and pension funding.....	25 640
66	Insurance and pension funding, except compulsory social security.....	34 960
	Total.....	60 600

a) Financial intermediation, except insurance and pension funding

- Bank charges actually paid

In this industry it is a matter of determining the actual bank charges paid by households for consumption purposes. The first step in the calculation of these charges involves deducting the balance of visible trade from the total value of goods and services sold by monetary institutions. Of the remaining amount, representing the value of services only, an estimated 30% is ascribable to household consumption expenditure. The institutions' profit and loss accounts provide the basis for the valuation of the service-charge element of this expenditure (see section 3.16). The following table summarises the assessment process:

	2000, in EUR m
Sales of goods and services	37 100
– Balance of invisible trade	200
= Sales of services	36 900
Consumer expenditure of private households.....	11 060

- Financial intermediation services indirectly measured (FISIM)

FISIM result from the difference between the actual interest and the interest calculated at the reference rate (see section 3.16 and Chapter 9). In line with the division of FISIM according to expenditure aggregates, an amount of EUR 14 580 m is attributed to consumption by resident households and EUR 630 m to consumption by non-profit institutions serving households.

b) Insurance and pension funding, except compulsory social security

Private consumption expenditure on insurance does not comprise the payment of gross premiums but only the service charge element, i.e. the part of the premium devoted to administration plus profit. This takes into account the fact that the major portion of the gross premiums paid by the insured flows back to them in various forms, representing in other words a redistribution of the money. The service-charge portion of the contribution revenue is calculated by adding to the premiums received the property income attributed to the insured from investing the technical provisions allocated to them and deducting from this all the funds flowing back to them, whether paid or in the form of a change in the technical provisions. The calculation is based on data from the Federal Insurance Supervisory Office (*Bundesaufsichtsamt für das Versicherungswesen*) (see section 3.16).

Insurance category	Private consumption ratio 2000 in %
Life insurance	100
Private health insurance	100
Non-life insurance other than health insurance:	
- General accident	100
- General third-party liability	50
- Motor insurance	81
- Legal liability	90
- Fire	2
- Theft and burglary	10
- Water supply	10
- Glass	10
- Storm damage	0
- Household contents	100
- Buildings	0
- Hail damage	0
- Pets and livestock	2
- Technical insurance	0
- Unit	0
- Transport	0
- Loan insurance	0
- Other insurance categories	10

Only a certain part of the service-charge element of each insurer's turnover is attributable to purchases by households. The value of this part is assessed by applying **private-consumption ratios** which are calculated separately for each individual segment of the insurance market. The calculation of these ratios is based on data from the Federal Insurance Supervisory Office. The above overview shows the ratios in 2000 for the various segments of the insurance market.

Private-consumption ratios are reviewed annually, especially for the categories of non-life insurance with high percentages of private policyholders, such as motor insurance.

5.7.3.11 Supply source 11: Real estate, renting and business activities

Services provided by this supply source constitute a major item of household final consumption expenditure, accounting for almost 21% of household spending. Rents for housing are the main factor here. At this point, mention should be made of a distinctive conceptual feature of this source, namely the fact that actual rents for rented housing and imputed rents for owner-occupied housing are included. The following table summarises the reconciled household final consumption expenditure (HFCE) in this domain:

WZ 2003 No.	Subcategories of supply source 11	HFCE, 2000 EUR m
70a	Housing services.....	216 630
	- Actual rents	82 010
	- Imputed rents	105 260
	- Water supply and provision of other ancillary services, excluding the cost of heating and other operating costs.....	29 360
70b	Real-estate activities other than housing services.....	1 174
71	Renting of machinery and equipment without operator.....	3 811
72	Computer and related activities.....	80
74	Other business activities.....	11 099
	Special assessment for second-hand and leased vehicles	7 566
	Total	240 360

a) Housing services

The valuation of housing services is effected with the aid of a highly detailed stratification model. The first step in this valuation process involves analysing the factors that affect rent levels and defining the various strata on this basis. By assigning the stock on the inventory of rented housing, with the relevant rents per square metre, to the appropriate stratum, it is possible to determine an average rent for each stratum. Thereafter, the actual average rent per square metre for each stratum is applied to the owner-occupied dwellings with the corresponding stratification criteria, which means that these dwellings are also objectively valued on the basis of market rents. For the base year, the rental value of housing stock is assessed for about 500 combinations of stratification criteria in the pre-unification territory of the Federal Republic and for 360 combinations in the new Länder. When subsequent rental values are extrapolated from the base-year figures, the growth in housing stock, in terms of total floor area, and price trends, in terms of rent per m², are assessed separately, again on the basis of the stratification model. More detailed explanations of the method are contained in section 3.17.

For the purposes of assessing consumption, rent comprises not only the net rent (basic rent) but also operating expenditure on items other than fuel, power and heating. This operating expenditure includes, for example, the cost of water supply and sewage disposal, chimney-sweeping, refuse collection and similar ancillary costs, such as communal aerials, cable connections, lifts, the services of a concierge and care of communal gardens. The operating expenditure on items other than fuel, power and heating per square metre from the 1993 sample survey of housing stock is calculated for the same combinations of stratification characteristics as the net rental values for the base year. For the extrapolation of operating expenditure, the m² values for the base year are updated by reference to the prevailing price trend and are then multiplied by the total floor area for each combination of stratification characteristics. From 2000 onwards, the results are then adjusted to coincide with the figures from the regular annual economic surveys.

Using the Länder categories from pre-unification Germany as well as rented housing and owner-occupied housing, adjustment factors are calculated which are then applied to the results for the Länder.

b) Real-estate activities other than housing services

The real-estate activities other than housing services to which household consumption expenditure is devoted comprise the activities of real-estate agencies (WZ 70.31). The private-consumption ratio of 13% combined with the turnover figure obtained from the VAT statistics, after deduction of the rent element, shows the consumption expenditure on services for this supply source.

c) Business services, etc.

The **turnover** from the provision of business services (WZ 71 to 74) is calculated on the basis of the VAT statistics. More details are contained in section 3.17. To the net turnover figure is added the applicable rate of VAT as shown in the VAT statistics.

In agreement with the input-output framework, a percentage of total turnover (the **private consumption ratio**) was used to estimate the value of sales to households by the individual industries.

For the renting of automobiles and other land vehicles not exceeding a laden weight of up to 3.5 tonnes, separate private-consumption ratios were obtained from the German Car Hire Federation (*Bundesverband der Autovermieter*) for the hiring of motor vehicles.

WZ 2003 No.	Supply source	Private consumption ratio 2000 in %
71.10.0	Renting of automobiles and other motor vehicles not exceeding a laden weight of 3.5 tonnes	Special assessment
71.21.0	Renting of other land-transport equipment	17
71.22.0	Renting of water-transport equipment	1
71.23.0	Renting of air-transport equipment	1
71.31.0	Renting of agricultural machinery and equipment	1
71.32.0	Renting of construction and civil-engineering machinery and equipment	1
71.33.0	Renting of office machinery and equipment, including computers	1
71.34.0	Renting of machinery and equipment not elsewhere classified	0
71.40.1	Renting of kitchen, table and bed linen and working apparel	10
71.40.2	Renting of sports equipment and bicycles	90
71.40.3	Lending libraries and magazine subscription clubs	65
71.40.4	Video libraries	95
71.40.5	Renting of personal and household goods n.e.c.	80
72.10.0	Hardware consultancy	1
72.22.1	Software consultancy	1
72.50.0	Maintenance and repair of office, accounting and computing machinery	1
74.11.1	Lawyers' offices with a notary's office	12
74.11.2	Lawyers' offices without a notary's office	12
74.11.3	Notaries' offices	12
74.11.4	Patent lawyers' offices	12
74.11.5	Other legal activities	12
74.12.1	Chartered accountants' offices; firms of chartered accountants	0
74.12.2	Sworn auditors' practices; firms of auditors	0

74.12.3	Tax consultants' practices; firms of tax consultants.....	2
74.12.4	Tax accountants' practices.....	1
74.12.5	Accountancy, excluding data-processing services	0
74.30.1	Technical testing and analysis	14
74.50.1	Labour recruitment conducted on a commercial basis.....	30
74.50.2	Provision of personnel on a commercial basis.....	0
74.60.1	Investigation activities.....	10
74.60.2	Security activities	1
74.70.1	Cleaning of buildings, rooms and inventory stocks.....	10
74.70.2	Cleaning of chimneys	0
74.70.3	Cleaning of transport vehicles.....	0
74.70.4	Disinfection and pest control	1
74.81.1	Photographic activities	66
74.85.2	Translation and interpreting activities	3
74.85.3	Secretarial activities	3
84.87.3	Auctioneering activities	40
74.87.5	Information offices	1
74.87.6	Debt-collection activities	0
74.87.7	Other property consultancy and administration.....	5
74.87.8	Other business activities not elsewhere classified	1

The special assessment for motor vehicles contains a calculation of the sales of used vehicles of service companies to households and the level of private vehicle leasing.

5.7.3.12 Supply source 12: Education, health and social work (private)

Four per cent of household final consumption expenditure is devoted to education, health and social work. It should be remembered that many education and healthcare services constitute public assets and are treated as consumption expenditure of general government or of non-profit institutions serving households. The turnover of market producers and private-consumption ratios are assessed in 32 separate categories. The following table shows summarised reconciled aggregate figures for household final consumption expenditure (HFCE):

WZ 2003 No.	Subcategories of supply source 12	HFCE, 2000 EUR m
80	Education.....	7 189
85	Health and social work	37 983
	Total	45 172

a) Education (private)

Turnover in the realm of education is calculated on the basis of the VAT statistics to which allowances are added for VAT-exempt services. More detailed explanations are contained in section 3.19. The net turnover is increased by the appropriate amount of VAT. The value of services provided by government institutions and non-profit institutions serving households is not recorded under this heading but is assigned to a separate supply source.

After the turnover figures had been reconciled within the input-output framework, the following **private-consumption ratios** were calculated for the various activity categories:

WZ 2003 No.	Subcategories of the educational supply source	Private consumption ratio 2000 in %
80.10.1	Kindergarten	95
80.10.2	Crèches.....	95
80.10.4	Pre-school preparatory education and primary education.....	95
80.21	General secondary education	95
80.22	Technical and vocational secondary education	50
80.30.5	Universities	95
80.30.6	General institutions of higher education other than universities.....	95
80.30.7	Colleges of administration.....	95
80.41.1	Driving schools.....	97
80.41.2	Tuition for pilots' and skippers' licences and similar qualifications..	80
80.42	Adult education n.e.c.	27

b) Health and social work (private)

The baseline data that are used for the calculation of **turnover** vary according to the activity category. For example, the annual hospital statistics are the main source of data on the turnover of private hospitals. Doctors' turnover is based primarily on figures from the statistics relating to the statutory health-insurance schemes, which are increased by additional types of income. Dentists' turnover is based on the average revenue per practice, which is multiplied by the number of registered dental practices. The VAT statistics are available as a means of assessing the turnover of veterinary practices. The VAT statistics were also used for an initial assessment of social work. Owing to the partial exemption from taxation, allowances were added on the basis of the data on public subsidies. In the care sector (in-patient and day-cases) the care statistics were taken into account in the 2005 revision, being first available for the reporting year 1999. Section 3.20 describes these assessments in detail. The net turnover is increased as necessary by the applicable VAT rate. Government institutions and non-profit institutions serving households are not part of this supply source.

Household final consumption expenditure is calculated by deducting from the relevant total amount of turnover reimbursements from the statutory health-insurance fund, income-support payments and other payments made to recipients other than households (payments to enterprises or to the public authorities, settlement of invoices from contracted physicians, etc.).

Only in the domain of veterinary practices (WZ 85.2) is household final consumption expenditure calculated using a **private-consumption ratio** after reconciliation within the input-output framework and household surveys. The figure for the year 2000 is 48%.

5.7.3.13 Supply source 13: Other community, social and personal services

About 4% of household final consumption expenditure is attributable to community, social and personal service activities. It should be noted that the value of services provided by government bodies and non-profit institutions serving households is not included under this heading. Expenditure is assessed for 44 separate subcategories. The following table shows the reconciled results for household final consumption expenditure (HFCE), each calculated in accordance with the method as described:

WZ 2003 No.	Subcategories of supply source 13	HFCE for 2000 in EUR m
92	Recreational, cultural and sporting activities	10 483
92.2	Radio and television activities.....	8 589
92.71.2	Casino and gaming-club activities.....	1 304
92.71.3	Turf accountancy, football pools and lotteries	6 383
93	Other service activities.....	23 659
	Total	50 418

a) Recreational, cultural and sporting activities

The **turnover** for this supply source is assessed on the basis of the VAT statistics. The calculation process is explained in detail in section 3.21. The applicable rate of VAT is added to net turnover. The value of services provided by government bodies or non-profit institutions serving households is recorded under another heading.

The turnover figures are multiplied by the corresponding **private-consumption ratios** to obtain the value of household final consumption expenditure. The following table shows the ratios that emerge after reconciliation within the input-output framework:

WZ 2003 No.	Activity category	Private consumption ratio, 2000, in %
92.13.0	Motion picture projection	85
92.31.1	Theatre companies.....	20
92.31.2	Ballet companies, orchestras, bands and choirs.....	10
92.31.3	Own-account artists	38
92.31.4	Own-account restorers	10
92.31.5	Own-account composers, arranging of music.....	0
92.31.6	Own-account writers.....	0
92.31.7	Own-account stage, motion picture, radio and television artists.....	5
92.31.8	Own-account performers	2
92.32.1	Organisation of theatre performances and concerts	90
92.32.2	Operation of opera houses, theatre and concert halls and similar facilities	90
92.32.3	Operation of variety theatres and cabarets	90
92.32.5	Technical activities in support of cultural and entertaining services	0
92.33.0	Fair and amusement-park activities	99
92.34.1	Dance schools.....	99
92.34.2	Other entertainment activities not elsewhere classified	60
92.51.0	Library and archive activities	70
92.52.1	Museum activities and organisation of art exhibitions	90
92.52.2	Preservation of historical sites and buildings.....	0
92.53.1	Botanical and zoological gardens	99
92.53.2	Nature reserves and wildlife preservation	99
92.53.3	Nature conservation	99
92.61.0	Operation of sports arenas and stadiums	55
92.62.1	Sports associations and clubs.....	50
92.62.2	Professional sports teams and racing stables	60
92.62.3	Individual own-account sportsmen, sportswomen and coaches	50
92.62.4	Sports promoters and other professional organisers of sports events	0
92.62.5	Sport and game schools and own-account teachers and instructors.....	50
92.71.1	Gambling dens and slot machines.....	100
92.72.1	Parks and other green space	10
92.72.2	Other recreational activities not elsewhere classified.....	70

93.01.1	Washing of textile and fur products	40
93.01.2	Operation of laundry collection and delivery points	60
93.01.3	Dry cleaning and dyeing of clothes	40
93.01.4	Collection and delivery points for dry-cleaning and dyeing of clothes	60
93.01.5	Pressing of clothes and textiles	50
93.02.4	Beauty treatment.....	99
93.02.5	Hairdressing.....	95
93.03	Funeral and related activities.....	99
93.04.1	Baths and saunas (excluding medicinal baths).....	99
93.04.2	Solariums and massage salons (excluding therapeutic massage), fitness centres and the like	99
93.05.1	Services of marriage bureaux.....	100
93.05.2	Other personal service activities.....	80
93.05.3	Other service activities n.e.c.....	31

b) Radio and television activities

The value of the services provided by radio and television corporations for household consumption comprises expenditure on radio and television licence fees as well as fees paid for cable and pay TV.

The Cologne-based Centre for the Collection of Radio and Television Licence Fees (*Gebühreneinzugszentrale*) provides data on the total revenue from licences as well as the revenue from radio and television licences in hotels and restaurants:

	2000 EUR m
Total revenue.....	5 918
Included in total: hotels and restaurants	572
Household final consumption expenditure	5 346

Figures on the cable fees paid by households were taken from the annual report of the regulatory authority and came to EUR 2 520 m.

The fees for pay TV according to the annual report of Premiere came to EUR 723 m after deducting a percentage for hotels and restaurants.

c) Casinos and gaming clubs

Turnover from the activities of casinos and gaming clubs is assessed on the basis of revenue from the casino gaming levy plus additional estimates for money paid into the staff tronc and for turnover from secondary activities. Section 3.21 describes these assessments in detail. The entire turnover from casinos and gaming clubs is attributed to household final consumption expenditure.

d) Turf accountancy, football pools and lotteries

Household final consumption expenditure on betting and lotteries is assessed on the basis of the total turnover of turf accountants, pools companies and lottery organisers, less the total amount of winnings paid out. Turnover is extrapolated from the revenue from betting and lottery tax as recorded in the fiscal statistics (EVAS 71211) to which is added the turnover from secondary activities (see section 3.21). Once the disbursed winnings have been deducted from this total turnover, the remainder is the amount of household final consumption expenditure:

	2000 EUR m
Turnover	10 848
– Winnings paid out	5 480
= Household final consumption expenditure	5 368

e) Other services

Household final consumption expenditure on the services of laundries, hairdressing salons, etc., is assessed in a manner similar to the method described above. The turnover from the various activity categories, derived chiefly from the VAT statistics, is multiplied by the corresponding private-consumption ratios, which are shown in the table in point a) above.

5.7.3.14 Supply source 14: General government

Household final consumption expenditure on general government services covers the purchases made by households from government departments for consumption purposes. These purchases include such items as entrance fees for museums and swimming pools, parking charges and fees for driving licences and passports. Since no specific service is obtained from the government authorities on payment of taxes, these are not recordable as consumption expenditure.

The baseline data for the valuation of government services are the highly detailed accounting statistics relating to the public budgets (EVAS 711) which are secondary statistics derived from the annual accounting figures contained in the federal budget and from the budgets of the Länder and local authorities. In these public budgets, all items of revenue and expenditure are classified in accordance with one of two uniform systems – the federal budget system, which applies to the Federal Republic and its constituent Länder, or the communal budget system, which applies to local authorities and special-purpose associations of local authorities – on the basis of economic categories (the grouped budget) and functional criteria, i.e. areas of responsibility (the functional budget). These classifications are the initial basis for the valuation of total sales effected by the Federal Government, the Länder and the local authorities (see section 5.9 below). At the same time, the highly detailed breakdown of public revenue provides information that is important in helping to determine household consumption expenditure. The following table shows household final consumption expenditure (HFCE) for the various categories of government activity:

WZ 2003 No.	Subcategories of supply source 14	HFCE, 2000 EUR m
ex 01-02	Agriculture, hunting and forestry	282
ex 60-64	Transport, storage and communication	143
ex 73	Research and development	12
75	Public administration and defence; compulsory social security	3 420
ex 80	Education	1 707
ex 85	Health and social work	772
ex 92	Recreational, cultural and sporting activities	907
	Total	7 243

5.7.3.15 Supply source 15: Non-profit institutions and domestic services

The private-consumption ratio for purchases from non-profit institutions and domestic services amounts to about 2%. It should be noted that domestic services provided free of charge are not included in this figure, nor are membership subscriptions to non-profit institutions. The following

table shows the reconciled household final consumption expenditure (HFCE) figure for both categories:

Subcategories of supply source 15	HFCE, 2000 EUR m
Non-profit institutions serving households (sales)	12 292
Domestic services	6 220
Total	18 512

a) Non-profit institutions serving households (sales)

In the national accounts, non-profit institutions serving households include all organisations, associations, clubs, institutes, etc., which offer their services free of charge or below cost price, chiefly to particular groups of households. Household final consumption expenditure in this domain does not include membership subscriptions or donations paid to these institutions but the actual value of the services they provide to households. The following table shows the figures for five categories:

Activity category (WZ 2003 no.)	Private- consumption ratio in %	HFCE, 2000 EUR m
Research and development (from Div. 73)	4	133
Education (from Div. 80)	21	2 689
Health and social work (from Div. 85)	21	5 118
Activities of membership organisations not elsewhere classified (from Div. 91) ..	8	1 379
Recreational; cultural and sporting activities (from Div. 92)	40	2 974
Total		12 292

The baseline data for the valuation of the purchases made by households from non-profit institutions serving households are the output figures for these institutions, broken down into activity categories. Further details regarding the calculation of these figures may be found elsewhere in this text, particularly in section 3.21. Estimated private-consumption ratios are applied to these categorised output figures, and then the imputed amount of VAT is added; this is calculated on the basis of the relevant rates of taxation shown in the VAT statistics.

b) Domestic services

Domestic services are included in consumption expenditure if they are provided in exchange for payment. It has been agreed that unpaid services within households should not be taken into account, both because of a lack of statistical information and because of the difficulties involved in the valuation of such services. The amount to be estimated for the calculation of consumption expenditure is therefore the amount of remuneration given to paid employees in households. The full value of domestic services is assigned to household final consumption expenditure.

The calculation of employee remuneration for domestic services is performed by means of a quantity-price method. For this, the number of employees in a household is multiplied by the relevant average pay level. Part-time workers earning less than the minimum for inclusion in the statutory social-security scheme are also included. Sections 3.22 and 4.7 contain more information on the calculations. The main data sources are the official employment statistics (EVAS 13111), the microcensus (EVAS 12213) and the studies on non-assessable employment con-

ducted by the Social Research and Policy Institute (*Institut für Sozialforschung und Gesellschaftspolitik*).

5.7.4 Consumption by purpose (COICOP¹) – inclusion of special product assessments

5.7.4.1 Special product assessments

The valuation of household final consumption expenditure by the supplier method, i.e. household consumption expenditure assessed as a percentage of the turnover of the various supply sources, is the main approach that is used to obtain short-term data in particular. When it comes to annual figures, special product assessments also play an important role. Such special assessments are made if reliable statistical information from other sources is available for the valuation of the consumption expenditure relating to a particular product. The first step is to ascertain the total amount of consumption expenditure on the product in question. Where this amount is not available, a quantity-price calculation is generally performed. The information relating to the specific product must then, however, be combined with the details for the relevant supply source in order to guarantee the consistency of the valuation system.

a) Tobacco (COICOP Group 02.2)

Household final consumption expenditure on tobacco is calculated on the basis of what are defined as small sales values in the VAT statistics for tobacco products (EVAS 73411); these values represent the total domestic turnover calculated on the basis of the total value of purchased revenue stamps. The exemptions/refunds of purchased revenue stamps are then deducted from the total value of purchased revenue stamps (small sales values in EUR millions, gross inclusive of VAT).

Item	2000 EUR m
Value of small sales.....	21 067
Revenue-stamp exemptions and refunds	– 302
Household private consumption expenditure in Germany..	20 765

b) Liquid gas (COICOP Subclass 04.5.2.2)

The figures for sales of liquid gas to households are taken from the publication '*Ausgewählte Zahlen der Energiewirtschaft*' which regularly provides figures pertaining to the energy sector. These figures show the distribution of liquid gas by volume in millions of kilowatt/hours and average prices, excluding VAT. The value of household consumption is assessed by adding imputed VAT at the rate of 16%.

Item	2000
Sales to households..... million	7 241
	kWh
* Average price excluding VAT	€/kWh 0.0379
* VAT rate.....	% 16
= Household final consumption expenditure	EUR m 318

¹ COICOP stands for Classification of Individual Consumption by Purpose, see Chapter 10.

c) Liquid fuels (COICOP Class 04.5.3)

Household consumption of liquid fuels is calculated on the basis of a price-quantity model. Total volume is taken from the energy balance sheets for the Federal Republic of Germany, which are compiled by the Study Group on Energy Balance Sheets (*Arbeitsgemeinschaft Energiebilanzen*). The average price per unit of volume was taken from the baseline data for the valuation of consumer prices for 2000.

Item		2000
Sales to households.....	kilotonnes	18 183
* Average consumer price.....	EUR/kg	0.4941
= Household final consumption expenditure	EUR m	8 983

d) Solid fossil fuels (COICOP Class 04.5.4)

The private consumption of solid fossil fuels (coal) is assessed on the basis of a price-quantity model. The consumed volumes of coal, coal briquettes, coke and lignite briquettes are taken from the energy balance sheets for the Federal Republic of Germany compiled by the Study Group on Energy Balance Sheets (*Arbeitsgemeinschaft Energiebilanzen*). Since these figures also contain miners' coal allowances, which are assessed at a different price and recorded in the statistics for mining and quarrying, the volume of these allowances is deducted from the total. The average price per unit of volume was taken from the baseline data for the valuation of consumer prices for 2000.

Type of solid fossil fuel	Sales to households in kilotonnes	Average price, 2000 in € per t	HFCE, 2000 EUR m
Coal	300	347	104
Coal briquettes.....	69	347	24
Coke	110	347	38
Lignite briquettes	891	272	243
Total			410

e) Fuel wood (COICOP Subclass 04.5.4.7)

The private consumption of fuel wood is assessed on the basis of a price-quantity model. The total volume of fuel-wood sales to households is taken from the energy balance sheets for the Federal Republic of Germany compiled by the Study Group on Energy Balance Sheets (*Arbeitsgemeinschaft Energiebilanzen*). Fuel wood is sold by retailers or forestry enterprises. Because of the quite substantial price differential, separate calculations are performed for each of these two types of sales outlet. The estimated turnover from fuel-wood sales by retailers is converted into a volume of wood by means of the average selling price recorded in the consumer-price statistics. By deducting this quantity from the total volume shown in the energy balance sheets, we obtain the estimated volume of fuel wood sold by forestry enterprises. The value of the volume sold by forestry enterprises is assessed on the basis of market reports compiled by the forestry authorities.

	Sales to house- holds	Average price, 2000	HFCE, 2000
	in kilotonnes	in EUR/t	EUR m
Forestry, logging and related service activities	11 092	26	289
Retail trade	583	520	303
Total			592

f) Motor vehicles (COICOP Subclass 07.1.1.1)

Private consumption expenditure on motor vehicles is calculated in a large number of individual categories. The following table shows summarised figures for household final consumption expenditure (HFCE) in 2000.

Item	HFCE, 2000 EUR m
Purchases of new vehicles	27 654
Purchases of used vehicles.....	9 291
Private use of company vehicles	15 556
Leasing charges	1 899
Commercial vehicles.....	108
Total.....	54 508

- Purchases of new vehicles by households

The valuation of the new vehicles purchased by households is based on the official statistics on the number of new vehicles registered. The number of new registrations in each class is then multiplied by the relevant average price. Details of new registrations of motor vehicles are provided monthly by the Federal Office for Motor Traffic (*Kraftfahrt-Bundesamt*); these statistics are broken down into two groups of vehicle owners (commercial and private). The average prices are determined by Deutsche Automobil Treuhand (DAT).

For staff purchases, i.e. newly registered vehicles which have been purchased by employees of car-manufacturing companies, the price is reduced by the applicable rate of discount. Details of the number of staff purchases and the rate of discount granted by the company are provided by vehicle manufacturers. The number of vehicles sold in this way can then be multiplied by the reduced list price.

- Purchases of used vehicles by households

Purchases of used vehicles comprise transactions between households (private owners) or commercial owners and other sectors (enterprises, general government, non-profit institutions or the rest of the world). Trade in used vehicles between households is not taken into account, because this does not alter the balance between total household income and total household expenditure.

The calculation takes the quantity (number of vehicles) valued at an average price (more details are presented in section 5.10). The number of vehicles is taken from the statistics on registered changes in vehicle ownership recorded by the Federal Office for Motor Traffic. The prices used are estimated as a proportion of the new prices.

- Private use of company vehicles

Motor vehicles whose registered owners are companies or professional practices are often used in part for private journeys. The value of this private use is calculated on the basis of a model and must be included in household final consumption expenditure. Details of the calculation are contained in section 5.10 below. The following percentages are used to assess the private use of company vehicles for the various categories of commercial keeper:

Industry	Private use as % of total use
Retailing; hotels and restaurants; other community, social and personal service activities	25
Agriculture, forestry and fishing activities; trade in motor vehicles.....	20
Wholesale and commission trade.....	15
Other industries	5

- Leasing

According to the criteria laid down in ESA 1995 (Annex II), no financial leasing takes place in Germany: in other words, all leasing activities in Germany are classifiable as operating leasing. This means that the value of the leased new vehicle must not be included in household final consumption expenditure but must initially be recorded as capital formation in machinery and equipment. Since the registration statistics assign these vehicles to their users, these data have to be adjusted. Only the residual value on expiry of the leasing agreement is included in household final consumption expenditure, provided the private user then purchases the vehicle outright. This residual value is included in net sales of used vehicles. Another element of household final consumption expenditure are the **leasing charges** incurred during the term of the agreement. In the absence of baseline information, these charges are calculated by means of a model. Besides the difference between the price of the new car and the residual value after leasing, an administrative surcharge and profit margin are also determinant factors in the leasing charge.

- Commercial vehicles

A small percentage of the turnover in commercial vehicles is for vans which are also purchased by private households. This turnover figure is assessed as part of determining fixed-capital formation using the commodity-flow method. The volume of sales to households includes VAT.

g) Fuels and lubricants for personal transport equipment (COICOP Class 07.2.2)

Calculation of household purchases of fuel and lubricants is based on the mileage statistics calculated by DIW, the German Institute for Economic Research (*Deutsches Institut für Wirtschaftsforschung*). In 1992 and 2002, surveys were conducted on behalf of the Federal Ministry of Transport, Building and Housing (*Bundesministerium für Verkehr, Bau- und Wohnungswesen*) among the owners of motor vehicles about vehicle mileage (kilometres driven in Germany and abroad, and fuel consumption in litres). DIW's analysis took into account the type of fuel (petrol, diesel) and vehicle (moped, motorcycle, car, coach, lorry, traction engine, etc.). The resulting aggregate fuel consumption was multiplied by the average sales prices. The result was total household final consumption expenditure of EUR 38 997 m in the year 2000.

h) Motor caravans (COICOP Subclass 09.2.1.11)

The valuation of purchases by private households is effected on the basis of new vehicle registrations, the number of which is multiplied by the average price. The total number of new registrations is obtained in the form of monthly figures from the Federal Office for Motor Traffic, one for commercial vehicles and one for privately owned vehicles. An unweighted average price is calculated from manufacturers' data. Household final consumption expenditure on motor caravans in 2000 is estimated at EUR 501 m.

5.7.4.2 The range of products chart

The instrument with which the information on specific products from the special assessments is correlated with the data for the various supply sources is known as a range of products chart. This chart is a coordination chart in which the household final consumption expenditure on particular types of product is broken down by supply source.

The main statistical basis for the range of products chart are the supplementary surveys of product ranges which are conducted every few years in the domains of trade and hotels and restaurants. In the supplementary survey conducted in the retail trade for 1997 (EVAS 45331), retailers provided information on the product structure of their turnover. Since 1999, a condensed turnover product structure has been surveyed as part of the annual surveys in all activity categories (EVAS 45221, 45251, 45321 and 45421). A supplementary survey (EVAS 45431) was carried out for 1995 among hotels and restaurants. The results of the annual surveys of hotels and restaurants provide information on the main categories of turnover. Although no such direct statistical surveys with a product-by-product breakdown of turnover are conducted for the other supply sources, the highly detailed classification of economic activities enables us to make quite an accurate breakdown by use. Since the coordination chart may still contain sales to households which are not classifiable as consumption expenditure, such as sales of building materials and medicinal products, such sales have to be discounted. The detailed breakdown of products proves useful for this. Afterwards the results of the special product assessments can be integrated. For accounting purposes, the range of products chart is broken down into 390 economic activities and 370 expenditure categories.

The breakdown of household purchases by use (goods and services) also paves the way, in principle, for a comparison with the results of the input-output compilation and the household survey and hence for checks on the exhaustiveness of the accounting data and on the use structures. Table 5—2 below shows the condensed range of products chart for 2000.

Table 5—2: Household final consumption expenditure in Germany by supply source and use (range of products chart)

at current prices, 2000
EUR m

Supply sources (WZ2003)	Use of income (SEA-98/COICOP)	Food and non- alcoholic beverages	Alcoholic beverages, tobacco	Clothing and foot- wear	Housing, water, electricity, gas and other fuels	Furnishings, household equipment and routine maintenance of the house	Health	Transport	Communication	Recreation	Education	Restaurants and hotels	Misc. goods and services	Total*
		01	02	03	04	05	06	07	08	09	10	11	12	
1	Agriculture, forestry and fishing	2 906	924	0	357	423	0	0	0	2 302	0	335	703	7 950
2	Mining, quarrying and manufacturing	23 311	515	1 038	972	7 038	571	5 343	19	10 744	0	3 244	2 805	55 600
3	Electricity, gas and water supply	0	0	0	29 770	0	0	0	0	0	0	0	0	29 770
4	Construction	0	0	0	3838	147	229	0	0	86	0	0	0	5 200
5	Vehicle sales and repair, petrol sales	479	962	0	70	26	4	103 154	0	1 417	0	34	0	106 150
6	Wholesale trade	1 081	6 316	387	2 502	1 474	188	4 532	370	982	0	0	158	17 990
7	Retail trade	103 264	30 377	66 803	12 321	70 587	16 324	4 998	2 288	55 095	0	443	21 280	383 780
8	Hotels and restaurants	972	1 146	0	0	0	0	37	194	775	0	59 749	117	62 990
9	Transport and communication	0	0	0	0	0	0	26 598	25 799	5 553	0	0	0	57 950
10	Financial intermediation	0	0	0	0	0	0	0	0	0	0	0	60 600	60 600
11	Housing services	0	0	0	216 630	0	0	0	0	0	0	0	0	216 630
12	Real estate, renting movable property	0	0	62	0	1 850	0	10 276	0	2 391	0	0	9 141	23 720
13	Other services	127	0	1 240	0	1 865	28 614	2 208	0	31 805	4 260	755	24 726	95 600
14	General government (sales)	0	0	0	0	0	260	530	0	1 180	1 590	320	3 360	7 240
15	Non-profit institutions (sales)	0	0	0	0	0	1 180	0	0	3 610	2 040	820	4 650	12 300
16	Domestic services	0	0	0	0	6 220	0	0	0	0	0	0	0	6 220
=	Household final consumption expenditure in Germany	132 140	40 240	69 530	266 460	90 530	47 370	157 680	28 670	115 940	7 890	65 700	127 540	1 149 690

* Balanced and rounded.

5.7.5 Reconciling consumption expenditure with data from the input-output compilation and the household surveys

The result of the regular assessments not only takes the form of a total figure for household final consumption expenditure in Germany but is also presented in a coordination chart on the basis of economic activities and expenditure categories. Another important step for checking for plausibility is a comparison with the results of the household surveys and input-output compilation, carried out for the various COICOP classes (four-digit reference numbers), of which there are 103. Because of the nature of the data required for these comparisons, they can only be conducted at irregular intervals.

The results of the 1998 sample survey of household income and expenditure were used for comparison with the household surveys. First of all, the results of the survey had to be converted into the categories used in the national accounts, with adjustments for undercoverage effects. A particular problem is posed by the need to convert the survey results from a national concept to a domestic concept, since, on the one hand, this means separating the expenditure of resident households, especially their expenditure on travel, into purchases made in Germany and purchases made abroad and deducting the value of the latter. On the other hand, the purchases made in Germany by non-resident households, which are not covered by the EVS, must be included. These are some of the reasons why the data from the household surveys on the various uses of household income are not all utilised to the same extent. Besides, comprehensive statistical information is available from other sources for the valuation of expenditure on goods, and so the survey results serve primarily to improve the basis for estimating household expenditure on services and to underpin the corresponding private consumption ratios.

Considerably more weight attaches to the reconciliation with the results obtained by means of the commodity-flow method in the input-output framework. Proceeding from the available volume of goods and services, this method involves estimating the use of these goods and services for final consumption, fixed-capital formation and intermediate consumption. In the commodity-flow method, the various goods and services are broken down into the smallest possible product categories. These goods and services are hypothetically tracked from their entry into the domestic economic process through the various production and marketing stages to the end user. Ascertaining the total volume of goods and services produced in or imported into Germany is the first step in this calculation; once exports have been subtracted, the domestic supply remains. In the commodity-flow method the individual products are assigned to expenditure categories on the basis of statistical and other information. In many cases, goods and services for household consumption can be plainly recognised as such, since items like clothing, jewellery and personal services are produced exclusively for households. By contrast, other goods and services are not produced for consumption purposes alone but can also be used for other categories of goods such as fixed-capital formation (e.g. passenger vehicles) or intermediate consumption (e.g. electricity or gas supplies). For the assignment of these goods and services to the various use categories, the compilers avail themselves of all available information from material-balance accounts, energy balance sheets and other sets of statistics providing information as to the sector in which the goods and services are used, such as the statistics on vehicle registration. The commodity-flow method is used in German national accounting in the input-output framework and is applied

to some 3000 different product categories. As a result, a separate estimated amount of household consumption expenditure is available for each category for purposes of comparison.

If the valuation of private consumption based on the commodity-flow method is to be made comparable with the results of the assessment based on the supplier method, the figures for private consumption must first be converted into the classification system used for the calculation of household final consumption expenditure, a process which is made easier by the highly detailed breakdown used in the commodity-flow method. The result of this conversion is a coordination chart (product/use consumption chart), which breaks down private consumption expenditure by both commodity type and expenditure category and is used as the reconciliation basis. The divergences between the figures produced by the commodity-flow method and those derived from the supplier method are investigated with a view to identifying and eliminating the cause of the disparity. Besides harmonising the expenditure structures, this reconciliation also enables compilers to verify and, if necessary, adjust the private consumption ratios. Table 5—3 below shows the condensed product/source chart for 2000.

Table 5—3: Household final consumption expenditure in Germany by product type and purpose (product/use consumption chart)

at purchasers' prices, 2000

EUR m

	Household final consumption by purpose (SEA-98 / COICOP)	Food and non- alcoholic beverages	Alcoholic beverages, tobacco	Clothing and footwear	Housing, water, electricity, gas and other fuels	Furnishings, household equipment and routine maintenance of the house	Health	Transport	Communication	Recreation	Education	Restaurants and hotels	Misc. goods and services	Total
P60	by types of product (SIO-95)	01	02	03	04	05	06	07	08	09	10	11	12	
	Products of agriculture, hunting and related services	11 938	869	-	549	-	-	-	-	8 762	-	-	-	22 118
01	Products of forestry, logging and related services	-	-	-	431	-	-	-	-	391	-	-	-	822
02	Fish and other fishing products; services incidental to fishing	397	-	-	-	-	-	-	-	-	-	-	-	397
10	Coal and lignite; peat	-	-	-	341	-	-	-	-	134	-	-	-	475
11	Crude petroleum and natural gas; services incidental to oil and gas extraction, excluding surveying	-	-	-	9 488	-	-	-	-	-	-	-	-	9 488
14	Other mining and quarrying products	78	-	-	-	-	-	-	-	30	-	-	9	117
15	Food products and beverages	119 716	18 581	-	-	-	-	-	-	2 731	-	6 422	-	147 450
16	Tobacco products	-	20 716	-	-	-	-	-	-	-	-	-	-	20 716
17	Textiles	-	-	9 156	-	10 412	44	-	-	163	-	-	46	19 821
18	Wearing apparel; furs	-	-	48 346	-	35	-	-	-	-	-	-	-	48 381
19	Leather and leather products	-	-	9 968	-	-	242	-	-	791	-	-	3 002	14 003
20	Wood and products of wood and cork (except furniture), articles of straw and plaiting materials	-	-	-	886	803	-	-	-	16	-	-	195	1 900
21	Pulp, paper and paper products	-	74	-	79	1 193	-	-	-	804	-	-	3 200	5 350
22	Printed matter and recorded media	-	-	-	-	-	-	-	-	24 622	-	-	498	25 120
23	Coke, refined petroleum products and nuclear fuel	-	-	-	10 103	-	-	39 315	-	-	-	-	-	49 418
24	Chemicals, chemical products and man-made fibres	11	-	-	737	3 370	11 317	163	-	1 907	-	-	9 896	27 401
25	Rubber and plastic products	-	-	331	301	3 481	278	2 890	-	506	-	-	3	7 790
26	Other non-metallic mineral products	-	-	-	2 325	4 115	-	-	-	-	-	-	145	6 585
27	Basic metals	-	-	-	-	-	-	-	-	-	-	-	-	-
28	Fabricated metal products, except machinery and equipment	-	-	-	672	6 073	-	166	-	420	-	-	583	7 914
29	Machinery and equipment not elsewhere classified	-	-	-	1 053	13 186	11	17	-	57	-	-	450	14 774
30	Office machinery and computers	-	-	-	-	-	-	-	-	7 301	-	-	-	7 301
31	Electrical machinery and apparatus not elsewhere classified	-	-	-	-	2 659	-	354	-	-	-	-	-	3 013
32	Radio, television and communication equipment and apparatus	-	-	-	-	-	-	-	2 740	8 830	-	-	-	11 570
33	Medical, precision and optical instruments, watches and clocks	-	-	-	-	7	5 261	-	-	1 490	-	-	1 903	8 661
34	Motor vehicles, trailers and semi-trailers	-	-	-	-	-	-	58 564	-	1 029	-	-	-	59 593
35	Other transport equipment (ships, aircraft, spacecraft, etc.)	-	-	-	-	-	167	4 368	-	322	-	-	-	4 857
36	Furniture; other manufacture goods n.e.c.	-	-	-	-	31 575	-	-	-	8 555	-	-	5 556	45 686

Continuation: Household final consumption expenditure in Germany by product type and purpose (product/use consumption chart)

at purchasers' prices, 2000
EUR m

	Household final consumption by purpose (SEA-98 / COICOP)	Food and non- alcoholic beverages	Alcoholic beverages, tobacco	Clothing and footwear	Housing, water, electricity, gas and other fuels	Furnishings, household equipment and routine maintenance of the house	Health	Transport	Communication	Recreation	Education	Hotels and restaurants	Misc. goods and services	Total
P60	by types of product (SIO-95)	01	02	03	04	05	06	07	08	09	10	11	12	
40	Electrical energy, gas, steam and hot water	-	-	-	19 680	-	-	-	-	-	-	-	-	19 680
41	Collected and purified water; water-distribution services	-	-	-	5 061	-	-	-	-	-	-	-	-	5 061
45	Construction work	-	-	-	3 624	917	-	-	-	-	-	-	-	4 541
50	Trade, maintenance and repair services of motor vehicles and motorcycles; retail trade services of automotive fuel	-	-	-	-	-	-	18 651	-	-	-	-	-	18 651
52	Retail trade services, except of motor vehicles and motorcycles; repair services of personal and household goods	-	-	480	-	2 095	-	610	-	1 305	-	-	337	4 827
55	Hotel and restaurant services	-	-	-	-	-	-	-	-	-	-	59 195	2 780	61 975
60	Land transport and transport via pipeline services	-	-	-	-	-	-	14 215	-	-	-	-	-	14 215
61	Water-transport services	-	-	-	-	-	-	730	-	-	-	-	-	730
62	Air-transport services	-	-	-	-	-	-	8 510	-	-	-	-	-	8 510
63	Supporting and auxiliary transport services; travel-agency services	-	-	-	-	-	-	2 751	-	5 440	-	-	76	8 267
64	Post and telecommunication services	-	-	-	-	-	-	-	25 930	2 486	-	-	-	28 416
65	Financial intermediation services, except compulsory social security	-	-	-	-	-	-	-	-	-	-	-	26 550	26 550
66	Insurance and pension-funding services, except compulsory social security	-	-	-	3 878	-	-	-	-	-	-	-	34 960	38 838
67	Services auxiliary to financial intermediation	-	-	-	-	-	-	-	-	-	-	-	646	646
70	Real-estate services	-	-	-	192 227	-	-	-	-	-	-	-	1 771	193 998
71	Renting services of machinery and equipment without operator and of personal and household goods	-	-	57	-	619	-	1 808	-	1 603	-	-	-	4 087
72	Computer and related services	-	-	-	-	-	-	-	-	1 306	-	-	-	1 306
74	Other business services	-	-	-	985	1 488	-	1 408	-	777	-	-	5 783	10 441
75	Public administration and defence services; compulsory social-security services	-	-	-	-	-	114	465	-	39	-	-	3 185	3 803
80	Education services	-	-	-	-	-	-	2 695	-	-	7 658	-	391	10 744
85	Health and social-work services	-	-	-	-	-	29 936	-	-	913	-	-	10 817	41 666
90	Sewage and refuse-disposal services, sanitation and similar services	-	-	-	14 040	-	-	-	-	-	-	-	-	14 040
91	Membership-organisation services n.e.c.	-	-	-	-	-	-	-	-	2 004	232	-	5	2 241
92	Recreational, cultural and sporting services	-	-	-	-	-	-	-	-	26 449	-	83	-	26 532
93	Other services	-	-	1 192	-	2 282	-	-	-	4 757	-	-	14 753	22 984
95	Private households with employed persons	-	-	-	-	6 220	-	-	-	-	-	-	-	6 220
	Total	132 140	40 240	69 530	266 460	90 530	47 370	157 680	28 670	115 940	7 890	65 700	127 540	1 149 690

5.7.6 Consumption expenditure by residents of Germany in the rest of the world and by non-residents in Germany

The total of household final consumption expenditure by supply sources, including the special product assessments, reflects the purchases of households made in Germany. ESA 1995, however, requires the calculation of all consumption expenditure by resident households, both at home and abroad. In order to obtain this figure, we have to incorporate consumption expenditure in the rest of the world by resident households and to eliminate consumption expenditure in Germany by non-residents.

	2000 EUR m
Consumption expenditure by resident households in the rest of the world.....	51 780
– Consumption expenditure by non-resident households in Germany	21 140
= Balance	30 640

Both the household final consumption expenditure by resident households in the rest of the world and the expenditure of non-resident households in Germany are recorded as part of the balance of payments by the Deutsche Bundesbank (EVAS 83111). The Bank's estimate takes account of expenditure on holiday travel and accommodation, including purchases made on cross-border shopping trips and by cross-border commuters, private expenditure on passenger transport and household consumption by employees of extraterritorial establishments, such as embassies, consulates and military bases. For 2000, these figures were as follows:

	2000 EUR m
Expenditure on holiday travel and accommodation	46 910
+ Expenditure on passenger travel other than air transport	470
+ Expenditure on the services of foreign airlines	3 950
+ Household consumption by employees of extraterritorial establishments	450
= Consumption expenditure by resident households in the rest of the world	51 780
Receipts for holiday travel and accommodation	14 130
+ Receipts for passenger travel other than air transport	420
+ Receipts for the services of German airlines	3 790
+ Household consumption by employees of extraterritorial establishments	2 800
= Consumption expenditure by non-resident households in Germany	21 140

The figures for holiday travel and accommodation and for passenger transport are taken from the balance of payments and are obtained by deducting a percentage of total turnover from travel and accommodation services to allow for business trips. This percentage is obtained by means of customer surveys. The percentage of travel and accommodation expenditure assignable to business travellers which was used in the calculation of consumption expenditure was as follows:

- German residents travelling abroad on business 20%
- Non-residents travelling on business in Germany 32%

Household consumption expenditure by employees of extraterritorial establishments comprises four separate accounts: household consumption by German employees of German diplomatic and consular missions is based on total personnel costs as entered in the budget for the missions of the Federal Republic of Germany. The emoluments paid to locally employed staff, such as gardeners and drivers, are deducted from the total, as these members of staff are assumed to be non-residents. A consumption ratio of 70% is applied to the remainder of the personnel costs

to obtain the private purchases of embassy staff. No statistics or survey results are available for the calculation of household consumption by non-resident employees of foreign diplomatic and consular missions in Germany, and so it is assumed that their household final consumption expenditure is approximately 80% of the amount assignable to their German counterparts in German missions abroad. The valuation of household final consumption expenditure by members of the Federal Armed Forces stationed abroad is based on the figures for total extraterritorial emoluments provided by the Federal Ministry of Defence, to which an imputed consumption ratio of 70% is applied. The starting point for the valuation of consumption expenditure in Germany by members of the armed forces of Germany's NATO allies is the entry in the balance of payments showing the income from government payments accruing to foreign military units. Once the payments made by the allied troops for goods and services have been deducted (these figures are provided by the Deutsche Bundesbank), the remainder is used to assess household consumption expenditure by members of the allied forces in Germany.

5.8 Final consumption expenditure by non-profit institutions serving households (expenditure approach)

The final consumption expenditure of non-profit institutions serving households is calculated on the basis of output by the differential method. The calculation of output is described in Chapter 3, which deals with the production approach. Own-account fixed-capital formation and sales to the social-security funds, to the state local governments, to enterprises and to private households (all of these sales figures are exclusive of VAT) are deducted from the total value of output to produce the amount of final consumption expenditure by non-profit institutions serving households. This calculation is done separately for the five industries in which non-profit institutions serving households are operating (see section 3.21.2).

Own-account fixed capital formation is assessed in the framework of capital formation in construction (see section 5.10.2) with the aid of the development in the value of the services rendered to these institutions by construction firms.

Sales to the state local governments are estimated as a percentage of the value of their benefits in kind provided for welfare and youth services and for war victims and similar welfare services.

The value of sales to the social-security funds is assessed as a percentage of the fund's total intermediate consumption. These sales primarily relate to expenditure by the fund on homecare assistance and emergency services.

Sales to enterprises are made by non-profit institutions in the domains of education (WZ 80), and culture, sport and recreation (WZ 92). The value of these sales is estimated as a percentage of the output of the non-profit institutions in the relevant categories.

The valuation of sales to households is explained in connection with the description of the various supply sources for which household final consumption expenditure is assessed (section 5.7.3.15).

The following derivation of final consumption expenditure by non-profit institutions lists and quantifies the individual headings for the year 2000.

	2000 EUR m
Output.....	60 829
– Own-account fixed-capital formation.....	870
– Sales to the state and local governments	9 610
– Sales to the social-security funds.....	3 460
– Sales to enterprises.....	1 904
– Sales to private households.....	11 793
+ FISIM	630
= Expenditure on consumption by non-profit institutions - result of calculation	33 822
= Expenditure on consumption by non-profit institutions - adjusted result	33 830

5.9 General government final consumption expenditure (expenditure approach)

The general government final consumption expenditure is calculated by the following method:

	2000 EUR m
Output of the general government sector (other non-market production, including the output for own final use)	265 590
– Own-account non-market production.....	760
– Sales from other non-market production.....	25 890
+ Social benefits in kind	152 970
= General government final consumption expenditure (expenditure approach) ...	391 910
of which:	
Actual individual consumption.....	224 840
Actual collective consumption	167 070

The components of the calculation of general government output in the local kind-of-activity units with other non-market production have already been mentioned in section 3.18. The statistical sources have also already been described.

The statistical sources for calculating final consumption expenditure are, for central government, the results for the central government budget, including its special assets, prepared by the Federal Ministry of Finance and, for the state and local governments, including their special assets, the results of the public finance statistics, broken down in detail according to types of revenue and expenditure. In addition, statistics are incorporated which are compiled by the social security funds (pension insurance scheme, agricultural pension funds, statutory health insurance schemes, statutory long-term care insurance schemes, statutory accident insurance schemes and unemployment insurance schemes). The statistical sources cover all government budgets in Germany in their entirety. The consumption of fixed capital is derived from the fixed asset account, in accordance with the perpetual inventory method. The most important conceptual differences from the accounting data in these sectors are the inclusion of imputed social contributions for the insurance scheme for civil servants and the estimation of consumption of fixed capital.

The output for own final use by the general government sector is effected entirely in local kind-of-activity units within that sector and falls under the heading of other non-market production. This

production chiefly comprises services provided by the planning and building-control departments of local authorities in connection with the planning and supervision of public construction work, services provided by materials depots and software produced on companies' own account. The output from these activities, assessed on the basis of cost elements, is deducted from the other non-market production of the general government sector and is recorded as fixed-capital formation.

The sales from other non-market production comprise revenue from user charges and administrative charges in cases where the government levies charges for administrative services such as tests and inspections, revenue from primary or secondary economic activities and revenue from concession and licence fees, in so far as such revenue does not constitute income from property (rent) or acquisitions less disposals of non-produced assets.

Social benefits in kind comprise expenditure by central, state and local governments, particularly on social assistance and war-victim support, and expenditure by the social-security funds, particularly for the services of doctors and dentists, for medicinal products, courses of treatment and therapeutic devices, for hospital services, for accommodation in nursing homes and similar establishments and for treatment at a health resort or spa. The benefits are made available directly to households by the service providers (doctors, pharmacies, hospitals, etc.) without being transformed by government intervention, and the government pays for them.

In the expenditure approach, the final consumption expenditure of the government sector is calculated by deducting fixed assets produced and retained for producer's own use (output for own final use) and the value of sales of other non-market production from the total output of the general government sector and adding expenditure on social benefits in kind.

In a supplementary calculation, the government final consumption expenditure as assessed by means of the expenditure approach may be converted into actual final consumption, making both individual and collective consumption recordable. Actual individual consumption comprises the social benefits in kind and the individually assignable benefits in kind in the domains of education, health, social security and sport, culture and recreation. The remainder is actual collective consumption.

5.10 Acquisitions less disposals of tangible fixed assets

5.10.1 Demarcation of fixed capital formation

Acquisitions less disposals of tangible fixed assets (fixed-capital formation) comprises the value of goods and services acquired by resident producers during the accounting year with a view to using them over a lengthy period of time for production purposes, minus disposals of used fixed assets. They include tangible assets as well as intangible assets and other machinery and equipment. The goods and services to be recorded are those which are used for more than a year in the production process and which exceed the ceiling for classification as low-value items, i.e. EUR 500 at 1995 prices. Services that enhance the value of property, such as major repairs and soil-improvement measures, are also classed as capital formation, but not military arms and weapons systems. Acquired buildings, owner-occupied housing and military buildings that are

usable for civilian purposes must be treated as capital formation. Facilities constructed by investors for their own use (own-account fixed-capital formation) are also part of capital formation.

Gross fixed-capital formation is assessed at purchasers' prices. This includes ancillary procurement expenses such as installation costs and the cost of ownership transfer as well as non-deductible VAT. The acquisition of fixed capital is recordable in principle at the time when ownership is transferred to the investor, which means that the financial terms of purchase do not affect the assignment of the capital acquisition. Own-account fixed-capital formation, however, is recorded at the time of production and is valued by reference to the basic prices of comparable goods. The word 'gross' in this context means that no adjustment is made for depreciation. In other words, part of gross fixed-capital formation can hypothetically be regarded as replacement expenditure, while net fixed-capital formation covers only those investments which increase total production capacity.

Since the introduction of ESA 1995, the term for capital formation has been expanded to include certain intangible assets such as computer programs and copyright. The fixed capital formation in 2000 was as follows.

	Figures for 2000 in EUR bn		<i>Description contained in section</i>
Tangible fixed assets		418.38	5.10
Fixed capital formation in construction	241.85		5.10.2
of which: Dwellings	140.92		
Other buildings and structures	100.93		
Fixed capital formation in machinery and equipment ..	176.66		5.10.3
of which: Machinery and equipment ¹⁾	132.49		
Transport equipment	44.17		
Cultivated assets	- 0.13		5.10.4
Intangible fixed assets²⁾		24.05	5.11, 5.12
Gross fixed-capital formation		442.43	5.10 – 5.12

1) including 'miscellaneous equipment' (small parts from CPA 17-27)

2) including additions to the value of non-produced non-financial assets

The following description also keeps to this breakdown of the gross fixed capital formation. Fixed capital formation in tangible assets is described first in section 5.10. Sections 5.11 and 5.12 describe fixed capital formation in intangible assets and net acquisitions of non-financial non-produced assets.

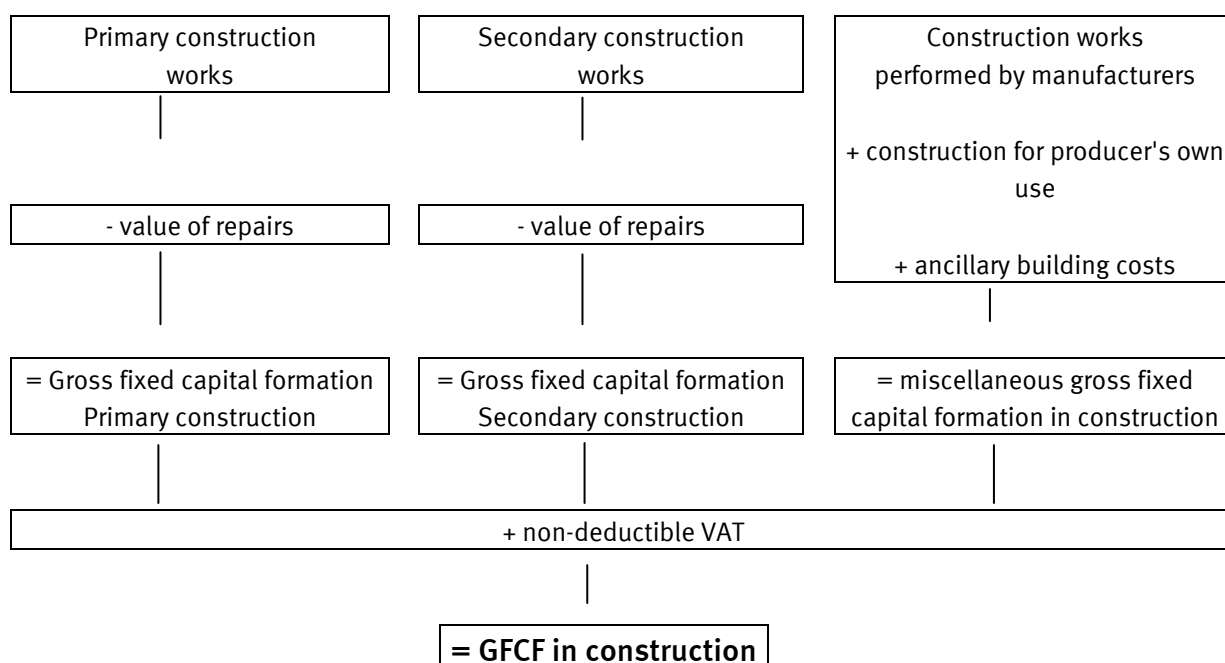
5.10.2 Gross fixed capital formation in construction

Gross fixed capital formation in construction (GFCF) in construction comprises the acquisition of new dwellings and other buildings and structures as well as investment expenditure on existing buildings and structures. A net increase in the value of used buildings and land need not be quantified for the national economy since, by definition, purchases and sales of used buildings and land within an economic area will always cancel each other out. GFCF in construction include not only actual construction activity on buildings and other structures (roads, airports, canals, etc.) but also installations that are integrally linked to these buildings and structures, such as lifts, heating, ventilation and air-conditioning systems, landscaping, gardens and fencing. More-

over the value of services associated with the production and sale of buildings and land transfer, such as the services of architects and estate agents, also form part of GFCF in construction. Building work performed by investors themselves and clandestine building work are also counted as GFCF in construction. The valuation of GFCF in construction is effected at purchasers' prices, which include non-deductible VAT. The structures built by investors for their own use are assessed at the basic prices for comparable goods and services, including an imputed profit margin. The share of GFCF in construction at EUR 241 850 m amounted to 11.7% of GDP in 2000.

The starting point for calculating GFCF in construction is the information from companies and businesses which perform building work and allied services. This indirect calculation method has considerable advantages, because statistical data from the constructors' side are more comprehensive and more readily available than they would be if a direct estimate were made on the basis of investors' data. The elements of the calculation are shown in Overview 5—2.

Overview 5—2: Elements in the calculation of GFCF in construction



First, the results for primary and secondary construction each have to be reduced by the figure for pure maintenance work, since this counts as intermediate consumption. Other construction and allied works not within the construction industry are assessed separately and are also recorded as part of GFCF in construction. Finally, the applicable amounts of non-deductible VAT are assessed and added to the relevant results. The following table shows the results of this calculation for the various activities:

GFCF in construction	2000
	EUR m
GFCF in primary construction	76 680
GFCF in secondary construction	74 770
GFCF in manufacturers' construction	13 360
Construction for producer's own use	27 680
Ancillary building costs	26 900
Non-deductible VAT	22 430
GFCF in construction, rounded	241 850

The value of GFCF in construction is assessed by calculating the totals for eight different types of building, namely dwellings, agricultural buildings and structures, industrial and commercial buildings, public buildings, buildings for non-profit institutions, industrial and commercial structures other than buildings, public highways and other public structures besides buildings. This method which differentiates construction categories helps in adjusting prices and enables compilers to reconcile the results with information from other sources, particularly the public finance statistics on general government GFCF in construction.

5.10.2.1 GFCF in primary construction

Primary construction comprises the industrial categories of site preparation (WZ 45.1) and construction of buildings and other structures (WZ 45.2)¹. The baseline value for the assessment of output from primary construction activities is **annual construction output**. This figure is obtained by means of an annual survey of businesses in the primary construction industries (EVAS 44211). Annual construction output is the total value of the building work performed during the accounting year by businesses in the primary construction industries, including their own work as sub-contractors as well as work performed for their account by external businesses and subcontractors. It includes construction work for third parties and for the business itself (own-account construction) for which full payment has been made or which is in progress and has not yet been paid for.

The annual survey covers enterprises with 20 or more employees, and so its results have to be supplemented by the annual construction output of businesses with 1 to 19 employees. For this reason, the turnover of businesses with 1 to 19 employees is taken from the annual blanket survey of production units in the domain of primary construction (EVAS 44231). Since this survey is conducted at works level, the value of turnover that emerges from it must be adjusted to eliminate duplication of data. Duplication occurs when turnover from units included in the blanket survey is already contained in the results of the annual survey of enterprises in cases where the units in question are part of a larger enterprise.

The annual output figures for the enterprises with 20 or more employees must be reduced by the cost of external labour in the realm of primary construction (subcontracting), because this amount is also taken into account in the output data for the subcontractor, so, unless this adjustment is made, the total output from primary construction activities will be overstated. Subcontractors' work outside the realm of primary construction, such as the services of architects, is still included in the figures used to assess annual construction output. The figures on the costs of

¹ German classification of areas of economic activity, 2003 edition, activity numbers

external labour come from the cost-structure survey of the construction industry (EVAS 44251). On the other hand, an allowance of 2.5% is added to the annual construction output of all enterprises for imputed statistical undercoverage. The value of building work performed by foreign enterprises, if not included in the reports on the construction surveys, is derived from the balance-of-payments statistics of the Deutsche Bundesbank and added to the annual construction output figure.

An additional special item covers production drilling. This comprises the output from industry 45.12 – test drilling, test boring and core sampling for construction, geophysical, geological or similar purposes – and the turnover from activity category 11.20.0 – service activities incidental to oil and gas extraction, excluding surveying; part of this turnover is recorded under the heading of test drillings (capital formation in intangible fixed assets) and part is recorded as production drilling under the heading of investments in construction.

GFCF in primary construction

	2000
Annual construction output by enterprises with 20 or more employees excluding test drilling and boring.....	EUR m 74 360
Annual construction output by enterprises with 20 or more employees.....	74 404
– Test drilling and boring WZ 45.12.0.....	44
+ Construction output by enterprises with 1 - 19 employees.....	27 628
Construction turnover in enterprises with 1 – 19 employees	28 656
– Mineral exploration	26
– Double counting of units with 1 - 19 employees	<u>1 002</u>
= Construction output by enterprises with 1 - 19 employees	27 628
= Annual construction output for all units	101 988
– Cost of external labour.....	<u>23 884</u>
= Annual construction output excluding cost of external labour.....	78 104
+ Upward adjustment for statistical undercoverage (2.5%).....	1 952
+ Construction output of foreign enterprises	<u>1 024</u>
= Output of the primary construction industries	81 080
+ Production drilling	119
– Value of repairs	<u>4 517</u>
= GFCF in primary construction, excluding VAT, rounded	76 680

In the German system of national accounting, repairs which do not generate an increase in value are not included under the heading of investments in construction. Such repairs include expenditure on maintenance, which forms part of intermediate consumption. Intermediate consumption is assessed from the VAT statistics (EVAS 73311) by estimating the part of the turnover comprising actual repair expenses in a detailed breakdown of economic activities. It is assumed that GFCF is involved in most construction industry activities (with a 0% repair ratio) and actual repair expenses arise in only a few selected areas.

Repair ratios in primary construction

WZ 2003 No.		2000 in %
45.21.0	General construction of buildings and civil engineering works	5
45.22.1	Erection of roofs, roof covering and related plumbing work	28
45.22.2	Waterproofing	25
45.25.3	Erection of chimneys and industrial ovens.....	18
	Remaining economic activities of primary construction	0
	Total primary construction	5.6

The resultant repair ratio is then applied to the figure for primary construction output, resulting in an amount of EUR 4 517 m for repairs.

5.10.2.2 GFCF in secondary construction

GFCF in secondary construction comprises the output of economic activities 45.3 – building installation – and 45.4 – building completion – plus the value of manufacturers' secondary construction activities minus repair work that does not increase the value of the repaired asset:

GFCF in secondary construction	1994	2000
	EUR m	
Construction output in WZ 45.3 and 45.4	92 334	93 175
+ Manufacturers' secondary construction activities	4 742	3 941
= Secondary construction output.....	97 076	97 116
– Value of repairs	22 037	22 348
= GFCF in secondary construction, rounded	75 040	74 770

The level of construction output for groups **45.3 (building installation)** and **45.4 (building completion)** was initially established for the year 1994, since the census of crafts (EVAS 53111) and the VAT statistics (EVAS 73311) provide turnover data for secondary construction activities in that year. The census of crafts only covers businesses registered on the crafts roll, whereas the VAT statistics cover all enterprises in the aforementioned industries, although the only figures in the VAT statistics relate to turnover, including the value of goods purchased for resale. The difference between the results of the census of crafts and the figures shown in the VAT statistics represented plausible values for the turnover of enterprises other than craft and trade businesses in the domain of secondary construction, and so, once the value of goods purchased for resale had been eliminated, the VAT statistics have been used to determine the output of secondary construction activities for 1994 as well as the subsequent years, including 2000 (EUR 93 175 m).

Besides the aforementioned secondary construction activities, GFCF in construction also include **industrial secondary construction carried out by manufacturing enterprises**. This includes lifts, central-heating systems, heating, ventilation and air-conditioning systems, etc., which are manufactured and installed by industrial companies. The valuation of these forms of secondary construction output is carried out for selected categories of goods on the basis of the results from the quarterly output survey (EVAS 42131) and the external trade statistics (EVAS 51211, 51221). The figures allow calculation of the domestic supply of the relevant products (output – exports + imports). The value of the domestic supply of products is converted into investors' prices by means of a capital-formation ratio, which is fixed for each good and service. The gross fixed-capital formation (GFCF) ratio expresses the value of investments in a good or service as a percentage of the total domestic supply of that good or service. GFCF in machinery and equipment is

generally assessed by this method (see section 5.10.3). For 2000, industrial secondary construction carried out by manufacturing enterprises is valued at EUR 3 941 m.

GP no. ¹	Product category	GFCF ratio
		2000 in %
2030 11	Wooden windows, doors and frames	10
2030 1305,9	Builders' joinery and carpentry	10
2523 12	Baths, showers and other sanitary fittings	15
2523 14	Plastic windows, doors and frames.....	15
2811 234,5	Sheet-steel insulation elements, laminated panels and blinds	15
2811 23 693,7	Glass roof constructions, collapsible and roll-up grilles of steel	25
2811 23 705,7	Roller shutters, collapsible and roll-up grilles of aluminium	25
2812 10 33, 53	Steel and aluminium gates, doors and windows	20
2812 10 35,7	Steel and aluminium windows.....	15
2812 90	Installation of purchased metal constructions	100
282111		
203,303,309	Heating boilers, hydraulic boilers and other steel vessels	15
287111 001,2		
287112 002		
2822 11 5	Radiators	15
2822 12	Central heating boilers	80
2822 91	Installation of industrial central heating boilers	100
2822 92	Repair of industrial central heating boilers.....	5
2875 11	Metal sanitary items.....	15
2875 215	Doors and compartments for steel safes.....	100
2875 2737	Steel or sheet-steel building materials.....	15
2912 2417	Acceleration pumps for heating systems.....	15
2922 16	Passenger lifts, goods lifts, escalators.....	100
2923 13 903	Compression heat pumps up to 15 kW	30
2923 908	Compression heat pumps from 15 kW upwards and similar.....	10
2924 241	Fire extinguishers	60
2953 157	Large boiler systems	100
2971 253,5	Instant water heaters, other electric water heaters	20
2971 263,9	Electric storage heaters and other electric heaters	20
2972 11,2	Non-electric heaters and cookers	20
2972 14	Non-electric water heaters.....	50
2611 12 909	Other seating made of wood.....	10

For the year 1994, the value of repairs in secondary construction which did not increase the value of the repaired asset was estimated from the 1995 census of crafts (EVAS 53111). For the individual classes and subclasses of secondary construction activity, the value of such repairs is estimated as a percentage of total turnover. Figures were estimated separately for the old federal territory and the new Länder. For 2000, the same calculation was made using data from the VAT statistics (EVAS 73311), resulting in a figure of EUR 22 348 m.

¹ German Systematic Classification of Commodities for Production Statistics, 2002 version

WZ 2003 No.	Secondary construction	Repair ratio 2000, in %
45.31	Installation of electrical wiring and fittings	20
45.32	Insulation work activities	7
45.33.1	Installation of plumbing, gas and water fittings	27
45.33.2	HVAC installation	23
45.34	Other building installation.....	18
45.41	Plastering	25
45.42	Joinery installation	14
45.43.1	Laying parquet and other wooden floor coverings.....	12
45.43.2	Laying wall or floor tiles.....	14
45.43.4	Other floor laying and pasting	38
45.43.5	Wallpapering	55
45.43.6	Equipping of rooms without specialisation	25
45.44.1	Painting and lacquering	48
45.44.2	Glazing	10
45.45.2	Stove and range installation.....	20
45.45.3	Other building completion and finishing work n.e.c.	11
28.52	General mechanical engineering	29
	Total	23

5.10.2.3 GFCF in manufacturers' construction

Besides industrial secondary construction, manufacturing also accounts for another type of GFCF in construction. Prefabricated construction covers some 90 product categories in the German Systematic Classification of Commodities for Production Statistics. The same source statistics and method are used for the valuation of prefabricated construction as are used for industrial secondary construction. The following table shows GFCF ratios applied. The value established for 2000 amounts to EUR 13 360 m.

GP No.	Product category	GFCF ratio 2000, in %
2030 1301,3	Builders' carpentry and joinery	10
2030 1307	Sauna cabins	70
2030 20	Prefabricated timber buildings	100
2523 20	Prefabricated plastic buildings	95
2623 1033,5,9	Electrical insulators.....	30
2661 12 001,3	Wall elements, ceiling tiles.....	5
2661 12 002	Sound insulating walls	40
2661 13	Pipes of cement, concrete	10
2661 20	Prefabricated cement buildings, precast concrete units	100
2666 12 006	Railway sleepers of cement, concrete	30
2666 12 007	Steel and prestressed concrete masts	30
2710 02 520	Rails, sleepers, points	30
2721 10	Tubes, pipes of cast iron	70
2722 10 100 to 450	Tubes, pipes of steel	45
2722 10,610 to 930	Tubes, pipes of steel	60
2811 10	Steel and aluminium buildings.....	65
2811 21 003,5	Steel bridges.....	100
2811 22 00	Steel towers and lattice masts.....	50
2811 23 15,7	Steel arching, formwork frames of steel	95
2811 23 300	Steel constructions for hydraulic engineering	100
2811 23 4,5	Insulating construction elements, sandwich structures, etc. of iron, etc.	15
2811 23	Other steel and aluminium constructions	95
2811 91	Installation of self-produced metal structures.....	100
2821 11 100	Vessels of iron or steel holding 300 litres and more, for gas, etc.	95
2821 11 309	Other steel vessels for fluids holding 300 litres and more	75
2821 11 509	Other iron or steel vessels for solid materials holding 300 litres and more	30
2821 11 700	Vessels of aluminium, etc. holding 300 litres and more for all kinds of substances	75
2821 12	Vessels for holding gases.....	55
2821 91 000	Installation of tanks and vessels	50
2821 92 000	Repair and maintenance of tanks and vessels	10
2873 12 500	Flex, cables, ropes and other articles of copper	15
2875 27 410	Sewerage installations	15
2922 18 200	Aerial railways, chair lifts and T-bar lifts, etc.	95
3130 13, 4	Electricity conductors	35
3130 15 030	Cables with optical fibres, telecommunication cables.....	40
3162 11 1,3	Electric traffic signalling and safety equipment.....	70
3162 11570	Burglar alarms for houses	100
3162 11 73,5	Display boards with LCD, LED displays	100
3162 14 300	Electrical insulators of any material	80
3162 16 3,5	Parts for electrical traffic signals for railway tracks, parts for electri- cal audible or visible signal equipment, etc.	10
3520 40 550	Fixed track material for railway tracks	100
4521 71	Construction on prefabricated residential buildings.....	100
4521 72	Construction on prefabricated non-residual buildings.....	100
4521 73	Construction on other prefabricated structures.....	100

5.10.2.4 Construction for producer's own use

Producers' own construction refers to construction work on dwellings by their owners and buildings or other structures erected by enterprises or government bodies for their own use.

	2000 EUR m
Construction work on dwellings by their owners.....	19 644
Buildings and other structures erected by enterprises or government bodies for their own use	8 031
Total producers' own construction, rounded.....	27 680

Construction work undertaken by households includes the unpaid assistance of neighbours and family members as well as the value of clandestine work. Since this work does not feature in tax returns or statistical surveys, its value has to be estimated. The estimates are based on the statistics on construction activity (EVAS 31111, 31121). These statistics contain details of the number of building warrants issued and completions reported and the construction cost of residential buildings, subdivided into buildings with one, two and three or more dwellings. The use of an early indicator, namely the number of building warrants issued, in conjunction with a late indicator, i.e. the number of completions, is designed to ensure that the estimated value of investors' own construction output can be assigned to the actual period when the housing in question was being built. As well as the construction of new buildings, these figures also cover conversion work for which a building warrant is required. From the assessed construction costs for each housing category, an estimate is made of investors' own construction as a percentage of total construction output. Different percentages were used in 2000 for the new Länder and the pre-unification territory of the Federal Republic. In this way the following percentages of investors' own output in Germany as a whole were obtained for 2000:

Ratio of investors' own construction to total construction costs on dwellings

	2000 in %
Residential buildings with 1 dwelling	26
2 dwellings.....	19
3 or more dwellings.....	4
Weighted average	19,5

The figure of 19.5% for 2000 is applied to GFCF in construction of dwellings (excluding investors' own construction and the cost of transferring land ownership, which produces a figure of EUR 19 644 m in the national accounts for investors' own construction.

The valuation of **buildings and other structures erected by enterprises or government bodies for their own use** is effected in cooperation between the compilers of the GDP production approach and the GDP expenditure approach. Data on own-account fixed-capital formation in manufacturing, mining and quarrying, commerce and transport and communication, as well as on own-account production of machinery and equipment in the building trade are compiled in the framework of the production approach (see Chapter 3). The principal baseline data are the results of the cost-structure surveys which are conducted in various industries. Capital formation by the government in its own assets is calculated on the basis of the public finance statistics as part of the assessment of the consumption expenditure for the general government sector. An estimated profit margin is added to the production cost, since output produced for the producer's own final use has to be valued at the basic prices of comparable market goods and services. Estimates are made of the figures for own-account construction in the domains of agriculture and non-profit institutions serving households.

	2000 EUR m
Agriculture, hunting and related activities	530
Electricity, gas and water supply	667
Extractive and manufacturing industries, construction	2 832
Transport, storage and communication	2 823
Other services	1 179
Buildings constructed for own use	8 031

5.10.2.5 Ancillary building costs

Ancillary building costs include domestic connection costs for electricity, gas, water/sewage and telephone services, the provision of garden plots and landscaped areas, the cost of architects', civil engineers' and surveyors' services, charges levied by local building authorities and the cost of transferring ownership of developed land (court and notarial fees, land transfer tax). Before the assessment of the various cost items is explained, the following table shows their relative significance in monetary terms:

	2000 EUR m
Connection costs for public utilities	971
Provision of garden plots	3 514
Architects', civil engineers' and surveyors' services	12 118
Fees levied by local building authorities	865
Cost of transferring ownership of developed land	9 431
Ancillary building costs, rounded.....	26 900

Neither official statistics nor the associations of electricity, gas and water companies possess data on the **cost of domestic connections** to the public utilities. For this reason, the costs of these connections have to be estimated on the basis of three sources:

- the number of completed construction projects from the statistics on construction activity (EVAS 31121),
- a survey of several utility companies in 1995, conducted by the German Gas and Water Federation (*Deutsche Vereinigung des Gas- und Wasserfaches*) with a view to establishing average connection costs, and
- a detailed statement of costs for all types of utility connection, compiled by ESWE, the department of works for the city of Wiesbaden, for the years 1973 to 2004.

At the same time, it must be borne in mind that the local utility companies hire external contractors for most of their civil-engineering projects, which means that this output is covered by the construction statistics and is therefore already contained in the output figure for primary construction. New telephone connections are also included on the basis of information from Deutsche Telekom.

	No.	2000 EUR m
Completions of residential and other buildings	260 111	
Average connection costs per building		14 099
Total connection costs		3 667
Output of utility companies included (24%) in above figure		880
+ Telephone connection costs		83
+ Sewerage connection costs		8
Total domestic and business connection costs		971

For the initial provision of **garden plots and landscaped areas**, the basis of assessment is the turnover of gardening and landscaping businesses as shown in the VAT statistics (EVAS 73311). With the aid of the results of a specialised survey of gardening and landscaping businesses by the Ifo Institute for Economic Research, the ratio of turnover from the creation of new gardens and landscaped areas to the total turnover of these businesses has been set at 60%. The value of the investments for 2000 works out at EUR 3 514 m.

The turnover of **architects, surveyors and structural engineers** is also provided by the VAT statistics (EVAS 73311). The GFCF ratios have to be estimated. In the case of architects and project managers/design engineers, it has to be noted that their turnover as reported in the VAT statistics includes an amount which is already recorded as subcontractors' output in the domain of primary construction. In addition, not all the output of interior designers and building consultants is capital-forming. The output of surveyors' offices also includes geological examinations, land surveying, meteorological activities and geodetic surveying, most of which has to be classed as intermediate consumption. For this reason, a GFCF ratio of 60% is applied to the turnover of firms of architects, 70% to firms of project-management consultants and design engineers and to building consultancy firms and 50% to firms of surveyors. The value of investments in this category for 2000 works out at EUR 12 118 m.

The **charges levied by local building authorities** are assessed on the basis of figures from the local-authority budgets (EVAS 71147) for administration of building activity and urban planning, surveying and building control for the year 2000 and yielded a total of EUR 865 m.

The **cost of transferring land ownership** covers the output of estate agents, notaries public and courts of law, as well as payments of land transfer tax. The amount of revenue from land transfer tax is obtained from the fiscal statistics (EVAS 71211).

The turnover of estate agents and notaries public is recorded in the VAT statistics (EVAS 73311). The bulk of an estate agent's turnover comes from brokering property leases, from property management, from devising financial plans and arranging financial services and from brokering the sale of property abroad. The GFCF ratio of 50% is based on an annual comparative survey conducted by the University of Cologne, in which some 360 estate agencies are asked for a breakdown of their turnover. Notaries also provide numerous services which cannot be classified as investments in construction. Examples of these other services are the preparation of instruments of incorporation and constitutions for the establishment of new companies, articles of association or similar instruments in connection with the creation of new partnerships, wills, trust agreements, etc. The GFCF ratio for notaries public is estimated at 50%. Court costs amount on average to 55% of notarial costs.

The cost of transferring land ownership, which relates only to the land itself, not to any structures built on it, is then calculated as a percentage of total capital formation on the basis of data such as those provided by the Federation of German Estate Agents (*Ring Deutscher Makler*), is then deducted from total investments in construction and is recorded as a separate item (increase in the value of non-produced assets). The total costs of transferring land ownership for 2000 work out at EUR 9 431 m.

5.10.2.6 Non-deductible VAT

The primary statistical data on specific building services that are used in the assessment of GFCF in construction are recorded without VAT. Since these primary sources give no indication of the level of fiscal liability that applies to each individual construction category, the valuation of the various categories of construction work is initially effected without the addition of VAT. However, when it comes to expressing the investments in construction in terms of purchasers' prices, an amount of VAT must always be added to the net values in cases where the investors are not entitled to deduct VAT. Because of the statutory regulations in this domain, GFCF in construction can be subject to varying levels of VAT liability, and this means that different rates are applied to the eight construction categories. When non-deductible VAT is assessed, a distinction must be made between two groups of investors:

- Investors are not normally entitled to deduct VAT if their own turnover is not taxable. VAT is therefore added to the value of purchases made by such investors. This group of investors includes financial intermediaries and insurance corporations, companies in the spheres of real estate and housing services, some of the service providers in the activities 73 to 92.
- Investors are entitled to deduct VAT at source if their own turnover is taxable. Purchases of tangible assets by this group are VAT-exempt. This is the case for most industrial and commercial companies.

VAT liability in respect of fixed-capital formation is initially assessed for industries through investor accounting, since the types of turnover which do not entitle investors to deduct VAT are concentrated in a small number of activity categories. The starting point for this calculation is the value of GFCF in construction for each industry to which so-called input-tax ratios are applied. These input-tax ratios indicate the percentage of fixed-capital formation on which the statutory rate of VAT is payable within each industry. Input-tax ratios are assessed in the input-output framework with the aid of the VAT statistics (EVAS 73311). A rate of VAT liability is fixed for each industry and is subsequently distributed among the various construction categories.

Non-deductible VAT	2000 EUR m
Dwellings.....	14 820
Industrial and commercial buildings	3 710
Public buildings.....	1 140
Road construction.....	1 190
Industrial and commercial structures other than buildings	30
Other public structures besides buildings	1 170
Non-profit institutions serving households.....	370
Total non-deductible VAT.....	22 430

5.10.3 Net purchases of machinery and equipment

Movable capital assets such as new machinery, equipment and vehicles constitute the core of investments in machinery and equipment, which are assessed and recorded separately in the German national accounts. Since in ESA 1995 they are part of aggregated gross fixed-capital formation, the demarcation lines developed in the European system also apply to investments in machinery and equipment. This means that the movable assets must have been procured during

the reference period to be used repeatedly or continuously for production purposes in Germany for at least one year and that the value of any such assets sold during the reference period must be deducted. Expenditure below a threshold of EUR 500 (converted with 1995 as price basis) is not included under capital formation in machinery and equipment, but as intermediate consumption. Items similarly not included in such investments are, for example, permanent installations in buildings and structures and arms and weapons systems used exclusively by the military. It does not matter, on the other hand, whether machinery and equipment have been bought or produced by their present owners.

The general principle of valuation at purchasers' prices means that trade and transport margins, installation costs and non-deductible VAT are all included in the assessed price. Own-account production is valued at the basic prices of comparable goods. In accordance with the ESA system, the rule is that the ownership concept is applied for the allocation to areas of activity rather than the user concept. Consequently, where operating leasing of assets takes place, such assets are recorded as the lessor's fixed capital.

At a total value of EUR 176.66 bn in 2000, investments in machinery and equipment account for about 8.6% of GDP.

5.10.3.1 Principles of the valuation processes

a) Investor and commodity-flow (CF) accounting

In the national accounts of the Federal Republic of Germany, the value of investments in machinery and equipment is assessed by means of two mutually independent methods. Investor accounting involves asking end users directly how much they have invested in machinery and equipment, while commodity-flow (CF) accounting proceeds from the domestic supply of goods (output + imports – exports) in a very detailed breakdown and by estimating the extent to which they are invested as fixed capital and taking into account various other items arrives at an indirect calculation of the capital formation in machinery and equipment. In theory, both methods will lead to the same results. It is only possible to suggest which method is preferable for national accounting purposes by taking into account the changes in the source statistics over time and assessing them in terms of quality with a view to the national accounting requirements. The use of both methods in comparison and reconciliation processes serves to minimise and, in part, to compensate for potential problems. The way the current price information is calculated is based largely on the CF method, since its results are currently considered to offer a better level of quality. The reasons for this lie in the following list of shortcomings among the baseline data for the purposes of investor accounting:

1. absence of baseline data applying to **more frequent intervals than a full year**: only annual figures are available, not quarterly figures;
2. a **lack of up-to-date statistics**; figures produced for the national accounts are not currently available until about 15 months after the end of the reference year;
3. the **lack of exhaustiveness** of coverage of all establishments, with no data at all for certain service categories.

On the third point, improvements have already been made in recent years as a result of the current introduction of standardised EU-wide structural surveys of businesses, but the same cannot be said with regard to the first two points. The CF measurement method makes up quite effec-

tively for the shortcomings of investor accounting. Almost all the main building blocks of the CF account are available on a quarterly basis, and most are even published monthly; the principal indicators that determine future development are already available at $t+4$ months, some of them even sooner, and they provide relatively full coverage of all the traditional types of tangible fixed capital.

However, even the CF measurement method suffers from some problems. One problem with the method lies in the breadth and diversity of the requisite source statistics and the issues this raises in terms of classification by content and accounting period. Another problem with CF derives from the fact that the subsequent final use of a good often cannot be reliably predicted early on when the good has just been produced or imported. Indeed, the decision as to whether some new products on the market will be used for intermediate consumption, final consumption or capital formation is often still a matter of guesswork to some extent at that stage. Other potential sources of uncertainty in the CF method lie in the numerous additions that are required for the transition from the source statistics used in the Federal Republic of Germany (e.g. output valued at ex-works prices, imports valued at ex-customs prices) to the requirement that only capital goods be included and that their value be expressed in purchasers' prices. These measurement problems, which we have only touched upon here but shall examine in more detail later in this text, typify CF accounting, because of its indirect nature; they can be systematically avoided if investors are surveyed directly.

b) Cross-classification of GFCF as a reconciliation instrument

The mutually independent systems of CF accounting and investor accounting can, in practice, lead to exactly the same result in the first instance, but this is more by chance than by design. This creates the need for a cross-checking and reconciliation instrument. This purpose can be served by a third separate system of determining gross fixed-capital formation (GFCF) which uses a cross-classification matrix in which the results of the CF and investor-accounting processes are the two sets of margin totals, the total for each industry being highly broken down in the other set respectively.

In theory, the matrix allows reconciliations to be made between CF figures and investor-accounting figures by providing three combinable cross-classification options:

1. the structure and aggregate amount of capital formation in machinery and equipment by product categories, i.e. the result obtained by means of CF accounting, summed down the vertical set of margin totals;
2. the structure and aggregate amount of capital formation in machinery and equipment by investing industries, i.e. the results obtained by means of investor accounting, summed across the horizontal set of margin totals;
3. structures within the matrix, both vertical and horizontal:
 - input direction (product structure for each investor category defined in the German classification of economic activities (WZ)), and
 - output direction (purchaser structure by WZ categories for each product type).

Which of these structures will be used to reconcile the results and to what extent this occurs will depend on the exhaustiveness and the perceived quality of the source statistics underlying the three separate accounting mechanisms. At present, mainly these two methods are used for reconciliation due to the completely inadequate statistical basis of the matrix structures and the

mentioned weaknesses of investor accounting in certain areas of activity that have not yet been entirely rectified. The quality of the results and the product structure of the CF system, on the other hand, are regarded as somewhat more reliable, and CF figures are left largely unchanged in current accounting at the present time. However, these qualitative priorities are not set in stone. If the gaps in investor accounting can gradually be closed due to improvements in the source statistics or more reliable estimates, and/or if the purchaser or user structures in the GFCF cross-classification matrices would base their statistical material more on special surveys, the structures of the CF will be integrated more into the reconciliation process. The same will also apply if the statistical basis of the CF (quarterly production statistics in particular; EVAS 42131) and of the external trade statistics (EVAS 511 and 512) were to be weakened through cuts introduced as money-saving measures.

These interrelated issues, as well as the important role of authoritative GFCE cross-classification matrices in this and other areas of the national accounts, will be explained in more detail in the following paragraphs. To that end, however, we shall have to refer to certain details of our CF accounting system, even though a fuller explanation of the system itself will be provided at a later point.

The Federal Statistical Office actually favours a two-level system of annual GFCF cross-classification matrices. At each stage, the core of this system is a long matrix of machinery and equipment categories with industries along the vertical axis. The **marginal product totals** of the vertical axis show the estimated capital formation share of the domestic supply at ex-works prices (output + imports – exports), which is shown as the CF subtotal for capital formation in machinery and equipment. At present, 203 machinery and equipment categories are given (CF Categorisation Group 1, see Overview 5–3 in section 5.10.3.2.h) according to the German Systematic Classification of Commodities for Production Statistics (currently 'GP 2002'). The **marginal investor totals** on this matrix are broken down according to code A60 of ESA 1995 (corresponding to the 60 divisions in the German classification of areas of economic activity). These totals arise through the estimated reduction of the investor accounting figures (purchasers' price concept) to the primary ex-works price concept of CF accounting.

These vertical axis totals (203x60) are concentrated after the annual balancing and reconciliation procedure in terms of product categories to form a short matrix (currently 15 product categories x 60 areas of activity). The product level matches CF Categorisation Group 2 (see point 5.10.3.2.h). At the short matrix level, the next step involves adding all the supplementary items from the CF (cf. section 5.10.3.3 and Overview 5–4) to complete the transition from ex-works prices or the cross-border concept to the purchasers' price concept. The last step once again requires a short matrix reconciliation with the margin product and investor totals of the new machinery and equipment.

Because of the intervals at which the results of investor accounting become available and the time lag between the period to which they relate and their publication date, the process, as mentioned, of reconciling the results from CF accounting, investor accounting and the cross-classification matrices for a given reference year cannot currently be completed any sooner than 15 months after the end of that year. In principle, there is no one single reconciliation method, and it will depend on the assessment of the quality of the source statistics used in the three

largely independent systems. Assuming the above-described assessment applies, then at present the optimal reconciliation process would be as follows:

1. The results of the separate comprehensive process of investor accounting by areas of activity are provisionally adapted to the levels of the salient CF accounting results for machinery and equipment, which have already been available for about one year by this stage. It is quite possible to make use of a degree of latitude in extrapolations and estimates when making allowance for economic activities that are not covered by investor accounting.
2. In a parallel operation, a synthetic extrapolated investor accounting is compiled; this involves taking the up-to-date marginal product totals that are already available from the CF account and recoding them into activity categories with the aid of the previous year's matrix structures. This ex-post extrapolated investor accounting result regularly varies more or less widely in its breakdown by economic activities from the collected current data, whereas the total for new machinery and equipment, which has already been reconciled in stage 1, remains unaltered.
3. Revision and modification of the internal matrix structures in line with what is considered plausible and sensible, with the aim of presenting the marginal investor totals resulting from step 1 with unchanged product structures. If this were only possible using structures within the matrix which seem implausible, then the marginal totals of both investor accounting and CF accounting will have to be examined in the following steps.
4. Spot checks are conducted where necessary on the structure of the investor-accounting results obtained in stage 1. If a plausible and coherent general system cannot be obtained by this means, a further reconciliation stage is required.
5. Where necessary, a spot check on the internal structures of the CF account. This can have a wide range of implications. In the best-case scenario, implausible figures would be found in the supplementary items that are added to the source statistics and could be eliminated. In the worst-case scenario, the assignment of commodities to classification categories and/or their GFCF ratios would have to be revised. If after this step a structurally coherent general result still cannot be achieved among the three methods, it may be considered necessary to carry out a further step.
6. Where necessary, a re-adjustment of the overall level of capital formation in machinery and equipment.

The method of reconciliation described here makes it apparent that differing assessments of the quality of the diverse data sources can lead to differing adjustment mechanisms and ultimately also to differing reconciliation outcomes. This, however, is a truism that applies to virtually all accounting systems that are fed from various mutually independent and possibly fallible sources. So the ultimate production of a matrix of new annual figures which is coherent and plausible in its structure must not blind us to the scope that exists for guesswork in certain of the published overall results.

In current-accounting practice, reconciliation steps 1 to 3 are generally enough to produce a balanced general system (marginal totals for commodity flows, marginal totals by investor and cross-classification matrix structures). The internal structures of the CF accounting mechanism as

addressed in stage 5, however, come under more scrutiny at least once every five to six years in connection with the major revisions of the national accounts. The findings from the annual reconciliation processes play a part in these revisions if inconsistencies in the reconciliation system have invariably been occurring at the same point and have always verged in the same direction, which has rarely happened in the past.

It is evident from the above that the reconciliation process used to obtain the annual value of investments in machinery and equipment, broken down into areas of activity and product categories, also has an impact on the structures of the GFCF cross-classification matrix as they develop from one year to the next. Where possible, the matrix structures should also be developed further based on independent thinking. Unfortunately, however, there is scarcely any reliable documentation for this purpose. Only the registration statistics of the Federal Motor Transport Authority (*Kraftfahrt-Bundesamt*) provide relevant data cross-classified by industry and by cubic-capacity class or commercial-vehicle category, as appropriate. Although in principle the registration data are adjusted to the standard European 'M1' classification system, which in turn largely matches the classifications of GP, nonetheless in the motor vehicle area there are likely to be considerable inaccuracies in the industrial classifications, largely due to survey errors, which do not allow for just a simple transfer of the structures used by the Federal Motor Transport Authority. For all other product types outside the motor vehicle sector there are no official statistics or other statistics which focus specifically on capital goods.

The Federal Statistical Office has never published the findings from its cross-classification matrices because of their shallow statistical roots. However, just once so far, a condensed matrix was to be delivered to Eurostat for the year 2000 as part of the ESA transmission programme, with (as yet unrevised) results for the year 2000. Table 5—4 below shows extracts from the corresponding revised matrix structures.

GFCF cross-classification matrices, however well or poorly substantiated they may be, are indispensable elements of certain internal operations. They play an especially crucial role in current GDP accounting in the following practical ways:

- They help to determine the weighting models for price indices by investing industries, in other words to determine the price-adjusted figures in the investor account,
- They serve to establish the distribution by duration of use in connection with the calculation of capital stock and depreciation by investing industry,
- They serve to express various values from the investor side, such as non-deductible VAT and machinery and equipment produced and retained for producers' own account, in terms of product categories for the purposes of CF accounting (see points 5.10.3.3.b and 5.10.3.3.d below).

c) General explanations relating to the commodity-flow approach

The idea of following products from their creation (i.e. their entry into the economic process) until their final use, thereby observing the pattern of their distribution among the various utilisation categories and tracing the diverse value-adding and finishing processes, is an image which comes very close to describing the concept of commodity flow. Newly manufactured products, for example, may be exported immediately, or they may initially be put into storage by the producer, or else the producer may use or consume them; alternatively, they may be supplied direct to

Table 5—4 GFCF cross-classification matrix, 2000 – new investments in machinery and equipment

Current prices

NACE sections	Industries	CPA product groups						TOTAL New machinery and equipment
		Machinery and equipment n.e.c.	Office machinery and computers	Electrical, radio, television and communication eqpt. and apparatus; medical, precision and optical instruments, watches and clocks	Motor vehicles, trailers and semi-trailers	Other transport equipment	Fabricated metal products, furniture and other manufactured goods 28,36, parts of 17-27	
	CPA No.	29	30	31,32,33	34	35		

EUR m

A,B	Agriculture, hunting and forestry; fishing	3 710	46	242	220	49	353	4 620
C	Mining and quarrying	706	38	71	60	34	41	950
D	Manufacturing	32 700	2 041	8 145	3 176	608	2 560	49 230
E	Electricity, gas and water supply	1 017	227	3 214	411	34	967	5 870
F	Construction	2 065	237	338	1 537	64	289	4 530
G,H	Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods; hotels and restaurants	3 214	2 923	2 863	4 178	273	2 369	15 820
I	Transport, storage and communication ..	1 749	1 099	5 235	3 276	6 685	816	18 860
J	Financial intermediation	85	1 805	938	285	37	560	3 710
K	Housing services, letting, IT, R+D, business services	8 185	9 521	9 249	26 319	3 453	4 663	61 390
L,...,Q	Other industries	3 079	3 203	10 385	2 698	713	2 392	22 470
TOTAL	All industries	56 510	21 140	40 680	42 160	11 950	15 010	187 450

all product groups =100

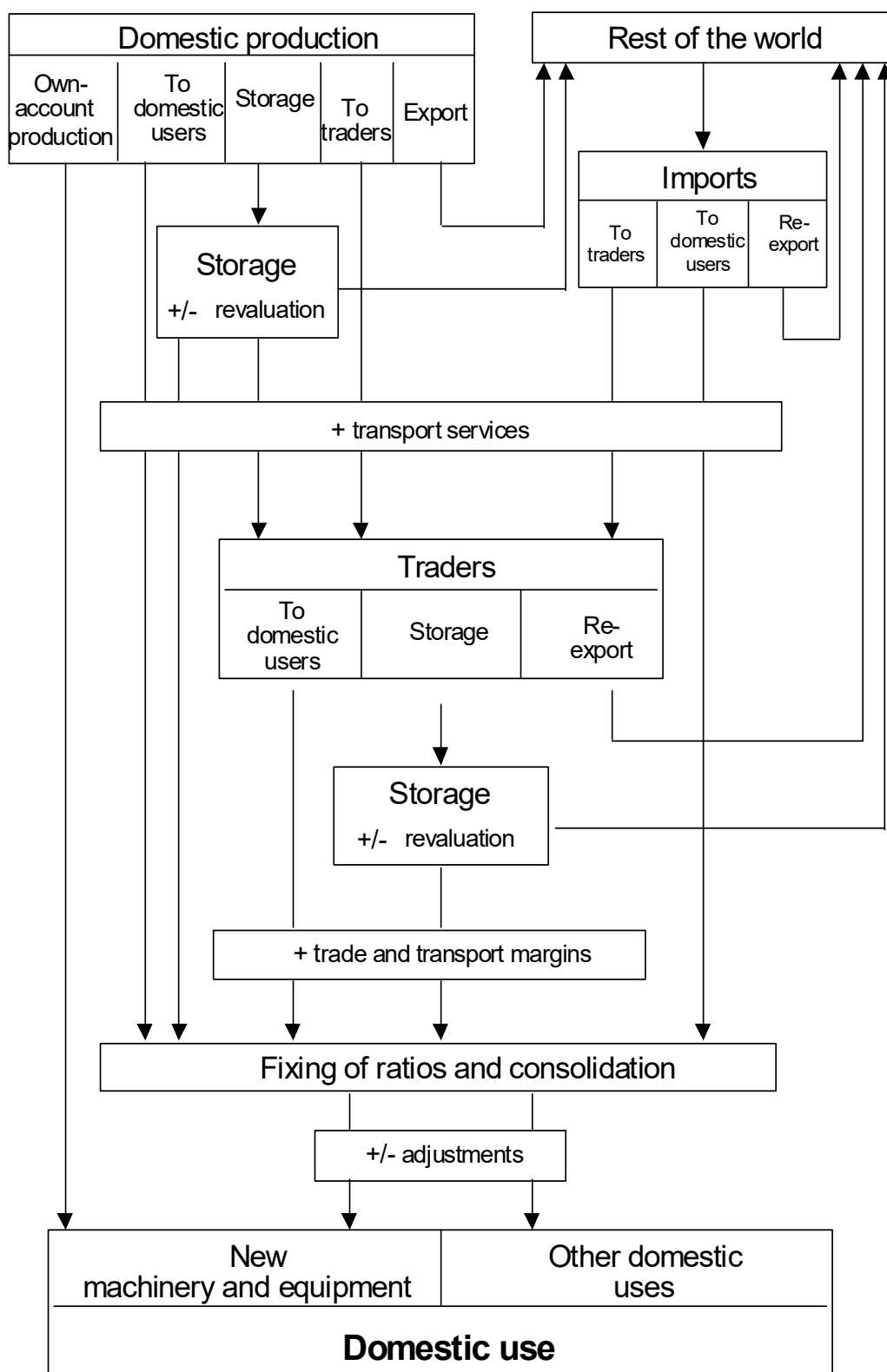
A,B	Agriculture, hunting and forestry; fishing	6.6	0.2	0.6	0.5	0.4	2.4	2.5
C	Mining and quarrying	1.2	0.2	0.2	0.1	0.3	0.3	0.5
D	Manufacturing	57.9	9.7	20.0	7.5	5.1	17.1	26.3
E	Electricity, gas and water supply	1.8	1.1	7.9	1.0	0.3	6.4	3.1
F	Construction	3.7	1.1	0.8	3.6	0.5	1.9	2.4
G,H	Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods; hotels and restaurants	5.7	13.8	7.0	9.9	2.3	15.8	8.4
I	Transport, storage and communication ..	3.1	5.2	12.9	7.8	55.9	5.4	10.1
J	Financial intermediation	0.2	8.5	2.3	0.7	0.3	3.7	2.0
K	Housing services, letting, IT, R+D, business services	14.5	45.0	22.7	62.4	28.9	31.1	32.8
L,...,Q	Other industries	5.4	15.2	25.5	6.4	6.0	15.9	12.0
TOTAL	All industries	100.0	100.0	100.0	100.0	100.0	100.0	100.0

all industries =100

A,B	Agriculture, hunting and forestry; fishing	80.3	1.0	5.2	4.8	1.1	7.6	100.0
C	Mining and quarrying	74.3	4.0	7.5	6.3	3.6	4.3	100.0
D	Manufacturing	66.4	4.1	16.5	6.5	1.2	5.2	100.0
E	Electricity, gas and water supply	17.3	3.9	54.8	7.0	0.6	16.5	100.0
F	Construction	45.6	5.2	7.5	33.9	1.4	6.4	100.0
G,H	Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods; hotels and restaurants	20.3	18.5	18.1	26.4	1.7	15.0	100.0
I	Transport, storage and communication ..	9.3	5.8	27.8	17.4	35.4	4.3	100.0
J	Financial intermediation	2.3	48.7	25.3	7.7	1.0	15.1	100.0
K	Housing services, letting, IT, R+D, business services	13.3	15.5	15.1	42.9	5.6	7.6	100.0
L,...,Q	Other industries	13.7	14.3	46.2	12.0	3.2	10.6	100.0
TOTAL	All industries	30.1	11.3	21.7	22.5	6.4	8.0	100.0

Overview 5—3 Commodity flow accounting of new machinery and equipment

Idealised measurement model



other domestic end users or consumers for production, investment or consumption purposes. They may also be sold first to a trader, who will then export, store or resell them. A similar situation applies in the case of imported products, which may be marketed through a trader or sold directly to a domestic user but may also be immediately re-exported. Overview 5—3 shows the part of the economic process on which the CF account should focus in an ideal situation, i.e. if all the necessary statistical data are available.

The diagram illustrates that commodity flows can be subject to a number of revaluation, value-adding and adjustment operations at various stages or between two stages. These are represented in the diagram by single boxes. In view of the constraints prevailing in the domain of statistics, it is impossible to show the flows in detail on the diagram, nor can their exact sequence as dictated by the direction of flow be represented. Summarisation and approximation, estimation and supposition, partial omission of stages and shifting of measuring points are all necessary. Moreover, additions and estimates cannot be made for the same breakdown of products at every single stage in the calculation. The calculation process is also influenced by the type of statistical material that is available on product prices for deflation purposes and its degree of detail.

The most important simplification measures in German CF accounting of investments in machinery and equipment have been referred to briefly above. One of these is the avoidance of separate examinations of the flow of commodities produced and used in Germany, the flow of exports and the flow of imports. This is done by means of a prior adjustment, whereby the net domestic supply (domestic output - exports + imports) is represented at basic prices or cross-border prices. In addition, the capital-formation ratio of products is not fixed immediately prior to the final stage, when the product is about to pass to the end user, but at a very early juncture, immediately after the figure is netted. The combination of these two steps considerably reduces the required number of specific estimates. In particular, it obviates the need to estimate separate capital-formation ratios for domestic output and imports in respect of individual product categories.

The CF suffers from less than pinpoint accuracy in, for example, the measurement of changes in inventories, since surveys on stock movements in Germany's national accounts are currently neither sufficiently up-to-date nor available at less than yearly intervals. On the other hand, the output and turnover data that are recorded more than once a year and are used to estimate the value of changes in inventories of capital goods for the quarterly accounting do not permit any assessment of the extent to which traders move products into and out of storage. In this context, it should also be mentioned that traders cannot, as a rule, be shown in the quarterly CF account as an institutionalised intermediate stage. Instead, trade and transport margins have to be estimated and added at a later point in the commodity flow for more consolidated product groups. By contrast, certain other adjustments are made at a fairly early stage in the commodity flow and are undertaken separately for production, exports and imports, although most of these adjustments are made for very highly aggregated groups of product categories too. The actual commodity flow positions (so-called “CF dimensions”, Overview 5—6) in the CF of investments in machinery and equipment are explained later in section 5.10.3.3.

5.10.3.2 Statistical basis and basic issues relating to a commodity-flow account

In this section some basic questions and problems concerning the commodity-flow measurement method are addressed. These remarks are followed by considerations on the capital-formation ratios and notes on the statistical output/turnover ratio. Then the various hierarchically structured data strata in the machinery and equipment calculations of CF accounting are explained.

Through the examination of all the described aspects together, it will become apparent that, despite a very highly detailed and relatively authoritative data base, this is only a system of estimations which contains some partially strong modelling elements. The subsidiary points dealt with in this section are moreover important for gaining an understanding of the actual implementation of the CF method for investments in machinery and equipment, which is described later (section 5.10.3.3).

a) Output and external-trade statistics as baseline data

The starting point for the CF calculation is the whole mass of new products that enter the economic process within a given period. From the point of view of our own national economy, these are the new products produced in Germany or imported from abroad. Accordingly, the monthly external-trade figures (external trade statistics; EVAS 511, 512) and the quarterly output figures (EVAS 42131) serve as the essential source statistics for CF accounting. At this early stage of the calculation process in the Federal Republic, so-called 'hard' military products, such as all armaments and weapon systems and all installations built for the sole purpose of supporting those systems, are eliminated from the statistics. This accords with the requirements under ESA 1995 and SNA 1993 that military weapons and their supporting systems be included as intermediate consumption of the government sector. Since the aim of the valuation process is to obtain an aggregate figure for domestic use of income, the following observations are confined to the part of total output which remains in Germany, i.e. the balance of output - exports + imports. Already this first step brings up a set of problems concerning statistics. In particular, these relate to categorisation issues, temporal classification issues, the interpretation and treatment of debit balances, entire industrial plants and other collective items in the external trade statistics. Because of the significance of these issues, not only in terms of the technicalities of the accounting process but also to some extent in terms of substantive demarcation and hence, ultimately, the determination of the level of capital formation in machinery and equipment, we shall deal with each of them in somewhat more detail under separate headings in the following paragraphs.

b) Categorisation issues

One of the primary concerns of statisticians is the correlation of findings from various surveys within a single classification system. Until the mid-1990s, output statistics and external-trade statistics in Germany were classified under widely divergent sets of headings. This was justifiable in the sense that they were intended to provide different information and to serve different purposes. The external-trade statistics had always been very strongly geared to international comparability, and in particular considerations of customs law, whereas output statistics traditionally focused more sharply on the origin of domestic products and the technicalities of production processes. A third nomenclature, the Systematic Classification of Production Activities in Input-output compilation (*Systematik der Produktionsbereiche in Input-Output-Rechnungen (SIO)*) was used at the time as a common denominator for the two systems of product classification, which were not directly comparable with each other.

As a result of international moves to standardise product classifications, which began in 1988 with the Harmonised Commodity Description and Classification System (HS) and led to the temporary adoption in Germany in 1995 of the radically revised Systematic Classification of Commodities for Production Statistics (*Systematisches Güterverzeichnis für Produktionsstatistiken (GP95)*), the procedure in CF accounting for marrying the classification of foreign trade with that of output was greatly simplified and improved. In the year of its publication, 1988, the HS served

as the basis for the Combined Customs Tariff and Statistical Nomenclature (CN), with which the German Commodity Classification for External-Trade Statistics (*Warenverzeichnis für die Außenhandelsstatistik (WA)*) is fully harmonised (i.e. including annual adjustments). From the HS and CN, the European Community developed the Prodcom (Products of the Community) list, which, with a few national additions and a more detailed breakdown, entered into force in Germany in 1995.¹ Meanwhile the 2002 edition of the GP is authoritative in the German national accounts, since it represents a more up-to-date version of Prodcom. The European Prodcom in fact is basically altered annually, but as a rule with minor adjustments to its classifications which are hardly relevant to the domain of capital goods.

The international standardisation measures applied in the mid-1990s resulted in a sharp reduction in the incidence of classification problems, which made it possible to abandon the circuitous balancing process involving the more crudely structured SIO and to start recoding the eight-digit categories of the German external-trade classification WA directly into the nine-digit codes of the German output classification GP. To this end, the classification specialists who work on these accounts in the Federal Statistical Office produce a key, which changes from year to year, for the transition from the WA to the GP. This distribution key, in fact, merely comprises a 'qualitative' converter, which identifies the GP categories into which a particular WA category is recodable, but does not specify the percentage quantity of commodities in the 'ex-categories'. The main problems are the 1:n and n:n cases in which the distribution key used in the national accounts in conjunction with the capital-formation ratios defined in the GP may directly affect the level of investment. The dominant 1:1 cases and n:1 cases, as 100% cases, do not initially present any problems for the encoding process, however. Nonetheless, in the case of summaries or divisions, they may become a problem as a result of classification changes to WA and/or GP. In these transfers, the level and temporal continuity are regularly subjected to scrutiny. Overview 5—4 is designed to provide help in illustrating the connections using fictitious figures. For example, a WA classification category in case 2 (1:n) and in case 4 (n:n) would require new weightings of the WA-GP distribution keys. Changes in GP may well necessitate new WA-GP keys as well as new weightings for the capital-formation ratios, unless all the GP numbers concerned have ratios of 0% or 100%.

Of the 10 700 or so eight-digit WA codes in 2000, the classification specialists identify about 1 730 'problem cases' in which a single WA code corresponds to two or more GP codes (1:n or n:n). Only 540 of these are products with a capital-formation function. These numbers require the estimation of different quantitative percentage keys for the transition from WA to GP. These WA-to-GP conversion keys must be adjusted annually in accordance with the prescribed annual Europe-wide amendments to the Combined Customs Tariff and Statistical Nomenclature (CN). In 2000 a total of approximately 20 000 percentage keys were required to convert about 10 700 WA codes into some 6 550 GP codes. These, however, include about 4 100 special assignments of

¹ For a detailed description of the background and methods see: Volkhard Polte, "Die statistische Güterklassifikation in Verbindung mit den Wirtschaftszweigen in der Europäischen Gemeinschaft", in *Wirtschaft und Statistik (WiSta)* 2/1994, pp. 89 et seq., and Dr Gerhard Stock, *Das neue Güterverzeichnis für Produktionsstatistiken*, WiSta 5/1994, p. 350 et seq.

Overview 5—4 Systematic classification in practice - the four possibilities

	WA-8 (1)	Schlüssel (WA%GP)	GP-9 (2)	Investitionen	
				Quote	Mill
Fall 1	A1 1500	100 %	P1 1500	70 %	1050
Fall 2	A2 2000	50 % 40 % 10 %	P2 1000 P3 800 P4 200	60 % 60 % 15 %	600 480 30
Fall 3	A3 400 A4 1000 A5 600	100 % 100 % 100 %	P5 2000	80 %	1600
Fall 4	A6 800 A7 800 A8 800 A9 800	50 % 25 % 25 % 60 % 20 % 20 % 50 % 40 % 10 % 30 % 35 % 35 %	P6 1520 P7 960 P8 720	25 % 50 % 15 %	380 480 108

(1) 8-digit level in the German Commodity Classification for External-Trade Statistics

(2) 9-digit level in the German Systematic Commodity Classification for Production Statistics

Translations: Schlüssel = Key
Investitionen = Capital formation
Quote = Ratio
Mill = EUR m
Fall = Case
A1 etc. = X1 etc.
P remains the same

keys in connection with the breakdown of the complete production plants that were exported (see point 5.10.3.2.e).

c) Temporal classification issues

Uncertainty as to the reference period to which various commodity flows should be assigned is a somewhat less serious problem in comparative terms. It should nevertheless be borne in mind that capital-expenditure surveys are not conducted at intervals of less than one year, which means that there is no investor-accounting mechanism which can be used to cross-check the quarterly trade statistics on machinery and equipment, which feature prominently in analytical discussions on the state of the economy. In the internal system of CF accounting, time-lag problems cannot be reliably pinned down. Temporal anomalies do occasionally become apparent, however, at the more detailed levels of product classification in the form of a negative value for output less exports (P-X). This intermediate value plays an important role, particularly in the adjustment of current prices for investments in machinery and equipment. In addition to statistical reporting inadequacies in the output and external trade statistics, which cannot be exactly specified but which may be serious, two theoretically plausible categories of cause for negative balances in connection with temporal classification issues are important:

1. Between the time when output intended for export is measured and the actual time of export, the products are held in storage for an interim period which does not balance entirely with the converse situation in which goods produced in previous periods are exported in the reference period. Since in a subsequent CF accounting operation, when additions are made to the source statistics, an internal estimate has to be made on the basis of output and turnover figures for changes in inventory values (see points 5.10.3.2.g and 5.10.3.3.b), the measurement method will tend to rectify such anomalies. There are, however, considerable residual grey areas, one reason for this being that the adjustment of inventory values cannot be based on exactly the same product breakdown that is used to measure the value of P-X.
2. Products which are re-exported are not counted on the basis of output but on the basis of their earlier import value. This 'error category' relates to the entire complex of re-exports of foreign commodities as a factor in the external trade statistics, and its scope cannot be discussed in detail here.¹ It should, however, be noted that very considerable quantities of products which are brought into Germany and registered as special imports are not intended for final domestic use but for subsequent re-export. Only in exceptional cases would it be possible to recognise the temporary nature of these imports at the time of their entry into Germany and to adjust the import and export figures accurately with no room for imprecise temporal classification. In the real statistical world, it has to be accepted that some data will be assigned to the wrong period and that the error will amount to the difference between the total volume of imports destined for re-export (which are not yet recognisable as such) and the total volume of re-exports (which are recognisable as such). This will cause inaccuracies in the recorded levels of the export (X) and import

¹ Commodities of foreign origin as defined in the external-trade statistics can include returned goods, goods exported after contract inward processing or economic processing, exhibition and trade-fair goods, goods stored at a foreign-based owner's expense (includes goods released for free circulation), hired and leased goods after use in Germany and supplies received in connection with joint programmes (e.g. the Airbus manufacturing consortium), etc.

(M) components of the formula for the domestic supply of goods (P-X+M), but it will not affect the total balance over longer reference periods as much.

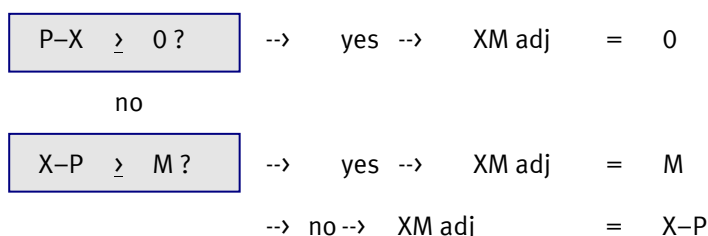
An obvious negative side effect, which particularly relates to the second case, is the resulting distorted weighting between the products comprising domestic output (P-X) and those comprising imports (M), in other words the import figures for machinery and equipment as reported in the statistics are overstated. Also in the event of highly divergent index levels for domestic producer prices (deflator for P-X) and import prices (deflator for M) the overall deflator may become distorted. An alternative way of treating this problem of temporal classification described for the second type, namely netting down exports and imports without altering the overall balance by adjusting for the recognisable re-exports on both sides of the equation, is conceivable. This, however, would sacrifice the indispensable consistency in the compiling of the monthly external-trade figures within the framework of the CF account, along with various monthly indicators that are used for estimation purposes. This disadvantage is deemed to outweigh the partial and evenly balanced overstatement of imports and exports in the CF account.

d) Treatment of negative balances

Both of the types of reason for possible inaccuracies in the allocation of data to reference periods, as outlined in the previous point, will tend to have a greater impact over shorter reference periods. This is particularly apparent at the most detailed level of the quarterly accounts. With the principal aim of limiting the impact of this distortion on the overall deflator for investments in machinery and equipment, a pragmatic, purely technical adjustment which does not alter the export-import balance is made to the CF account. The accounting procedure that was introduced to this end meets the following criteria: it is practicable in terms of the required technical input, we consider that its net effect is to shift the substance of the accounting data in the right direction, it does not affect the nominal total value of investments in machinery and equipment, and it reduces implausibilities in the deflation process and thereby improves the temporal consistency of the figures for investments in machinery at prices corrected for inflation.

The end result of this method is that it reduces exports and imports equally by a certain amount if the quarterly balance of output less imports for a product category at the lowest level of aggregation (nine-digit GP code) is a negative figure. The amount of the adjustment is determined by means of the following algorithm:

Algorithm:



where:

P	=	Production
X	=	Export
M	=	Import
XM adj	=	adjustment (equal amount deducted from X and M)

For the year 2000, applying the **same absolute adjustment figure** to exports and imports, this method lowers the value of exports by approximately 17½% and the value of imports by about 26½%, both figures prior to applying capital-formation ratios. These deductions do not exhibit a significant seasonal figure in the course of time, but do show a slight rise in the trend since the mid-1990s. This adjustment also includes, for example, some exports and imports of products for further processing in the framework of the Airbus manufacturing consortium. The different percentage reductions for exports and imports reflects their differing weightings in the overall balance of domestic availability.

e) Export of entire production plants

By special permission of the Federal Statistical Office, complete production plants, the components of which need only be classified under selected chapters of the German Commodity Classification for External-Trade Statistics (WA), may be registered for export. To this end, special WA code numbers beginning with 988..... are assigned to the plants. In theory, there are 240 special WA code numbers for complete production plants, of which around 100 have so far been assigned values. The total annual value of these exports before application of the adjustment ratio amounted to EUR 2.4 bn in 2000.

The information contained in the WA coding regarding the chapters to which the components of complete production plants registered for export are assignable is very general. It is, of course, impossible to match these components to individual registered nine-digit codes from the German Systematic Commodity Classification for Production Statistics (GP), which means that further differentiation by GP numbers must be undertaken on the basis of estimation. If on the other hand there were too little precision in the approach to this task, excessively high percentages of many plant codes would be concentrated into too few nine-digit GP codes, resulting in implausible P-X balances for those GP codes. This very specific balancing problem is alleviated by means of a very broad estimated product breakdown of these plants. With the aid of individual distribution keys, the plant codes against which values have been entered are each divided into an average of some 40 nine-digit product codes from the GP95 classification. This broad spread of product categories largely ensures that concentrations of export figures are not repeatedly registered under particular product headings, a distortion which can result in implausible figures showing that exports of specific product categories exceed the output of such products.

f) Estimation of capital-formation ratios

We use the term 'capital-formation ratios' or simply 'ratios' to describe the percentage of products entering the economic process for the first time which, possibly after the addition of trade and transport margins and after the inclusion of non-deductible VAT and other additions, is ultimately used as capital machinery and equipment within Germany. In genuine commodity-flow accounting, original estimates of the subsequent intended use of a product are required at an early stage of its creation or import. Official statistics do not provide any direct information from the supply side, such as data obtained from producers and importers about the final use of their product ranges. Such enquiries are hardly likely to bear fruit anyway. Although manufacturers will normally be familiar with the institutional structure of their direct clientele, they often do not know where their products end up and are even less frequently aware of the type of use to which their dual- or multi-purpose products are actually put.

For decisions regarding capital-formation ratios, it makes sense to define five types of product:

- Type 1: Products that do not in any way match the normal definition of fixed capital (e.g. foodstuffs).
- Type 2: Products used almost exclusively to form fixed capital (e.g. a transport aircraft).
- Type 3: Products that can be used to form fixed capital or for intermediate consumption (e.g. a jet engine, which represents intermediate consumption when used in the construction of a new aircraft but fixed capital when fitted as part of a general overhaul designed to prolong the life of an aircraft).
- Type 4: Products that can be used to form fixed capital but can also be used for final consumption (e.g. personal computers).
- Type 5: Products that may be used for fixed-capital formation, intermediate consumption or final consumption (e.g. electric cooker hobs).

The allocation of products to one of these types can certainly depend on definition methodology, as in the case of military durables with civilian uses, which ESA 1995 defines as fixed capital but which were regarded as intermediate consumption in the previous version of ESA.

In the CF accounts the capital-formation ratios are set at the level of the nine-digit GP codes. There are no 'hard' sources in the sense of statistically qualified surveys on this. Instead, the compilers of the national accounts must rely on their own estimates and seek opportunities to verify or improve on them by way of sporadic and partial interviews of relevant experts. Since they are very labour-intensive and not underpinned by statistical legislation, systematic and well substantiated surveys at best are carried out at long intervals and on a voluntary basis. To this end, the direct assistance or mediation of trade associations would be very helpful. Of all nine-digit GP codes, which number about 6 550, a total of around 4 550 are assigned to type 1 (ratio = 0%). Around 550 product codes are assigned to type 2, with ratios between 95% and 100%. The allocation of products to either of these groups may be regarded as relatively safe and plausible. The remaining 1 450 products of types 3, 4 and 5 suffer from a considerably greater level of uncertainty whose quantitative percentage cannot be ascertained within CF accounting. In Table 5—5 the roughly 2 000 nine-digit GP codes of types 2 - 4, which are assigned capital-formation ratios in the German national accounts, are arranged according to the level of ratio.

Some aspects of the overall spectrum of issues concerning ratios will now be touched on briefly below in the context of commodity flow accounting.

The long-observable trend towards increasingly complex products, in the domain of plant construction or in the manufacture of complete flexible assembly lines, for example, represents a shift from capital formation to intermediate consumption and consequently affects our ratio calculations. If individual categories of capital goods which may also be reported separately in output statistics are entered as components of a larger item of manufacturing plant, they are systematically identified as fixed capital. In such cases, however, the use of the products as components actually amounts to intermediate consumption. In our definition of product types, this situation constitutes a shift in the ratios *within* categories 3 and 5, which occurs in cases where the components could still serve as fixed capital in their own right too. Such shifts can also take place *between* categories 3 and 2 or 5 and 2, which would be the case if production technology or market conditions changed in such a way that items which had hitherto been obtainable as distinct capital goods could only be procured now as components of a larger unit. The extent of

such shifts is difficult to determine. Although the larger composite product, such as a production plant or assembly line, can be easily identified through its separate code number, the need to reduce the capital-formation ratios for those components that have been statistically reclassified in some cases as products for further processing actually creates a requirement for precisely the highly detailed knowledge of the composition of production plants which is no longer available now that entire plants are covered by a composite code number. Additional uncertainties regarding the ratios can also be expected to arise as a result of classification errors at the collection stage if the definitions in the GP classification system are temporarily overtaken by industrial developments, since the GP is revised at fairly infrequent intervals in the Federal Republic of Germany – about once every five years at the present time.

The reporting of complete production plants also leads to problems when it comes to deflating investments in machinery and equipment, a process which is based on a breakdown into the smallest possible product categories.

Table 5—5 Ratio structure of the basic materials underlying GFCF in machinery and equipment

EUR m

%ratios (GFCF in machinery and equipment)	Number GP-9 digit	Values before ratio				Values after ratio			
		Output (P0)	Exports (X0)	Imports (M0)	Balance (PXM0)	Output (P1)	Exports (X1)	Imports (M1)	Balance (PXM1)
> 0 ; < 5	194	19479	12599	13907	20787	606	424	510	692
≥ 5 ; < 10	269	31368	12599	9274	28043	1722	686	541	1578
≥ 10 ; < 20	316	49249	26049	21058	44258	5788	3227	2541	5102
≥ 20 ; < 40	166	41459	21979	17902	37382	11539	6111	5248	10676
≥ 40 ; < 60	106	111345	64619	21588	68314	55215	32909	10723	33030
≥ 60 ; < 80	159	26821	14432	13617	26006	19541	10530	10162	19173
≥ 80 ; < 90	98	13026	5399	9098	16725	11010	4500	7661	14170
≥ 90 ; < 95	113	18087	6674	4778	16192	16719	6194	4349	14874
≥ 95 ; = 100	582	90711	66902	29927	53736	88774	65702	29547	52619
Total	2003	401545	231252	141151	311443	210914	130283	71282	151914

Total = 100

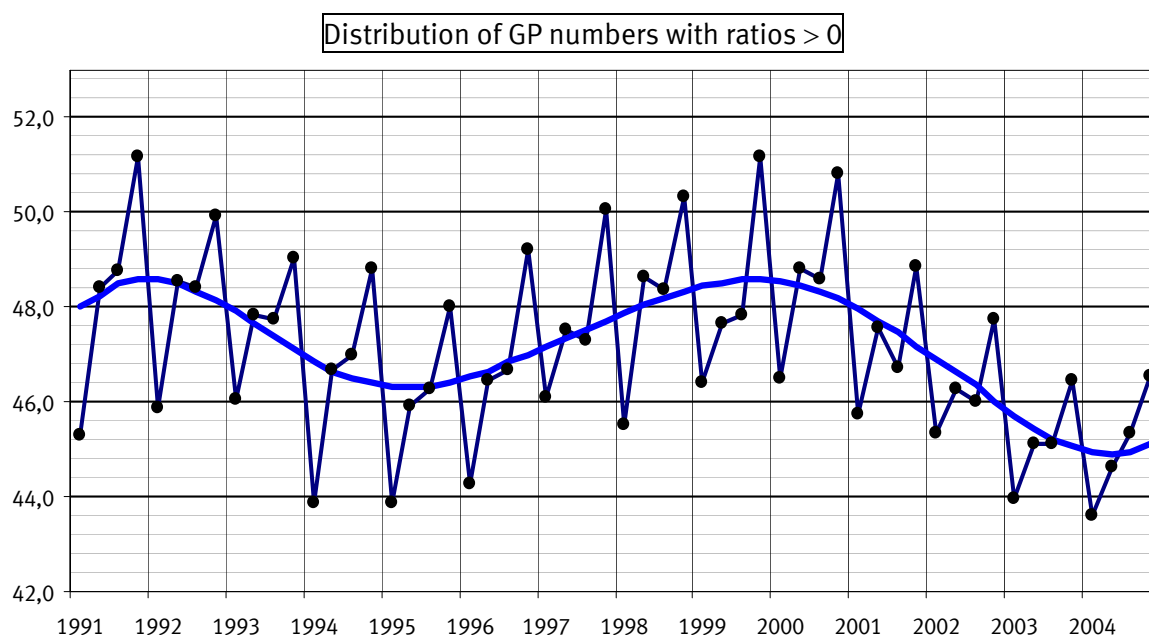
%ratios (GFCF in machinery and equipment)	Number GP-9 digit	Structure before ratio				Structure after ratio			
		Output (P0)	Exports (X0)	Imports (M0)	Balance (PXM0)	Output (P1)	Exports (X1)	Imports (M1)	Balance (PXM1)
> 0 ; < 5	9.7	4.9	5.4	9.9	6.7	0.3	0.3	0.7	0.5
≥ 5 ; < 10	13.4	7.8	5.4	6.6	9.0	0.8	0.5	0.8	1.0
≥ 10 ; < 20	15.8	12.3	11.3	14.9	14.2	2.7	2.5	3.6	3.4
≥ 20 ; < 40	8.3	10.3	9.5	12.7	12.0	5.5	4.7	7.4	7.0
≥ 40 ; < 60	5.3	27.7	27.9	15.3	21.9	26.2	25.3	15.0	21.7
≥ 60 ; < 80	7.9	6.7	6.2	9.6	8.4	9.3	8.1	14.3	12.6
≥ 80 ; < 90	4.9	3.2	2.3	6.4	5.4	5.2	3.5	10.7	9.3
≥ 90 ; < 95	5.6	4.5	2.9	3.4	5.2	7.9	4.8	6.1	9.8
≥ 95 ; = 100	29.1	22.6	28.9	21.2	17.3	42.1	50.4	41.5	34.6
Total	100	100	100	100	100	100	100	100	100

Over time, the capital-formation ratios of most individual products at the least aggregated level are kept relatively constant. This is mainly due to the extreme length of time which would be entailed in obtaining sound estimates of the ratios based on expert knowledge. On the other hand,

however, relative constancy of the ratios is also objectively justified by the breakdown into a large number of classification codes. The aforementioned shift towards more complex production plants is an exception to this. Great vigilance must be exercised, however, in the observation and regular updating of ratios for product categories where particularly dynamic growth is taking place. A recent example has been the market in wireless communication (mobile phones) in recent years. Within a few years, this product category (3220 11 700 – transmission equipment with built-in reception equipment) has gone from being a pure capital asset to a product with a high final-consumption ratio, and the volume of sales has rocketed. Somewhat less dramatic but similarly significant has been the shift in capital-formation ratios for certain products in the domain of computers and computer systems.

With the statistical instruments that are available at the present time it is utterly impossible to register cyclical and seasonal fluctuations in capital-formation ratios. Seasonal fluctuations may be imagined for category 4 products, for instance personal computers and their peripherals, the consumption of which is likely to rise at Christmas time. Changes of ratio between components of not entirely homogeneously definable types of products, i.e. within the nine-digit GP codes, are also difficult to register. The ratios estimated for CF purposes should therefore always be treated as mixed ratios in seasonal, economic and product-related respects. The potential strength of such structural effects can certainly be gauged if we examine the pronounced seasonal ratio trend for the aggregate of all product categories which results despite the largely constant rate of all the individual ratios. Figure 5–1 shows the quarterly capital-formation ratio for cumulative domestic availability (P-X+M) across all approximately 2 000 products included in our commodity-flow ratios.

Figure 5–1 Cumulative capital formation-ratio



The ratio shown below in Overview 5–6 is considerably lower because there the complete product spectrum of the GP codes 28 - 36, i.e. including products with the ratio 0, is included. This demarcation is significant during current estimates of capital formation in machinery and equip-

ment. The remarkably significant seasonal figure and the cyclical trend of the cumulative capital-formation ratio in Figure 5-1 are almost entirely due to structural effects *between* product categories. The tendency for ratios to peak in the fourth quarter and to sink to their lowest level in the first quarter of the year must be interpreted as meaning that, within the total range of about 2 000 GP product categories that are used for capital formation, those products with a higher capital-formation ratio, i.e. the typical capital goods, tend to assume particular importance towards the end of the year and are accorded lowest priority at the start of the year. It is clear that at a given relative statistical constancy of all single ratios the possible degree of classification of products will have a great effect on the level of economic and cyclical reality reflected in the figures for capital formation in machinery and equipment by the commodity-flow account. From this viewpoint, for example, the reduction in the product categories recorded in output or external-trade surveys, which repeatedly features in discussions regarding efforts to save the expense of the official statistics, would serve to lower the quality of the commodity-flow accounting.

g) Output or turnover statistics as a basis for CF accounting?

So far it has been assumed that, in addition to the external-trade statistics, the quarterly output statistics form the most suitable statistical basis for CF accounting purposes. At first sight, turnover statistics could also be considered to offer an alternative basis for data on machinery and equipment produced in Germany, because the value of the market production of capital goods and the turnover of capital-goods manufacturers categorised by specialisation should be very similar. At any rate, the circle of respondents is more or less the same and the workforce has the same minimum size. According to the explanations contained in the above paragraphs, however, just the lack of product orientation in an adequately detailed classification does away with the possibility of relying solely on the VAT statistics. The CF method of offsetting products of domestic origin against external trade and the essential formation of ratios at a very detailed level of product classification were actually impossible to realise using the VAT statistics, since they were related to industry.

Yet it is essential to have turnover data in the CF account to allow a quantitative assessment at two important transitional stages from the generation-side view of the output statistics of the use-side demarcation of investments in machinery and equipment: 1. the capital-formation services which are largely missing from the output statistics and 2. output stock movements of capital goods at the manufacturer. Corresponding estimates necessitate an analysis of the causes of deviation between the figures of the output and turnover statistics. To accomplish this, we roughly distinguish three groups of reasons and attach to them terms used in relation to seasonal adjustment methods:

- | | | |
|---|---|-----------|
| A | divergences in the system of concepts (trend) | |
| B | changes in stock of output | (season) |
| C | miscellaneous coincidental divergences | (residue) |

It is not our intention here to examine the precise statistical definitions of output and turnover and to draw a line between them; such analyses are provided by specialised publications of the Federal Statistical Office. Particular importance in terms of information value for our further considerations also attaches to a study carried out in 2004 by the Federal Statistical Office entitled

Produktbegleitende Dienstleistungen 2002 bei Unternehmen des Verarbeitenden Gewerbes und des Dienstleistungssektors; this was performed on the basis of a § 7 BStatG survey.¹

Figure 5—2 Ratio of output to turnover in the capital goods domain (excl. cars)

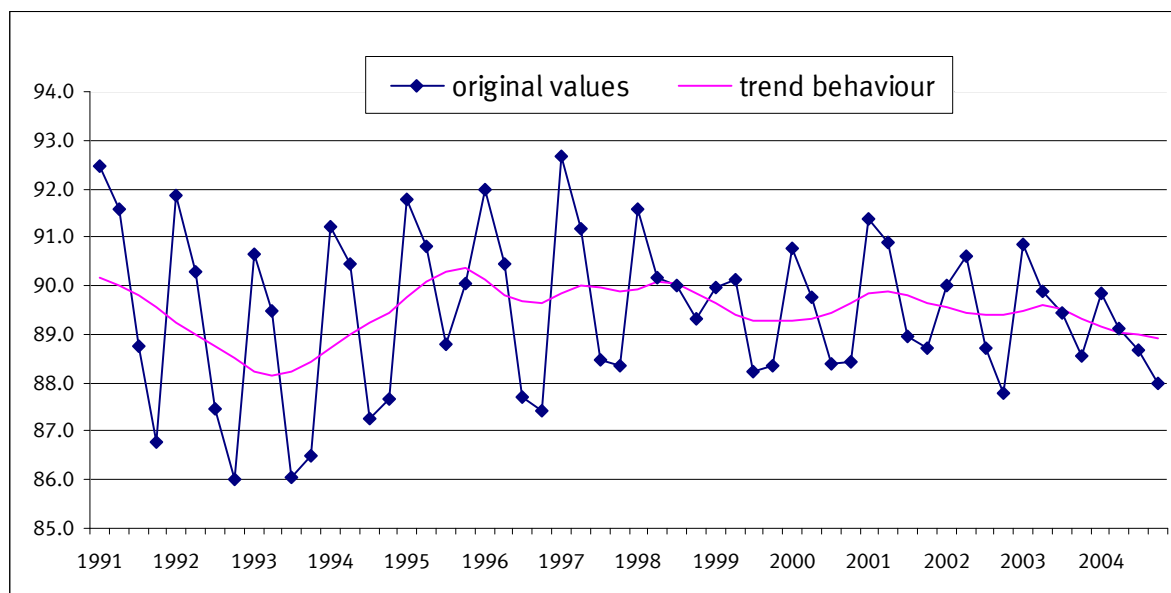


Figure 5—2 shows the actual behaviour of the output-turnover ratio in Germany from 1991 onwards. Market production of all goods (i.e. including those with a capital-formation ratio of 0), excluding cars in GP codes 28 - 36, and the turnover of the corresponding industries as defined by technical departments. For simplicity, the trend is presented as a rolling four-quarterly average. The later explanations concerning the two named CF supplementary headings of capital-formation services at the manufacturer and changes in stock of output refer to the data underlying Figure 5—2. In this, on the one hand the divergence between the trend and the value 100 is viewed as a reference figure from which capital-formation services are estimated using a suitable factor. Secondly, the divergences between the trend and the original series of the output-turnover ratio can be interpreted as a component of stock (including any coincidental divergences).

Below we provide some brief explanations of the three chosen categories.

Re A: Conceptual divergences

Market production, besides covering those saleable commodities intended for the market, also includes products intended for the manufacturer's own use, valued at basic prices. These products also comprise equipment and machinery intended for the manufacturer's own use, which are defined as fixed-capital formation in accordance with the principles of German national accounting. These same principles dictate that products intended for leasing (manufacturers' leasing) are also included in the concept of market production. In both of these respects, market production is a broader concept than turnover, which is confined to actual sales and covers neither the value of machinery and equipment produced for the manufacturer's own use nor products

¹ See also Mödinger, P., Redling, B.: *Produktbegleitende Dienstleistungen im Industrie- und Dienstleistungssektor im Jahr 2002* in WiSta 12/2004, p.1408 et seq. and Opfermann, R.: *Produktbegleitende Dienstleistungen und ihre statistische Erfassung* in WiSta 3/2004, p. 269 et seq.

intended for leasing. The attempts to define output in a market-centred way, for instance by including the cost of packaging in the value of sold products and by basing the valuation of products intended for leasing on the price they could fetch in the market, are consistent with the required definition of capital goods.

The **turnover** of businesses from their own products and services, unlike output and contrary to the desired national-accounting definition, probably includes at least some of the receipts from the leasing of products manufactured by the businesses themselves. In accordance with the system of national accounting, however, the turnover from this activity contains the revenue from numerous services which are largely omitted from the output figures. Examples are transport services, services provided in connection with the initial installation of new machinery or equipment and, in the case of complex production plants, planning services, in so far as these services are directly linked to the capital asset in the narrower sense. Such additional services to investors, whether their capitalisation is optional or compulsory, are often included by manufacturers in the price of the purchase and reported as turnover. At the present time, even if separate charges are levied for these services, they are probably reported in many cases as part of the corresponding sales transaction. Even if this is perhaps involuntary, it is still consistent with the required definition of investments in machinery and equipment in the CF account. On the other hand, there are other components of turnover which, by agreement, are not recorded in the national accounts as fixed-capital formation but as intermediate consumption, such as maintenance and inspection, advertising and staff training. In addition, parts of products for purely military use, which are not fixed capital as defined in the national accounting system, may be included in turnover if they are made by producer units that do not specialise exclusively in the manufacture of military hardware. As part of the CF treatment of output statistics, these 'hard' defence products are eliminated from the outset. Lastly, with regard to the recording of gross amounts, we must refer to differences in reporting requirements between turnover and output data relating to those production processes which involve a division of labour. For example, in certain forms of contract processing and contract production work, besides the value of the finished products, the wage element that is already included in the latter is reported again as turnover; this element, however, does not appear separately in the output figures. Moreover, in the domain of contract work there may be cases in which the turnover statistics are complete but the output statistics only record the wage element. It must be said that, for all the efforts to achieve conceptual clarity, it is impossible in practice to make an absolutely sharp statistical distinction between the capital and non-capital components of output and turnover. In particular, it is not possible at the present time to isolate and quantify all the components that feature in theoretical analyses.

To sum up, our future reflections must proceed from the assumption that, under the applicable rules, turnover figures fall short of output figures and of the definition requirements for national accounting in some areas, especially because the turnover figures exclude machinery and equipment produced for the manufacturing company's own use or for leasing purposes. Conversely, reported turnover figures can also exceed total reported market production, because the former include a number of ancillary services and other extras. Only some of these ancillary services are recordable as machinery and equipment under the national accounting rules. In particular:

- planning and other technical services,
- transport services connected with the sale of capital goods,
- installation services other than those reported in the output figures, and

- other installation and commissioning services,
- training and familiarisation on first installation.

Below we list some examples of components of turnover which do not belong to the figures for machinery and equipment:

- income from the renting or leasing of products,
- regular maintenance, inspection and training services,
- hotlines, etc.,
- regular software licence fees,
- income from patents and licences,
- advertising services,
- turnover from military products, and
- gross amounts.

Re B: Changes in manufacturer's stock of output

The time at which market production is recorded for the CF account is the reference period (quarter) when the production process was completed. For turnover, on the other hand, the time of recording is governed by the invoice date, which is generally around the time of delivery and in this respect is closer to the national accounting concept of recording sales at the time when ownership is transferred. If turnover data were used in place of output data, it would therefore be possible to circumvent the estimation of manufacturers' stock movements. So in this specific respect, turnover values would actually be a more suitable basis for the national accounting purpose of measuring use aggregates.

Re C: Miscellaneous coincidental divergences

Under the heading of coincidental divergences between output and turnover there may be numerous imponderables relating to the content of data or the technicalities of their collection. These could include, for example, the turnover figures relating to the interim and final statements of account for large-scale projects, the term of which spans several reference periods. Conversely, in the case of output certain large-scale projects are probably often reported in practice (contrary to the reporting concept) in accordance with construction progress. Accordingly, the turnover statistics occasionally show more wildly erratic fluctuations than the output figures.

As the difference between the original series and the trend, Figure 5—2 shows the very pronounced seasonal character of the output-turnover ratio, which is interpreted, for CF purposes, completely - i.e. including coincidental divergences - as an extended movement of stock.

h) CF data and valuation hierarchies

Overview 5—5 summarises the hierarchically structured aggregation and valuation levels of CF accounting in the Federal Republic of Germany. From a technical point of view, the borderlines between these levels are fluid in some cases, but every accounting process can be conceptually assigned without dubiety to one of the following levels:

- | | |
|----------------------------|---|
| 1. Baseline level: | most refined breakdown possible: eight-digit WA codes and nine-digit GP codes |
| 2. Categorisation Group 1: | medium degree of aggregation, ranging from four-digit to nine-digit product codes |
| 3. Categorisation Group 2: | high degree of aggregation: two- or three-digit codes |
| 4. Global level: | highest degree of aggregation: single-digit code |

Re Level 1:

At level 1, only the external-trade and output statistics are dealt with for the smallest product categories. This includes all the classification issues affecting CF, the encoding of the WA to GP, the observation and any necessary corrections of obvious implausibilities in balances and all setting of ratios at the level of the individual product. The actual valuation covers the monthly processing of import and export figures, which are recorded separately for trade with EU partners and trade with countries outside the EU, and the quarterly processing of output statistics. This valuation does not use the raw baseline data, comprising several million data sets, but is based instead on special starter material from the specialised statistical collections, material which serves other purposes too. At this level, the entire spectrum of products is handled rather than a selection which is relevant to capital goods. This makes it easier to make comparisons and to perform cross-checks with other collection systems and establishes a link with global indicators through up-to-date estimates. At the present time, some 10 700 WA code numbers have to be processed; in 2000, with the aid of about 20 000 key files, these were transformed into approximately 6 550 GP codes, of which about 2 000 may consist wholly or partly of machinery or equipment that can be used for fixed-capital formation. Since the revision in 2005, data on prices taken in principle from the nine-digit classifications are included. However, in fact only around 600 producer price indices and about 800 import price indices are distinguished.

Re Level 2:

Level 2 is characterised by a specially compiled set of products broken down into categories of medium size in the CF account and referred to below as Categorisation Group 1. This is shown below in a table. This set of product categories, currently 203 items, was designed to be homogeneous in its content and balanced in terms of its quantitative structure and is a mixture of four-digit to nine-digit GP codes. In the regular quarterly accounts, ESA requires a transition to be made as part of deflation from the fixed-price basis of the statistical material on prices to a calculation using the previous year's prices at this medium size of product category. Further important applications of Categorisation Group 1 occur in the internal GFCF cross-classification matrices described already and in the pursuit of various lines of enquiry in connection with the valuation of assets and of fixed-capital consumption.

Re Level 3:

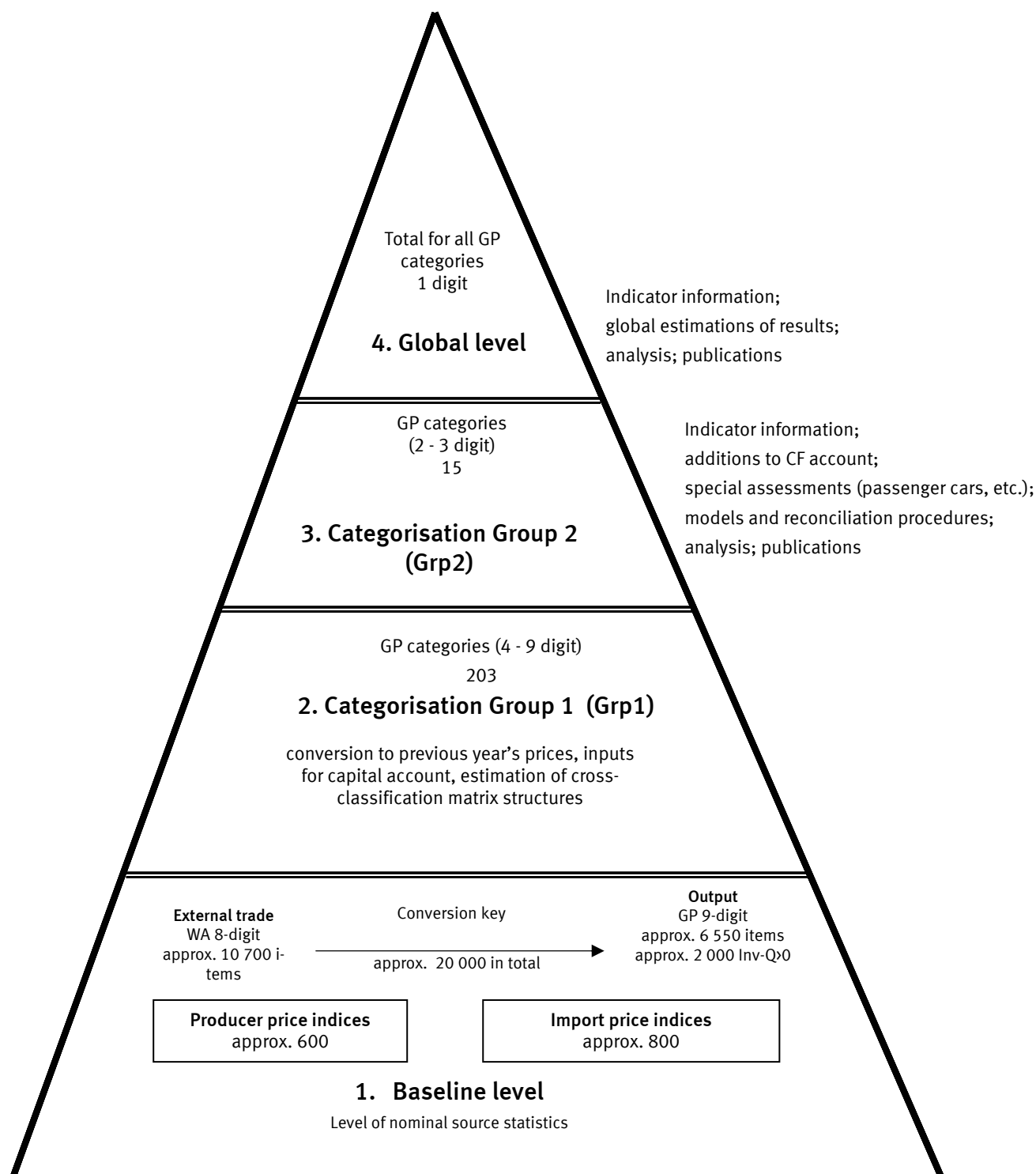
The results of the intermediate calculation of the nominal and real values of P-X and M on the basis of Categorisation Group 1 are aggregated at the level of Categorisation Group 2. Most new

investments in machinery and equipment (almost 75% in 2000) are determined on the basis of these raw data from the source statistics. All estimated adjustments, additions and demarcation processes are then effected at the level of Categorisation Group 2, since the bulk of these transformations cannot be quantified for more specific product categories. This also explains why many analytical enquiries designed to elicit information about the most highly differentiate product classifications for investments in machinery and equipment are impossible to answer from the CF accounting system. The various stages in the accounting process at which data are added and transformed can be discerned in what we call the 'CF dimension', which is set forth in Overview 5—5. Section 5.10.3.3 below deals with these stages in the process. Anticipating our subsequent remarks, we should point out that, although the CF account continues to cover the entire range of products, the 'ready-made' figures for passenger cars are replaced at a later stage by the result of a special assessment derived from registration figures issued by the Federal Motor Transport Authority, since we consider these figures to be more reliable (see point 5.10.3.3.e below).

Re Level 4:

Level 4, as a global level, condenses the product classifications to the one-digit classification codes, however, still includes the complete CF dimension. This data and calculation level is used predominantly in the course of estimating the respectively most up-to-date quarter, i.e. if basic materials are not yet completely available broken down into product categories. Valuation level 4 has no relevance to explanatory representations of the final annual results of capital formation in machinery and equipment. However, since levels 3 and 4 are entirely compatible with each other in terms of the CF dimension and since the data from each can be incorporated into the other, the final results from previous reference periods can also be presented and explained at level 4. This is a necessary means of guaranteeing complete compatibility between the valuation of machinery and equipment and the valuation of other aggregates, or indeed the GDP production approach, in the estimation of current values.

Overview 5—5 Data and valuation levels for commodity-flow accounting of GFCF in machinery and equipment



Commodity Flow Grouping 1 (Group 1)

Serial No	Group 1	Abbreviated text (main points)	Number GP-95
1	1740	Made-up textile articles, except apparel	28
2	1751	Carpets and other floor coverings	9
202	1752 1 2	Made-up fishing nets and commodities	6
3	1800, 1900	Work and professional clothing, and shoes, etc.	31
4	2030	Builders' joinery and carpentry of wood	1
5	2040	Packaging material, warehouse supplies and transporters of wood.....	2
6	2051	Other articles of wood (excluding pallet collars).....	2
7	2211, 14,31-33	Publishing, printing and reproduction of recorded media	21
203	2513 7 3 250	Fenders, including inflatable	1
8	2522	Plastic packing goods.....	10
9	2523	Builders' ware of plastic	2
10	2613, 15, 21	Bottle glass, other glass, ceramics (or roof tiles, structural ceramics)	27
11	2624, 25, 26	Products for chemical, technical purposes, of china, ceramics	13
12	2721, 51, 52	Pipes, etc. of cast iron, iron/steel forged products	27
13	2811	Steel and light metal building structures	2
14	2821	Tanks, collectors and similar of iron, steel, aluminium.....	6
15	2830	Steam-generating nuclear reactors except central heating hot water boilers	12
16	2861	Cutlery	10
17	2862	Tools: for long-wave ratio stations/radiolocation [LWS/FO], joiners, bricklayers, etc.....	82
18	2871	Iron or steel drums and similar containers	5
19	2872	Packaging, closures of iron, steel or non-ferrous metals.....	1
20	2875	Manufacture of other fabricated metal products n.e.c.	40
21	2911	Combustion engines and turbines	27
22	2912 1	Hydraulic and pneumatic engines, water-driven and vapour engines, etc.	7
23	2912 2	Pumps for liquids; liquid elevators	29
24	2912 3	Air, vacuum pumps, air or other gas compressors	17
25	2912 4, 9	Parts for pumps and compressors, installation, repairs, etc.	10
26	2913	Taps and valves	6
27	2914	Bearings, gears, gearing and drive elements.....	15
28	2921 1	Ovens and furnace burners and parts thereof	14
29	2921 9	Installation, repair and maintenance of ovens and furnace burners.....	2
30	2922 1 1	Pulley tackle and hoists n.e.c.	3
31	2922 1 2	Hoisting engines for mining, winches and capstans, etc.	6
32	2922 1 3	Permanently fixed lifting platforms for motor vehicles and other hoisting gear.....	3
33	2922 1 4	Cranes, mobile lifting frames and works trucks fitted with a crane.....	8
34	2922 1 5	Electrical trucks fitted with a crane and other trucks	7
35	2922 1 6	Lifts, elevators and moving pavements	2
36	2922 1 7	Continuous mechanical handling equipment.....	8
37	2922 1 8	Equipment for moving, loading/unloading railway vehicles, cable railways, etc.	7
38	2922 1 9	Parts of lifting equipment and conveyors	3
39	2922 2	Buckets, scoops, dipper ladles, claws for cranes and excavators	1
40	2922 9	Installation, repair, maintenance of hoists and conveyors.....	3
41	2923 1 1	Heat exchangers and other apparatus for liquefying gas	5
42	2923 1 2	Air conditioner appliances.....	5
43	2923 1 3	Refrigeration cabinets, equipment and devices for generating cooling, heat pumps.....	10
44	2923 1 4	Appliances for filtering or cleaning gases n.e.c.	7
42	2923 2	Ventilators or bench, wall fans and similar, output ≤125W	3

Serial No	Group 1	Abbreviated text (main points)	Number GP-95
46	2923 3	Parts for air-conditioning units, refrigerators, heat pumps and similar....	14
47	2923 9	Installation, repairs, maintenance of refrigeration/ventilation products and similar	4
48	2924 1	Generator gas products, etc.; equipment for filtering and such like of rivers, etc.	7
49	2924 2 1	Packing machines	17
50	2624 2 2	HH personal weighing machines, filling and metering scales, etc.	4
51	2924 2 3	Weight-grading machines, counter scales, weighbridges and other scales	6
52	2924 2 4	Spray guns, sandblasting machine, water jet equipment, etc.	9
53	2924 3 1	Centrifuges for chemical, food and other industries	4
54	2924 3 2	Calender and rolling mills (textiles, rubber, plastic)	4
55	2924 3 3	Automatic goods-vending machines (including cash dispensers).....	2
56	2924 4	Machinery and equipment for treating materials by manipulating temperatures n.e.c.	12
57	2924 5, 7	Parts of gas-generating, weighing, rolling, dishwashing, packaging machinery	16
58	2924 6	Industrial dishwashing machines	1
59	2924 9	Installation, repairs, maintenance of machinery for unspecified uses n.e.c.	6
60	2931	Single-axle, ploughing, forestry tractors and similar locomotives	16
61	2932	Other agricultural and forestry machinery and parts	84
62	2940 1	Machine tools for removing material, workshops, etc.	15
63	2940 2	Screwing, drilling, routing and thread-cutting machines.....	33
64	2940 3 1	Other machine tools for machining down metals n.e.c.	33
65	2940 3 2, 3	Machines for metalworking, numerically controlled or not.....	17
66	2940 3 4	Forging machinery and presses for metalworking.....	14
67	2940 3 5	Other machine tools for non-cutting metalworking.....	8
68	2940 4 1	Machine tools for stone, ceramic materials, concrete, etc.	3
69	2940 4 2	Woodworking machines, machine tools for cork, natural rubber and similar.....	16
70	2940 5	Handheld machines and pneumatic tools.....	24
71	2940 6	Welding and soldering machines, equipment and appliances.....	18
72	2940 7	Parts and accessories for machine tools	24
73	2940 9	Installation, repairs and maintenance of machine tools	6
74	2951 1	Machines for metal products, rolling mill apparatus, etc. and parts thereof.....	10
75	2951 9	Installation, repairs and maintenance of metalworking machines, etc....	3
76	2951 1	Continuous mech. handling equipment for work below ground, mining equipment, etc., civil engineering equipment	10
77	2952 2	Automatic graders, road graders, etc.	16
78	2952 3	Other machinery, etc. for earthmoving, grading, etc., clearing snow	5
79	2952 4, 5	Machines for sorting, screening, mixing and similar, crawler vehicle tractor	13
80	2952 6	Parts of mining, construction machinery and machines for handling building materials	8
81	2952 9	Installation, repairs and maintenance of mining, construction machines and machines for handling building materials	4
82	2953	Machinery for food and tobacco processing, and parts thereof	38
83	2954 1	Machinery for spinning, weaving, embroidering and knitting.....	19
84	2954 2, 3	Other machines for producing textile clothing and handling skins, leather, etc.....	26
85	2954 4	Parts and accessories for textile, clothing and leather industry	13
86	2954 5	Domestic sewing machines	1
87	2954 9	Installation, repairs and maintenance of textile machines, etc.	4

Serial No	Group 1	Abbreviated text (main points)	Number GP-95
88	2955	Machines for the paper industry	18
89	2956 1 1	Bookbinding machinery and equipment	5
90	2956 1 2, 3	Typesetting machines, offset printers and equipment	6
91	2956 1 4	Other printing and auxiliary machines and equipment	6
92	2956 1 5	Parts of printing, typesetting and printing machines	3
93	2956 2 1, 2	Spin dryers, dryers for wood, paper, etc.	7
94	2956 2 3	Machines and equipment for processing and working rubber, etc.	12
95	2956 2 4	Forging and moulding boxes for metal, glass, etc, models	9
96	2956 2 5	Machines with independent functions n.e.c.....	25
97	2956 2 6	Parts for machines for other particular branches of industry n.e.c.	7
98	2956 9	Installation, repairs, maintenance of machinery for specific branches of industry n.e.c.	7
99	2960	Weapons and ammunition.....	7
100	2971	Electrical household equipment and parts.....	46
101	2972	Non-electric heating and hot-water appliances, etc. for household, and parts	9
102	3001 1	Office machinery and calculating machines	10
103	3001 2	Photocopiers, blueprinting machines and other office equipment.....	11
104	3001 9, 3002 9	Installation of office machines, computers and other equipment	2
105	3002 1 1, 2	Analogue or hybrid, automatic or digital computer equipment	3
106	3002 1 3	Digital processors	1
107	3002 1 4	Input or output units	6
108	3002 1 5	Storage units.....	5
109	3002 1 6	Other data processing devices.....	1
110	3002 1 7	Parts and accessories for automated computer equipment and units.....	2
111	3110 1-3	Electromotors, generators, generator sets, electrical transformers	37
112	3110 4	Electrical transformers.....	14
113	3110 5	Ballast, power converters, fluorescent lamp ballast, etc.....	11
114	3110 9	Installation, repairs and maintenance of electrical machines, generators, transformers.....	2
115	3120 1	Electrical devices for closing, etc. for >1000V	7
116	3120 2	Electrical devices for closing, etc. for ≤1000V.....	27
117	3120 3	Boards, fields, etc. for electrical switches, controls, etc.	6
118	3120 4	Parts of electricity distribution or control apparatus	3
119	3120 9	Installation, repairs and maintenance of electrical distribution equipment, etc.	2
120	3150 2	Lamps and lighting fittings	19
121	3150 3	Other electrical lighting equipment n.e.c.	16
122	3162 1	Electric traffic signalling, safety and similar devices, etc.	6
123	3162 9	Installation, repairs and maintenance of electrical devices n.e.c.	2
124	3210	Electronic components and boards.....	5
125	3220 1, 3, 9	Transmitting and receiving devices (including portable), parts and installations.....	11
126	3220 2 0 200	Telephones	1
127	3220 2 0 400	Switching equipment for wire telecommunication.....	1
128	3220 2 0 500	Transmission equipment such as modems, cables, etc.....	1
129	3220 2 0 n.e.c.	Other devices for telephony and telegraphy	4
130	3230 2	Television sets, video monitors and projector monitors.....	12
131	3230 3	Devices for image, sound recording and reproduction.....	14
132	3230 4	Microphones, loudspeakers, etc., receivers for radio communication.....	10
133	3230 5	Parts for apparatus for image and sound recording, etc., antennas	7
134	3230 9	Installation, repairs and maintenance of selected radio equipment, etc.	2
135	3310 1 1	X-ray equipment, devices, alpha emitters, etc. and related components	7
136	3310 1 2	Electro-diagnosis equipment, ultraviolet or infrared radiation appa-	3

Serial No	Group 1	Abbreviated text (main points)	Number GP-95
		tus	
137	3310 1 3	Other instruments, apparatus and devices for dentistry	3
138	3310 1 4	Sterilising equipment for medical or surgical purposes or laboratories...	1
139	3310 1 5	Syringes, needles, catheter equipment for medical and surgical applications.....	13
140	3310 1 6, 8	Mechano-therapeutic massage equipment, apparatus for relieving dysfunction, etc.....	5
141	3310 2	Furniture for medical, surgical purposes, barbers' chairs and similar components.....	2
142	3310 9	Installation, repairs and maintenance of medical devices	2
143	3320 1	Navigation instruments and instruments for geophysical purposes, etc.	11
144	3320 2	Radiolocation, navigational and radio remote control devices.....	3
145	3320 3	High-accuracy weighing machines, drawing instruments, etc., instruments for measuring length	11
146	3320 4	Instruments for measuring or detecting ionising radiation, electrical values	10
147	3320 5	Instruments, etc. for measurement, etc. of other physical-chemical properties	29
148	3320 6	Other instruments, apparatus and devices for measuring and testing	33
149	3320 7, 8	Apparatus and devices for regulating, parts, accessories for measuring, testing, etc.	19
150	3320 9	Installation, repairs and maintenance of measuring instruments and devices, etc.....	5
151	3330	Industrial process control equipment	1
152	3340 2	Other optical instruments and parts thereof.....	19
153	3340 3	Photographic equipment and parts thereof.....	30
154	3350	Watches and clocks.....	12
155	3410 1	Internal combustion engines for motor vehicles and motorcycles.....	9
156	3410 2 1	Cars, mobile caravans with reciprocating engine with spark ignition, cubic capacity ≤1500cc	2
157	3410 2 2 330	Cars with reciprocating engine with spark ignition with cubic capacity >1500-2000 cc	1
158	3410 2 2 350	Cars with reciprocating engine with spark ignition with cubic capacity >2000-2500 cc	1
159	3410 2 2 370	Cars with reciprocating engine with spark ignition with cubic capacity >2500 cc.....	1
160	3410 2 3 100	Cars with internal combustion engine with self-ignition with cubic capacity ≤1500 cc	1
161	3410 2 3 330	Cars with internal combustion engine with self-ignition with cubic capacity >1500-2000 cc	1
162	3410 2 3 350	Cars with internal combustion engine with self-ignition with cubic capacity >2000-2500 cc	1
163	3410 2 3 400	Cars with internal combustion engine with self-ignition with cubic capacity >2500 cc	1
164	3410 2 4	Cars with electric motors and other motors/engines	2
165	3410 2 Wohn	Motor-caravans	4
166	3410 3	Buses with internal combustion engine, etc. with self-ignition or spark ignition	5
167	3410 4 1	Lorries with internal combustion engine with self-ignition.....	5
168	3410 4 2	Lorries with internal combustion engine with spark ignition or other engine.....	5
169	3410 4 4	Road tractors, without powered trailers	1
170	3410 4 5	Chassis for tractors, buses, cars, trucks with engines	1
171	3410 5	Rocker dump car, crane lorry, motor vehicle for special purposes.....	7
172	3420 1	Bodywork for cars, lorries, buses, tanker superstructures, etc.....	5

Serial No	Group 1	Abbreviated text (main points)	Number GP-95
173	3420 2 1	Goods container for gas, etc., containers, waste tips	4
174	3420 2 2	Towed caravan for living or camping	4
175	3420 2 3	Trailers (including semi-trailers)	8
176	3420 3	Parts of trailers, including semi-trailers	4
177	3430	Parts and accessories for motor vehicles and motor vehicle engines	3
178	3499	Refining products from this group of commodities	1
179	3511	Ships excluding boats and yachts	35
180	3512	Pleasure and sporting boats	14
181	3520	Rail-transport equipment	28
182	3530	Air- and space-transport equipment	26
183	3541	Motorcycles	6
184	3542	Bicycles, parts and accessories	8
185	3543	Invalid vehicles	2
186	3550	Vehicles n.e.c.	4
187	3611 1 1	Seat for aircraft and road vehicles, seating with metal frame	6
188	3611 1 2, 3	Seating mainly with wooden frames, garden furniture	10
189	3612 1 1	Metal furniture for offices	8
190	3612 1 2	Wooden furniture for offices	7
191	3612 1 3	Wooden furniture for shops	1
192	3613	Wooden furniture for kitchens	2
193	3614 1 1	Metal furniture n.e.c. but not for offices	6
194	3614 1 2	Wooden furniture for bedrooms, dining rooms and living rooms	9
195	3614 1 3, 4	Other wooden furniture, and furniture of plastic and other materials	10
196	3615	Mattresses	7
197	3622	Articles of jewellery; articles of goldsmiths' or silversmiths' wares and parts thereof	5
198	3630	Musical instruments	28
199	3640	Sports equipment	12
200	3650	Games and toys	17
201	3663	Other products of commodity group 36 n.e.c.	1

Commodity Flow Grouping 2 (Group 2)

Serial no.	CPA no.	Brief description	No., GP 95
1	28	Fabricated metal products	158
2	29	Machinery and equipment	962
3	30	Office machinery and computers	41
4	31	Electricity generating machinery and apparatus, etc.	152
5	32	Radio, television and communication equipment etc.	68
6	33	Manufacture of medical, precision and optical instruments, watches and clocks	219
7	34.10.21 - 24	Travel by car	15
8	34.10.30 - 54	Commercial vehicles	24
9	Rest of 34	Rest of CPA 34	38
10	35.11	Ships	49
11	35.20	Rail-transport equipment	28
12	35.30	Air- and space-transport equipment	26
13	Rest of 35	Rest of CPA 35	20
14	36	Furniture, musical instruments, sports equipment, etc.	129
15	Part of 17-27	Other manufactured products	180

5.10.3.3 Application of the commodity-flow approach

a) The basic commodity-flow accounting model

Following the sequence of the valuation process, the various stages in the processing of the German CF account can be outlined in a rough schematic model. The extensive work that is undertaken at the basic level results in a first, still very approximate value for investments in machinery and equipment. Numerous additions have to be made before the aim of exhaustiveness and compliance with the definition requirements of ESA 1995 can be achieved. These additions are generally made on the basis of Categorisation Group 2. The following table summarises the process in accordance with the commodity-flow method and also serves as a point of reference for the more detailed explanations presented below:

	2000		
	EUR m	New machinery and equipment = 100	Machinery and equipment = 100
Baseline value 1	151 914	81.0	86.0
Specific additions to output statistics.....	+ 12 871	6.9	7.3
Special additions to the external-trade statistics	+ 6 614	3.5	3.7
Baseline value 2	= 171 399	91.4	97.0
Trade and transport margins and other additions	+ 16 481	8.8	9.3
Reconciliation with special assessment for passenger cars and other reconciliation operations.....	– 430	0.2	0.2
New purchases of machinery and equipment	= 187 450	100.0	106.1
Net purchases of used machinery and equipment	– 10 790	5.8	6.1
GFCF in machinery and equipment	= 176 660	94.2	100.0

The general model shown is a summary of the detailed model in the Overview 5–6 below. In it, all the more detailed explanations refer where appropriate to the items shown in column 2. The CF scheme shown does not claim to be generally valid and does not represent any particular instance of commodity-flow accounting. Instead, it corresponds far more to the particular situation in Germany and is focused on depicting the conceptual rules of the ESA as well as possible and meeting the needs for data in the overall context of the production, expenditure, input-output and national-wealth accounting.

The numbers suffixed in Overview 5–6 to all output values (bearing the letter P), export values (letter X) and import values (letter M) denote the following:

- The figure 0 signifies classification *prior* to the application of capital-formation ratios and *prior* to any additions to the baseline data.
- The figure 1 shows that the classification of baseline values has been effected *after* the application of capital-formation ratios but *prior* to alteration by means of the additions described below at valuation level 3 or 4, as appropriate.
- The figure 2 indicates that the baseline values have been classified *after* the application of the ratio and *after* the inclusion of all types of additions.

b) Additions to which a general explanation applies

Many items (serial no.) in Overview 5—6 tend to be more of a technical nature and can be looked at as a group:

- *Baseline figures*

(serial nos. 1, 3, 5, 15 and 29)

These are the baseline output and external-trade statistics, aggregated into two-digit GP categories or fully aggregated, which result from the valuations undertaken at levels 1 and 2, as described above. The value of turnover from capital goods, which is used for purposes of comparison, is also assigned to this group.

- *Current vacant items ('dummies')*

(serial nos. 10-12, 19, 20, 22, 23, 33-37, 42, 45, 47, 48 and 65)

To keep the system flexible, a certain number of 'spacer items' are contained in the CF model; although these are fully compatible with the internal computing system and are automatically counted along with the other items, they were left blank on initial installation and could theoretically remain so. These are designed to allow for a further development of the valuation procedures even between major revisions.

- *Reconciliation adjustments*

(serial nos. 56, 57 and 66)

Reconciliation adjustments may be required for various reasons, most of which are of a temporary and minor nature (see 5.10.3.3.f).

- *Subtotals, totals and backward ratio projections*

(serial nos. 2, 4, 13, 14, 24-28, 38-41, 52, 53, 55, 58, 59, 67 and 68)

These items are self-explanatory.

c) Specific additions to output and external-trade statistics

- *Extrapolations for businesses with 1 to 19 employees (serial no. 6)*

Output statistics are only collected from enterprises with 20 or more employees. For this reason, extrapolation factors are applied at level 3 of the CF accounting process, i.e. with the product breakdown in Categorisation Group 2. The data used for this extrapolation in the CF account are the corresponding estimates from the production approach; these estimates are based on turnover figures from annual surveys of small businesses as well as reports submitted by craft and trade businesses up to 2000 and, from 2001 onwards, newly designed structure surveys of businesses with 1 - 19 employees. The breakdown of industries in the manufacturing sector (WZ/NACE 28-36) can be applied directly to CF Categorisation Group 2 for the valuations of machinery and equipment, but the estimated figures cannot be incorporated as they stand. Since it must be presumed that small businesses make up a significantly below-average percentage of manufacturers of capital goods, the extrapolation factors from the production approach are lowered by around half. There are no available sources for a product-based breakdown that would make for greater precision in the calculation of this adjustment. In our view, the resulting estimated additions of just under 3% of the output variable P1 to the value of investments in machinery and equipment probably represent the maximum plausible estimate.

Overview 5—6 GFCF in machinery and equipment, CF dimension

Ser. No.	CF item Abbrev.	Alg. Sign	Commodity Flow	2000 EUR m
1	UG		Aggregate turnover (dom.+ext.) acc. to MB, NACE/GP 2 digit categories 28-36 after KWU adjustments	607 391
2	QP0UG		Ratio: output P0 / aggregate turnover 'UG'	90,6 %
3	P0		Output acc. to prev. year's output stats., 20 or more employees, complete GP 2-digit categories 28-36, before	550 182
4	QP1P0		Ratio: output P1 / output P0 (i.e. ratio project parts from GP 17-20,22,25--27)	38,3 %
5	P1	+	Mach. + equipm't output acc. to prev. year's output stats., 20 or more employees, GP 28-36, 17-27, after ratio	210 912
6	Hoch19	+	Extrapolated figures for 1-19 employees, analogy to extrapolations of turnover in production approach	5 837
7	Selbst	+	Own-account production of mach. + equipm't	1 704
8	DiHrs	+	Estimate derived from P0/UG of cap.-formation services of capital goods producers (excl. Hsp, Trsp)	5 543
9	VoHrs	+-	Estimate derived from P0/UG of seasonal stock components, incl. residual components	- 213
10	ErgP01	+-	Supplements 01 to output (currently not assigned)	0
11	ErgP02	+-	Supplements 02 to output (currently not assigned)	0
12	ErgP03	+-	Supplements 03 to output (currently not assigned)	0
13	SMErgP		Total of all supplements to the baseline data of quarterly output stats.	12 871
14	P2		Output of mach. + equipm't, after ratio, after supplements	223 783
15	A1	-	Exports of mach. + equipm't, only new products as far as ascertained from ext.-trade stats., after ratio	130 279
16	SoAH-A	-	Ext.-trade stats. supplements to exports (part of Ch. 99): part-deliveries, exemptions, missing responses,	2 694
17	HTrspA	+	Trade and transport margins in fob value of exports, where part of value at point of exit/entry	- 5 207
18	IntraA+	+	Temporary CF special allowances added to exports due to imputed undercoverage in Intra-Community trade	0
19	GemA	+	Reserved for possible adjustment to exports for netting ext. trade figures in case of European Community	0
20	LeasA	+	Reserved for possible export adjustments for cross-border operating leasing	0
21	GebrKorrA	+	Unidentifiable used goods in exports (e.g. ships) as distinct from new ships, part of no. 62	- 277
22	ErgA01	+-	Supplements 01 to exports (currently not assigned)	0
23	ErgA02	+-	Supplements 02 to exports (currently not assigned)	0
24	SMErgA		Total of all supplements to exports	-2 790
25	A2		Exports of mach. + equipm't, after ratio, after supplements	127 489
26	PA1		Balance (output - exports), after ratio, before supplements	80 633
27	SMErgPA		Total of all supplements to the balance (P1-X1)	15 661
28	PA2		Balance (output - exports), after ratio, after supplements	96 294
29	E1	+	Imports of mach. + equipm't, only new products as far as ascertained from ext.-trade stats., after ratio	71 281
30	SoAH-E	+	Ext.-trade stats. supplements to imports (part of Ch. 99): government goods, part-deliveries, exemptions,	3 336
31	Zoll	+	Excise revenue in EU external trade (EU external borders)	488
32	IntraE+	+	CF special allowances added to imports due to imputed undercoverage in Intra-Community trade	0
33	GemE	-	Reserved for possible adjustment to imports for netting ext. trade figures in case of European Community	0
34	LeasE	-	Reserved for possible import adjustments for cross-border operating leasing	0
35	ErgE01	+-	Supplements 01 to imports (currently not assigned)	0
36	ErgE02	+-	Supplements 02 to imports (currently not assigned)	0
37	ErgE03	+-	Supplements 03 to imports (currently not assigned)	0
38	SMErgE		Total of all supplements to imports	3 824
39	E2		Imports of mach. + equipm't, after ratio, after supplements	75 105
40	PAE1		Balance (output-exports+imports), after ratio, before supplements	151 914
41	PAE2		Balance (output-exports+imports), after ratio, after supplements	171 399
42	VoHdl	+-	Changes in inventories of stock goods in trade (currently no estimates, i.e. inaccuracies in seasonal figures)	0
43	DIPAE	+	Estimate of capital-goods services, not of capital goods producers (excl. Hsp, Trsp)	3 198
44	PrNutz	-	Private use of capital goods (currently only cars), reclassification to household consumption	- 13 409
45	Frei	+	No content currently assigned to this field	0
46	PrivLeas	+	Private car leasing (adjustment item for keeper definition in Fed. Office for Motor Traffic registration stats.)	3 603
47	ErgPAE01	+-	Supplements 01 to balance (P2-X2+M2) (currently not assigned)	0
48	ErgPAE02	+-	Supplements 02 to balance (P2-X2+M2) (currently not assigned)	0
49	Hsp	+	Trade-related services for mach. + equipm't, all marketing stages	15 589
50	Trsp	+	Transport-related services for mach. + equip. from producer/border exit or entry to end user	3 999
51	GSt	+	Non-deductible taxes on products affecting mach. + equip.	3 501
52	SMErgPAE		Total of all supplements to the balance (P2-X2+M2)	16 481
53	Neue1		GFCF in new mach. + equipm't, demarcation 1, before car registration comparison, before balancing	187 880
54	AbgIN	+-	Reconciliation (nominal) between CF of cars and results of special car account	- 438
55	Neue2		GFCF in new mach. + equipm't, demarcation 2, after car registration comparison, before balancing	187 442
56	AbsN_1St	+-	Internal CF balancing + GNP balancing (nominal) where appropriate, including rounding, distributed prop. to all	8
57	AbsN_2St	+-	Ad hoc, structural balancing (nominal) with 2-digit GP categories	0
58	SMAbsN		Total of all reconciliation steps (nominal) with new mach. + equipment	0
59	Neue3		GFCF in new mach. + equipm't, demarcation 3, after car registration comparison, after balancing	187 450
60	GebrA	-	Exports of used equipment, where separately identifiable in ext. trade stats (otherwise contained in X1)	- 3 448
61	GebrE	+	Imports of used equipment, where separately identifiable in ext. trade stats (otherwise contained in M1)	233
62	GebrPriv	-	Net sales of used mach.+ equip. by investors to German non-investors	- 4 661
63	Schrott	-	Scrapping of mach. + equip. not fully written off	-863
64	GebrLeas	-	Sales of used, leased cars to households (delayed/advanced counterentry to PrivLeas)	- 2 046
65	SoGebr	+-	Other withdrawals from used mach. + equipm't (currently not assigned)	0
66	AbsGebr	+-	Balancing with used mach. + equipm't (incl. rounded figures)	-5
67	SMGebr		Total net sales of used mach. + equipm't	- 10 790
68	Ausr		GFCF in machinery and equipment as a subaggregate of GDP	176 660

- *Machinery and equipment for producers' own final use (serial no. 7)*

Own-account fixed-capital formation, including an imputed profit margin, is assessed for the manufacturing sector in the framework of the GDP production approach from the recorded results of the annual company and cost-structure surveys. In the domain of manufacturing, these statistical sources shed no light on the division between investments for producers' own use in machinery and equipment and investments in construction. This distinction is actually made in the framework of the valuation of GFCF in construction. For the construction industry separate data are available on machinery and equipment produced by building firms for their own final use. Further indications are provided by the business reports of the German railway and telecommunications companies, Deutsche Bahn and Deutsche Telekom. According to the official fiscal statistics, it is estimated that 10% of government expenditure on own-account fixed capital formation is devoted to investments in machinery and equipment, the remainder being allocated to construction projects.

The CF measurement method with its concentration on products, on the other hand, is initially less suitable for the valuation of the own-account production of machinery and equipment. This calculation is instead based to a greater extent on the results of the production approach and the investor accounting classified into industries. So that the formal requirement for a full breakdown of investments in machinery and equipment into product groups can be fulfilled, the data from the aforementioned sources are recoded from an industry-based to a product-based format by means of estimates and with the aid of GFCF cross-classification matrices.

For parts of the manufacturing sector, it may be noted that, under the classification system for output statistics, the P1 output classification should, in principle, already contain machinery and equipment manufactured by producers of capital goods for their own final use. However, because of imputed undercoverage, particularly in the case of own-account fixed-capital formation in the form of machinery and equipment which does not belong to the range of products normally marketed by the manufacturer, no deductions are made from the results of investor accounting.

- *Capital-formation services, provided by manufacturers of capital goods (serial no. 8)*
- *Changes in inventories of capital-goods manufacturers (serial no. 9)*
- *Capital-formation services, provided by manufacturers not producing capital goods (serial no. 43)*

The need for the first two additional accounting items is immediately apparent from the discussion of the statistical and conceptual differences between output and turnover (see point 5.10.3.2.g). The choice of output as the basis of the CF account requires the addition of capital-formation services and services incidental thereto, the value of which, although included in the turnover of the capital-goods manufacturers, is absent from production reporting. The output stock changes of these enterprises also have to be taken into account. An increase in stocks reduces the commodity flow, while a depletion of stocks accelerates the flow. Capital-goods services are also provided by service companies - in other words, by areas of activity outside the main focus of capital goods. A quantitative estimation of all three additional accounting items is made by reference to the monthly turnover statistics in the capital-goods manufacturing sector (WZ 28-36) and the corresponding key figures of the quarterly output statistics (GP 28-36). From the viewpoint of the WZ and GP activity definitions, these statistics are immediately suited to the quantification of the first two additional items listed (serial nos. 8, 9). Although this does not actually apply to the third item (serial no. 43), the same statistics are also used in its valuation,

since there are no up-to-date statistics on the salient service sectors for periods of less than 12 months.

Figure 5—2 (see point 5.10.3.2.g) can be referred to in order to illustrate the actual assessment of the three additional items. The value of changes in output stocks (serial no. 9) held by capital-goods manufacturers is derived directly from the difference between the original output/turnover ratio and the seasonally adjusted output/turnover series; this is done by applying the difference in ratio to the original figure for turnover and deflating it to investment level with the help of the average capital-formation ratio. This approach automatically reduces the effects of the stock item on the annual totals. However, a very typical quarterly seasonal characteristic results which is frequently overlaid by considerable irregular peaks. The latter occasionally require manual intervention to bring about internal commodity-flow plausibility among the results of capital formation in machinery and equipment. Such internal modifications normally should not affect the annual figures. The two capital-formation service items are estimated by first deriving a unit of measurement from seasonally-adjusted turnover and output figures which ultimately equals the difference, adjusted to allow for inventories and irregular components, between the figures for turnover and output. In Figure 5—2 this would be represented by the difference between the adjusted P/T ratio from the value 100. As in the calculation of inventories, this unit of measurement is transformed to the national accounting definitions of equipment and machinery using capital-formation ratios. The final amount of imputed services results by adding estimated percentages for the actual capital-formation portion of the P/T difference to this unit of measurement. In 2000, 26% is assumed for the capital-formation services of manufacturers of capital goods (serial no. 8) and 15% for those arising outside the capital-goods producing sector (serial no. 43). The calculation of both these percentages is based on information from the study by the Federal Statistical Office already mentioned in point 5.10.3.2.g): *Produktbegleitende Dienstleistungen 2002 bei Unternehmen des Verarbeitenden Gewerbes und des Dienstleistungssektors*.

- *Other exports and imports as per external-trade statistics (serial nos. 16 and 30)*
- *Additional CF estimates for intra-Community trade, temporary (serial nos. 18 and 32)*

The CF-accounting concept of other exports and imports covers reports, estimates and additions that are bracketed together in chapter 99 (code numbers 99xxxxxx) of the German external-trade statistics. Not all are listed in the published WA. Among the official WA items which are regarded in the context of CF accounting as being relevant to fixed-capital formation are, for example, sets of parts for vehicle assembly, ranges of spare parts and aircraft parts. When such products are exported, it is assumed that an equivalent output value has been included in the accounts, which means that the corresponding (low) capital-formation ratio from the output side must be applied to the export figures if overcoverage of investments in machinery and equipment is to be avoided. Conversely, imported products of this type must be recorded as parts with correspondingly low ratios. Among the non-published items in the WA classification that are included in the CF account are the following entries, which are formulated in somewhat unspecific terms: 'Federal Government goods and services' (mostly imports), 'incompletely reported commodities' (mostly exports), 'missing responses on intra-Community trade' (exports and imports) and 'exemptions in external-trade statistics' (exports and imports). The last-named item covers estimates added to the external-trade statistics to plug information gaps caused by the existence of minimum volumes below which transactions need not be reported. The item 'missing responses on intra-Community trade' is a summary balancing figure, representing the difference between

the value of reported external-trade transactions and the value of transactions that should have been reported, according to tax returns. No product specification exists for all these figures which is less aggregated. In CF accounting, compilers circumvent the problem by breaking down the estimated capital-formation element of these values into the code structure of Categorisation Group 2 and inserting backward-projected average ratios for the various product categories into the CF account. This approach guarantees the continuity of product classification that is required for publication purposes.

As well as this, as part of the commodity-flow account for capital formation in machinery and equipment, other allowances were temporarily added to exports and, more noticeably, to imports, starting in 1993 and finally tapering out by 1996. This was necessary because simple analyses of time series in the intra-Community statistics that were still being consolidated revealed undercoverage. There was no hard and fast statistical basis for these estimated adjustments to the balance of trade in capital machinery and equipment, but plausible arguments were presented in the comparative EU study, while others were advanced by various business associations, which were able to substantiate their arguments with the results of internal surveys.

- *Trade and transport costs relating to f.o.b. exports (serial no. 17)*

In the balance of output less exports (P-X), output figures at ex-works prices are reduced by the value of exports, which, in accordance with the free-on-board (f.o.b.) principle, may normally include the cost of freight and insurance up to the point of entry into the country of destination as well as trade margins, provided that a selling agent is involved – which, in the case of exported capital machinery and equipment, is presumed to be less common than direct sales. In order to adjust for these elements of export values, an automatic deduction is made at the breakdown level of Categorisation Group 2; in 2000, this deduction amounted to an average of 4 % of the value of exports.

- *Customs revenue from extra-Community imports (serial no. 31)*

The c.i.f. (cost, insurance and freight) value of special-trade imports on entry into the EU does not include customs revenue, although this has to be included in the system of national accounting. Until 1993 the external-trade statistics provided information on customs revenue for the entire breakdown of WA commodity categories. Since then, customs revenue has been extrapolated at the level of Categorisation Group 2 on the basis of the last available structural breakdown. Documentation from the fiscal statistics can be used to verify the estimated revenue levels.

- *Adjustment of export figures to isolate the value of new machinery and equipment (serial no. 21)*

This adjustment item should be seen in the context of the efforts of those who compile the CF accounts to obtain, along with the total value of investments in equipment and machinery (serial no. 68), the sharpest possible definition and breakdown into product categories of *new* equipment and machinery (serial no. 59). In order to ensure that new machinery and equipment is properly demarcated, only exports of new products may initially be deducted from the total value of newly manufactured machinery and equipment. This can be achieved for all products for which the WA classification has separate code numbers for used items. To this extent, the way in which the basic valuations are conducted guarantees that item A1 (serial no. 15) contains no used products. These are not deducted until we reach the item 'exports of used machinery and equip-

ment' (serial no. 60). Only in isolated cases, however, does the WA commodity classification have separate code numbers for exports of used products, one example being used passenger cars. Other significant exports of used products, such as ships and aircraft, cannot be eliminated from the baseline material in item A1. The external-trade statistics, however, include a separate estimate for used ships, which is incorporated as part of the adjustment described in the present paragraph (serial no. 21).¹

d) Other additions and demarcation

All the additional items that have been explained up to this point are clearly definable as output, exports or imports of capital goods. The same does not apply to the following elements of the CF account. This is therefore the juncture at which the whole equation $P2-X2+M2$ is put together, producing a balance which is, in several respects, the first subtotal in the calculation of fixed-capital formation. At this level, for example, it is possible to discern approximate product structures for new machinery and equipment as well as price trends. Further additions specified at the new level follow below:

- Private use of motor vehicles (serial no. 44)

In our accounting system, the private use of motor vehicles purchased by businesses is assumed to relate solely to passenger cars. Commercial vehicles are therefore eliminated from the following considerations from the outset. The estimated private use of the new passenger cars that were registered by businesses in 2000 is broken down by industry as follows:

Private use of company cars, 1995

Industry (WZ divisions)	2000 % of total
Agriculture, hunting and forestry; fishing (A,B).....	15
Mining and quarrying, manufacturing, electricity, gas and water supply, construction (C,D,E,F)	15
Wholesale trade and commission trade, except of motor vehicles and motorcycles (51)	15
Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods (52)	20
Sale, maintenance and repair of motor vehicles and motorcycles; retail sale of automotive fuel (50)	85
Hotels and restaurants (H).....	25
Transport, storage and communication (I)	10
Financial intermediation (J).....	10
Real estate activities (70)	20
Renting of machinery and equipment without operator and of personal and household goods (71)	12
Other activities (L,M,N,O)	0-20

As was mentioned above, the primary source for statistics on passenger cars, which, in accordance with the standard European M1 definition, includes all saloon and estate cars with up to nine seats, is provided by the registration statistics from the Federal Motor Transport Authority (*Kraftfahrt-Bundesamt*)². These statistics record registrations of new cars, classifying them by the

¹ See also the explanations on serial no. 60 in point 5.12.3.3.g).

² The registration statistics from the Federal Motor Transport Authority serve as a database for the purposes of CF accounting as well as for the aforementioned special assessment for passenger cars (see point 5.12.3.3.e). In the

groups of vehicle owners, i.e. essentially on a user basis. This, however, disregards the fact that many commercial keepers of vehicles, in almost every industry, use the vehicles to a greater or lesser extent for private purposes. In fiscal legislation, this results in corresponding deductions from depreciation allowances for wear and tear and reduced rates of input-tax relief for the routine maintenance of commercially used vehicles. From the definition of gross fixed-capital formation set forth in paragraph 3.102 of ESA 1995, it may be concluded that the percentage of capital machinery and equipment which is not used in production processes must be reallocated to take account of private use. No recommendations have been made, however, regarding the amount or the assessment basis of such deductions and additions. The estimates in the national accounts of Germany, differentiated by industry, are based on assumptions regarding the percentage of private use of the relevant motor vehicles, combined with the principles governing the granting of tax allowances for business use.

The figure of 85% for motor-vehicle retailing requires special explanation. Of all new cars registered by investors in 2000, it is estimated that about one third, with a total monetary value of some EUR 12.5 bn, were registered by the motor trade. These are mainly demonstration models which are the subject of sales-promotion measures, and are registered for a very short time by vehicle dealers in their own name to be sold thereafter to households at an average discount of about 10%. In the German national accounts, a percentage of the value of the demonstration models is added direct to household final consumption expenditure. This is done for two reasons: firstly, irrespective of their brief initial registration as retailers' vehicles, they are used to a considerable extent for private purposes from the very outset; secondly, if they were assigned for the interim period to the retail-trade category, vehicles would thereby account for an implausibly high percentage of new machinery and equipment (items *Neue1* or *Neue2*, serial no. 53 or 55) in analytical terms, and their inevitable resale would then result in an equally implausible volume of net sales to households of used machinery and equipment (serial no. 62). Our method therefore ignores demonstration vehicles in their role as a transitory item in the domain of retail trade. This may, in certain circumstances, blur the dividing line between fixed-capital formation and household final consumption in contiguous periods, distorting the true picture by the amount of the balance between vehicle retailers' income and expenditure, but this is a price we are prepared to pay. Our approach does not affect the total volume of gross national income.¹

- *Reallocation of the leasing of passenger cars to households (serial no. 46)*
- *Reallocation of the leasing of used passenger cars (serial no. 64)*

Extensive analyses and discussions, some of them with specialists from the car trade, made us aware in the course of the ESA 1995 revision that the normal terms and conditions of car-leasing contracts in Germany do not match the definition of financial leasing as laid down in ESA 1995; on the contrary, these terms and conditions amount, without exception, to operating leasing. This has implications for the division of car sales between household final consumption and fixed-capital formation. The values of cars sold for household consumption and for capital formation are determined by means of an analysis of the number of new vehicles recorded in the regis-

case of CF accounting, however, the numbers of registered new cars are merely used to obtain capital-formation ratios, but there are no other deviations from the CF method of estimating output, exports and imports.

¹ The vehicles registered as demonstration models are not to be confused with the dealers' stocks of new vehicles, which have not been registered yet. If the value of the latter vehicles were to be recorded on a quarterly basis, it would be a matter of drawing a line between the GNI aggregate for fixed-capital formation and changes in inventory values.

tration statistics of the Federal Office for Motor Traffic. Since these statistics are compiled on a user basis, all passenger cars that are privately purchased by means of longer-term operating leasing are assigned to 'employees and persons not gainfully employed'. Under the owner-based approach, which is a primary requirement of ESA 1995, the value of these vehicles is reallocated to the lessors.

The CF calculations for fixed-capital formation and for household consumption are based initially on the actual figures as set forth in the register of the Federal Motor Transport Authority; once these data have been recorded, reallocations are made. Two reallocations - one from household consumption to fixed-capital formation and one from the latter to the former – are required. Neither of them affects the total volume of GNI, but they do pull the two relevant GDP aggregates in opposite directions, each increasing one aggregate at the expense of the other. These reallocated items are:

1. Sales of new vehicles, broken down into the keeper categories defined by the Federal Motor Transport Authority
2. Transfers of used vehicles, as entered in the re-registration records of the Federal Office.

Re Item 1:

In the calculation of both aggregates, i.e. household final consumption expenditure and gross fixed-capital formation, the registration data from the Federal Office are initially analysed on a user basis. The necessary adjustments are then made by applying the above ratios in order to convert the data to an ownership basis. Comprehensive information about the volume of leasing within the economy as a whole, roughly divided into product and industry categories (lessees), is regularly collected by the ifo Institute for Economic Research. The ifo figures provide the basis for a sufficiently accurate estimate of the volume of private car leasing for the purpose of reallocating values within the national accounts while not affecting the GNI figures. The ifo Institute publishes its yearly findings on leasing transactions in Germany and information on its collection methods in its magazine *ifo-Schnelldienst* and other publications.

Re Item 2:

In order to make the proper division between household consumption and fixed-capital formation in connection with used-car sales, we begin, as in our treatment of new cars, with the number of vehicles on the register of the Federal Office for Motor Traffic, in this case the number of vehicles re-registered on change of ownership (see serial no. 62). Just as new cars are registered on a user basis, i.e. under keeper categories, the same applies to re-registered cars. Let us take the case of a car that has hitherto been leased to a private individual and is now sold as a used car. When this vehicle was first purchased, the value of the new vehicle would be reallocated in the national accounts from household consumption (the purpose for which the registered keeper has taken the vehicle on lease) to fixed-capital formation (the purpose for which the owner and lessor has bought the vehicle). The sale of this used car would now be registered by the Federal Office for Motor Traffic as a transaction between two private individuals. In the national accounts, however, it must be treated as a sale made by an investor to a household. In making these 'reverse entries', we proceed from the following highly realistic assumptions:

- Vehicles leased by investors to households are not sold to other investors on expiry of the lease but are either purchased outright by the lessees themselves or sold by the lessors to other households or to purchasers in other countries.
- The average term of a private lease is two and a half years.
- Privately leased passenger cars are roughly comparable with new cars in terms of their distribution by cubic-capacity class and price bracket.

The minimal grey areas between household consumption and fixed-capital formation which result from exceptions to these simplifying conditions but do not affect the value of GNP can safely be disregarded.

The percentage of new cars leased to households, which can be obtained from the information published by the ifo Institute, may be directly multiplied, on the basis of the assumptions described above, by the number of new cars that were registered two and a half years before the reference period. The result of this calculation is the estimated number of private leases that are due to expire during the reference period; this number is then multiplied by a figure representing the average residual value of the leased vehicles. To find the residual value, professional assessors (ADAC, Schwacke, etc.) are brought in.

These reallocations do not affect the full recording of used-car exports (part of serial no. 60), irrespective of whether the cars were previously in the hands of private or commercial keepers. Another more complex issue would be the treatment of cross-border leasing transactions in the car trade. Such transactions have hitherto been disregarded in CF accounting for want of factual information, but two slots have already been assigned to them in the accounting framework (serial nos. 20 and 34).

In 2000, a total of EUR 3.6 bn was reallocated from household consumption to fixed-capital formation in respect of transactions relating to new cars, while the reallocations from fixed-capital formation to household consumption in respect of used cars amounted to EUR 2.0 bn. The net result was an increase of EUR 1.6 bn in the recorded value of gross fixed-capital formation.

As was mentioned above, investments in passenger cars are effectively assessed by means of two methods which are, by and large, mutually independent (CF accounting for output, export and import figures, and the official register for the number of vehicles). These reallocations resulting from the German leasing rules apply equally to both methods, the reconciliation item arising due to the two methods (serial no. 54) remaining unaffected.

- *Trade margins (serial no. 49)*
- *Transport margins (serial no. 50)*

Trade and transport margins can be hypothetically split into several flow elements. For example, a distinction may be made between transport from producer to wholesaler, from wholesaler to retailer and from producer direct to investor, while trade margins may be wholesalers' or retailers' margins. Such a breakdown, which would be part of a comprehensive commodity flow as depicted in Overview 5—6 above, cannot be undertaken with the statistics that are currently available. So that the potentially wide grey area can be taken into account in the estimated margins, all submargins added on the way from the producer to the investor, via traders where appropriate, are lumped together into a single transport margin and a single trade margin. These esti-

mates are made at the Categorisation Group 2 level. As a basis for these estimates, we can use the figures from the censuses of commercial and catering establishments which are conducted at irregular intervals and the statistics on wholesale and retail trade, in particular the surveys that are conducted every few years on the composition of product ranges and on the distribution of turnover by purchaser category. These and other recorded data are used in the annual input-output framework and in special enquiries that are conducted at longer, irregular intervals with a view to obtaining, firstly, an indication of the extent to which traders intervene in the commodity flow from producer to investor and, secondly, an indication of the actual size of the transport and trade margins. The margins entered in the CF accounts are a combination of the two sets of information. The last major special enquiries affecting the estimation of trade and transport margins were conducted with a view to compiling a market-integration chart in the input-output framework¹. Unless time series can be reliably constructed on the basis of findings recorded in the input-output compilation, annual figures for the intervening years between the reference years covered by special enquiries are obtained by interpolation, using a breakdown into two-digit GP product codes. Data for the period since the reference year of the most recent special enquiry are extrapolated, but a trend is only inferred if it is adequately substantiated by past developments. As a rule, the last measured indicator is held constant until new findings become available. In general terms, the input-output framework, which covers the entire commodity flow, serves as a means of checking the estimated trade and transport margins in the CF accounts.

- *Non-deductible taxes on products (serial no. 51)*

Like the value of machinery and equipment intended for the producer's own final use, the value of non-deductible taxes on products can only be ascertained, in principle, by means of assessments undertaken from the investors' side and not through CF accounting, since differentiation by turnover levels and by eligibility or non-eligibility for input-tax deduction is only possible on an industry-by-industry basis. According to the enquiries conducted in the framework of investor accounting, businesses in the realms of communication (until 1995), financial intermediation and insurance, real estate and housing services, as well as some of the service industries (NACE 73 to 92), are essentially ineligible for deduction of input tax. This ineligibility, however, is not absolute, because the applicable VAT provisions do allow for some exemptions. In the realm of other services, only a small number of activities are liable for VAT. The amounts of tax derived from investor accounting, broken down into investing industries, are recoded to the product classifications of Categorisation Group 2 with the help of GFCF cross-classification matrices.

e) The special assessment for passenger cars and its integration into the CF account

In the GDP expenditure approach, household consumption and fixed-capital formation in respect of passenger cars were calculated by separate methods until the last-but-one revision in 2000. The registration data from the Federal Motor Transport Authority were used for this in two different ways. Household final consumption expenditure on car purchases was assessed directly from the number of vehicles shown in the registration statistics for employees and persons not gainfully employed; the same method is still applied. In the framework of the commodity-flow (CF) account for investments in machinery and equipment, on the other hand, the number of vehicles registered by the Federal Motor Transport Authority was only used to ascertain the capital-formation ratios, but in all other respects there was no departure from the customary indirect CF approach, via the income side (analysis of output, export and import values). Both methods have

¹ Cf. Vol. 8 in the Federal Statistical Office's publication series *Ausgewählte Arbeitsunterlagen zur Bundesstatistik*.

strengths and weaknesses. The direct method has the decided advantage that the point of measurement occurs when the vehicle is in the hands of the user, which means that fewer additional estimates (changes in inventories, trade and transport margins, etc.) are required. On the other hand, the direct method of measurement poses problems when it comes to turning the number of vehicles into a monetary value and bridging the 'quality gap' with the aid of upward adjustments to the extrapolation factors which are derived from the price statistics and which are adjusted to allow for quality differences. The lack of a uniform approach to household final consumption expenditure and fixed-capital formation was a weak point as far as the inherent consistency of the expenditure approach was concerned and made it necessary to carry out special consistency checks.

As part of mentioned ESA 1995 revision in 2000, the direct valuation method based on the number of registered cars was adopted as the primary method for the assessment of fixed-capital formation as well. The definition of a car is based on the standardised European M1 category of the Federal Motor Transport Authority which states that it is a passenger vehicle with at least four wheels and no more than nine seats. To convert the number of vehicles into a monetary value, compilers can avail themselves of the tried and tested method for calculating household final consumption expenditure on car purchases, whereby cars are divided into categories on the basis of the cubic capacity of their engines. All special assessments and reallocations in the domain of investments in passenger cars, such as allowances for the private use of company cars and the leasing of new cars by households and the counteradjustment for the subsequent sale of leased vehicles as used cars (see point 5.10.3.3.d) are fully integrated into the new valuation procedure.

However, in order to avoid losing the inherent consistency and exhaustiveness of the CF account and to check the direct valuations, the previous CF measurement method has been preserved as a back-up for the car account. The latter method produces a divergent result, which plays no more than the role of a cross-check for plausibility. Because of the completely different approaches to this measurement, the difference between the two results cannot be specified in detail and can only be shown as a reconciliation item.

- *Reconciliation of the CF account with the special assessment for passenger cars (serial no. 54)*

The following explanations can best be understood with the aid of Overview 5—6. From the CF perspective, the existing CF method of assessing the value of car purchases remains as ever a fully integrated part of the calculation process. In particular, this means that the private-use ratios for each industry, based on the number of cars registered by the Federal Motor Transport Authority in each cubic-capacity bracket, continue to be fed into the CF accounting process at the first stage, the baseline level. Until the CF item Neue1 (= new machinery and equipment prior to reconciliation with the data on car registrations - serial no. 53) is entered, the old CF procedure therefore remains in place for all items in the CF account.

The introduction of the reconciliation item (serial no. 54) effects the transition to the new valuation procedure. The reconciliation item reveals the difference between the results of the two valuation processes. Compared with the average for the years 1991 to 2004, the figure for August 2005 shows a slight decrease of EUR 220 m per year, although it must be said that the range of dispersion in the individual years is considerable. In 2000, the alternative CF figure was

around EUR 440 m higher than the figure obtained from the assessment procedure which brought the machinery and equipment result, so it was necessary for a downward correction of this figure.

In the entire area of commercial vehicles, which have virtually no impact on household final consumption expenditure but account for a great deal of fixed-capital formation, the CF alone determines the result. This is where a continuously updated monetary (euro) valuation of the registration figures remains a statistical 'pipe dream' on account of the frequent and dramatic technological advances that occur in this field and in view of the diversity within the vehicle categories defined by the Federal Motor Transport Authority.

f) Acquisitions less disposals of used machinery and equipment

The additional accounting items that have been described so far lead us from the baseline values of output, exports and imports to the CF value *Neue3* (= new investments in machinery and equipment after reconciliations and adjustments – serial no. 59). In order to determine the aggregate investments in machinery and equipment for the GDP expenditure approach, the balance of purchases less sales of used machinery and equipment must be added to the value of investments in new machinery and equipment. In Germany, investors have always sold more used capital goods than they have purchased. This not only applies to the cumulative picture but is even true of each individual item of used capital goods referred to below for which an import/export balance is drawn up. So acquisitions less disposals of used machinery and equipment are invariably negative entries, whereas the counterentry shows a positive balance for the purchasers of these goods. For this reason we shall refer hereinafter to net sales, which means that we can use positive figures. In macroeconomic terms, the main purchasers of used machinery and equipment are the rest of the world, in which case the counterentry is made under the heading of exports, and households, in which case the purchases are counterbooked as household final consumption expenditure. For the sake of convenience, although it is not entirely consistent with the system as a whole, scrapped machinery and equipment are included under the general heading of net sales. As well as the rest of the world, which might buy used capital goods direct or through a retailer, final purchasers of used machinery and equipment may be enterprises, in which case the counterentry is made under the heading of intermediate consumption. Where used fixed capital is sold to other investors within the same clearly defined accounting area, however, the value of the acquisition and that of the disposal cancel each other out. The balance is therefore zero, and such transactions may be disregarded in the national accounts. There is not sufficient statistical evidence in Germany at the present time to sustain an industry-by-industry analysis of the transfer of used products within the national economy. This would be the prerequisite for a breakdown of the aggregate value of investments in machinery and equipment by investing industry. For want of the necessary statistical data, the breakdown by industry in investor accounting is based on new machinery and equipment alone (*Neue3*).

- *Exports of used machinery and equipment (serial no. 60)*
- *Imports of used machinery and equipment (serial no. 61)*

Used motor vehicles and used ships are a particularly significant factor in these items. The external-trade statistics explicitly indicate the used vehicles imported and exported, but exports of used ships are not recognisable as such unless the ships are sold to be broken up in a foreign yard. For this reason, an estimate is made in the external-trade statistics for purposes of national accounting; this estimate involves checking all individual ship registrations and identifying used ships on the basis of their significantly lower average values. The baseline export figures were previously adjusted by these values (see point 5.10.3.3.c, serial no. 21) in order to avoid implicit duplication of the adjustment.

It should be noted that exports and imports of used machinery and equipment cannot be fully substantiated at the present time. That would require a separate external-trade code for each and every category of used product. Significant undercoverage probably occurs in the case of aircraft, for example, when German airlines modernise their fleets. Such undercoverage, however, does not influence the total value of investments in machinery and equipment, the figure used in the calculation of GDP, but it does affect the borderline between new and used machinery and equipment, which is not consistently sharp. Let us explain this by reference to the case of an exported second-hand aircraft. If the corresponding countervalue could be correctly eliminated from the value of exports, the balance of $P-X+M$ would still include the value of all new products, and rightly so. In other words, the value of the exported second-hand aircraft would not yet have been deducted from the sum of $P+M$. The value of new machinery and equipment, the net sales of used machinery and equipment and the aggregate amount of capital formation in machinery and equipment would be properly demarcated. If, on the other hand, the value of the aircraft could not be eliminated from the export statistics, the value of $P-X+M$, and hence the value of new machinery and equipment, would be understated, but the adjustment for used products that is deductible from net sales would also be understated by the same amount. The aggregate value of investments in machinery and equipment would therefore be unaltered. The countervalue of the aircraft, in other words, would essentially have been eliminated from the aggregate value at the wrong point in the accounting process, earlier than it ought to have been.

- *Net sales of used machinery and equipment to households (serial no. 62)*

At the present time, only the sales value of used cars is recorded in this entry. Other groups of used products that might be sold to households are unlikely to account for a significant volume of fixed capital in any industry. The net sales of used cars are obtained from the number of re-registrations on change of ownership which is indicated in the quarterly registration figures issued by the Federal Motor Transport Authority. These statistics show details both of purchases by investing industries from households and of purchases by households from investing industries, which predominate as a rule. For convenience, the numbers of vehicles from the registration statistics are broken down into cubic-capacity classes on the basis of the new registration structure, and the number in each class is multiplied by the estimated average price for used cars in the relevant class. The estimation of the average used-car price for each class is based on the average price of a new car in the same c.c. class, which is obtained during the valuation of household final consumption expenditure. The prices of new cars are reduced to used-car prices by means of percentage deductions. The percentages are estimated on the basis of a wide diversity of documentation. This includes the results of studies by motoring organisations and price lists produced by the car trade.

- *Scrapping of machinery and equipment (serial no. 63)*

The estimation of the value of scrapped machinery and equipment is based on statistical data from the iron and steel industry on scrap metal delivered to blast furnaces, steel works and ferrous-metal foundries; these data cover scrap supplied by traders. In 2000, for example, it is imputed that about one third of the total volume of scrap came from machinery and equipment and that the remainder came from other domestic sources and from imports. The available data show the volume of scrap in metric tons, and this quantity is multiplied by the average price per metric ton. This price is obtained by extrapolation from the euro price for the base year as indicated in the price statistics; an appropriate price index from the statistics on basic prices is used for the extrapolation.

5.10.4 Cultivated assets

The net increase in the value of cultivated assets is assessed by the Federal Ministry of Food, Agriculture and Consumer Protection in the framework of the national agricultural and forestry accounts and the Ministry's figures are incorporated into the national accounting statistics by the Federal Statistical Office.

The valuation of **growing crops** is made for the following four types of cultivation with the aid of acreage data and the relevant cost rates:

- asparagus fields,
- hop fields,
- vineyards
- orchards and fruit farms.

The total figure comes to EUR 45 m for the year 2000.

Animals are regarded as **cultivated assets** if they have been used for more than one year as breeding animals or productive livestock. Animals intended for breeding or productive use at a later date (e.g. dairy cattle) which are not yet of breeding age and animals removed from breeding herds or flocks (e.g. beef cattle) are recorded as inventory stocks.

The results of the livestock censuses are used to assess changes in inventories. The changes are measured by comparing the number of livestock at the respective census dates and imputing average live weights for the various stock categories. The changes in inventories of capital livestock assets between the various census dates are then adjusted by the volume of imported livestock, since the final figure also includes animals imported in the course of the year. The net changes in livestock inventories are multiplied by the average prices for slaughter animals. Changes in stock inventories are valued at the average price for slaughter stock. Current prices are obtained from the weekly information bulletins from the livestock and meat trade and weighted average prices are obtained by reference to the slaughter volume for each livestock category. The values of imports and exports, which are used to adjust the amount of own-account fixed-capital formation and to assess the value of sales to the rest of the world, are initially obtained from the external-trade statistics. A trade margin of 10% is added to the total value of imports and deducted from the total value of exports.

The changes in livestock inventories for 2000 amounted to a net reduction of EUR 178 m.

Accordingly, the following are the investments in cultivated assets in 2000 (EUR m):

Crops.....	45
Livestock	– 178
Cultivated assets	– 133
Cultivated assets, published figure, rounded.....	– 130

5.11 Aquisitions less disposals of intangible fixed assets

Under the ESA 1995 rules, intangible assets may be classed as fixed-capital formation if they meet the general criteria for capital goods (use in production processes for more than one year and value above the ceiling for classification as inexpensive products) and are themselves the result of a production process. ESA 1995 refers explicitly to computer software, entertainment, literary or artistic originals and mineral exploration as produced intangible fixed assets. On the other hand, acquisitions of intangible non-produced assets, such as patented entities, leases or other transferable contracts and purchased goodwill, are not counted as fixed-capital formation. The following table shows the breakdown of intangible fixed-capital formation:

	2000 EUR m
Mineral exploration	30
Computer software.....	18 100
Entertainment, literary or artistic originals	4 690
Intangible fixed assets (total)	22 820

The calculation methods and source statistics are described in the following subsections.

5.11.1 Mineral exploration

Exploratory drilling takes place in the course of prospecting for deposits of petroleum, natural gas and other mineral resources, whereas commercial drilling serves to exploit the resources that have been discovered. Commercial drilling was already included in investments in construction before the adoption of ESA 1995. Exploratory drilling, on the other hand, was not classed as an investment until the introduction of ESA 1995.

The value of mineral exploration as a fixed asset is not only the cost of the drilling itself but also the ancillary costs, such as expenditure on aerial photographs and surveying. Two sources are used to determine the value of mineral exploration:

Exploration designed to identify oil and gas deposits is chiefly conducted by enterprises in activity subclass 11.20.0 – Service activities incidental to oil and gas extraction, excluding surveying. The value of mineral exploration is assessed with the aid of turnover figures for this area of activity from the monthly manufacturing reports. The annual report on drilling activities in Germany that is published by the Regional Soil Research Office of Lower Saxony (*Landesamt für Bodenfor-schung*) provides the basis for a percentage-wise division into exploratory and commercial drilling (the latter being investments in construction). With these percentages, which are applied to

the domestic turnover indicated in the monthly report, the value of exploratory drilling is then assessed. According to historical data from a major supplier of natural gas, expenditure on surveying and aerial photogrammetry and other prospection costs account for about 30% of expenditure on mineral exploration. For this reason a 30% allowance is added to the cost of exploratory drilling to cover these ancillary services.

Mineral exploration is also undertaken by businesses in class 45.12 of the classification of economic activities ('test drilling and boring'), which includes drilling for construction purposes as well as for geophysical, geological and similar purposes. Consequently, the annual output for this economic activity class as derived from the survey of construction companies is divided, on the basis of an estimate, between investments in construction and intangible assets (mineral exploration), and each is recorded separately.

On this basis, the value of mineral exploration in 2000 was assessed at EUR 30 m.

5.11.2 Computer software and databases

5.11.2.1 Concepts, demarcation and categorisation

The term 'software' will be used hereinafter as a synonym for the concept of 'computer software' which is used in ESA 1995, although the former term is sometimes used in a far wider sense in other contexts. Both terms include databases. Drawing a demarcation line between individual types of software and databases and between these fixed assets and other, non-capital intangibles based on special know-how is not without its problems. It also appears to be difficult, in the context of the practical implementation of ESA 1995, to arrive at realistic and feasible definitions and conventions on the basis of which a compromise can be found between an exhaustive concept of fixed assets and an EU-wide harmonised concept. With this aim in mind, a Eurostat task force examining the wider picture of intangible fixed assets for the first time in 1997 also dealt with the treatment of computer software and large databases in the German national accounts. However, no definition was found to express an EU-wide harmonised software concept, and so in 2002 two task forces were set up at Eurostat and the OECD in order to measure software. Their conclusions and recommendations in the final report¹ on 'Software Measurement' can be classified within the slightly differently categorised demarcation lines described here. The Federal Statistical Office ahead of this conducted a study into methodology initiated by Eurostat on the same set of issues.

¹ 'Report of the Eurostat Task Force Software Measurement', Eurostat document B1/CPNB/313, June 2002

Overview 5—7: Software as part of intangible fixed capital formation

Software type	Treated as		
	Machinery and equipment	Intangible assets	Non-capital intangibles
Purchased software			
Software procured together with computer hardware.....	X		
Software integrated into machinery and equipment.....	X		
Software purchased separately		X	
Change of ownership of software rights.....			X
Own-account software			
Developments for own internal purposes		X	
Developments for marketing (excluding software publishers)			
Software integrated into industrial products			X
Service software for product support.....		X	
Own developments by service providers		X	
Developments by software publishers:			
Durable standard-software originals		X	
Permanent development of company-specific software			X
Basic research in the field of software			X
Data material belonging to databases			
Data purchases which can be recorded on a balance sheet ...		X	
Data produced on companies' own account for marketing:			
Initial establishment of marketed data.....		X	
Care and maintenance of marketed data			X
Data for own internal purposes			X

Overview 5—7 shows a rough classification of software and databases on which it is possible to base a discussion of theoretical conceptual national-accounting categories. This breakdown is a slightly consolidated version of the one that was used in the aforementioned methodological study conducted by the Federal Statistical Office. It should be pointed out that it is presumably impossible to find the necessary statistical material for all of these theoretical categories. It may, however, prove helpful when estimates have to be made and could serve as a basis for questionnaires.

The various items in Overview 5—7 are described in somewhat greater detail in the following points.

a) Purchased software

In the national accounts, purchased software includes the value of those transactions which, though concluded as licensing agreements in the strict sense of the law, are actually effected like normal purchases in the sense that the customer pays the full amount on procurement and is free to sell the software on to a third party and that the software must be entered in the accounts as the customer's asset. In the case of genuine licensing in the economic sense, on the other hand, in which the licensee pays regular fees over an agreed contractual term, consideration has to be given under the heading of own-account software to valuing the original versions held by software publishers. The general consensus is that firmware associated with particular hardware, operating systems and drivers included in the price of hardware, other 'packaged' software, etc., should not be estimated separately from the recorded computer hardware.

In fact, it is not only in the specific IT markets but increasingly in other areas too, such as mechanical engineering and plant construction, where we see traditional hardware products being equipped with new IT components, which in turn have a substantial software content. Machinery and plant with special fully integrated software packages, which are often not separately priced, as well as the innumerable types of machinery, vehicles and other equipment that are now controlled by embedded software, mostly microprocessor-linked, are still normally recorded under the heading of machinery and equipment. Separation of the hardware from the software element of capital goods is neither statistically possible nor analytically desirable. Software which is separately purchased is included in fixed-capital formation if it meets the normal criteria (above the maximum value for classification as an inexpensive product, used in a production process for more than a year) that apply to tangible fixed assets.

Purchased software has long been divided into **customised** and **standard software**. Both categories are being increasingly supplanted by hybrid forms, many of which fall under the heading of **componentware**. Componentware describes the trend towards customised software solutions in the form of an increasingly multi-layered system of interlocking standard modules. The producers of these modules frequently consider themselves to be the producers of standard software. However, often with the help of intermediate advisers, it is customised software which the purchaser receives. The subdivision between customised and standard software does not affect the conceptual definition of purchased software, but it can influence the discussion concerning the volume and definition of software produced for software publishers' own account.

In connection with the definition of purchased software, we should also refer briefly to the purchase of rights to software products. In most cases, the transferred rights are not simply licences for clearly and precisely defined market products but also involve the entire complex know-how of the producing company that sells the software, know-how which has been amassed in a permanent development process, definable neither in chronological terms nor in terms of function and content and ineligible for inclusion as fixed capital in the national accounts (see point 5.11.2.1.b). Indeed, in such product sales, many software developers become buyers, which means that the transfer assumes the character of a full or partial business takeover, in which the purchase price that is actually paid far outweighs the value of the recorded assets. In national-accounting categories, this amounts to purchased goodwill, i.e. the transfer of intangible non-produced assets. If, on the other hand, there is a transfer of ownership of clearly and precisely definable original standard software, categorised in the national accounts as software produced for software publishers' own account and therefore recordable as fixed assets, a distinction must be drawn between domestic and external transactions. If the transaction takes place between residents, no new asset is created, and so the **level of GDP is unaffected**; since such transactions take place as a rule between software producers, there is no transfer between industries or institutional sectors either, which means that, apart from highly theoretical ownership-transfer costs, these transactions need not be recorded at all in the national accounts. If, however, a foreign (non-resident) buyer or seller is involved, it becomes a matter of a used fixed asset entering or leaving the economic process. In the national accounts, the production approach is not affected, but in the expenditure approach a reallocation should be made between fixed-capital formation and the balance of exports less imports. This reallocation, however, **does not alter the level of GDP** and is not effected in practice because of the obvious statistical measurement and valuation problems it would entail.

b) Own-account software

Software produced by a company **for its own internal use** can occur in all institutional sectors and in all industries. Since German fiscal and commercial law does not define software produced for companies' own account,¹ there is a certain degree of scope for interpretation, which has to be limited by convention.² In addition to the general criteria for capital formation (value greater than the ceiling for inexpensive products, utilisation in a production process for more than a year and relationship to the production process), each of the following positive criteria, quite independently, should support the argument that software produced in-house should be recorded as fixed capital:

- Roughly comparable software in terms of function and performance is actually available for purchase in the market at prices above the ceiling for inexpensive products.
- The volume and complexity of the software are such that a comparable product could quite conceivably be commissioned from a software producer.
- The software produced in-house is a separate and complementary component of an existing hardware and software system which is already included in the company's fixed assets.

In-house software developments in these categories may relate to any internal administrative or production process. It seems likely, however, that they are declining in importance in favour of the purchase of increasingly customisable modular standard products.

There is a marked difference between in-house software solutions and software which is developed by non-software companies to accompany their products or as an embedded component of their products, in other words software produced **for the market**. An increasing volume of man/hours is being devoted to this area of activity in the development divisions of industrial enterprises and especially in particular branches of the service sector. In the previous point concerning purchased software, we referred to the virtual impossibility of separating, in the expenditure approach, the value of integrated industrial software from the value of the hardware product in which it is embedded. At this juncture, however, no decision has yet been taken as to whether such developments give rise on the generation-of-income side to software originals within the meaning of ESA 1995 with potential for future utilisation and marketing. Although one cannot always rule out the possibility that the development of such own-account software might be of relevance in terms of licence rights, this connection should be disregarded, since the development activities in question are more closely akin to research and development (R&D), the value of which, for pragmatic reasons, is not recorded under the heading of produced fixed assets in the revised international systems of national accounting. Software elements cannot be detached from this R&D complex; indeed, R&D is becoming increasingly dominated by software developments.

¹ German law, in fact, explicitly prohibits the capitalisation of intangible assets produced by companies for their own final use.

² This is probably one of the particularly critical points in ESA 1995 in terms of the principle of European GDP harmonisation. As far as we are aware, some European countries require this category of software to be capitalised, while others provide for optional capitalisation. However, even in the latter countries the definitions of content for accounting purposes are unlikely to be uniform.

By contrast, separate service software, such as software systems for the purposes of training, induction and customer care and for maintenance and remote diagnosis in the realm of after-sales service, and software developed by service providers, such as commercial database operators, computer centres and trade directories, should be recorded as software produced for companies' own account, subject to compliance with the positive criteria listed above, but the recorded amount should not exceed the value of the initial investment on the development of the software. The considerable routine expenditure involved in merely keeping such software marketable if the performance specifications remain largely unchanged is not fixed-capital formation.

Software developed by **software publishers** should be dealt with separately within our demarcation structure, although it too is developed for the market. The embedded software referred to above in industrial manufacture has been excluded from the domain of intangible investments, since it is scarcely separable from the rest of the general input into the development of tangible assets. By contrast, ESA 1995 surely has to be interpreted as implying a need to impute the production of notional 'originals' for all standard software marketed as a separate product by software publishers. By analogy with artistic originals, such as an author's manuscript or the master copy of a motion picture, it is imputed that this type of software serves as a longer-term basis of capital stock for the future income of software publishers. This conception surely accords only partly with the reality of modern software production, which, with its rapid sequence of updated versions and highly modularised customisation of standard applications, has to be constantly adapted to rapidly changing market requirements, often so quickly that the latest product range marketed by software publishers scarcely fulfils the durability criterion from the publishers' own perspective. Nevertheless, in the valuation of the activities of software publishers, a division is made into capital-forming durable standard software originals on the one hand and, on the other hand, non-investment activities, such as the rapid and constant development of company-specific software ranges, consultancy, the assembly of customised standard products from existing modular components, etc.

The probably substantial public and private expenditure on **basic research** in many areas of software (e.g. neural networks, artificial intelligence, biogenetic and quantum-mechanical computer-control systems) is not included as fixed-capital formation, either because there is no prospect yet of marketing the results of this research or because accountants do not expect the research investment to yield any directly attributable return.

c) Data material belonging to databases

The term 'databases' is not defined in detail in ESA 1995 and is bracketed together with computer software. This seems warrantable, but a distinction should be made on the basis of the software type to which databases belong. First of all, the technical components of the database structure (database management systems, including peripheral software, problem analysis and establishment of system and data structures, creation of search systems, etc.) should be separated from the actual data material. The technical elements can all be subsumed within the categories of purchased and in-house software discussed above and, by their very nature, will feature automatically in surveys and estimates relating to software. It only remains for us, therefore, to discuss the conceptual approach to the treatment of data material in the narrower sense.

Actual trade in **data material that is identifiable for accounting purposes** is always likely to exceed the maximum value for non-recordable inexpensive products when it is tailored to customers' individual needs. Such purchases are becoming an interesting proposition for a wide range of businesses, for example through the development of data-warehouse systems and data-mining techniques. They can be classified under the heading of purchased software; indeed, because of the way in which their value is estimated, they are implicitly included in the assessed value of software.

In the case of data material compiled by companies for their own account, the same theoretical distinction that applies to own-account software should be made, namely the distinction between in-house data material for internal use and commercial material for marketing. The latter category includes data marketed by commercial database operators. These are primarily the aforementioned service providers, which might also be producers of own-account fixed assets in the form of software. The concept of fixed capital in the form of data material covers only the investment input up to the point at which the data first become marketable plus major expansions of the content of databases for purposes such as the acquisition of entirely new customer categories. Routine maintenance and continuous updating are not included, even if they involve a steady increase in the size of the database. Such continuous expansive updating normally serves only to maintain the marketability of a database without increasing its profitability. On the other hand, without continuous updating, most databases would cease to serve any useful purpose within a short space of time. It can be assumed that the chosen method of valuing software produced in-house implicitly also covers these parts of the databases (see the following sections).

The creation and maintenance of data material for internal organisational, business and administrative purposes (e.g. data files of all descriptions on customers, patients, clients or members, product lists, purchase records, inventories and internal staff records, as well as official computerised files maintained by public authorities, such as vehicle-registration databases, individual data files held by the social-security institutions and state security bodies or data held by supervisory authorities in the spheres of banking, insurance and so on) are to be classed as ancillary activities under ESA 1995 and are not to be treated as intangible fixed assets.

5.11.2.2 Estimating the value of purchased software

The statistical basis for the valuation of purchased software is very weak in Germany. No official surveys were made until after 2001. Analyses and studies conducted by market-research institutes and trade associations as well as specialised journals on software, computer, IT and multimedia markets, etc. do provide some clues, but in many cases the categories to which their data relate are not clearly defined, and the figures are scarcely comparable with each other. Most market assessments of this kind are based on figures and estimates relating to sales in the relevant sectors or subsectors. Their main shortcoming lies in the mixing, whether complete or partial, of software sales, licence revenue, training, advisory or other services and hardware sales - in other words, they combine elements of fixed-capital formation with elements of intermediate consumption. In many cases, the analyses are made only on a global or European scale. Such sources are scarcely suitable means of reliably **assessing the volume** of purchased software that can be entered in the national accounts as intangible assets. What we really need for that purpose are targeted surveys on use of income. This conclusion was reached in a report commissioned by the Federal Ministry of Economics and Technology and compiled by the ifo Institute for

Economic Research in 1996 on the estimation of intangible fixed assets in the national economy.¹

Comparatively firm foundations for our present estimates are provided by the anonymised responses to special questions asked by ifo in its surveys on the economic climate for the years 1995 to 2000, excluding 1997. The sample comprised about 3 000 companies from the domains of manufacturing and construction, broken down into categories on the basis of the German classification of economic activities (WZ). The questions related to the purchased software entered under intangible fixed assets in each company's balance sheet and to three alternative potential means of projection: number of employees, turnover volume and value of fixed-capital formation. In relation to the aggregate total for manufacturing plus construction in the national accounts, the average figures from the surveyed years covered 18% of the labour force, 32% of total turnover/output and 36% of the value of new machinery and equipment. In relation to the entire economy, the representation levels amounted to 5%, 13% and 11% respectively. Where turnover figures from the sample were incorporated into the estimation process, they were converted into percentages of the total output figures recorded in the national accounts. This method ensures that the reallocations in the GDP production approach are implicitly included and that the macroeconomic changes in inventories, which are scarcely relevant in the domain of software, are excluded from all projection strategies. This simplification has no significant effect on the projected figures for purchased software.

Three levels of software intensity (each being the ratio of the total for the sample to the total for the relevant activity divisions in the national accounts) can be formed with the aid of appropriate data from the national accounts for the three projection media referred to above **as a first step**. This gives three alternative extrapolation results which for most two-digit WZ codes are combined into a simple arithmetic mean. In individual cases, where specific indicators or plausible theories suggest a higher correlation between a particular projection medium and the use of purchased software, or where the sample is liable to contain 'outliers', the three alternative results of the projections may be weighted individually. For instance, the sample might happen to contain some highly labour-intensive firms, and the low ratio of software to employees in these firms could result in an excessively low extrapolated figure.

In the **second step in the projection process**, the figures for the industries covered by the sample (manufacturing and construction) are used to draw conclusions about the other industries that the sample does not cover. First of all, assumptions are made about the relative importance of purchased software in the other activity divisions (two-digit WZ codes) compared with the divisions in the sample, and these assumptions are expressed in the form of weighting factors. It may safely be assumed, for example, that comparatively little use will be made of software in agriculture, while the realm of research and development will be more software-intensive than manufacturing and construction. Accordingly, factors greater or smaller than 1 were assigned to these other areas of activity. As a result, differentiated 'software intensities', albeit strongly influenced by these estimates, are also used to extrapolate the WZ divisions not covered by the sample. By this means estimates are avoided that are entirely arbitrary or are uniformly pegged to the figures for the manufacturing and construction industries. With the introduction of the service

¹ ifo Institute for Economic Research 'Schätzung immaterieller Anlageinvestitionen in der Volkswirtschaft', an expert opinion commissioned by the Federal Minister for Economics, Munich, January 1997.

statistics, the economic divisions IA and KA were able to be removed from this estimation approach from 2000 onwards.

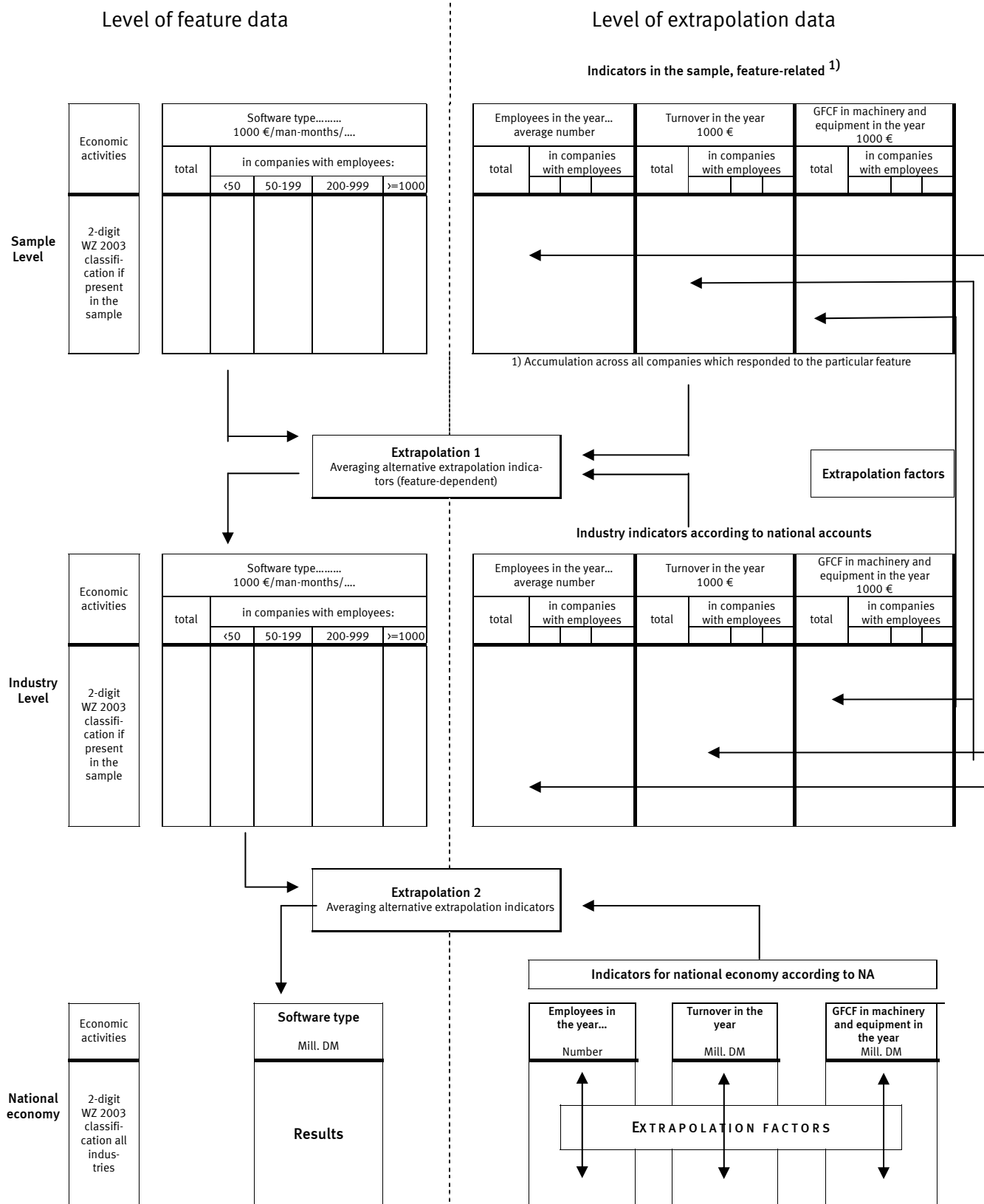
Overview 5—8 provides a schematic representation of the estimation method described here.

The differentiation by workforce size which is shown in the overview as part of the first step in the projection process and which would have been possible on the basis of the ifo sample material was actually dispensed with following a significance test. In view of the huge amount of imputation and estimation in the whole projection process, such refinements would merely have created a veneer of apparent precision at unwarranted extra expense. We cannot rule out the possibility, however, that consideration might be given to such stratification approaches to projection in subsequent surveys.

According to the European Regulation concerning structural business statistics, there are surveys to be expected in the domains of mining and quarrying, manufacturing, electricity, gas and water supply and construction (WZ 93 divisions C - F). These will enable us to check and adjust the present estimates (levels of software intensity and weighting factors) in the sections covered by the sample. In the period prior to 1995, the annual trend was compared with the series of software estimates which were part of the fixed-capital formation recorded in the commodity-flow account prior to the ESA 1995 revision of the national accounts. For the other years for which no data are available from blanket or sample surveys, the aforementioned analyses and studies of the software market conducted by market research institutes, trade associations, etc., can provide a basis for extrapolations and interpolations relating to purchased software. In addition, the levels of software intensity that are firmly rooted in blanket or sample surveys and the relationship between software and other closely correlated variables, such as investments in office machinery and computers, can serve as a cross-checking framework for both projections and quarterly estimates.

Overview 5—8: Purchased software as recorded in the national accounts

Schematic representation of the valuation method



5.11.2.3 Estimating the value of software produced for companies' own account

The conditions for the statistical recording of computer software and databases produced for companies' own account are very poor in Germany. Because of the explicit capitalisation ban referred to above, the official accounting data contain no information on this; the surveys that would be required to fill this gap would be prohibitively costly and time-consuming and would yield unreliable results. Statistically exploitable costing figures on software projects are only recorded in isolated cases and then only in larger economic units. They serve as aids to decision-making when it comes to determining whether a company should develop its own software or commission an external provider. In short, attempts to measure the value of own-account software directly by means of surveys are unlikely to bear fruit in Germany. This hypothesis is confirmed by the findings of the aforementioned ifo study and of the ifo sample surveys. The surveys for 1995 and 1996 included a question about software produced for companies' own account, but the estimate extrapolated from the responses, for 1995 at least, was most implausibly low. For this reason we based our estimate on a model, which is outlined below.

The baseline figures are employment data drawn from the annual microcensuses on computer-centred occupations¹. The main relevant occupations listed in the German Directory of Occupational Codes, 1992 edition, as used for the microcensus, are as follows:

- 774 DP specialists, computer scientists, mathematical/technical assistants, etc.
- 7750 Software developers, general
- 7751 Application-software developers
- 7752 System-software developers
- 7753 Software-development managers
- 776 Data-processing organisers, systems analysts and related occupations
- 777 DP consultants and sales specialists
- 778 Computer-centre specialists, data managers
- 779 Occupation-centred or industry-centred data-processing specialists
- 783 Data loggers, keyboarders, validators, etc.

First of all, a straight head count is made of all the representatives of these occupational categories, i.e. irrespective of occupational status, position within the company, full-time or part-time employment, etc. Another category was formed to cover the many employees in other non-computer-centred occupations who nevertheless engage in data processing in the wider sense. This additional category is:

- 9999 Practicing data-processing specialists in other occupations.

The detailed definition of this category confines it to employees from the technical occupational categories 60 and 61 (engineers, scientists and technicians) provided that their principal activity as recorded in the microcensus does not exclude the possibility of computer programming.

In all, the 2000 selection process identified some 629 000 employees who could in theory be assumed to be involved in the production of software on own account as capital formation. The

¹ For the purposes of this model, we dispensed with some of the extrapolation refinements which have only marginal effects (e.g. special regional weighting factors), refinements which involve a completely disproportionate input of time, cost and effort in relation to the other margins of uncertainty in the model.

next step in the effort to circumscribe software produced for companies' own account in a plausible manner involves classifying these employees on the basis of three principal criteria. Besides the eleven occupational categories listed above, the microcensus assigns employees to 60 NACE categories (two-digit WZ divisions) and to ten departmental divisions, i.e. the parts of companies in which the respondents work:

1	ProdMont	Fabrication, production and assembly
2	Replnst	Maintenance, repair and input production
3	Arborg	Operations planning and monitoring and related activities
4	F&E	Research and development, construction, design and prototype construction
5	Material	Material management, purchasing, stockkeeping and material distribution
6	VerkPR	Sales, marketing, service, advertising and public relations
7	DVBüro	Finance, law, accounts, data processing, statistics and related activities
8	Personal	Personnel, training, medical and welfare services, etc.
9	Leitung	Company management, management of administrative bodies, board-room activities
10	Ohne Abt	Businesses not divided into departments

The entire model therefore comprises approximately 6 600 elements as shown in Overview 5—9.

The crucial factor for the estimated level of own-account software is the assumption as to the percentage of their time the selected employees actually spend on the production of software on own account (capital expenditure) as defined for national accounting purposes (their 'rate of involvement'). Assumptions about the rate of involvement are essentially three-dimensional in the model, in the sense that they are based on occupations, departments within companies and industries, but that the sample is not broken down into combinations of all the 6 600 elements but into sum totals for each of the eleven occupational groups, the ten departmental categories and the 60 WZ areas of activity. The rate of involvement for a particular element is derived from the multiplication of the relevant factors.

(Schematic outline of a possible method of estimation)

$E_{w,a,b}$	=	Number of employees (acc. to microcensus)	in	the WZ/NACE classification	w	$1 \leq w \leq 60$
			in	the company department	a	$1 \leq a \leq 10$
			in	the IT-specific occupational group	b	$1 \leq b \leq 11$
Wf_w	=	WZ-factors	=	partial activity-specific OAS relevance		$0 \leq \text{Factor} \leq 1$
Bf_b	=	occupational factors	=	partial occupation-specific involvement rate in production of OAS		$0 \leq \text{Factor} \leq 1$
AF_a	=	departmental factors	=	partial department-specific involvement rate in production of OAS		$0 \leq \text{Factor} \leq 1$
$BAf_{b,a}$	=	combination factor: occupational dept.	=	combination: occupation-specific involvement rate in company departments		$0 \leq \text{Factor} \leq 1$
G_b	=	pay level	=	occupation-specific annual gross salary in €		
T_b	=	part-time factor	=	occupation-specific part-time factor, collectively agreed work hours = 1	Z_b	≥ 1
Z_b	=	allowance	=	imputed overheads and profit mark-up		
K_b	=	costs	=	average annual total costs per employee in € = $G_b * T_b * Z_b$		

[illegible]

		Company department				
		1	2	...	a	...
Occupation	1	BAf _{1,1}	...	BAf _{1,a}	...	BAf _{1,10}
	2	.		.		.

	b	BAf _{b,1}	...	BAf _{b,a}	...	BAf _{b,10}
	.	.		.		
	.	.		.		
11	BAf _{11,1}	...	BAf _{11,a}	...	BAf _{11,10}	

Bf ₁
.
.
.
Bf _b
.
.
.
Bf ₁₁

$$\begin{bmatrix} G_1 \\ \vdots \\ G_b \\ \vdots \\ G_{11} \end{bmatrix} * \begin{bmatrix} T_1 \\ \vdots \\ T_b \\ \vdots \\ T_{11} \end{bmatrix} * \begin{bmatrix} Z_1 \\ \vdots \\ Z_b \\ \vdots \\ Z_{11} \end{bmatrix} = \begin{bmatrix} K_1 \\ \vdots \\ K_b \\ \vdots \\ K_{11} \end{bmatrix}$$

Af_1	...	Af_a	...	Af_{10}
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OAS _w	=	own account software by industries	=	$\sum_a \sum_b E_{w,a,b} * Wf_w * ABf_{a,b} * K_b$,	w = 1,2,3,...60
OAS _b	=	own account software by IT-specific occupations	=	$\sum_w \sum_a E_{w,a,b} * Wf_w * ABf_{a,b} * K_b$,	b = 1,2,3,...11
OAS _a	=	own account software by company departments	=	$\sum_w \sum_b E_{w,a,b} * Wf_w * ABf_{a,b} * K_b$,	a = 1,2,3,...10
OAS	=	total for own account software	=	$\sum_w \sum_a \sum_b E_{w,a,b} * Wf_w * ABf_{a,b} * K_b$	

The result is the assumption that, for example, a general software developer (7750) who works in the production and assembly division of a company manufacturing metal products (factors 75% x 10% x 50%) has an imputed involvement rate of 3.75% in the development of software for the company's account as defined in ESA 1995, but a general software developer (7750) in the same industry is involved in the DVBüro division at an imputed rate of 18.75% (factors 75% x 50% x 50%). For 2000, the overall average involvement rate for all respondents from the relevant occupations – a total of just under 629 000 employees – came to approximately 7.8% (cf. Table 5—6 below).

Table 5—6: Overall figures for own account software by occupation in 2000
(summarised model results)

Selected occupations	Input		Employee equivalents Number	Input	Input	Cost per employee equivalent EUR	Estimate for OAS	
	Employees	Involvement		Gross salary EUR /year	Total al- lowance		Million	
	Number	rate %					EUR	%
	1	2	3 = 1x2	4	5	6 = 4x5	7 = 3x6	8
7740 DP specialists, computer scientists, mathematical/technical assistants, etc.	142 900	7.8	11 191	50 480	2.209	111 486	1 248	21.5
7750 Software developers, general.....	119 600	14.1	16 885	56 089	2.158	121 024	2 043	35.2
7751 Application-software developers	12 800	18.4	2 357	61 697	2.174	134 148	316	5.5
7752 System-software developers.....	19 000	15.4	2 930	67 306	2.261	152 164	446	7.7
7753 Software-development managers.....	1 500	9.7	146	78 524	2.229	175 047	25	0.4
7760 Data-processing organisers, systems analysts and related occupations ...	46 800	8.2	3 842	50 480	2.246	113 390	436	7.5
7770 Consultants and marketing specialists in the field of information technology	61 400	3.9	2 384	50 480	2.303	116 277	277	4.8
7780 Computer-centre specialists, data managers	62 000	5.5	3 423	50 480	2.156	108 836	373	6.4
7790 Occupation-centred or industry-centred data-processing specialists	38 300	5.5	2 100	56 089	2.291	128 513	270	4.7
7830 Data loggers, keyboarders, validators, etc.	29 400	4.9	1 434	28 045	1.639	45 967	66	1.1
9999 Practicing data-processing specialists in other occupations..	95 460	2.8	2 657	50 480	2.265	114 346	299	5.2
All selected occupations ...	629 160	7.8	49 350	53 606	2.194	117 607	5 799	100

The estimation of the involvement rate is absolutely crucial to the result of the model. Reflections and studies indicate that, of the ten types of company department listed in the 2000 microcensus, categories 4, 7 and 10 are the ones in which significant rates of involvement in the production of in-house software are most likely to occur. The data-processing staff in the other departments, by contrast, presumably spend the bulk of their working hours on routine activities in the production process or in the provision of services, activities which do not count as capital formation. If we consider the occupational dimension in isolation, it is assumed that occupational categories 7750, 7751 and 7752 are very heavily involved in the production of in-house software, categories 744, 7753 and 776 are significantly involved, and the other categories have little involvement. As for the industry dimension, some lines are drawn within the model in order to take account of the special features of various types of software:

- Sharp reductions are made in WZ Divisions 28 to 36 (the activities in which capital goods are produced); these cuts are designed to allow for the circumstances described above with regard to embedded software in industrial products (Overview 5—8 in section 5.11.2.1).
- Sharp reductions are made in WZ Division 72 (Computer and related activities); this relates to our remarks above on the continuous development of company-specific software and to the other special features of this industry.
- Reductions are made in WZ Division 73 (Research and development) to allow for the high percentage of basic research, which, under the present accounting system, is not to be regarded as an investment.
- The number of respondents in each category in the microcensus is multiplied by the average involvement rate for that category to produce the number of 'employee equivalents' engaged entirely in producing software for their companies' own account (see Table 5—6).

In the next step, these 'employee equivalents' are multiplied by imputed labour-cost rates (as per ESA 1995, including a profit allowance). To this end, we began by estimating the average gross pay for each of the occupational groups for the benchmark year, 2000. When it comes to estimating gross pay, the only available indicators are undifferentiated generalised data from the labour-cost survey and estimates or survey findings obtained from trade associations, specialised publications and business consultants; these data, too, are generalised, and there are huge variations between them. The next step is to apply the usual valuation methods to the gross pay levels, adding imputed allowances for welfare contributions, overheads, operating and capital costs, fitting-up periods, downtime and other non-productive periods. Any part-time factors that can be determined for each occupational group from the microcensus are included in the aggregate allowances shown in Table 5—6.

In the selected occupational groups from the domain of data processing, the estimate for 2000 produced an average gross annual wage or salary of EUR 53 600. The total imputed adjustment factor (including a profit mark-up) taking into account the part-time factors is just over 2. Details from this calculation can be found in Table 5—6.

The total value of software produced for companies' own account in 2000 works out at EUR 5.8 bn with EUR 4.2 bn for the reference year 1995. This is appreciably more than the ifo report referred to above arrived at from its direct sample survey for 1995. As has already been said, the institutional framework in Germany, in terms of the statutory accounting requirements, means that businesses can only be expected to provide very indefinite answers to direct questions regarding the value of the software they produce for their own account. Moreover, it must also be borne in mind that the model presented here allows a considerable degree of latitude. For all the refinement of the tiered classification structures, this latitude lies primarily in the selection of the occupational groups that may be involved in the in-house production of software as a fixed asset and in the estimation of the actual involvement rates for these occupational groups.

5.11.3 Entertainment, literary and artistic originals (“copyright”)

The creation of new films, music and literature (“copyright”) is regarded as production activity in ESA 1995. On the expenditure side, the value of copyright is also recorded as an intangible fixed asset. In accordance with the general demarcation lines, entertainment, literary and artistic originals cannot be recorded as investments unless they exceed the maximum value for inexpensive goods and are used regularly or continuously in a production process for more than one year. This means that the value of copyright in respect of entertainment, literary and artistic originals, irrespective of the way in which these originals are used or the distribution medium, is only recorded if it yields an income for more than one year through its use in the production of other goods and services. Non-published manuscripts and published books from which the author receives no royalties are therefore excluded from gross fixed-capital formation. Potential subsequent income is also immaterial. If additional income is derived from a work at a later date – following the invention of new reproduction media, for example – such income is recorded when it actually accrues. Because of their short lifespan, newspaper and magazine articles and news broadcasts are not normally counted as entertainment, literary and artistic originals.

As intangible assets, entertainment, artistic and literary originals are not tied to a particular time or place. Because of their ubiquitous and ever-present nature, they are inherently indivisible and cannot be sold in parts. The question of **divisible copyright** arises especially with regard to the recording of cross-border sales of regionally limited rights in respect of motion pictures – 'Europe only' distribution rights, for example – which are common practice in the cinema industry. In the case of divisible rights, fixed assets or parts thereof are imported and exported; in the case of indivisible rights, services are imported or exported. These increase the purchaser's intermediate consumption and hence reduce total gross value added in the importing country. There are some who support the principle of divisibility: they regard the original work as a package of exploitation rights which may be sold as such to exploiting agents, who thereby become investors. The argument against this view is that, in the case of leases, ESA 1995 does not make any provision at all for the value of a lease to be recorded as capital formation on the part of the lessee, even though a lease, like a copyright, also represents the transfer of a package of partial usufructuary rights to another economic operator. The Federal Statistical Office rejects the divisibility theory and regards an original piece of entertainment, literature or art as an indivisible whole, in respect of which diverse rights of exploitation may be granted. The payment received in exchange for this right constitutes a service fee.

Copyright is **valued** depending on the data at the sales price (films and television productions), at estimated production costs (recording media) or at the estimated present value of future receipts (originals that result from the artistic creativity of writers, musicians, composers, actors).

Films and television productions

Films: ESA 1995 includes films under the heading of entertainment, literary and artistic originals without giving a precise definition of what a 'film' comprises. The German Copyright Act (*Urheberrechtsgesetz*) distinguishes between the **opus**, which is the sum of the personal intellectual contributions of numerous people who help to make a film (the director, cameraman, editor, sound mixer, actors, make-up artists, etc.) and who thereby become joint holders of the copyright for the opus, and the **visual and sound media** on which the opus is recorded. In order to protect the value of filmmakers' economic contributions, the Copyright Act¹ grants them a supplementary right, known as an ancillary copyright, to cover the visual and sound media. Since the joint owners of the copyright for the opus do not normally obtain any payment in addition to the fee for their work on the film, only the filmmaker's ancillary copyright in respect of the visual and sound media is entered in the accounts as an original within the meaning of ESA 1995.

Television productions: When it comes to the **demarcation** of intangible assets in television productions, we must bear in mind that the screenplays, soundtracks, etc. which go to make up television productions are originals in their own right and must be recorded, where appropriate, as intangible assets of their respective originators (scriptwriters, musicians, etc.). Although the format of a television programme, i.e. the idea behind the programme, is protected by copyright, this right is rarely sold or licensed, which means that it is not an intangible asset within the meaning of ESA 1995. It follows that a series transmitted over a period of more than one year can only be recorded as an intangible asset if its individual episodes are repeated regularly for more than a year. There are some sound arguments in favour of restricting the imputation of regular use to fictional programmes (films, television plays, serials and series), children's programmes and documentaries and a few televised concerts and theatre productions. The last-named category, however, accounts for such a small percentage of the time devoted to repeat transmissions that such productions may be disregarded.

The value of copyright in films and television productions is based on the turnover recorded in the VAT statistics (EVAS 73311) for the WZ classification 92.11 — Motion picture and video production and WZ 92.20.2 — Production of radio and television programmes. However, since this turnover also includes some which is not under copyright protection (such as business and advertising films, film engineering, sound studios), a deduction of 55% is made. This deduction is calculated on the basis of data concerning the turnover structure of film production companies (TV producers, film producers, etc.) according to the type of turnover (television productions, motion pictures, advertising films, etc.) taken from the study on films and television in Germany, 2000/2001².

¹ Cf. section 94 of the Urheberrechtsgesetz of 9 September 1965, as amended on 23 June 1995.

² See: Publisher VISTAS Verlag, Studie Film und Fernsehwirtschaft in Deutschland 2000/2001, Schriftenreihe der Landesmedienanstalten Band 26, Berlin 2001.

There are wide fluctuations in the VAT levied from year to year. For this reason the above-described reduced turnover figures from the VAT statistics are not used but instead we apply a rolling two-year average.

The value of originals in this domain for 2000 is calculated as follows:

	EUR m
Turnover according to the VAT statistics	
WZ 92.11 Motion picture and video production	5 355
WZ 92.20.2 Production of radio and television programmes	888
Total from WZ 92.11 and WZ 92.20.2	6 243
– Deduction of 55%	– 3 419
= Reduced turnover	2 824
Rolling two-year average	2 770

Sound carriers

In the realm of music, the Copyright Act distinguishes between **musical works**, which are the creative artistic output of composers, **sound media**, which are the technical economic output of manufacturers, and **performances**, which are personal interpretations of the musical works by the performing artists. These are three types of intangible originals which are protected by copyright and which generally generate income for more than one year. For this reason, it seems appropriate that music originals, unlike films, should be recorded as assets of manufacturers, composers and performers.

The value of **originals belonging to manufacturers of sound media** is assessed at basic prices. The assessment basis is a survey on production costs for sound media in the years 1993 to 1995, which was conducted by the ifo Institute for Economic Research in cooperation with the German Federation of the Phonographic Industry (*Bundesverband der Phonographischen Wirtschaft e.V.*), the respondents being the members of the Federation (phonogram producers). The Federation estimated that the survey covered about 80% of the total expenditure incurred by German phonogram producers. The findings of the survey for the years 1993 to 1995 were therefore multiplied by 1.25 to obtain the estimated total value of original phonograms. A figure of EUR 850 m resulted for 1995 and was extrapolated in the subsequent years to include the development of the fees paid to self-employed artists and to compensation groups according to information from the Artists' Social Welfare Fund (*Künstlersozialkasse*) in conjunction with the development of the royalties paid by various companies exploiting third-party rights according to the GEMA business report and the annual report of the German Patent and Trademark Office (*Deutsches Patent- und Markenamt*). The total figure comes to EUR 1 120 m for the year 2000.

Musical compositions, artistic interpretations and literature

Originals belonging to writers, composers, singers, actors and other independent artists are assessed on the basis of the present value of future receipts. In place of the highly complex present value method, based on assumptions about the duration of the exploitation period, about the development of revenue from royalties within that period and about the discounting rate, we use

an estimation model¹ which, though simple, demonstrably achieves good results, at least for Germany, and takes account of all royalties within the local economy for a calendar year (R_t), the rate of growth in total royalties in relation to the previous year (r_t) and the interest rate (i_t). The present value of the originals produced in year t (P_t) is calculated as follows:

$$P_t = R_t \times (1 + r_t - i_t).$$

The baseline assessment of the total amount of royalties for individual groups of artists is derived from estimates of the **direct payments** made by publishing houses to authors and of the **distribution of royalties** by the collecting societies - the WORT Literary Copyright Society, the Musical Performance and Mechanical Reproduction Rights Society (GEMA) and the Performing Rights Society (GVL - *Gesellschaft zur Verwertung von Leistungsschutzrechten*).

In order to ascertain the value of the royalties distributed by the collecting societies, we use business reports and other information from the societies to estimate the amount of their budget that has been distributed to originators within Germany and to break down this amount by occupational groups. The collecting society GEMA has undertaken a special analysis for this purpose and has provided us with a distribution formula concerning the payment of royalties to composers, writers and music publishers.

Musical compositions

Royalties payable for more than one year to composers and arrangers of music in Germany are generally paid exclusively through the GEMA collecting society. The first step in the valuation of copyright for musical compositions is to establish how much money GEMA has distributed in royalties to composers and arrangers. To this end the total amount distributed by GEMA is reduced by the estimated amounts distributed abroad and to other German collecting societies. The remainder of the total amount distributed to German originators and publishing houses is then divided among occupational groups and publishing houses as appropriate. For 2000, the amount distributed to composers and arrangers of music came to EUR 165 m. In a second step, the present value of the anticipated yield from these royalties is assessed by means of the simplified estimation method described above. In 2000 the value of copyright for musical compositions therefore amounted to approximately EUR 160 m.

Artistic interpretations

Under section 73 of the Copyright Act, interpreters of artistic works (singers, dancers, actors, orchestras, etc.) are afforded protection as performing artists. Section 73 lays down that the performances of a performing artist may not be made visible or audible to the public outside the place of performance by means of screens, loudspeakers, etc., or recorded on visual or sound media, reproduced and distributed without the consent of the performing artist. The ancillary rights (performing rights) of these artists are administered by the Performing Rights Society (GVL). The GVL distributes royalties not only to performing artists (such as conductors, singers, actors, producers, orchestras, members of choirs and ballet companies, solo instrumentalists, singers

¹ See Federal Statistical Office, part I-A of the study entitled *Methoden und Grundlagen der Berechnung immaterieller Anlageinvestitionen und der Wertsachen nach ESG 1995* (distributed as a background document to Document CN 383 at the meeting of the Working Party on the ESA, 20 October 1998).

and dancers and studio musicians¹⁾, but also to manufacturers of visual and sound media as well as to promoters of cultural events. The GVL receives its income from payments for broadcasts and transmissions of sound recordings and video clips on radio and television, public playing or showing of radio and television programmes, sound recordings and video clips (e.g. in hotels, restaurants, cinemas, discotheques and on stage), reproduction for private and other use of radio and television programmes and of sound media (levy on reproduction equipment and blank cassettes).

In 2000 the GVL had a budget of EUR 122 m. With an assessed administrative-expenditure margin of 3.6% and an equal division of distributed royalties between performers and phonogram producers, the royalties paid out to performing artists amount to EUR 60 m. The simplified method of estimating the present value of anticipated receipts resulted in the valuation of copyright in respect of artistic interpretations for 2000 at roughly the same figure of EUR 60 m.

Literature

Writers receive royalties of more than one year's duration either direct from publishing houses or from the collecting societies WORT and GEMA. The value of the royalty payments from these collecting societies is estimated on the basis of the volume of their budgets in accordance with the method described above. The value of **direct royalties from publishing houses** can, in principle, be obtained either from the statement of royalty payments compiled by the Artists' Social Fund (*Künstlersozialkasse*) on the basis of annual returns or from information on turnover from the sale of books.

The payments by the Artists' Social Fund to collectors liable to pay royalties in the literary sector (excluding compensation groups) reveal some inconsistencies in the time series since 1999. The royalties paid to book authors are calculated at the previous royalty rate of 5.6% on the book turnover within Germany.

On the basis of the amount of royalties paid directly to writers by publishing houses and of those distributed to them through the WORT and GEMA collecting societies, the value of anticipated revenue from copyright for 2000, as assessed by the simplified estimation method, works out at approximately EUR 580 m.

The total value of copyright for music compositions, artistic interpretations and literature in 2000 is EUR 800 m.

		2000
	Entertainment, literary and artistic originals	EUR m
WZ 22	Publishing, printing and reproduction of recorded media	1 120
WZ 92	Recreational, cultural and sporting activities.....	3 570
	Included in total: motion-picture and television activities	2 770
	artistic and literary creation and interpretation	800
	Total entertainment, literary and artistic originals	4 690

¹ The artistic occupations referred to here correspond to subclass 92.31.7 of the German classification of economic activities, which covers individual artists in the domains of theatre, cinema, radio and television.

5.12 Additions to the value of non-produced non-financial assets

5.12.1 Land improvements

Among the significant land improvements that can be undertaken are land reclamation measures, the draining of marshland and measures to prevent flooding and erosion. To this end dykes, embankments, walls, drainage ditches, etc., may be created. These are constructions which add to the value of non-produced non-financial assets in the form of land and which are not directly used in any production process. The value of such construction work is assessed as part of the calculation of GFCF in buildings and other structures (see section 5.10.2). Construction work is primarily work done in the domain of primary construction (see section 5.10.2.1). Expenditure on the planning of these construction measures is classed as ancillary building costs, the assessment of which is described in item 5.10.2.5.

5.12.2 Costs of ownership transfer associated with non-produced assets

The cost of transferring the ownership of land, including buildings on the land, is assessed in the framework of GFCF in construction (see the remarks on ancillary building costs in section 5.10.2.5 above). The percentage of the land-transfer costs that relate only to the transfer of ownership of the land itself is then determined, and the relevant amount is deducted from GFCF in construction and recorded as a separate entry. The percentage figure is determined on the basis of data from the Federation of German Estate Agents (*Ring Deutscher Makler*) and of our own estimates.

In 2000 the value of the costs of ownership transfer associated with non-produced assets amounted to EUR 1 230 m.

5.13 Changes in inventories

5.13.1 General explanatory remarks on inventory evaluation

The baseline data available in Germany enable us to adhere largely to the categories and definitions set forth in paragraph 3.119 of ESA 1995. All valuations in the two-digit industry classifications of the German national accounts differentiate, in conformity with ESA, between materials and supplies of intermediate consumption (stocks of inputs), work in progress and finished goods (stocks of outputs) and goods purchased for resale. An explicit subdivision of output stocks into work in progress and finished products, however, is not possible. The following subsections will initially address some of the general aspects and problems concerning calculation of stocks and the basic approach to converting book values. Section 5.13.2 will then once again list the basics of calculation looking at all industries.

5.13.1.1 Time of recording and valuation under ESA 1995

The aim of ESA is to assess the value of all entries and withdrawals in the manner of a continuous stocktaking process, even if a particular item enters stock and is withdrawn from stock during the same reference period. This approach is designed to ensure that the proper line is drawn between goods in storage and all related categories within the economic process (intermediate

consumption, output, goods for final use). To this end, it would be necessary to record and assess the value of the following elements:

Incoming stocks of inputs at purchasers' prices

(possible counterentries: manufacturer's output, assessed at basic prices; manufacturer's stock of outputs (debit amount), assessed at notional basic prices at the time of withdrawal; goods for resale (debit amount) held by intermediary traders, assessed at the current acquisition value at the time of withdrawal; imports, assessed at purchasers' prices)

Outgoing stocks of inputs at current acquisition values

(possible counterentries: intermediate consumption, assessed at purchasers' prices at the time of final consumption)

Incoming stocks of outputs at basic prices at the time of completed production

(possible counterentries: manufacturer's output, assessed at basic prices)

Outgoing stocks of outputs at basic prices at the time of withdrawal

(possible counterentries: last domestic use, exports or input stocks, assessed at purchasers' prices)

Incoming stocks of goods for resale at purchasers' prices

(possible counterentries: manufacturer's output, assessed at basic prices; manufacturer's stock of outputs (debit amount), assessed at notional basic prices at the time of withdrawal; goods for resale (debit amount) held by intermediary traders, assessed at the current acquisition value at the time of withdrawal; imports, assessed at purchasers' prices)

Outgoing stocks of goods for resale at purchasers' prices

(possible counterentries: last domestic use, exports or input stocks, assessed at purchasers' prices).

The theoretical valuation guidelines set forth in the ESA have implications for the national accounting systems. Since it is imputed that only goods with updated price valuations ever leave warehouses and that the 'older goods' remain in storage, this approach could result in a decrease in the value of inventory stocks at current prices over a short period between two measurement dates if market prices were to rise, even though the volume of those stocks remained constant or even increased. Should inflation occur, a valuation in strict accordance with the ESA rules would therefore tend to produce a cumulative understatement of the current market value of inventories. In industries with very limited warehouse stocks but a high throughput of goods, continuously valued at current prices, it is perfectly possible that rising prices might result in very high negative figures for the nominal value of inventory stocks, even if the volume of goods in stock had not shown any change over a lengthier period between two measurement dates.

In the case of **stocks of inputs**, compilers of national accounts should proceed as if each good withdrawn from stocks had been purchased at the current price and not as if it had been purchased during an earlier period at a different price. In terms of business accounting, this would

correspond to a lifo (last in, first out) valuation, whereby stocks that remain in storage are assessed in accordance with the minimum-price principle. The lifo system is slightly more consistent than the ESA, however, in that it effects an additional reduction in the value of inventory stocks in the event of falling prices. Because it assigns a higher value to withdrawals than to entries when prices are rising, the national accounting strategy tends to result in the recording of higher intermediate consumption than would probably be recorded in practice in many business accounts. Accordingly, the operating surplus shown in the national accounts is liable to understate the sum total of all company accounts. This is intentional and incorporates into national accounting the idea of maintaining the real value of undertakings. This, of course, means that the purchase of a replacement for a consumed input will be assessed at the higher current acquisition value in the event of price increases. In other words: the so-called 'paper profits' that may find their way into company income statements as a result of increases in the prices of stored goods have no effect on the residual incomes recorded in the national accounts.

As far as **stocks of outputs** are concerned, to understand the link between the generation and distribution accounts we should not focus entirely, or even primarily, on the withdrawal of a good from inventory stocks at the time of sale but rather on its entry into the inventory on completion of production. By contrast, the withdrawal of goods from stocks is represented in the national accounts as merely an 'asset-swap' on the expenditure side of the GDP account. Otherwise the fundamental idea pursued in the ESA in respect of output stocks is that a good, costed as on completion of manufacture, is included in the calculation of value added, irrespective of whether it is sold immediately or initially put into storage. This, however, is tantamount to treating non-institutionalised storage processes for output stocks as having no effect on value added, since any price increases between the time of production and the effective time of sale do not become an element of residual income. In this respect the ESA ignores the actual turnover figures. In the case of output stocks that are in storage at the time of a price rise, residual income is therefore determined by the lower basic price and not by the market prices actually obtained for the goods in question. When prices rise, this valuation rule also tends to lead to an understatement of residual income in the national accounts by comparison with the concept of company profits. In this respect, the idea of maintaining the real value of undertakings is very broadly interpreted in the ESA. In inflationary situations, on the other hand, some thought could also be given to a deviation from the current ESA rule; this deviation would allow any increase in subsequent production costs that might occur between the manufacture and sale of outputs to be fully covered in the national accounts, and the price-driven increase in proceeds from the sale of outputs could be used as a means to this end.

National accounts often indicate lower operating surpluses for businesses than are shown in company balance sheets, and the aforementioned understating of net entries into inventory stocks is symptomatic of this phenomenon if treatment is consistent. The difference between the actual selling price and the basic price of output stocks and, in the case of input stocks, between the price at the time of actual use and the purchasers' price can, as we have already indicated, be treated as paper profits with a view to ensuring that the real value of undertakings is maintained, but the compilers of the national accounts seek to eliminate these paper profits. A similar consideration underlies the practice of assessing depreciation in the national accounts at replacement cost rather than historical cost.

5.13.1.2 Means of transposing the ESA 1995 rules

All of the considerations set out above relate to the desire to assess changes in inventory values and eliminate paper profits in accordance with the ESA rules. In practice, the continuous valuation of all individual entries and withdrawals within a production process, i.e. a perpetual inventory, is not statistically practicable. ESA 1995 recognises this too, and in paragraph 3.124 it proposes various alternative solutions for use in specific situations. One of these is the possibility, described in paragraph 3.124(d), of estimating the changes in the volume of wholesale and retail traders' inventories between the beginning and end of the reference period, subject to the proviso that turnover rates are estimable for the individual product types within these inventories. In addition, paragraph 10.56 of the ESA also refers, more or less in passing, to ways of comparing inventory stocks held at the beginning of the accounting period with those held at the end, although it is only put forward as a means of cross-checking estimates of prices and volumes obtained¹.

In the Federal Republic of Germany, alternative methods based on inventory comparisons are adopted. A distinction has to be made, however, between two options that vary in quality. The better, albeit rarer option, which is used, for example, in agriculture and in the domain covered by the German Oil Storage Association (*Erdölbevorratungsverband*), uses genuine volume figures, the value of which can be fairly reliably assessed with the aid of market prices. For most industries, in contrast, it is not the real quantities, but the book values as recorded in the cost-structure and other annual statistics. In 2000, the sectors which were represented by book values and measured against the closing stocks, made up approximately 94% of the total. Behind the book values recorded in the statistical returns are volumes of goods which have presumably been valued by the reporting companies for entry in their balance sheets as required by tax legislation. It must be assumed that these valuations are not always based on the same theoretical valuation principles outlined above that apply to the national accounts.

5.13.1.3 Notes on the 'work in progress' problem

Growing crops and maturing livestock (ESA para. 3.119 b) (1) and part of (2)) are determined as part of the national agricultural account established by the Federal Ministry of Food, Agriculture and Consumer Protection, although not differentiated into work in progress and finished products. Estimates of the volume of standing timber (ESA, 3.119. b) part of (2)) are taken from the national forestry account (see 5.13.1.2).

In Germany, uncompleted structures can only be recorded in the national statistics as structures, not as changes in inventories, even if a buyer has not yet been found for them. Paragraph 3.119(b)(3) lays down that they should be initially treated as changes in inventories. In this and some other cases of work in progress, such as the other unworkable examples listed in this subparagraph of ESA 1995, namely 'partially completed research for a legal or consultant's dossier' (5), 'partially completed film productions' (6) and 'partially completed computer programs' (7), it has been decided not to estimate values for the German national accounts. These cases are merely a matter of assigning parts of total value added to particular accounting periods. Where lengthy reference periods, such as years, are used, the changes in inventory values will largely cancel each other out and will therefore have no effect on the level of GDP. This is inherent in the

¹ This method has also been examined as part of the detailed discussion of deflation within the Eurostat framework, where it has at least been raised to the status of the so-called 'B method', in other words the accepted second-best solution. Cf. Deflation of changes in inventories, Revised Paper, Eurostat B1/CN 441.

fact that the values in the examples referred to above are effectively balances; they represent the value of work begun in the reference period that is carried forward into the following period less the value of work begun in previous periods for which payment is received in the reference period. If we attempted to estimate the sequence of such processes, it would not even be possible in most cases to determine reliably whether the entries in question are credit or debit balances, which is why we always impute zero change.

In the case of output produced that is not yet finished (ESA 3.119. b), example (4)), it may be assumed in contrast that the ESA concept of 'work in progress' follows the correct statistical approach. On the one hand, considering the stocks this applies, at least on an annual basis, because the cost-structure statistics provide the main source of data for the calculation of initial and closing stocks of work in progress, sometimes at the pro rata basic costs. In the case of the calculations of machinery and equipment by the commodity-flow method, the definitions are determined by the quarterly output statistics, which in principle entail reports following completion (for major items of machinery and equipment as well). However, it is possible that sometimes major items of machinery and equipment (ships, oil platforms and such like) will still be reported on the basis of the progress of the construction work. The details cannot be verified in the national accounts. In such cases, allocation of machinery and equipment and GDP to accounting periods true to the concept can only be approximate. In the light of other unavoidable margins of uncertainty, however, such approximations ought to be negligible when considered year by year.

Quite generally it is clear that the 'work in progress' concept of the international systems of ESA and SNA is demanding in theory, and can probably not be realised entirely or traced reliably in any country at all. The regular balancing processes between the production and the expenditure approach for GDP in quarterly national accounting should always be found also to relate implicitly to elements of these critical criteria for 'work in progress'.

5.13.1.4 Conversion of stocks at book value as a standard accounting procedure

The technical procedure of measuring stocks in the national accounts system focuses in particular on the closest compliant determination and elimination of paper profits and losses (SNA/ESA terminology: 'holding gains and losses'), to which we have so far referred, and will occasionally do so in this text, as 'paper profits' and 'paper losses'.

Below the conventional international method of calculating changes in inventories in current and constant prices and paper profits and losses are outlined in tabular form where book values are available.

Opening stocks	1	Book values	Source: annual surveys
	2	Conversions a)	Source: National accounts input and output prices
	3	at constant prices	Calculation: 1 / 2
Closing stocks	4	Book values	Source: annual surveys
	5	Conversions a)	Source: National accounts input and output prices
	6	at constant prices	Calculation: 4 / 5
Changes in in- ventories	7	Book values	Calculation: 4 – 1
	8	at constant prices	Calculation: 6 – 3
	9	Conversions b)	Source: National accounts input and output prices
	10	Current prices	Calculation: 8 x 9
	11	Paper profits/losses	Calculation: 7 – 10

- a) Conversion on uniform price basis depending on deflation concept (e.g. fixed price in 2000 = 100 or previous year = 100)
b) Conversion to average annual prices of reporting year

The concept of the international systems regarding paper profits is in fact approximately fulfilled by the method of estimation set out in the table provided it can be assumed that the commercial valuation implicitly represented by the book values is sufficiently well approximated by making a 'suitable' choice of deflator (rows 2 and 5) or inflator (row 9). With a simple mathematical conversion it can be shown that the difference between changes in inventories at book value and the above-defined changes in inventories at current prices agrees with the nominal definition of paper profits¹ of SNA/ESA.

Whereas for a single product the following applies:

q_a = Volume of stock at the beginning of a period

q_e = Volume of stock at the end of a period

p_a = Price of stock valuation at the beginning of a period

p_e = Price of stock valuation at the end of a period

\bar{q} = Average annual volume

= $(q_a + q_e)/2$ (assuming continuous developments of volumes)

\bar{p} = Average annual price

= $(p_a + p_e)/2$ (assuming continuous development of volumes and prices)

Then:

$$\begin{aligned}
 (q_e p_e - q_a p_a) - \bar{p}(q_e - q_a) &= \text{Change in book value} - \text{change in inventories at current prices} \\
 &= q_e p_e - q_a p_a - \frac{q_e p_a - q_e p_e + q_a p_a + q_a p_e}{2}
 \end{aligned}$$

¹ No further reference is to be made in this document to the connections according to definition between nominal profits and the derived real and neutral paper profits and losses as explained in the international national accounting systems.

$$\begin{aligned}
&= \frac{q_e p_e - q_e p_a + q_a p_e - q_a p_a}{2} \\
&= \frac{q_e (p_e - p_a) + q_a (p_e - p_a)}{2} \\
&= (p_e - p_a) \frac{q_a + q_e}{2} \\
&= (p_e - p_a) \bar{q} = \text{nominal paper profit/loss according to SNA/ESA}
\end{aligned}$$

From this transformation it is clear that the same results for changes in inventories at current and constant prices can also be obtained by a different approach to that of the above table. The first stage involves determining the paper profits by a method approximating the idealised, original SNA/ESA formula. Subtracting the paper profits from the changes in book value results in changes in inventories at current prices, which are in turn deflated at average annual prices in order to obtain deflated figures.

The idealised SNA/ESA formula for paper profits and losses defined in physical quantities and unit prices $(p_e - p_a) \bar{q}$ can be approximately transformed very well for statistical purposes using the expression $(l_e/l_a - 1) \bar{b}$, with $l_{e,a}$ standing for the price indices and \bar{b} standing for the annual average of the book values. In the method practised in the national accounting system, paper profits and losses are assessed regardless of whether price indices are defined on a fixed-price basis or on the previous year's price basis.

5.13.1.5 Other general clarification

The transformation of commercial accounting book values to paper profit-adjusted changes in inventories demands exact price series for the surveyed book values. Questions then arise as to consistency of time and content. In the **time** dimension it can be assumed that a relatively prompt allocation of price indices to the surveyed book value inventories mainly approximates the commercial valuations in the case of commercially desirable fast turnaround times at warehouses. However, it should be remembered that the entire spectrum of possible commercial stock valuations (lifo, fifo, hifo, etc.) could only be tracked reliably by the use of highly complex statistical surveys to supplement the current warehouse surveys, which is naturally an illusory undertaking. An allocation of price indices with accuracy of **content** is rendered more difficult by the fact that the cited baseline data are present in the classification by areas of economic activity instead of by categories of product. This is disturbing, particularly in the case of input stocks, because contrary to the case with output stocks, no direct conclusions can be drawn regarding the stored product on the basis of the industry concerned. In the national accounts this problem is solved by undertaking, based on knowledge gained from the input-output framework, an industry-specific weighting of the price indices according to the individual input structures of each individual industry.

Opening and closing stocks of products for intermediate consumption, output stocks and goods purchased for resale are elicited in the chief annual sources used for data on inventories. One particular problem has always been caused by the discrepancies that occur in national surveys between the recorded closing stocks for one year and the opening stocks reported in the survey for the following year. The main reasons for this are likely to be annual changes in the circle of respondents and possibly commercial revaluations that are undertaken for the transition from

one accounting year to the next. It is impossible to trace these discrepancies back to their roots and eradicate them. Before the German national accounts were revised in 1999, which brought them into line with ESA 1995, stock levels used to be extrapolated with the aid of the annual changes, which provided recorded time series of stocks at book value and at constant prices. The main problem with that system lay in the increasingly wide discrepancy between the level of the extrapolated stocks and that of the actual stocks as stated in the survey returns, which could only be eliminated in the framework of major revisions of the national accounts by adjusting historical data over long periods. With the transition to ESA 1995, publication of continuous stock inventory series was dispensed with because they are not part of the ESA transmission programme and have also not been part of the national accounting system for some time. The cessation of stock extrapolation has no effect on the calculation of changes in inventories.

5.13.2 Details of the basis of valuation

This section contains descriptions of the basis for calculation and sources, broken down according to the classifications of areas of economic activity, set out in cohesive listings. In all areas of activity, ultimately the procedure to convert the book values is always according to the standard account that was previously explained. In all those areas in which the necessary **book value of stocks** can be drawn directly from surveys, the description is limited to the naming of the statistical source, referring to the ESA¹.

With exceptions in the wholesale and retail industry and in some other industries, the **price data** required for the standard approach originate from the production approach and special accounts within the input-output framework. These are, firstly, the prices of output for output stocks and goods purchased for resale and, secondly, specially determined input prices for stored intermediate consumption goods. In the following named sources, this indication of the origin of the prices is therefore not repeated again.

Division 01 Agriculture, hunting and related service activities

Changes in inventories in the realm of agriculture are assessed in cooperation with the Federal Ministry of Food, Agriculture and Consumer Protection. All the sources referred to in this context relate to surveys conducted and collated under the aegis of the Federal Ministry in connection with the production of the national agricultural accounts. The calculations all proceed on the basis of volumes of stock and prices which are converted into the input data required for the standard calculation (notional book value stocks and the associated prices). Details extracted from the national agricultural accounts provide information below on the very detailed product distinctions.

The changes in stocks (by volume) of potatoes and cereals are taken from the agricultural business and market returns (source: national agricultural accounts). The valuation of the volumes is based on the price of ware potatoes for the second half of the year.

Changes in inventories are taken into account in the case of vegetables that are sold from warehouse stocks in the first half of the post-harvest year rather than from field crops. The value of

¹ Standard listing of all statistics of the statistical offices of the Federal Republic of Germany and of the Länder – version for the Federal Statistical Office, status: January 2006.

the end-of-year stock of these vegetables is assessed on the basis of receipts from their sale in the first half of the following year. Data on harvested quantities are obtained from the survey of vegetable cultivation (source: national agricultural accounts), and data on quantities sold are obtained from the Central Office for German Agricultural, Forestry and Food Market and Price Reports ZMP (*Zentrale Markt- und Preisberichtsstelle der Land-, Forst- und Ernährungswirtschaft GmbH*). Changes in the value of inventories are assessed with the aid of prices for the second half of the harvest year, which are obtained from the same source.

The valuation of changes in stocks of apples and pears is based on documents from the ZMP concerning the seasonal distribution of the quantities sold through central producer markets.

The development of the stocks of wine is assessed on the basis of data from the German Winegrowers' Association (*Deutscher Weinbauverband*).

For the assessment of changes in stocks of cattle, calves, pigs, poultry, sheep and horses the results of the livestock censuses are used (source: national agricultural accounts and December livestock censuses). The changes in livestock inventories are obtained by comparing the head counts at the relevant census dates and multiplying the difference by an assumed average live weight for each livestock species.

ESA 1995 distinguishes between inventory livestock (animals for slaughter) and livestock kept as tangible fixed assets (for breeding, dairy produce, wool, etc.). In the Federal Republic of Germany, breeding animals account for a particularly large quantity of the livestock in the latter category. This ESA distinction is also made in the internal stock valuations undertaken by the Federal Ministry of Food, Agriculture and Consumer Protection. Before the introduction of ESA 1995, this division of livestock into two categories was not practised in Germany, since the value of livestock was hardly a major factor in the national accounts and did not affect GDP, which made it appear unnecessary to create a separate category of tangible fixed assets alongside buildings and other structures and machinery and equipment. Now that the binding provisions of ESA 1995 have been introduced, the distinction is made between animals reared for slaughter and those reared as tangible fixed assets. On the basis of separate internal data on perennially productive livestock, it was easy to divide historical data into the same two categories.

The Federal Ministry of Food, Agriculture and Consumer Protection divides livestock into the two categories – perennially productive livestock (PPL), which is excluded from stock inventories in the present context, and the remaining inventory livestock – on the basis of the following table:

	Allocation PPL = perennially productive livestock	Assumed average live weight (kg)
Cattle		
Young cattle at least six months but less than one year old.....		240
Cattle at least one year but less than two years old		
Males		400
Females for slaughter.....		400
Female dairy and breeding animals	PPL	400
Cattle at least two years old		
Males		550
Heifers for slaughter.....		450
Heifers for use as dairy and breeding animals	PPL	450
Dairy cows	PPL	550
Suckling cows	PPL	550
Cows for slaughter and fattening		550
Calves		
Calves below six months of age or 220 kg live weight		120
Pigs		
Piglets less than 20 kg live weight.....		10
Pigs 20 up to 50 kg live weight and fattening pigs with a live weight in excess of 50 kg .		60
Breeding sows with a live weight in excess of 50 kg.....	PPL	150
Boars with a live weight in excess of 50 kg	PPL	160
Sheep		
Sheep less than one year old		40
Breeding ewes and rams	PPL	60
Wethers and other sheep		60
Horses		
All categories	PPL	500

The prices that are required for the valuation of changes in quantity are obtained for each animal category (reports on the livestock and meat industry, source: national agricultural account) and are combined in weighted form by means of the respective monthly slaughtering figures in the Federal Ministry of Food, Agriculture and Consumer Protection.

Division 02 Forestry, logging and related service activities

The changes in inventories for standing timber were taken from the revised national forestry account now available, as recalculated by the economics institute of the Federal Research Centre for Forestry and Forest Products of Hamburg, on instructions from the Ministry of Food, Agriculture and Consumer Protection. The calculations are based on forest growth models which are extrapolated from the results of the first federal German forest inventory (1986 to 1988) and of the GDR's 'Datenspeicher Waldfonds' inventory (which continued until 1993). The valuation is obtained at basic prices for the felling of the reference year less future harvesting costs (costs of felling the timber).

Divisions 10 to 37 Extractive and manufacturing industries

Source of book value of stocks: Cost-structure survey of manufacturing, mining and quarrying (EVAS 42251).

Divisions 40 to 41 Electricity, gas and water supply

Source of book value of stocks: Cost-structure survey on electricity, gas and water supplies (EVAS 43221).

Division 45 Construction

Source of book value of stocks: Cost-structure survey on the construction industry (EVAS 44251).

Divisions 50 to 52 Main areas of the retail and wholesale sectors

Sources of book value of stocks: Annual survey of the wholesale trade and commission trade (EVAS 45221),

Annual survey of the retail trade (EVAS 45321),

Annual survey of the sale, maintenance and repair of motor vehicles and motorcycles (EVAS 45621).

Sources of price indices: Index of wholesale prices (EVAS 61281),
Index of retail prices (EVAS 61131).

Special features: The wholesale and retail sectors are differentiated into 40 sub-sectors (largely four-digit WZ classifications).

Special areas of Division 51**Federal Institute for Agriculture and Food and German Oil Storage Association**

The **Federal Institute for Agriculture and Food** is a storage agency for farm produce; in the classification of economic activities, the Institute is not regarded as a commercial body but as an agency of general government (agricultural administration), and the changes in the value of its inventory are reallocated accordingly in the national accounts. Quantitative details of the stocks of beef and pork at the end of the year and assessed stocks of various types of cereals can be found in the monthly statistical reports from the Ministry of Food, Agriculture and Consumer Protection. Suitable price data are available from the monthly producer price indices for products of agriculture (EVAS 61211). This information allows construction of the same vector of parameters as is used for all the other parts of stocks with the standard account.

The **German Oil Storage Association** provides internal data on stock volumes (metric tons) as at 31 December each year for crude oil, petrol, diesel/heating oil and heavy oil as well as market prices in EUR per metric ton as at 31 March and 30 September. Price interpolation and evaluation of the quantities involved allows estimates to be made of the standardised data input for the stock calculations on the basis of this information as well.

Division 55 Hotels and restaurants

Source of book value of stocks: Annual survey of hotels and restaurants (EVAS 45421)

Divisions 60 to 64 Transport, storage and communication

Source of book value of stocks: Service statistics according to NACE I (EVAS 47411)

Division 65 Financial intermediation, except insurance and pension funding

Changes in inventories in the domain of financial intermediation relate exclusively to the input stocks held by the commodity divisions of the Raiffeisen Rural Credit Unions, which are assigned to the banking sector on the grounds of the primary activity of their parent institutions. Information about changes in inventory stocks is available from the annual business report of the Federation of German Industrial and Rural Credit Unions (*Bundesverband der Deutschen Volksbanken und Raiffeisenbanken*) and the recorded amounts can be converted into accounting figures with the aid of appropriate price indices in accordance with the standard account.

Divisions 70 to 74 Real estate activities, renting and diverse services

Source of book value of stocks: Service statistics according to NACE K (EVAS 47412)

5.14 Acquisitions less disposals of valuables

In Germany, the figures for net acquisitions are calculated in the case of the following goods:

- gold bars and coins
- new works of art
- existing works of art
- jewellery, gems, etc.

Gold bars and coins: Household purchases of gold bullion from banks are recorded as acquisitions less disposals of valuables. The data relate only to newly cast gold bars (the 'primary market'), since sales of existing gold bars (the 'secondary market') between households cancel themselves out. In close cooperation with the DEGUSSA company, purchases of gold bars by households in the primary market in the year 2000 were estimated at EUR 50 m.

Included in the value of acquisitions less disposals of valuables is the external balance for coins which, in 2000, amounted to EUR 31 m. Altogether acquisitions less disposals of gold bars and coins thus amounted to EUR 81 m in 2000.

New works of art: Assessment of new works of art purchased as valuables is based on museum and art exhibition turnover (WZ 92.52.1) according to the VAT statistics (EVAS 73311). These statistics also include VAT-liable turnover of museums and art gallery turnover in inexpensive assets which are unsuitable as investments for the purpose of preserving the value. However, there is also certainly gallery turnover in valuable, new works of art, which is not reported in the VAT statistics and also turnover which does not appear in the classification WZ 92.52.1, because it takes place as a direct transaction between the artist and the purchaser. For simplicity we assume that these grey areas will cancel each other out. Imports are added to the turnover data of the VAT statistics and exports are subtracted. Information on this is available from the external-trade statistics (EVAS 511).

The valuation for the year 2000 is as follows:

	EUR m
Museum and gallery turnover as in VAT statistics (WZ 92.52.1)	232
+ Imports	317
– Exports	466
Acquisitions less disposals	83

Existing works of art: For works of art already existing in Germany and sold there, only the actual trade-related services are recorded as the value of acquisitions less disposals of valuables. The imports valued at purchasers' prices, in other words inclusive of the trade-related services, have to be added to this figure.

The starting point for the calculation is the figures for retail sales of antiques and antique rugs (WZ 52.50.1) and second-hand books (WZ 52.50.2) drawn from the VAT statistics. The figure for trade-related services within the entire turnover of these WZ categories is determined with the help of an estimated trading margin of 20%. To this is added imports of valuables (EVAS 51221) as shown in the external-trade statistics, while exports (EVAS 51211) are subtracted. We assume that imports and exports of valuables feature only in the retail trade. By deducting exports (including the trade-related services, the figure recorded for valuables now only includes the trade-related services for works of art sold inside Germany (as well as imports, of course).

Acquisitions less disposals of valuables in existing works of art are calculated with the following formula: acquisitions less disposals = trade-related services + imports – exports

The valuation for the year 2000 is as follows:

	EUR m
Retail turnover in antiques (WZ 52.50.1) and second-hand books as in the VAT statistics (WZ 52.50.2)	533
including trade-related services 20%.....	107
+ Imports.....	38
– Exports	61
Acquisitions less disposals	84

It is implicitly assumed that there are no direct transactions between households, or that the amounts of such transactions match those of transactions from the retail trade in antiques, but do not include valuables as defined by the ESA.

Jewellery, gems, etc.: The data on the output for sale by manufacturing enterprises with 20 or more employees are first taken from the output statistics (EVAS 42121). The output statistics are evaluated ex-works and exclusive of VAT. The following product categories from the output statistics are used:

GP 36.22 – jewellery and related articles, less

- GP 3622 14 300 – other goods of precious metals or precious metal plating (excluding catalysts),
- GP 3622 14 700 – platinum catalysts in the form of wire cloth or grill

Estimates are added for small businesses. For this the same percentage allowance is used as was found and applied in the input-output framework to allow for small businesses in the German classification WZ 36.2 – manufacture of jewellery and related articles. In 2000 it amounted to 71.74%.

To find the domestic use of income, the next step involves adding the imports and deducting the exports. The trade-related services are added to the previously determined domestic use of income in order to obtain domestic use of income at purchasers' prices. The trade-related services

are determined from the input-output compilation. For this, first the totals for retail and wholesale output are calculated for SIO 362 'Jewellery and coins' (as the difference between output at purchasers' prices less output at basic prices). The trade-related services for the calculation of valuables are then determined from the relationship between the trade-related services assessed in the first step and the output at basic prices. In 2000 the figure for trade-related services was 55%.

Calculation of trade-related services from the input-output compilation in 2000 for SIO 362 'Jewellery and coins':

Output from SIO 362 in the IOT at purchasers' prices.....	EUR 4 380 m
Output from SIO 362 in the IOT at basic prices	EUR –2 824 m
Wholesale and retail output in the IOT for SIO 362	= EUR 1 556 m
Allowance on value at basic prices	55.0992 %

After comparison with data from the microcensus as part of the calculation of household consumption, it was decided that 25% of domestic use at purchasers' prices could serve to preserve value and are therefore recorded as valuables.

Calculation method with data for 2000:

	EUR m
Output destined for sales (output statistics)	822
+ Allowance for small establishments	<u>589</u>
= Domestic output at ex-works prices.....	1 411
+ Import.....	722
– Export.....	<u>628</u>
= Domestic use	1 505
+ Trade-related services	828
= Domestic use at purchasers' prices	2 333
of which 25% = acquisitions less disposals of valuables	583

In summary, the following figures concerning valuables result for 2000:

	EUR m
Gold bars and coins	81
New works of art.....	83
Existing works of art	84
Jewellery, gems, etc.....	583
Total valuables.....	831

5.15 Net exports of goods and services

Net exports of goods and services are calculated by subtracting imports from exports. A distinction is made between goods and services transactions.

In order to find the figures for cross-border **goods transactions** the data on special trade from the external-trade statistics and supplementary details from the data on general trade of the external-trade statistics (EVAS 51) are used.

Cross-border **service transactions** are derived from the balance on current account forming part of the balance of payments statistics (EVAS 83111) and from other internal Deutsche Bundesbank documentation.

These source statistics, however, do not fully match the structure of the national accounts, which means that a number of modifications are required; these modifications are explained below. In particular, it should be noted that the use of the concept of special trade¹ does not correspond to national accounting practice² and that, in the valuation of imports, it is necessary to convert import figures from the c.i.f. values contained in the external trade statistics to f.o.b. values for recording in the national accounts. The external-trade statistics determine the value of goods at the point when they cross the German border. Accordingly, the imports of goods that are recorded in those statistics include the cost of transport and insurance between the point of exit in the exporting country and the point of entry into Germany (c.i.f. (cost, insurance, freight) valuation). In the national accounts, however, these costs are detached from the value of trade in goods and are recorded separately as service transactions (f.o.b. (free on board) concept).

The following table shows the total additions and deductions made on the basis of the source statistics to provide the national accounts figures.

Derivation of exports and imports for the national accounts

Figures for 2000 in EUR m

	Exports	Imports
Goods transactions recorded in the external-trade statistics (special trade, exports f.o.b., imports c.i.f.)	597 440	538 310
– Downward adjustments	13 310	39 580
+ Upward adjustments.....	11 980	34 740
= A. Goods transactions with the rest of the world (national accounts – exports f.o.b., imports f.o.b.).....	596 110	533 470
Other services recorded in the balance of payments (excluding consumption expenditure).....	71 590	90 010
– Downward adjustments	7 040	4 330
+ Upward adjustments.....	–	8 150
= B. Other service transactions with the rest of the world (national accounts).....	64 550	93 830
C. Consumption expenditure (non-residents in Germany)	21 140	–
D. Consumption expenditure (residents of Germany in other countries).....	–	51 780
B + C + D = Services (national accounts), excluding FISIM.....	85 690	145 610
+ FISIM in the revenue from the provision of services	6 590	–
+ FISIM in the expenditure on services	–	2 060
B + C + D = Services (national accounts), including FISIM	92 280	147 670
A+B+C+D = Goods and services with FISIM (estimate for the national accounts)	688 390	681 140

¹ This means all goods imported for use or consumption or for processing or refining and goods originating from production or processing/refining in the survey region which are exported. Special trade involves importing **ex**-warehouse for trading the free market or refining. Therefore this corresponds mainly to imports over national frontiers.

² In principle, the national accounting system is based on the concept of general trade which differs from that of special trade by the inclusion of storage operations. In general trade, imports are recorded **for** warehouse and exports **ex**-warehouse.

The modifications to the results of the source statistics only partially affect the level of net exports of goods and services, and largely these are only book transfers between goods transactions and service transactions. In the case of the latter, the following items are involved:

- freight transport and insurance from the point of exit in the exporting country to the point of entry in Germany in cases where non-German carriers are used,
- sales of goods to allied forces,
- cancellations and repairs to carriers' vehicles.

These items thus have no bearing on the value of net exports but merely affect the distribution of that value between goods and service transactions.

Detailed explanations follow below on the upward and downward adjustments applied to the baseline figures in determining the goods and service traffic for the purposes of the national accounts.

Processing to order

Under ESA 1995 paragraph 3.135 m, goods processed to order must be recorded in gross amounts. However, not all goods imported for processing to order, for example, are actually re-exported after active processing, for some are sold direct within the country. In this case an additional export and import are feigned. The correct valuation of the goods inclusive of the processing payment is then guaranteed. The matching transactions are mirrored as passive processing to order. These data are provided by the Deutsche Bundesbank.

Warehousing transactions

The requisite data on warehousing are supplied by the Deutsche Bundesbank.

Returned goods

Returns are goods which are sent back to their country of origin because of alleged defects or for other reasons. Since these consignments are not genuine market transactions, their value must be deducted from the source statistics, both in respect of the original sale and in respect of the return¹.

Fringe payments

Fringe payments, such as compensation, rebates and payments under liability clauses, reduce the value of transactions retrospectively and are therefore deducted from the recorded value of sales. These fringe payments are included under the services heading of the balance of payments statistics².

Freight and marine-transport insurance policies

The external-trade statistics determine the value of goods at the point when they cross the German border. Accordingly, the imports of goods that are recorded in those statistics include the

¹ Cf. Fachserie 7 Außenhandel, Reihe 1 under summary item 9 / 901.

² Cf. Deutsche Bundesbank, Statistisches Beiheft zum Monatsbericht, Reihe 3, Zahlungsbilanzstatistik, Table 4a.

cost of transport and insurance between the point of exit in the exporting country and the point of entry into Germany (c.i.f. (cost, insurance, freight) valuation). In the national accounts, however, these costs are detached from the value of trade in goods and are recorded separately as service transactions (f.o.b. (free on board) concept). Any such costs which are included in the value of exports as payment for the transport of goods to the point of entry are separated from the value of trade in goods.

The cost of transport and insurance services provided by foreign companies, expressed as a percentage of the total value of imports, is added back into the accounts under expenditure on services. The transport and insurance services provided to exporters by German companies are already included in the baseline data on income from service provision. The value of these services is only recorded by the Deutsche Bundesbank in internal documentation. The transport and insurance services provided by German companies for the importation of goods, on the other hand, are not classed as exported services. Since the value of these transport services is already included in the baseline data on income from service provision (in the monthly balance of payments, its inclusion under revenue in the imports (c.i.f.) account is designed to offset its contribution to the value of imports of goods), it is duly extracted from these data too.

The total of the transport and insurance to be deducted from the imports of goods is published by the Deutsche Bundesbank¹.

The conversion of c.i.f. values into f.o.b. values for imports of goods and the simultaneous increase in the imports of services do not have any effect on the balance of exports over imports or the level of GNP.

While the ESA leaves the full transport and insurance costs under the heading of imports of goods as well as imputing an export of services in cases where transport and insurance costs are met in euros, the German national accounts do not record transport and insurance costs paid in euros as either imports of goods or exports of services.

Gas of foreign origins

In agreement with the Deutsche Bundesbank, the (de facto) pure transit of gas from abroad is not treated as an import or export and is deducted from the baseline values of the special trade statistics.

Other additions to the source statistics

Letters and parcels sent by post are exempt from compulsory declaration for purposes of external-trade statistics. The **traffic in packages with other countries** accordingly has to be added to the baseline figures for trade in goods as an estimate made on the basis of data on the number of packages sent and assumptions regarding the average value of each package. The calculations are made by the Deutsche Bundesbank by multiplying the number of exported and imported packages by an imputed average value of EUR 13.

¹ Cf. Deutsche Bundesbank, Statistisches Beiheft zum Monatsbericht, Reihe 3, Zahlungsbilanzstatistik, Table 3a, col . 18.

Book imports

The value of book imports is not fully recorded in the external-trade statistics. This applies in particular to the commodity categories 'books and brochures' and 'newspapers and magazines'. According to estimates of the Deutsche Bundesbank, the undercoverage in this domain amounts to about one third of the actual value of exports and imports in these two categories.

Fish landed abroad

Fish landed abroad should be regarded as an export, and their value is therefore added to the total figure for exports in the domain of special trade. The value of fish landed abroad is published as part of the deep-sea and coastal fishing statistics¹ compiled by the Federal Statistical Office (EVAS 41361).

Under the heading of **other trade in goods as per balance-of-payments statistics**, figures are added to imports and exports which essentially cover payments arising from trade in goods and other movables between non-residents and residents of Germany in cases where the purchased items do not leave German economic territory. In the case of imports, the addition also covers payments made for purchases of goods imported under the simplified importation procedure and the forwarding by resident collection agents to non-residents of proceeds from the sale in Germany of items imported from abroad. These values are recorded in the internal documentation of the Deutsche Bundesbank.

The value of cross-border transactions in **gold coins which are legal tender** contained in the special trade imports and exports is extracted from the source statistics (source: statistics on special trade).

Other demarcation lines: goods / services

Repairs to transport equipment are not included in special trade. Their value is recorded internally by the Deutsche Bundesbank and added to exports of goods.

The value of **purchases by residents of other countries travelling in Germany** is deducted from exports. This is done to avoid double counting, because the value of these purchases is included in both special-trade exports and income from services in the balance-of-payments statistics. It is recorded internally in the framework of the external-trade statistics under general trade.

Other additions and extractions

Construction services are heterogeneous flows to and from the German construction companies working abroad. The value of these services is extracted from the value of imports and exports because they are balanced out in the national accounts, while the flows are recorded as gross amounts in the balance-of-payments statistics. The data are recorded internally by the Deutsche Bundesbank. The appropriate amount is deducted from both expenditure on services and income from services. The difference is also taken into account under cross-border property income.

¹ Cf. Fachserie 3 Land- und Forstwirtschaft, Fischerei, Reihe 4.5.

Ships' and aircraft stores

Cross-border goods transactions include these special transactions under the heading 'ships' and aircraft stores', since they are not included in the external-trade statistics. Information on these transactions, however, is obtained from the statistics on foreign payments held by the Deutsche Bundesbank and is provided to the Federal Statistical Office.

Leasing

Transactions in goods in the external-trade statistics are recorded as part of cross-border leasing transactions. Since, in Germany, financial leasing as defined by the ESA is generally not legally possible, because the complete passing of all risks from the lessor to the lessee automatically renders the contract void or results in its re-interpretation into a hire-purchase agreement, the transaction values recorded in the external-trade statistics have to be corrected. Lease payments are recorded as payments for services.

FISIM

According to the FISIM concept, service charges must also be taken into account in connection with cross-border interest payments on loans and deposits. The corresponding values for credit and deposit business by German banks with foreign economic entities are included in the valuation of output of domestic banks (see section 3.16).

Conversely the values for the import of services in connection with lending and deposit transactions by German non-banks with foreign banks must be estimated separately. The basis for these estimates is found in information from the Deutsche Bundesbank concerning loans from and deposits with foreign banks on the part of German non-banks, and information from the International Monetary Fund (IMF) on national lending and deposit interest rates in countries with major financial centres (Luxemburg, London, New York). Generally it can be assumed that the transaction is denominated in the currency of the host country and therefore the lending, deposit and reference interest rates valid for this currency apply to the calculation.

Derivation of trade in goods as per the national accounts using the baseline values recorded in the external-trade statistics

Item	2000 EUR m
Imports (special trade as in external-trade statistics).	538 311
Upward adjustments.....	34 737
+ Processing to order.....	963
+ Imports to warehouse (domestic account)	21 954
+ Packages.....	43
+ Books	310
+ Other trade in goods.....	9 739
+ Ships' and aircraft stores.....	1 728
Downward adjustments	39 580
– Imports ex-warehouse	17 697
– Finance and operating leases	513
– Returned goods	5 734
– Fringe payments.....	2 493
Freight and insurance policies	
– Sea freight.....	8 035
– Inland shipping freight	145
– Road freight, etc.	1 388
– Air freight	505
– Pipelines	333
– Sea transport insurance	1 148
– Coinage gold	18
– Gas of foreign origins	1 572
Goods imports according to national accounts	533 468

Item	2000 EUR m
Exports (special trade as in external-trade statistics)	597 440
Upward adjustments.....	11 985
+ Purchase of goods after active processing to order	963
+ Value of repairs	955
+ Export ex-warehouse	5 538
+ Other trade in goods.....	3 881
+ Packages	122
+ Fish landing	90
+ Ships' and aircraft stores.....	436
Downward adjustments	13 312
– Fringe payments.....	5 155
– Purchases by foreign travellers	48
– Leasing	776
– Returned goods	5 734
– Coinage gold	26
– Gas of foreign origins	1 572
Goods exports according to national accounts.....	596 114

Derivation of trade in services as per the national accounts using the baseline values recorded in the balance-of-payments statistics

Item	2000 EUR m
Income from services according to balance of payments	92 726
Downward adjustments	7 042
– Sea freight (German share)	1 916
– Inland shipping freight (German share)	40
– Road freight, etc. (German share)	377
– Air freight (German share)	217
– Construction KZ 570 revenue	4 492
Income from services in the national accounts (rounded; excluding FISIM)	85 690
Adjustment for FISIM	6 590
Income from services including FISIM	92 280

Item	2000 EUR m
Expenditure on services according to balance of payments	141 793
Upward adjustments	8 143
+ Sea freight (foreign share)	6 119
+ Inland shipping freight (foreign share)	106
+ Air freight (foreign share)	288
+ Road freight (foreign share)	1 010
+ Pipelines (foreign share)	333
+ Sea transport insurance (foreign share)	287
Downward adjustments	4 332
– Construction KZ 580 expenditure	4 332
Expenditure on services in the national accounts (rounded; excluding FISIM)	145 610
Adjustment for FISIM	2 060
Expenditure on services including FISIM	147 670

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Chapter 6 GDP balancing and other procedures of validating

6.1 GDP balancing within the accounting system

GDP in Germany is calculated in two separate ways: the production approach calculates GDP by referring to producers' gross value added and net taxes on products, whilst the expenditure approach calculates GDP as the sum of consumption expenditure, fixed capital formation and the external balance of goods and services. In both approaches, the calculations are performed in a largely autonomous way and are combined in a macro-economic provisional balancing process. In Germany, it is not really possible to calculate GDP in a third way via the distribution side (income approach) because of the large gaps in information about entrepreneurial income. However, the results from the income approach are used for plausibility checks of GDP, e. g. for the creation of macro-economic parameters.

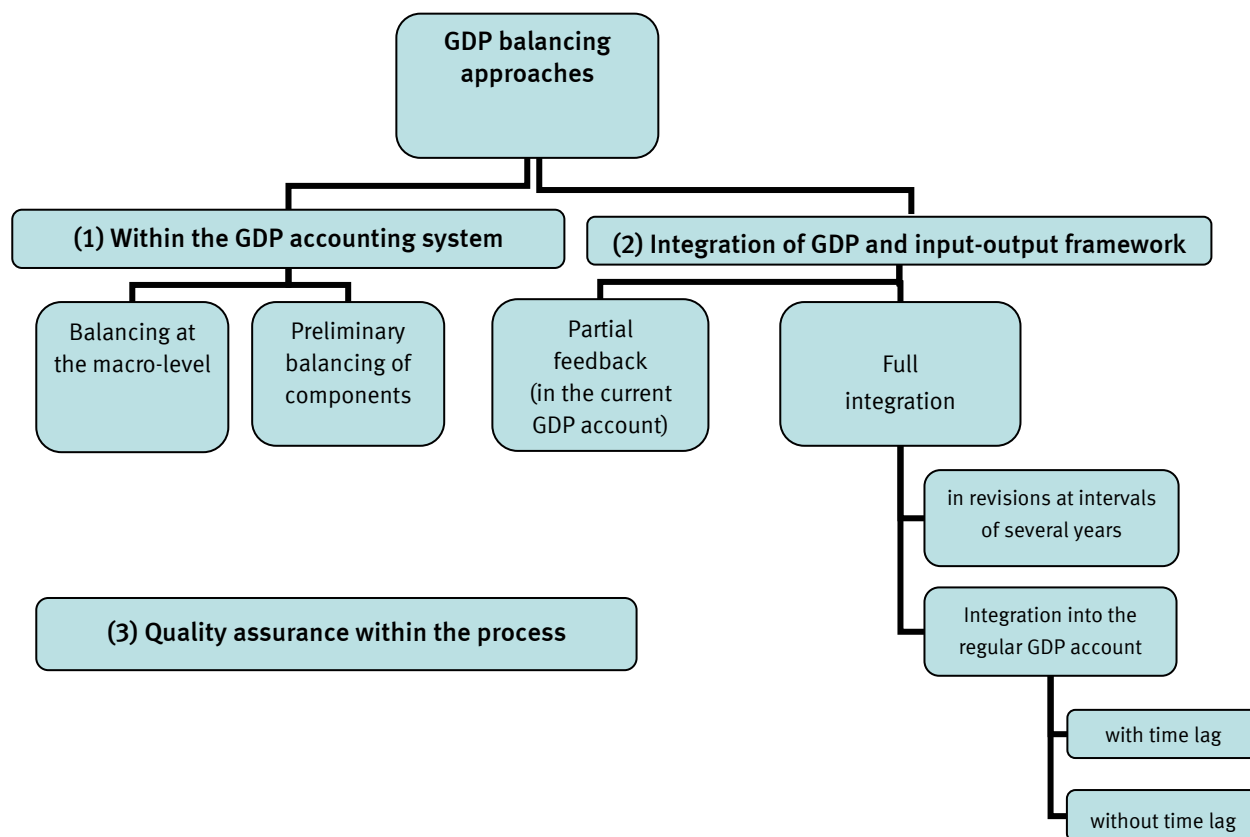
The methods of calculating GDP can generally be subdivided into three major blocks for the purposes of comparison and validation:

- (1) Macro-economic GDP balancing
- (2) Detailed balancing
- (3) Quality assurance during the process

These approaches are shown with their overall context in Overview 6—1 below. The balancing of GDP serves to verify the results of calculating the largely independently computed production and expenditure approaches to calculating GDP at the macro-level and combines them on the basis of the macro-economic circuit (block 1a). This procedure is performed separately in each calculation of GDP, starting with the first provisional quarterly GDP calculations (t+45 days after quarter end) and the first provisional annual calculation in January of the following year, via the

regular more in-depth annual calculations (for the first time after $t+18$ months) until the major national accounts revisions and backward projections which are carried out at intervals of several years and are mostly combined with changes to the method. During these calculation cycles the statistical data become ever more complete and the quality of the national accounts figures is progressively improved.

Overview 6—1: The system of GDP balancing



In addition to this macro-balancing, a preliminary balancing of components (block 1b) is undertaken. Aggregates which are particularly closely related by their statistics are checked for coherence prior to GDP balancing. Particular examples of this are the reconciliation of the calculation of capital expenditure on construction with construction industry output or the reconciliation of the baseline values for retail trade, on the one hand, to calculate household final consumption expenditure and, on the other, to calculate output and value added for the retail industry.

Detailed balancing (block 2) forms a further point of approach which involves integrating GDP and the input-output framework. Based on supply and use tables, a detailed reconciliation is made of product supplies (domestic output and imports) and product use (final demand and intermediate consumption). If the detailed balancing reveals that due to the need for changes in various groups of products or industries the benchmarks in the tables are not sound, there may be yet another change in the results of the macro-balancing of GDP. Full integration of the input-

output compilation was formerly only possible in the context of national accounts revisions at intervals of several years, because there were relatively large delays before the tables were available. As a result of substantial acceleration in calculating the input-output tables (IOT) during recent years, however, it is now possible to integrate them into the current annual GDP estimations. Nonetheless there is currently a time lag of about three years (e.g. the IOT from the 2003 reporting year could not be included until summer 2006). Full integration without a time lag is not possible due to the data situation and the substantially more complex calculations involved in preparing the IOT.

As well as these two approaches to balancing GDP there is a whole range of further measures designed to provide accompanying quality assurance for the calculations (block 3); these are outlined in detail in section 6.2.

6.1.1 GDP balancing at macro-level

The practice of macroeconomic GDP balancing features a systematic iterative procedure which entails employing an interactive process involving a number of experienced technical experts in order to observe a whole series of different ratios in order, ultimately, to obtain an optimised result (trial and error). So this is not a mechanical process or a mathematical procedure with a predetermined sequence. The balancing process can be broken down into the following stages:

- (1) Its starting point lies in the results of the calculations from the production and expenditure approach (annual and quarterly results, at current and at constant prices).
- (2) Identification and checking of deviations
- (3) Analysis of results over time (time series)
- (4) Comparison of 'new' and 'old' results (from the previous account)
- (5) Comparison of provisional and final results (from earlier years)
- (6) First feedback / verification of 'soft' and less reliable aggregates
- (7) Plausibility check on changes to inventories (after the first balancing stages)
- (8) Plausibility check on implicit deflators (after the first balancing stages, for GDP, production- and expenditure-side aggregates)
- (9) Feedback with (provisional) seasonally- and calendar-adjusted results
- (10) Feedback with results of distribution accounts (e.g. operating surplus, labour share in national income, savings-income ratio)
- (11) Analysis of other macroeconomic indicators (productivity, unit labour costs)
- (12) Feedback with results of sector accounts (coherence in particular)
- (13) Analysis of balancing differences in the time series
- (14) Very detailed subdivision of balancing differences (published values) primarily by mechanical methods (with subsequent plausibility check, particularly in the case of time series)
- (15) Comparison with the results of other external institutions

- (16) Discussion and feedback from external national accounting experts (or, particularly in the case of seasonally and calendar-adjusted results, experts from the Deutsche Bundesbank).

The more detailed breakdown of the balancing differences (step 14) relates in particular to the results of the production approach. Here, the gross value added of the industries is adjusted to the gross domestic product which has already been determined, with the output (due to the better statistical basis) generally remaining unchanged and the balancing entry being made under intermediate consumption. In this procedure, a few of the industries are left out of the balancing process (e.g. the sectors of general government and financial corporations), either because the results are considered to be particularly well-funded or because they are already being processed elsewhere in other subsystems (sector accounts). A final check is then made on these balancing entries at the next accounting date (in other words, one year later), based on the detailed supply and use tables (see section 6.1.2).

The following table shows the size of the balancing differences found between the accounting results according to the production and expenditure approaches.

Balancing of GDP figures at current prices
2000 reporting

GDP figures	EUR bn	Divergence from harmonised GDP	
		EUR bn	%
GDP (production approach)	2038.6	+ 23.9	+ 1.2
GDP (expenditure approach)	2067.6	– 5.1	– 0.2
Balanced GDP (published figure)	2062.5	–	–

For the year 2000 the GDP according to the expenditure approach was EUR 29.0 bn (in other words, 1.4%) above the result calculated according to the production approach. The balanced GDP figure for 2000 was EUR 2 062.5 bn, which is EUR 23.9 bn, or 1.2%, higher than the figure calculated on the basis of the production side. The result is slightly (minus 0.2%) lower than the result obtained via the expenditure side.

Logically, the balanced result should lie in the interval between the production and expenditure approaches. The substantially greater increase in the figures calculated on the basis of the production approach is due to the fact that, despite numerous additions in the course of checking for data gaps, it is still possible for certain figures to be understated in the production accounts. This particularly applies in cases where VAT has been charged but has not been transferred to the fiscal authorities. The figures for gross value added and the recorded taxes on products, and therefore also the GDP calculated on the basis of the production approach, could well be too low by these amounts. An obvious upward adjustment is made to compensate for this. The main reason why the 2000 nominal GDP figure has been adjusted to a level which is marginally below the result of the calculation based on the expenditure approach is that the final use aggregates are also balanced annually and quarterly in the course of their time series. This is especially the case for changes in inventories because these have the least sound statistical basis compared to the other final use aggregates. In principle, the sum of the final use

aggregates does not change, since the results of the calculation undertaken on this basis are subject to a series of checks or are based on data which, due to the method, are implicitly regarded as complete. The correction of the figures for 2000 based on the expenditure approach may therefore be regarded as mere 'fine-tuning'.

In the other years, the balancing configuration shows a similar pattern and the balancing differences of the past have been of similar magnitudes. Nonetheless since 2002 there has been an obvious increase in the discrepancies between the production and expenditure approaches of GDP. Interestingly, this coincides with the introduction of the euro notes and coins and it is conceivable that changes in the behaviour of the main economic players as well as extra statistical recording problems were involved. This would suggest, for example, the so-called 'carousel' or 'missing trader' fraud and other forms of VAT fraud, particularly in the case of cross-border transactions, or fresh problems in recording the payment transactions for the balance-of-payments statistics.

6.1.2 Detailed balancing with the supply and use tables

A major task of the national accounts is to balance the production and expenditure approaches by reference to the supply¹ and use tables² and the input-output tables. These tables provide a basis for consistency checks on the results of the production approach and the expenditure approach of GDP classified into detailed product group categories. Moreover, they represent an important prerequisite not only for calculations in comparable prices but also for evidence of output as well as intermediate consumption in the individual sections stated in the previous year's prices.

The figures from the production approach referring to output, intermediate consumption and gross value added are classified into 59 industries and these are combined into product groups in the supply and use tables.

The cross-classification for industries and product groups as presented in the supply and use tables are used for checking the consistency and improving the estimates.

- **Identities for industries:**

The total output of the industries matches the total input of the industries. For each industry:

$$\text{output} = \text{intermediate consumption} + \text{value added}$$

- **Identities for product groups:**

¹ The **supply table at basic prices with a transition to purchasers' prices** shows the value of the goods produced inside Germany, broken down by product groups and industries, and supplemented by imports by product groups

² The **use table at purchasers' prices** shows the use of the goods in a combined breakdown by product groups and industries or categories of the latest use, supplemented by the value added generated within the production process (with its components) by industries

The supply of products equals the use of products. The total supply at purchasers' prices by product group is equal to the total use by product group at purchasers' prices. In the case of each product group,

	Output at basic prices
+	Imports (cif)
+	Trade and transport margins
+	Taxes less subsidies on products
=	Supply of products at purchasers' prices
	Intermediate consumption at purchasers' prices
+	Consumption expenditure
+	Gross capital formation
+	Changes in inventories
+	Exports (fob)
=	Use of products at purchasers' prices

The supply and use tables therefore represent an important link between the calculation of domestic product and the input-output framework. The data from the GDP calculation, broken down into industries, are converted into homogeneous production units, thereby matching the classifications which are used in the input-output tables.

In the input-output tables there is a complex product breakdown of

- *the total output of products from domestic production and imports,*
- *the use of these products for intermediate consumption, consumption expenditure, gross fixed capital formation and exports, as well as*
- *the value added arising during production and broken down into components.*

*The total of all homogeneous units of output making up the products in a product group forms a **homogeneous branch**, which is consequently formed according to strict rules. It produces all the products of a product group and no other products. Homogeneous branches and **product groups** are identical in content. In the one the term relates to the production activity and in the other it relates to the actual product.*

The baseline statistics for calculating the input-output tables consist of highly broken down data on the **output** of products sourced from domestic production and imports. The most important statistical sources for determining domestic output are the production statistics, while the figures on imports are based on the external trade statistics in particular. The output figures are taken from the column and row totals of the input-output tables. The input method is generally applied in order to break down the figures in the columns whilst the output method is applied to those in the rows.

To calculate the output of goods and services (supply) it is necessary to distinguish between **domestic output** and **imports** in the breakdown by type of product. The object of the calculation is to achieve results in a standard product classification.

To break down domestic output by product, the same sources and basis of calculation are used as in the calculation of output in the 59 industries for the GDP calculation. These sources are used not only as the basis for analyses of other data sources and further calculations but also in

order to make a first subdivision by product group. The output values are broken down into products on the basis of the highly differentiated Systematic Classification of Production Activities (SIO) in order to allow an allocation of the existing data as accurate as possible and to close any gaps and omissions with detailed supplementary information.

The essential **stages** in the calculation of output by products are:

- taking into account the conceptual differences among the data sources and harmonising them to fit in with the general data,
- harmonising to accord with the concepts of the national accounting system and its results - for instance, calculation of trade margins by netting goods for resale or the changeover from using purchaser's prices to using basic prices,
- transferring from industries to homogeneous branches. The statistical unit underlying the above calculations is the enterprise and it is associated with an industry according to the primary focus of its activities. To obtain the output by branches of homogeneous production from these data, the secondary activities have to be identified and converted into the branches typical of them. What particular activities these may be, and whatever their extent, will be expressed in the breakdown of output by products.

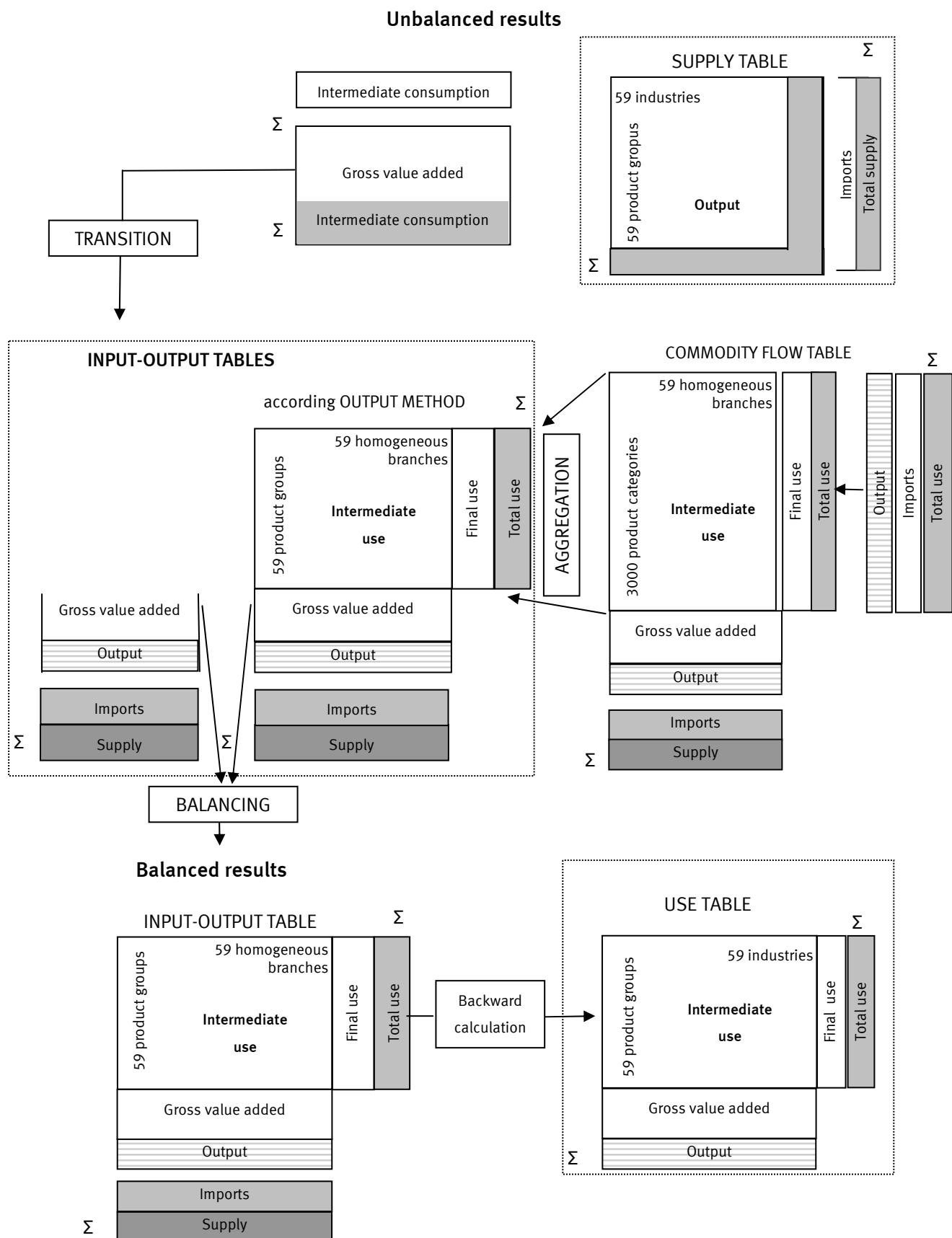
The rows of the input-output tables show how the output of goods and services from domestic output and imports broken down to product groups is used in the economy. This is the case in the first quadrant (intermediate consumption) as intermediate consumption of individual homogeneous branches and in the second quadrant of the input-output tables as the final use in the subdivision by the consumption expenditure of households and non-profit institutions serving households (household consumption expenditure), the consumption expenditure of general government, gross fixed capital formation, changes in inventories and net acquisitions of valuables as well as exports.

The use of individual categories of products is determined row-by-row in a very detailed breakdown (around 3 000 eight-digit classifications within SIO) and is referred to as the commodity-flow or output method. Aggregation results in figures for the output and use of the homogeneous branches.

The results of the transition of the output of industries to that of homogeneous branches have to be harmonised with the values determined from the commodity-flow table. This process will also show up any problems originating from the calculation of industries. The Federal Statistical Office itself carries out checks on the extent to which the results of the production approach and the expenditure approach can be modified in individual areas – particularly the parts that are estimated – in order to guarantee that the accounting mechanism is plausible.

Once the corrections have been incorporated into the input-output table (59 product groups X 59 homogeneous branches), a backward projection can be made of the use table, broken down into 59 industries. This method leads to an entirely plausible result on all counts. The following Overview 6—2 illustrates the approach used for the input-output framework.

Overview 6—2: Flow chart showing the calculation within the input-output framework



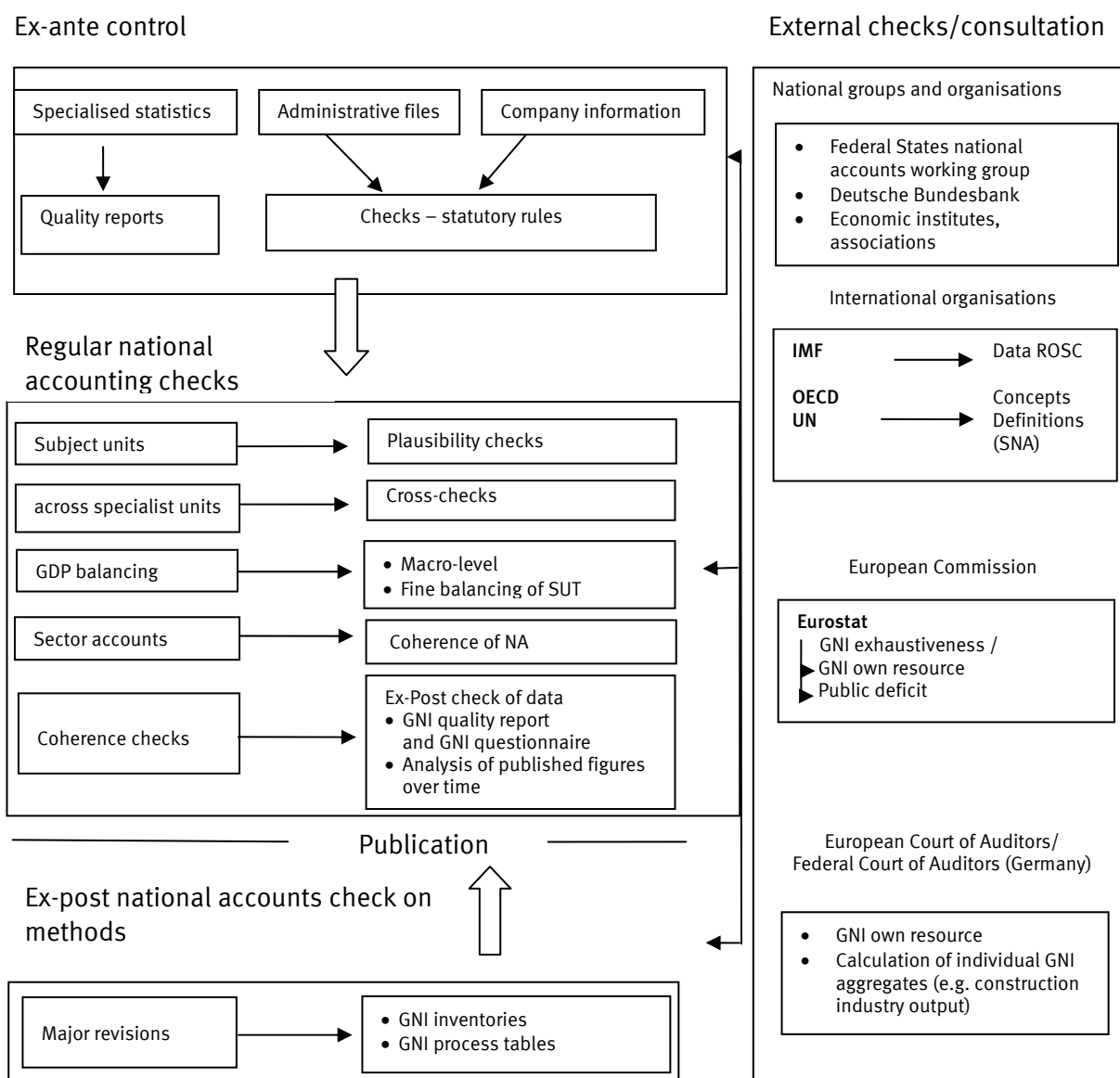
6.2 Other approaches to validating GDP

The procedure of balancing of the gross domestic product may be considered central to a comprehensive system of **quality assurance** to accompany the process of drawing up the national accounts. In Overview 6—3 below, the most important elements of this quality assurance approach are outlined.

The breakdown distinguishes between:

- Ex-ante control (in the source statistics)
- Ongoing national accounting control (of the results)
- Ex-post check on national accounts (the methods used)
- External checks and consultations.

Overview 6—3: Quality assurance in the German national accounting system



Notes:**a) Ex-ante control****(1) Quality control of the specialised statistics**

Before the actual national accounts calculations can take place, a series of quality control checks must be made, some of which will have already been performed by those supplying the source statistics. In the national accounts system, the results of a widely diverse range of primary and secondary surveys are processed in addition to information from administrative data sources. The initial data used for the national accounts and the underlying source statistics are explained in detail in the respectively valid version of the GNI-inventory. From the viewpoint of the national accounts these involve a quality control check ex ante, since the same data are checked again for plausibility as part of the national accounts system, and wherever possible are compared with data from other sources and are also checked for consistency against long-term series. In addition, GNI process tables are prepared which demonstrate, in tabular form with verified figures, on what basis (surveys, administrative sources, estimation models, etc.) the calculation of important national accounting aggregates is based and which adjustments (conceptual adjustments, adjustments because of thresholds of the source statistics or to achieve exhaustiveness, etc.) have been made.

(2) Cooperation between specialised statistics sources and the national accounting system

To calculate the national accounting figures, all suitable data are used that are available on the particular publishing or revision date. This includes current surveys, administrative data, household surveys, the annual accounts of major enterprises and information obtained from associations. In cases making use of internal sources, in other words the statistics held by the Federal Statistical Office, this takes place as part of bilateral contact between the affected technical departments within the national accounting system and those within the specialised statistics. As part of discussions held with working parties on special statistics, issues are discussed concerning matters of national accounting in terms of content as well as timing.

(3) Scheduling

The publication schedule which can be found on the Internet and the timetables for publication of the source statistics show the compilers of the German national accounts when the various current baseline data will be available (see www.destatis.de/Presse/Jahreskalender). As soon as the particular national accounts departments have received the press releases pertinent to their own areas (automatically via email or the Intranet), they are able to access the underlying detailed data ('Genesis' data base).

(4) Progress control to specialised statistics

To verify that the official statistics are prepared on time, there is a special database-supported monitoring process (TeCon) available for internal control. It keeps track of the schedules for all the official statistics at the Federal Statistical Office and of deliveries from the regional statistical offices. Punctuality is documented in regular control reports. Any critical delays to the schedules are regularly discussed at management level and improvements are induced. For external sources of statistics the specialised departments are also largely kept informed by the producers

of the statistics, or else the data are sent automatically based on appropriate agreements (e.g. the health sector, private health insurance, post office, railways).

(5) Documentation

The specialised departments keep records of all the sources that are integrated into the calculations. These tables are updated regularly and checked at all accounts deadlines. In the 2004 annual report of the European Court of Auditors it was found (paragraph 3.48, b) that the "existence of agreements or equivalent arrangements between National Accounts departments and units providing basic statistical data, which set out the conditions for the delivery and the quality of data" is a given in Germany. The results which ultimately flow into the final calculation of GDP are documented particularly thoroughly. As well as this, important ad-hoc decisions are recorded in separate notes and memoranda.

(6) Reports on quality

As a rule, the results of the quality control checks on individual sets of specialised statistics are documented in the relevant quality reports. Since December 2005 quality reports have been produced for almost all the official statistics (approximately 230 reports, including those for the national accounts and the employment account). These are normally distributed together with the figures as a part of the publications.

b) Time scheduling in national accounts

(7) National accounting schedules

Within the department entitled 'National and Environmental Accounts, Labour Market' all dates (accounting deadlines, internal delivery dates, balancing deadlines and publication dates) are already set each year in December for the following year. By this means all the employees of a department will know exactly the date by which they have to complete the quarterly and annual accounts for their areas of expertise for delivery to other specialist units of the department for further attention. The complex delivery relationships within the department are handled with the help of computer software. The employees who are responsible for particular accounting areas are also in constant direct contact and if necessary ad-hoc meetings are conducted at the work level and documented where necessary.

(8) Progress control to national accounting schedules

A special department is responsible for the internal deadlines within the national accounting system which also prepares for the reconciliation and publication of the GDP data. It ensures that sub-calculations are completed on time and that the delivery and publication deadlines are kept. The deliveries from the subject units are each documented in electronic form to show the date and time. In addition, an independent detailed coordination system exists for the purposes of the input-output framework.

(9) Quality control in national accounting subject units

During calculation of the individual national accounting aggregates quality control checks are constantly being conducted, a synopsis of which is shown in Overview 6—3. Here the source data are checked for plausibility and then compared with data from other available sources.

Discussions with other specialist units and/or departments are held in order to clear up possible discrepancies and ultimately to reach the appropriate result. Where necessary, the individual basic data must be adapted to fit the national accounting concepts, which in turn requires a thorough consultation of the data material.

(10) Cross-sectional checks of national accounts/employment account

The results of the employment account will open the way for an important cross-sectional check by industries. The employment account, which is fed from numerous, regular, often monthly sources, serves for the respective specialist units as an extra means of control, particularly with regard to development in the different industries and according to the sector. Conclusions can be drawn about the plausibility of the statistics in the overall context from a comparison of the results of the employment account with the results of individual specialised statistics. The figures from the employment account also form an important basis for the work of the cross-unit working group on coherence in the German national accounts (*Kohärenz (VGR)*)¹.

(11) Monitoring the exhaustiveness of the national accounts

Part of the cross-sectional control checks are all the works carried out in connection with the exhaustiveness check of gross national income (GNI) for EU own-resources purposes. This refers in particular to the reconciliation of consumption expenditure (national accounts) with the results of household surveys (sample surveys of income and consumption from the household budget survey) as well as to a special project called 'Beschäftigtenabgleich' (check-up of exhaustiveness of GNI based on employment data)¹.

(12) GDP balancing at macro-level (see section 6.1.1).

(13) Detailed balancing of GDP (see section 6.1.2).

(14) Quality check by means of sector accounts

After GDP balancing, while the sector accounts are being prepared a further check takes place for full system coherence. This is a check entailing an analysis of whether the macro-economic circuit is complete - in other words, whether the production approach, expenditure approach, income approach as well as the financial accounts in the various sectors of the economy agree with one another. Several days after the balancing date, the subject unit responsible for combining the sector accounts generates a complete set of sector accounts with the data records compiled by other national accounts units. The sector accounts for S.12 (financial corporations), S.13 (general government) and S.2 (rest of the world) are delivered entirely by other national accounts units. The other sectors S.11 (non-financial corporations and quasi-corporations) and S.14/15 (households and non-profit institutions serving households) are calculated from the existing modules, and partly also by means of 'mirror-image' comparisons. The examination for exhaustiveness, consistency and plausibility of the sector accounts involves the use of very complex and highly detailed control tables with which the coherence of the individual accounts items used by the various specialist units is investigated. Any differences revealed are reported to the responsible specialist units, discussed and corrected immediately.

¹ On this refer also to Chapter 7.

(15) Quality check of national accounts/financial accounts

In addition to the internal checks for the sector accounts, at every accounting deadline there is a reconciliation and coherence check against the financial accounts prepared by the Deutsche Bundesbank. Issues concerning allocation to particular sectors are cleared up and, as far as possible, financial balances are harmonised according to sector. Differences in the financial balances between the financial account and the non-financial sector accounts remaining as a result of non-assignable residual items in the balance-of-payments statistics for the rest of the world (S.2) are posted as a balancing entry in the non-financial corporations sector (S.11). Apart from different assessment dates, the financial balances of S.12, S.13 and S.14/15 are adjusted reciprocally.

(16) Working group on coherence of the national accounts (*Arbeitsgruppe Kohärenz (VGR)*)

A separate cross-unit working group entitled '*Kohärenz (VGR)*' which was set up during the work of the major national accounts revision of 2005 makes a detailed examination of the provisionally reconciled results. Its function is to check all the important national accounts aggregates by industries (breakdown as in A60) from output to net operating surplus for coherence within the national accounts over time. Various indicators for all areas of activity according to the German classification system (WZ) and aggregates are calculated and checked, and in particular any sudden changes in the time series are closely analysed. Once the 2005 revision was complete, the group also became responsible for checking the coherence of the backward calculations (1970 - 1991). Here too, detailed analysis or control tables were prepared in which all the results for the backward extrapolation were checked for temporal coherence and consistency of the national accounts.

(17) Quality control check on 'productivity'

As well as the test program of the '*Kohärenz (VGR)*' working group, there is one more particular analysis of productivity indicators, such as gross value added per employee and per hour worked by a person in employment, or unit labour costs. As a supplement to this, the ratios for capital productivity and capital intensity form good analytical cross-checking possibilities for the results by industry.

c) Ex-post check on the methods used in preparing the national accounts

(18) Ex-post control procedures: GNI questionnaire

One further check is carried out after publication of the results with the completion of the GNI questionnaire and preparation of the annual report on the quality of the GNI data. A subject unit is responsible for this although not directly involved in the regular calculations, so it can view the results from a different perspective. Whilst with the aid of the GNI questionnaire once again the concordance of the components of the figure for gross national income is checked, it is the GNI quality report that provides information on the reasons for any changes caused by the revision itself.

(19) Ex-post control procedures: analysis of publication status over time

Parallel to the preparation of the quality report on the GNI data, complex ex-post control tables are prepared in which published results in absolute values and also the rates of change of GDP and GNI for the quarters as well as for the years are updated using long time series and documented. Also a comparison of the publication statuses for all important national accounting aggregates takes place and is documented. These control tables are updated at each accounting date and submitted to the departmental management for information purposes.

(20) Ex-post control procedures: GNI-Inventories

In addition, as part of major revisions, descriptions of the methods used in national accounting are updated in accordance with standard EU guidelines and other fundamental ex-post control checks of the methods are conducted at regular intervals by the preparation of 'GNI process tables'. These GNI process tables help to ensure the sources from which the data originate are thoroughly documented at longer intervals in line with a system that is general throughout the EU. An initial pilot study was conducted for the year 1995; the next process tables are being prepared for the year 2000. These standardised descriptions provide a further basic ex-post control check of the national accounting methods at regular intervals.

d) External checks and consultations

(21) Feedback with regional accounts

The national accounts working group of the federal states in Germany is responsible for calculations at the levels below national level; nonetheless this indirectly allows checking of the GDP results and feedback at national level. The national results for the different GDP aggregates are verified as far as possible using the results from the Federal States (bottom-up approach). In the process of adapting the Federal States results to the national figure (coordination), discrepancies can be checked and indications of a possible need for changes may become apparent. Necessary corrections can then be taken into account with the next accounting date for the national accounts.

(22) Feedback with the Deutsche Bundesbank

The Deutsche Bundesbank is an important external partner for the Federal Statistical Office in the compilation of the national accounts. On the one hand, the Bundesbank provides important building blocks for the national accounting system with the results of the balance-of-payments statistics and the financial account, which necessitates a permanent intensive discussion process between the two sides. In addition, through the close cooperation in the context of seasonal adjustment of the national accounts results, the Deutsche Bundesbank offers further support for the examination and checking for plausibility of the national accounts data.

(23) Indirect checks

Research institutions, ministries and the broad specialist public undertake an indirect external verification and checking for plausibility of the official national accounts results. More or less intensively and regularly, they follow the calculation statuses of the national accounts results and study the quality and efficiency of their econometric models by comparison with the official results. Here too, there is an intensive exchange of experience, either through direct bilateral

contact or special discussion groups.¹ On the part of the Federal Statistical Office, great care is taken to ensure that the independence and objectiveness of the official statistics are not impaired.

(24) International checks (EU Commission)

In the international context, the EU Commission (Eurostat), in the context of GNI own-resources control, regularly checks whether the compulsory definitions and concepts of ESA 1995 are adhered to, and that the methods and results are comparable and complete. In case disparities or shortcomings are found, Eurostat puts forward (general or special) reservations which have to be dealt with inside a particular time limit. Since the start of the calculation of the EU's own resources on the basis of national accounts results (in 1988 for the first time) there have been numerous more or less complex projects which have significantly improved the quality and international comparability of the national accounts data.

(25) International checks (European Court of Auditors)

In the course of calculating GNI own resources, the European Court of Auditors has also started making complex checks among the statistical offices of Member States. The European Court of Auditors checked the German GDP calculations in 2004 and a further check on the calculations was made in April 2006, featuring the construction industry in particular. The results of the Court's checks are documented and published in its annual reports.² These checks are closely observed by the (German) Federal Audit Office (*Bundesrechnungshof*).

(26) International checks (International Monetary Fund)

Finally, the International Monetary Fund (IMF) carried out an extensive check on parts of the official statistics in 2005. The results were condensed in a 'Report on the Observance of Standards and Codes' (Data ROSC) and also published for open public access on the Internet (<http://www.imf.org/external/np/rosc/rosc.asp#G>). Apart from the national accounts, the checks also featured the areas of the government finance statistics, the balance of payments and the producer price statistics which are also relevant to the national accounts. During the checks a very detailed examination was made of the calculation process employed to prepare the German national accounts.

This report therefore serves as a further external control instrument and helps both in our own assessment of our work and our products, as well as providing an independent evaluation of the quality and level of the German national accounts in an international comparison for our users. Even though such controls entailed additional, intensive work, the Federal Statistical Office, and in particular the department 'National and Environmental Accounts, Labour Market', have delivered an obvious sign of information transparency for the general public by making this voluntary check.

¹ The committee of national accounts experts in particular which meets at intervals of several years is an important platform for the exchange of information and experiences between the Federal Statistical Office and external users of its results.

² See annual report of the European Court of Auditors concerning execution of the 2004 budget, in: Official Journal of the European Union C301/01 of 30 November 2005.

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Chapter 7 Overview of the allowances for exhaustiveness

The exhaustiveness of the results is an important goal of the national accounts, the significance of which has clearly risen since 1988 which is when the European Union (EU) started using GNP or GNI for the purposes of monitoring its own resources. In addition to the country-specific additions and adjustments to ensure exhaustiveness, which have been applied for a long time now in the respective national accounts, a Europe-wide harmonised approach to improve exhaustiveness was agreed¹. This policy mainly provides for a review of existing national estimated allowances, the inclusion of tips and benefits in kind and the reconciliation with employment data. Another matter that surely relates to the concept of exhaustiveness is the examination of the way in which the territory covered by the national accounts is defined².

Paragraph 3.08e of ESA 1995 meanwhile stated explicitly that activities not registered with the authorities were also to be included. In the demarcation of economic activities to be recorded (within the production boundary), it is irrelevant whether a particular economic activity is legal or illegal, practised in accordance with the rules or associated with tax evasion, performed openly or in secret, practised regularly or occasionally, or produced for the market or for own use. Gaps and under-recording in the statistics, e.g. because of cut-off limits or reporting thresholds, should be remedied using estimates in the national accounts.

¹ Commission Decision 94/168/EC, Euratom of 22 February 1994 on measures to be taken to improve exhaustiveness, in Official Journal L 77 of 19 March 1994, p. 51 et seq.

² Commission Decision 91/450/EEC, Euratom of 26 July 1991 defining the territory of Member States, in Official Journal L 240 of 29 August 1991, page 36ff in conjunction with Commission Regulation (EC) No. 109/2005 of 24 January 2005 on the definition of the economic territory of Member States for the purposes of Council Regulation (EC, Euratom) No. 1287/2003 on the harmonisation of gross national income at market prices in Official Journal L 21 of 21 January 2005, page 3 et seq.

Art. 1(2) of the above decision to secure exhaustiveness¹ convey that "economic activities which are illegal under national law do not come within the area of application of the measures foreseen in this decision". Since ESA 1979, 2nd ed., which was authoritative at the time, did not contain a clear rule on this, this provided important clarification. Although – in contrast to the previous ESA 1979 – ESA 1995 contains explicit provisions in various clauses, according to which even legally prohibited production such as (prohibited) prostitution or production of drugs has to be included in GDP and GNI. In terms of the legal basis, however, it should be mentioned that with the transition from ESA 1979 to ESA 1995 the measures aimed at exhaustiveness were **not** revised following Decision 94/168. So it has not been conclusively clarified whether the introduction of ESA 1995 also covers illegal and criminal activities within its sphere of application, or not.

In a project commissioned by Eurostat the drugs trafficking and alcohol and tobacco smuggling were used as examples for gauging the possibility of quantifying these selected illegal activities in Germany. The aim was to check whether the requirements of ESA 1995 to include illegal activities as well can be put into practice in Germany in a way that is reliable and allows comparisons. The conclusions reached in this project are that, with the statistical situation as it is, there are enormous margins of uncertainty in quantifying the drugs trafficking and alcohol and tobacco smuggling in Germany and also there are large gaps in the information. These margins and gaps can at present only be bridged by free assumptions, largely of a subjective nature. The inclusion of these estimates would reduce the reliability and international comparability of the data on GDP. The inclusion of such activities also means that the intended gain in exhaustiveness would be countered by increased risk of a rise in the figures because of the possible double counting. It can not be excluded that even in the previous national accounting system part of these illegal activities are already implicitly included. This will be the case if the profits from illegal activities by way of money laundering are declared as the fictitious turnover of legal enterprises and have therefore already been included through the source statistics used for the national accounts, such as the VAT statistics or business statistics in the wholesale and retail trade and hotels and restaurants. Also there is no information for the inclusion of these illegal and criminal activities in the quarterly and regional GDP data. The inclusion of the drugs trafficking and tobacco smuggling in the GDP and GNI is therefore to be rejected for statistical reasons.

Ensuring the exhaustiveness of the GDP and GNI data is checked afresh in Germany **as part of each major revision of the national accounts**, with the exception of illegal and criminal activities. A whole bundle of measures were introduced with the 1999 major revision, as mentioned in the previous GNI-inventory.¹ During the 2005 major revision the following measures were carried out in particular concerning this.

¹ Cf. Federal Statistical Office, Fachserie 18, Reihe S.22, Wiesbaden 2002, p.26 et seq.

7.1 Special measures to ensure exhaustiveness

a) Reconciliation with the VAT statistics

As a further safeguard to guarantee the accuracy of the national accounts calculations, many categories in the production approach were also reconciled with figures from the VAT statistics. In each case, it had to be borne in mind that this comparison can be distorted by numerous special provisions of German fiscal law and by categorisation differences between the economic systems. Nevertheless, these comparisons also helped to authenticate many of the figures in the national accounts.

b) Reconciliation with the business register

For substantial areas of industry the business register supplies the statistical basis on which to base sampling and extrapolation. It is therefore also an important element of verifying exhaustiveness. Information from the statistical business register was used for reconciliation purposes for the first time. Even though the data from the register was not directly used in the results of this revision, a comparison with the current sources of data for the national accounts elicited important information in terms of accuracy. The intended improvements of the business register, such as the extended coverage of industries and improved topicality, will make such comparisons even more useful.

c) Reconciliation with household surveys

A further check for exhaustiveness was made as part of a Eurostat study into consumption. The object of the study was to make a detailed comparison of the national accounts data on household consumption expenditure drawn mainly from the trading turnover figures and the (extrapolated) results of the survey of income and expenditure (EVS). In Germany, this survey is carried out at five-yearly intervals. Around 0.2% of all households are surveyed on a voluntary basis. About 60 000 households took part in each of the last two surveys which were conducted in 1998 and 2003. The surveys for the year 1998 chiefly served the purpose of verifying the exhaustiveness of the German calculations of household consumption expenditure, which at almost 60% of GDP represents by far the most important use category.

Although the household surveys also record household expenditure according to 'SEA'¹, some conceptual adjustments are necessary in order to render the results of the household surveys comparable with those of the national accounts. The most important differences are found in the figures for travel expenditure, insurance benefits and the treatment of household purchases².

Based on an extrapolation procedure used in the 1998 EVS, whose findings are fully integrated into the national accounting system in terms of its definitions and quantities, a detailed analysis of the results is made of household consumption expenditure according to purpose. Despite giving the greatest possible consideration to the conceptual differences between the EVS and the national accounts, the extrapolated result of the household survey is considerably lower than that of the national accounts. For the year 1998, the ratio between the EVS and the national

¹ Systematic Classification of Household Income and Expenditure (SEA 1998).

² There is a full explanation of these differences in: Burghardt, M., Zur Revision der privaten Konsumausgaben im Rahmen der Volkswirtschaftlichen Gesamtrechnungen 2005, in: WiSta 2/2006, p. 142.

accounts figure is 86.5% for household consumption overall. Household surveys clearly appear less suited for completely determining the level of household consumption in the entire economy. This realisation is borne out by international experience¹, which also shows disparities in the dimensions found between the extrapolated results of household surveys and the figures calculated for the national accounts system. Decisions on methodology, such as for instance not to include households with a monthly income of over EUR 18 000 and not to question the inhabitants of shared dwellings, as well as the voluntary nature of participation in the surveys are probably the main reasons that the household survey was incapable of depicting the wide spread of expenditure behaviour among the population. It is less capable of doing so the smaller the survey base is and the fewer households actually take part.

Among the 12 departments of household consumption examined in detail there are also no empirical clues which question the exhaustiveness of the calculations on household consumption in the context of the national accounts based on the extrapolated results of the 1998 survey of household income and expenditure. Following the conceptual adjustments to suit the national accounting system, the extrapolated results of the 1998 EVS are now on the whole lower than the national accounts figures for 1998. In all other cases (above all section 04: housing, water, electricity, gas and other fuels) it is evident that the higher values found in the 1998 EVS do not indicate any undercoverage on the part within the national accounts.

The methods developed within the study for comparing consumption were designed so as to allow a regular assessment of the reliability of household surveys and to be applicable for the benchmark years of the future. Furthermore, the results of the study have been included in the calculations for the national accounts revision of 2005; this was on grounds of consistency, both in the expenditure approach and in the production approach of GDP. The extrapolated results of the 1998 survey on household expenses therefore primarily provide an improved basis for estimating household expenditure on services (e.g. in the domains of hotels and catering and of transport, storage and communications).

d) Reconciliation of commodity flows using the input-output framework

During the major revision of the national accounts, information was also processed to a particular degree from the input-output compilation, for which the regular GDP calculations are mostly received too late. The 2005 revision involved in particular a harmonisation of the results for the year 2000. The necessary corrections related both to the level of consumption expenditure and to those of output and, above all, intermediate consumption. Before and during the overall economic balancing the input-output compilation was always included.

The commodity-flow method in the context of the input-output framework is based on the goods and services available in the economy and estimates their use as consumer goods, capital goods or as intermediate consumption. In the commodity-flow method, the various goods and services are broken down into the smallest possible product categories. These goods and services are

¹ In connection with this, the experience of the Task Force should be mentioned, which as part of the GNP Committee with the participation of Austria, France, Italy, the United Kingdom and Germany, conducted comparative calculations between household surveys and the national accounts from November 1995 until June 1996. These showed that the differences between the corrected household survey results and the figures of the national accounts in other countries are more or less similar to those in Germany. As a rule, however, the differences can hardly be quantified in detail.

hypothetically tracked from their entry into the domestic economic process through the various production and marketing stages to the final user. Ascertaining the total volume of goods and services produced in or imported into Germany is the first step in this calculation; the value of exports is then deducted, leaving the available volume of the domestic supply of goods and services. In the commodity-flow method the individual products are assigned to expenditure categories on the basis of statistical and other information. In many cases, goods and services for household consumption can be plainly recognised as such, since items like clothing, jewellery and personal services are produced exclusively for households. By contrast, other goods and services are not produced for consumption purposes alone but can also be used for other categories of goods such as fixed-capital formation (e.g. passenger vehicles) or intermediate consumption (e.g. electricity or gas supplies). For the assignment of these goods and services to the various use categories, the compilers avail themselves of all available information from material-balance accounts, energy balance sheets and other sets of statistics providing information as to the field in which the goods and services are used, such as the statistics on vehicle registration. The commodity-flow method is used in German national accounting in the input-output framework and is applied to some 3000 different product categories. As a result, a separate estimated amount of household consumption expenditure is available for each category for purposes of comparison.

If the valuation of private consumption based on the commodity-flow method is to be made comparable with the results of the assessment based on the supplier method, the figures for private consumption must first be converted into the classification system used for the calculation of household final expenditure consumption, a process which is made easier by the highly detailed breakdown used in the commodity-flow method. The result of this conversion is a coordination chart (product/use consumption chart)¹ which breaks down private consumption expenditure by both commodity type and expenditure category and is used as the basis of comparison. The divergences between the figures produced by the commodity-flow method and those derived from the supplier method are investigated with a view to identifying and eliminating the cause of the disparity. Besides harmonising the expenditure structures, this reconciliation also enables compilers to verify and, if necessary, adjust the private consumption ratios.

e) Reconciliation of the commodity-flow account – investor accounting

In the German national accounts, the value of capital formation in machinery and equipment is assessed by means of two mutually independent methods. Investor accounting involves asking investors directly how much they have invested in machinery and equipment, while commodity-flow (CF) accounting proceeds from the domestic, highly broken down, supply of goods (output + imports – exports) and by estimating the extent to which they are invested as fixed capital and taking into account various other items arrives at an indirect calculation of the capital formation in machinery and equipment. Compared with investor accounting, CF accounting delivers quarterly figures which are highly current, but the information about capital formation which is elicited direct from investors mostly necessitates fewer supplementary items. The introduction of service statistics now means that only a small number of industries are not supported in the investor account by statistical source material.

¹ See Table 5–3 in Chapter 5.

The two mutually independent methods of calculation for CF and investor accounting are brought into agreement through investor coordination charts in which the results of the CF and investor accounting processes are the two sets of margin totals: the structure and total amount of capital formation in machinery and equipment by product category forms the result summed down the vertical set of marginal totals; the structure and total amount of capital formation in machinery and equipment by investing industry forms the result summed across the horizontal set of marginal totals. The internal structures of the matrix show an input direction, which is the product structure among investors as defined in the German classification of economic activities (WZ), and an output direction, which is a purchaser structure by WZ categories for all the product categories.

Which of these structures will be used to reconcile the results and to what extent this occurs will depend on the exhaustiveness and the perceived quality of the source statistics underlying the accounting mechanisms. At present, the level and product structure of CF accounting are subject to the least alterations, because this is perceived to be a slightly more reliable approach.

f) The implication of new surveys

The 2005 revision incorporated the results of a series of important new surveys for the first time. In many areas this improved a hitherto inadequate database and replaced unreliable estimates. This particularly affected the care statistics, service statistics and the annual structure survey of small manufacturing enterprises.

- The **service statistics** referred to here denote the annual structure survey in divisions I and K of NACE Rev. 1 and WZ 2003 (EVAS 47415). Starting with the reference year 2000, this survey is conducted on the basis of the law on service statistics (*Dienstleistungsstatistikgesetz*) as a decentralised sample survey. For 'business-related' service providers this was the first structural information available to determine the intermediate consumption ratios and inputs of goods. The fact that various features are coherently presented in one survey improves the data basis for the national accounts. Such features may be, for example, details of output, intermediate consumption, number of employees, compensation of employees, gross fixed-capital formation, etc.¹.

However, experience shows that new surveys do not provide entirely reliable results during the initial years. This was also demonstrated in the service statistics for the year 2000, of which the amounts recorded were little used in the 2005 revision. The apparently plausible structure information from the service statistics led, in some areas, to quite different information regarding intermediate consumption. This relates above all to the areas for which the cost-structure surveys, conducted on a voluntary basis, had previously provided no information. There was considerably less need for adjustments in other areas due to the information in the service statistics.

- In manufacturing (except the construction industry), i.e. in divisions C and D of NACE Rev. 1 and WZ 2003, a new annual **structure survey on small enterprises** (with 1 to 19 employees) (EVAS 42252) has been introduced. The following features of the survey are particularly relevant to the calculations for the national accounts: employees, total turnover, cost of

¹ Cf. Gans-Raschke, H.-J., Die Bedeutung der Dienstleistungsstatistik für die Berechnung der Wertschöpfung in den Volkswirtschaftlichen Gesamtrechnungen in: WiSta 2/2006, p. 146.

materials, costs of services used, staff costs and fixed capital formation. These were surveyed for the first time in respect of calendar year 2001. The results for 2001 and 2002, which had already been taken into account in the 2005 revision of the national accounts, led to lower output figures and also to lower intermediate consumption figures compared with the results previously published. In most years this resulted in a higher figure for gross value added in the manufacturing industry.

- The **care statistics** (EVAS 22411, statistics of home care services and EVAS 22412, statistics of in-patient nursing homes) provide, for the first time for 1999, information for determining the output of this portion of the social services industry. Unfortunately the questions regarding intermediate consumption were removed from the original draft statute on care statistics, so that no information on this is included in these surveys. A full survey of the care statistics is conducted at two-yearly intervals.

g) Explicit checks on individual accounting areas

- The gross value added in the domain of **domestic services** matches the compensation of employees of the persons employed in this industry. These persons may be domestic staff, private tutors or cleaners, for example. Triggered by international comparisons, which in the case of Germany revealed a well-below-average gross value added for such domestic services, a thorough check was made for the 2005 revision, taking into account all the available sources of statistics. The official statistics of the Federal Employment Agency (*Bundesagentur für Arbeit*) on domestic employment certainly do not provide a complete picture of the employment situation in this industry. In many instances neither the employer nor the employee wishes to have employees registered for social security. Data obtained from surveys may possibly compensate for the missing figures. Accordingly the results of the time use survey of 2001/2002 and of the Socioeconomic Panel (SOEP) were used. Both surveys record that just less than 10% of households employ a cleaner or household help. The average weekly pay of household helps is determined on the one hand by the average weekly hours worked per household and on the other by the hourly wages that are paid. According to the time use survey results, household helps are employed for just less than four hours a week per household. The hourly rates used in the calculation are related to the relevant collective agreements. A revision of this calculation revealed that the gross value added in this industry after the revision comprised about 2.4 times the figure prior to the revision. This figure is now at an internationally comparable level.

The time use survey is only conducted at long and irregular intervals; moreover, a comparison with the last survey dating from 1991 is rendered more difficult by changes in the survey questions. For this reason it is impossible to make a simple extrapolation forwards or backwards from the values determined in 1991 and 2001. The employment rate for married women is therefore taken as an indicator of development. In future, it will need to be checked whether new surveys with a similar range of questions confirm the results of the extrapolations or whether other indicators would bring better results.

- The functionally demarcated **housing services** segment contained in the WZ 70 classification was also carefully revised as part of the 2005 revision. Although there were no significant changes to the stock of housing overall, an obvious downward adjustment was made to the previously recorded figure for gross value added from housing services.

In part, this results from new information gained from the 2002 microcensus which, as in the 1999 survey, contained a supplementary programme on the living conditions of households. This showed that the figures for unoccupied housing stock were much higher, particularly in the former GDR, than in the previous account, so that the output figure needed a downward adjustment. Another decrease in the figure for output results from a slight reduction in the square-metre rental values and this also stems from the results of the 2002 microcensus. As well as that, the results of the newly designed continuous household budget surveys have indicated an increase in service charges (occupier's additional property expenses), which at a given gross rental income also leads to a reduced net rental income or output.

On the other hand, based on the continuous household budget surveys which have been conducted annually since 1999, in conjunction with information from the Federation of German Housing Enterprises, new information has been obtained on intermediate consumption, which has resulted in a higher figure being entered. Clearly the housing modernisation taking place in the former GDR in particular has previously been understated.

7.2 Further checks and specific evaluations

Besides the broad checks for exhaustiveness referred to above, many areas of the national accounts were subjected to particular scrutiny in order to ensure that their coverage was sufficiently exhaustive. These special assessments were chiefly effected by means of reconciliation with special data sources, some of them unofficial (relating to activities such as own account construction, certain personal services, private tuition, tips or benefits in kind).

7.2.1 Explicit allowances for undercoverage

Allowances for undercoverage are derived for various national accounts categories as a result of the exhaustiveness checks. Such explicit allowances cover all possible types of under-recording, such as own-account construction, tips or payments in kind, tax evasion or statistical cut-off limits. There is not always enough information to break them down by individual causes of under-recording. These explicit allowances are already featured in the description of the particular accounting categories and are therefore only briefly outlined at this point.

7.2.1.1 Allowances in the production approach

- In the domain of **agriculture**, allowances are made for the units not included in the agriculture account which only produce for their own consumption (e.g. kitchen gardens and animal husbandry by non-farmers). Relevant estimates are available from the Federal Ministry of Food, Agriculture and Consumer Protection to cover the following products: fruit, vegetables, flowers and garden plants, eggs, honey.

In the **forestry** account likewise, it is assumed that 10% of businesses with less than 200 ha of forest area are producing exclusively for their own consumption. These businesses are not included in the forestry account. An allowance of 2.5% is made for their inclusion in the national accounts. This allowance is calculated using internal forestry account data and corresponds to the estimated proportion of the quantity of timber felled for own final use.

In the domain of **fishing and fish farming**, an upward adjustment is made to this output figure to take account of the processing of freshwater and farmed fish and other secondary activities. The percentage amount of this allowance is assessed on the basis of data from the VAT statistics regarding the number and turnover of reporting enterprises in Subclass 05.01.2 – river and lake fishing - and Class 05.02 – operation of fish hatcheries and fish farms. It is assumed that none of the average turnover per enterprise in West Germany in 1980 came from secondary activities and that half of each subsequent annual increase in average business turnover has been due to secondary activities.

- In the domains of **mining and quarrying** and of **manufacturing**, earlier full surveys, such as censuses of workplaces or crafts and trades, showed that the source statistics such as cost-structure surveys, investment surveys or monthly reporting usually contain figures that are slightly too low. This is mainly because the reporting entities **tend to disappear** over time due to company closures, insolvencies and such like, while – contrasting with departures – new firms are often incorporated into the reporting group only after a delay. Because of this, an allowance of 0.75% is added to the figures for turnover.

A **comparison of the register** with the files of the fiscal administration and Federal Employment Agency in 2002 revealed that there were a large number of new enterprises not so far registered. Dual preparation of the monthly report showed that these were responsible for approx. 1% of turnover. This extra basis was distributed pro rata over the time series back as far as 1995. From 2002 onwards this adjustment is no longer required, because the source statistics now refer to the corrected register.

Besides the above adjustments, an allowance is also made for the **hidden economy**. On the basis of the register of fines which is maintained by the Central Association of German Craft Industries and Trades (*Zentralverband des deutschen Handwerks*), adjustment factors were calculated for selected areas of manufacturing and applied to the turnover figures recorded in the cost-structure survey.

An **allowance for own consumption** refers to a company's own products or goods purchased for resale which are retained for consumption by the owner. An allowance for own final use is only required if this is not fully recorded in the source statistics. By means of a table used by the regional finance offices of the fiscal administration to determine fixed amounts of tax relief for own consumption, allowances were calculated for selected branches of the food and beverage industry; these allowances were then extrapolated to the national accounts based on the number of employees.

Further allowances are added in order on the one hand to fill omissions in the source statistics for non-reporting entities and other circumstances and on the other hand to guarantee the adjustment of the source statistics to comply with the concepts of ESA 1995.

- In the domain of **electricity, gas and water supplies** because the survey of water suppliers is restricted to water suppliers delivering at least 200 000 m³, an upward adjustment of the measured value of output is necessary. The calculation of this allowance is based on the statistics on public water supply¹ (EVAS 32211), which allow an estimate of the missing water delivery figures (survey year 1998). Based on a comparison and evaluation of the missing delivery quantities at average prices (m³ prices to end users), an allowance of 2.4%

¹ See Fachserie 19 (Umwelt), Reihe 2.1.

resulted for undercoverage in the available years 1998 and 2001 which was also applied to the year 2000.

- The main allowances in the **construction industry** relate in particular to the following situations:

In principle, **construction work performed abroad** is not part of domestic production, but the export of services deriving from such work is taken into account. Germany-based employees are involved in the construction of buildings outside Germany; they carry out planning and development work or perform managerial or supervisory functions on foreign building sites. On the basis of consultations with experts, the services provided by this extraterritorial labour force are estimated at 10% of the total annual value of construction work performed abroad according to the investment survey¹. The corresponding amount is added to domestic output under the heading 'export of services'.

Increase in output after reconciliation with VAT statistics (EVAS 73311): As a result of pilot assessments regarding the comparability of concept-based and activity-based disparities between the various data sources, it emerged that a further adjustment was needed. To avoid undercoverage mistakes, the output was increased by 2.5%.

The treatment of **construction work that is undertaken for investment reasons** is based on the valuation of capital expenditure on building (see section 5.10.2). These are assumptions made for own services provided by the developers and for unpaid work and illegal employment in the construction industry. **Non-capital construction work** is also taken into account. It results from data gained from reconciliation with the input-output compilation as well as estimates. For this, a total of 10% of the work undertaken by parties for investment purposes is assumed. The level of output is thereby increased by EUR 2 bn in the year 2000.

- In the **wholesale and retail trade and maintenance and repair of motor vehicles and personal goods**, output is determined using data from the business register (EVAS 52121) combined with the VAT statistics (EVAS 73311) and the annual survey of the wholesale and retail trade (EVAS 45251). Undercoverage allowances are derived as a result of cross-comparisons. An allowance was also added for the hidden economy; this allowance is based on a register of fines maintained by the Central Association of German Craft Industries and Trades (*Zentralverband des deutschen Handwerks*) for selected manufacturing activities and is supplemented by turnover figures from the crafts and trades section of the cost-structure survey. The turnover data for WZ 50.2 (maintenance and repair of motor vehicles) and WZ 50.40.4 (maintenance and repair of motorcycles) were reassessed on the basis of new cross-checks against the VAT statistics.
- Modified data from the business register formed the starting point for determining output in the domain of **hotels and restaurants**. These data are substantially higher than the previous results which were based on the VAT statistics and the annual and monthly surveys of hotels and restaurants. In addition, allowances were added to the turnover figures for undercoverage - activities in the hidden economy, for example - and for the estimated income from tips. A special assessment was made for turnover from the letting of short-stay accommodation in smaller establishments, since the above statistics only relate to the

¹ See Fachserie 4 (Produzierendes Gewerbe), Reihe 5.2.

turnover of establishments with nine or more beds. The special assessment is based on surveys of the tourist information centres in Bavaria, Baden-Württemberg, Mecklenburg-Western Pomerania and Rhineland-Palatinate on the number of overnight stays in small establishments with fewer than nine beds.

- Allowances are added in the domain of **transport, storage and communications**, particularly for the following subsections:

In the case of car transport, tips occur in particular for taxis. In air transport, an allowance is added to the business statistics for foreign offices.

- In the domain of **real-estate, renting and business activities not elsewhere classified**, the largest allowance is for leasing. The VAT statistics are the data source used in the assessment of output in this industry. However, the allocation process is not without its problems, because many leasing enterprises, though legally independent, are actually subsidiaries of a group or organs of a larger company. Since the VAT statistics treat the group or principal company as the sole taxable entity, and since the main activity of such groups is often manufacturing, the turnover data for the leasing enterprises would be 'lost' if only the VAT statistics pertaining to this industry were consulted. As the data referring to manufacturing output are drawn from the relevant specialised statistics rather than the VAT statistics, and the specialised statistics state the 'branch' turnover rather than that of the group, they are also left out of account. To counter this problem, first of all the leasing enterprises are separated into affiliated and independent enterprises. The turnover of the independent leasing enterprises is contained in the VAT statistics for WZ 71. Most of the leasing activity by affiliated enterprises is regarded as an activity of the parent group, as outlined above, and an allowance is estimated for this area. A survey and treatment of the annual accounts of the major leasing companies gave a turnover volume for the entire section of affiliated leasing during 2000 of around EUR 8 bn, of which approx. EUR 1 bn was deducted for the book value of withdrawals from the pool of leasable assets, because this is purely a balance-sheet extension. The remainder was taken into account along with the values from the VAT statistics, from which the balance-sheet extension items were also deducted which were equivalent to the value of intermediate consumption.

A further allowance was made for undercoverage in the domain of VAT statistics so as to include those enterprises which fall below the threshold for inclusion in the VAT statistics.

Further allowances were included for the domain of **software and databases**, because it is not fully reflected in the VAT statistics. One reason for this is that publishing as in WZ 79, including databases, was absorbed entirely without changes into category 22.1 of WZ 93 for the purpose of the VAT statistics from 1994 onwards. Consequently, this made it necessary to transfer the databases from publishing (WZ 22.1) to databases (WZ 72.4) with a sum of around EUR 3.7 bn for the year 2000. There is no counterpart item in the account for WZ 22.1, because VAT statistics are not prescribed as the primary source of data on the output of the publishing industry.

On the other hand, as a result of implausible disparities that emerged when the basis for the categorisation of VAT statistics was changed from the 1979 classification of economic activities to the 1993 version, a software allowance amounting to more than EUR 3 bn has been added since 1994 to Groups 72.1 - 72.3 and 72.6. As with time the figures for turnover

were indicated more accurately by the annual levels of value added tax, the allowances were gradually reduced each year. For the year 2000 only EUR 500 m was allowed.

In the domain of **research and development** the undercoverage allowances for the VAT statistics in the course of the 2005 revision were once again substantially raised in agreement with the employment account.

Real estate transfer tax needs to be treated as a special allowance for the domain of **real estate, renting and business activities not elsewhere classified**. Since this tax is recorded under capital formation in construction as an ancillary acquisition cost, it has to be recorded as a supply of products on the production side. This is done with an explicit allowance added to output (and taxes on products). However, this effect is neutralised with the transition to basic prices as part of the conceptual reclassifications for national accounting.

- The VAT statistics do not cover all the services provided in the enterprise sector of the domain **education**, because some parts, such as private tuition or further education, are exempt from VAT¹. For this reason, the general check for exhaustiveness resulted in the addition of substantial undercoverage allowances in this domain.
- Significant allowances were also added in the domain of **health and social work**. The output of **medical practices** is calculated with the aid of expenditure figures for the statutory health insurance schemes from their annual reports and accounts, which are published in the quarterly statistics of the Federal Ministry of Health and Social Security. In coordination with the expenditure approach, this value is raised to the total material purchases by the statutory health insurance schemes for all medical services. As well as the actual medical services, it also includes such items as dialysis and maternity support services. Doctors' income from private practice and from other independent medical activities is added to this figure. This addition is obtained from the cost-structure statistics for physicians (EVAS 52551) and is calculated by applying the ratio of income from private practice and other independent medical activities to income from health-insurance funds. This estimate is then cross-checked by means of a comparison with the naturally lower expenditure of private health schemes as indicated in the statistical reports on private health insurance obtained from the Private Health Insurance Association (PKV-Verband).

In calculating the output of **dental practices**, an allowance is made for out-patient dental treatment which is not included in the statistics of the Federal Association. Such items could include, for example, dental services purchased on a purely private basis and the privately invoiced services of dentists employed in hospitals or similar institutions. By analogy with the national satellite account for health services², this allowance is set at 10%.

In the domain of **psychotherapists and psychologists; medical massage, hydrotherapy, physiotherapy, midwifery and related professions; other independent activities in the field of healthcare**, the distribution of doctors' turnover found in the cost-structure statistics (EVAS 52551) serves to indicate the percentages of turnover that are not billed through the

¹ Cf. German law on VAT (*Umsatzsteuerstatistikgesetz*) as amended by the notice dated 21 February 2005, §4 No. 21 and 22.

² See Satellitensystem für das Gesundheitswesen zu den Volkswirtschaftlichen Gesamtrechnungen, final report commissioned by the BMA, prepared by the Bonner Forschungsgruppe and the Federal Statistical Office, Bonn/Wiesbaden, October 1992.

statutory health-insurance funds, and these percentages are used in the assessment of output. A 10% allowance for assumed undercoverage is also added.

The assessment of the output of **paramedical practices** was fully revised in the 2005 revision. The revised calculation is based on data from the income tax statistics (EVAS 73111) and the VAT statistics (EVAS 73311).

A 60% allowance is added to the output in the domain of **ambulance and rescue services as well as other healthcare facilities and institutions** to cover VAT-exempt turnover, which is quite substantial in this area, as in the national satellite account for health services¹.

The output generated by **veterinary activities** is assessed from the figures for taxable turnover derived from the VAT statistics. To these is first added a small allowance of 0.5%, because the VAT statistics have a data collection threshold set at EUR 17 500 annual turnover. A further increase is made to the figure to take account of other undercoverage such as activities in the hidden economy. The total allowances from the reference year 1997 onwards come to around 12.5%, a higher figure than found in the human-medicine activities such as 'other independent activities not elsewhere classified' in the domain of healthcare or dentists. The reason for this is that it is considered that there might be a wide range of activities among veterinary surgeons that are not adequately covered. The amount of the allowance agrees with comparable allowances used in other countries of Europe.

- In the domain of **social work**, an allowance has to be added in areas in which most services are VAT-exempt. This is done to accord with the calculations of household final consumption expenditure in this industry.
- Obvious allowances are added in the domain of **other community, social and personal service activities**. These relate in particular to the subsections listed below:

In the domain of **sewage and refuse disposal, sanitation and similar activities** the VAT statistics (EVAS 73311) form the basis of the calculations. However, some adjustments, and allowances in particular, need to be made to arrive at the national accounts figure. On the one hand, this takes into account the inadequacy in the allocations seen in the VAT statistics, which arose during the transition to the new classification of economic activities (WZ 93). On the other hand, the figures taken from statistics drawn from the published accounts of public funds, establishments and enterprises from 1997 onwards are higher than in the VAT statistics. Assuming, quite plausibly, that the general government sector only generates non-taxable or exclusively VAT-exempt turnover, the figures taken from the annual report statistics may be regarded as the lower limit for the enterprise sector. The figures taken from the VAT statistics are therefore brought up to the level of the figures for public funds, establishments and enterprises (allowance of 10%). In addition, from 1992 onwards a further allowance of 5% is made for activities which have not been included, because even in these cases hidden economy activities can still be found.

The VAT statistics provide the source of data for assessing market-producer output in the domain of **sporting activities**. However, this figure has to be reduced because a certain proportion (around 34%) is attributable to non-profit institutions. A supplement is also estimated in the realm of sporting activities to allow for factors such as coaches who work on a more or less freelance basis.

¹ Cf. *ibid.*

In the case of secondary turnover, output in the domain of **casinos and gaming clubs** is supplemented by data on taxable turnover taken from the VAT statistics. In addition, a 35% supplement is added to the gross proceeds to allow for the content of the staff *tronc* along with an estimate of the value of the pages' *tronc*, based on a sample survey. A further amount, representing 5% of the taxable turnover, is added to cover other tips.

Further additions for the provision of other personal service activities are made, for example, in the area of hairdressing (tips, illicit work) or prostitution, provided the data are not already recorded under other activities. Calculations for the last-mentioned area are based on a model which in turn is based on information from various, mainly official, sources such as public health boards, ministries, the Federal Criminal Police Office (*Bundeskriminalamt*) and from research among publications.

- The new calculations in the domain of **domestic services** have already been described in section 7.1.g.

7.2.1.2 Allowances in the expenditure approach

- Based on the calculation of **household final consumption expenditure** by the supplier approach, explicit allowances for exhaustiveness can only be made in exceptional cases¹. As a rule, the allowances thus implicitly enter the calculations via the selected private-consumption ratio and the suppliers' turnover, a figure which has already been increased by the application of allowances for exhaustiveness. Exhaustiveness is often also improved by using special assessments to gain a more accurate scrutiny of sales made via special sales channels. This applies, for example, to own consumption in agriculture, calculation of staff and factory sales and benefits in kind in the manufacturing industry and, in the domain of electricity, gas and water supplies, to the special assessment for private electricity consumption in agriculture. The product-related special assessments also contribute to an improvement and thus also to achieving full coverage of household final consumption expenditure. Such special assessments are made if reliable statistical information from other sources is available for the valuation of consumption expenditure relating to a particular product. The information relating to the specific product must then be linked to the details of the relevant supply source in order to guarantee the consistency and exhaustiveness of the valuation system.

The allowances outlined below thus only show the explicit allowances which also apply to this expenditure aggregate. Independent calculations of such allowances are made for tips, benefits in kind, own consumption in agriculture, production in kitchen-gardens and prostitution services.

A separate calculation is made of the (voluntary) **tips** in the domain of hotels and catering, for motor vehicle repairs, for the services of craftsmen and tradesmen and for taxis and hairdressing. The allowance for tips in the year 2000 came to a total of EUR 2 bn, being calculated in the light of experience and on the basis of tax law aspects. **Benefits in kind** are assessed as the value of goods produced by a company and made available free of charge or

¹ Comparison with household final consumption expenditure as recorded in the household survey EVS provides an impression of how the method is instrumental in ensuring exhaustiveness. After adjusting for the quantifiable differences in concept, household consumption according to the household survey in 1998 lies at around 13.5% below the figure for household consumption expenditure shown in the national accounts.

at reduced rates by employers to their employees. These include reduced fares for employees and their relatives in the rail and air transport industries, free beer for brewery employees and provision of sports and leisure facilities for employees. The calculations of benefits in kind in the transport industry are based on comparable private expenditure in the particular areas. Figures on free beer are provided by the brewing industry. Benefits in kind arising through the provision of sports and leisure facilities are estimated on the basis of the labour cost survey in which questions are posed about the 'material and outside service costs for company health facilities and other staff facilities'. In total, benefits in kind to the value of just under EUR 0.6 bn were calculated for the year 2000. **Own consumption in agriculture** amounting to around EUR 2.6 bn is calculated by the Federal Ministry of Food, Agriculture and Consumer Protection. This includes production in kitchen-gardens among households. An allowance has also been estimated for the services of non-recorded **prostitution**.

- In calculating **capital formation** in the primary construction industry, an allowance of 2.5% is added to the annual value of construction work by all enterprises due to the assumed statistical undercoverage. The annual value of construction work performed by foreign enterprises, if not included in the results on the construction surveys, is derived from the balance-of-payments statistics of the Deutsche Bundesbank and added to the annual construction output figure.

Construction work undertaken for investment reasons represents the largest portion of the allowances added to the calculation of capital formation on construction. This figure includes unpaid assistance from neighbours and family members as well as the value of illicit work. Since this work does not feature in tax returns or statistical surveys, its value has to be estimated. The estimates are based on the statistics on construction activity (EVAS 31111, 31121). These statistics contain details of the number of building permits issued and completions reported and the construction cost of residential buildings, subdivided into buildings with one, two and three or more dwellings. The use of an early indicator, namely the number of building permits issued, in conjunction with a late indicator, i.e. the number of completions, is designed to ensure that the estimated value of investors' own construction output can be assigned to the actual period when the housing in question was being built. As well as the construction of new buildings, these figures also cover conversion work for which a building permission is required. From the assessed construction costs for each housing category, an estimate is made of investors' own output as a percentage of total construction output. A figure of 19.5% has been found for 2000 according to the size of building and regional location. This is added to the capital formation in housing construction (excluding investors' own output and the cost of ownership transfer on non-produced non financial assets) as shown in the calculations of capital formation, which produces a figure of almost Euro 20 bn to be shown in the national accounts for investors' own account construction.

- Like the compilation of household final consumption expenditure, explicit allowances for exhaustiveness only have to be made as an exception in the calculation of **gross fixed capital formation in machinery and equipment**; this is because of the way this figure is calculated using the commodity-flow method. The allowances therefore normally implicitly enter the calculations via the selected capital-formation ratios.

Explicit allowances for exhaustiveness are nonetheless made for investment-related services and ancillary services. On the one hand, these are investment-related services and ancillary

services which are not contained in the production of the capital goods manufacturers, such as planning and other technical services and installation services, provided such services are not already counted within the output statistics. These estimates are derived from production/turnover ratios and came to just under EUR 5.6 bn in 2000. On the other hand, there are investment-related services and ancillary services by enterprises which are provided outside the machinery and equipment production industry, e.g. in connection with initial installation, and these have to be carried in the accounts. The relevant allowance comes to EUR 3.2 bn for 2000.

- The national accounts contain no explicit allowances in the case of **net exports of goods and services**. The data used are taken from the external trade statistics and balance-of-payments statistics to which allowances for exhaustiveness have already been applied, particularly in the case of existing statistical cut-off limits. Regarding individual topics, special assessments are also undertaken by the Deutsche Bundesbank, the results of which are included in the calculations of the figures for net exports of goods and services.

7.2.1.3 Allowances in the income approach

- Various allowances are included in calculating compensation of **employees** depending on which accounting method is used. As long as the calculations are made by multiplying average earnings by the number of employees, the calculations of average earnings in a particular industry will cover the entire industry per se. Information on the level of coverage of the calculations therefore mainly focuses on the degree to which the employment account is covered. Considering all industries together, the level of coverage for the employment account lies at almost 100%. Noticeably **higher estimates** in the employment account are only obtained for the **construction** and **domestic services** industries.

Where the calculation of average earnings relies on social insurance data, **allowances are included for earnings which are higher than the threshold** for the payment of social contributions.

The growing significance of second jobs is also accounted for in our calculations. The **allowance for auxiliary workers** raises the average earnings within the relevant industries and is determined on the basis of statistical data from the Federal Employment Agency.

Some remuneration in kind is already included in the source data, because employers are required to include these portions in their regular returns to the statistical institutions. As most 'non-cash benefits' of employees are liable for social contributions, the liable pay includes these components. In addition to that **upward estimates** are also made. Supplementary special assessments primarily take into account **tips, subsidised meals in works canteens and free travel and flights** for the employees of transport enterprises.

7.2.2 Implicit assurance of exhaustiveness through the method of calculation

The estimation method itself often results in implicit coverage of activities. For example, agricultural production is estimated on the basis of cultivated areas and the relevant average

yields. In the same way, housing rents are calculated on the basis of the housing stock — broken down by size and other features — and the rents per square metre in each case. We do not know, and it is irrelevant for the exhaustive recording of such production activities, whether the income estimated in this way and included in GDP is declared to the tax authorities.

7.2.3 Implicit assurance of exhaustiveness through overall economic balancing in the system of accounts

In the balancing of GDP, the results of the production and expenditure approach in particular, which are initially estimated independently of one another, are analysed and assessed in the context of the whole economy. As a rule, this balancing with a bias towards the expenditure approach, leads to an implicit inclusion of sales that are not reported to the fiscal authorities. The greater rise in the figures calculated on the basis of the production approach is due to the fact that, despite numerous additions in the course of checking for data gaps, it is still possible for certain figures to be understated in the production approach. This particularly applies in cases where VAT has been charged but has not been transferred to the fiscal authorities. The figures for gross value added and the recorded taxes on products, and therefore the GDP calculated on the basis of the production approach, could well be too low by these amounts. An obvious upward adjustment is applied to compensate for this. In principle, the sum of the expenditure aggregates does not change though, since the results of the calculation undertaken on this basis are subject to a series of checks or are based on data which, due to the process, implicitly guarantee exhaustiveness. It should therefore be assumed that the figures on expenditure tend to be more complete than those on the generation of income. The correction of the figures for 2000 based on the expenditure approach may therefore be regarded as no more than 'fine-tuning'.

Over the years, there has evolved an ever greater interlinkage between the calculation of domestic product and the input-output compilation. For example, the detailed data from the supply and use tables, thoroughly broken down into product groups and industries, are used as a means of cross-checking the figures for domestic product that are found on the production and use sides. Whilst the results of the domestic product calculation permit balancing of the overall figure as determined in the two approaches, the input-output data, which also carry very detailed breakdowns into product groups and industries, allow the calculations to be checked for consistency. So far, these checks have only been possible **ex post** in the case of major revisions or for the final calculation of domestic product, since the appropriate supply and use tables were not yet available. However, in the 2005 revision, it was for the first time possible, with the help of the supply and use tables, to achieve consistency **ex ante** between the highly broken down results of the production approach by 59 areas of activity on the one hand, and of the expenditure approach by 59 product groups on the other. The integration between the domestic product calculation and the input-output compilation now takes place regularly in the summer as part of the annual computations of gross domestic product, in which as a rule four previous reporting years can be revised. The results of the input-output compilation are then available for the two latter reporting years and are integrated into the reconciliation process. For the year $t-4$ – the figures for which are finalised as of the accounts date – the input-output compilation used is also already final. By contrast the reconciliation of year $t-3$ is still based on a provisional input-output framework.

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Chapter 8 Transition from GDP to GNI

8.1 Compensation of employees

The compensation of outward commuters during the year 2000 totalled EUR 4 080 m and that of inward commuters to Germany totalled EUR 5 680 m.

The gross wages and salaries and employers' social contributions are calculated separately and then totalled to determine the compensation paid to inward and outward commuters. Gross wages and salaries are calculated in principle by multiplying average earnings by the number of inward and outward commuters. The average rates of social contributions in relation to gross wages and salaries are used to estimate employers' social contributions.

8.1.1 The numbers of inward and outward commuters

8.1.1.1 Number of outward commuters

In the year 2000, around 95 000 people commuted to work outside Germany. This number can be divided into employees of the allied forces, diplomatic, consular and cultural missions of foreign states and international organisations within Germany and those commuting outward to the rest of the world, in this case to neighbouring states, i.e. cross-border commuters.

Information regarding the number of German employees who work for the allied forces in Germany is available from the employment statistics (EVAS 13111) and from the Federal Ministry of Finance. A total 20 000 commuters have been ascertained to be working for the allied forces in 2000. This was 21% of all outward commuters.

Information on German employees working for international organisations is provided by the Deutsche Bundesbank. Official records show that around 5000 people were employed in this way during the year 2000.

Figures are also available from the employment statistics (EVAS 13111) on German employees working for other countries' diplomatic, consular and cultural missions in Germany. In 2000, there were about 3000 outward commuters to other countries' missions.

In the case of the countries with the highest numbers of commuters, the Deutsche Bundesbank compiles data on the number of outward commuters to those countries (cross-border commuters) which it obtains from the respective statistical offices or social insurance agencies. The figures for Switzerland, Luxembourg, the Netherlands and France total 57 000 outward commuters which represents around 60% of all cross-border commuters. Calculations are made for the remaining countries on the basis of the population census (EVAS 12111) and microcensus (EVAS 12212).

During the last population census in Germany it was not possible to attribute some of the commuters to any of these states. An allowance was added for this group of 'long-distance' commuters.

8.1.1.2 Number of inward commuters

In 2000, a total of 201 000 residents of other countries commuted to Germany for employment. These persons can be divided into cross-border commuters, seasonal workers and employees of German diplomatic, consular and cultural missions abroad.

Information concerning cross-border commuters from abroad who are liable for statutory pension scheme contributions in Germany is obtained from the German Federal Pension Fund (*Deutsche Rentenversicherung Bund, DRV-Bund*). The data on pension scheme contributions relates to the inward commuters' place of residence. Neither the place of work nor the industry is recorded. An allowance is added to the data from the German Federal Pension Fund for persons who do not have to pay statutory pension scheme contributions.

Data on the number of seasonal workers is derived from the number of work permits issued by the Federal Employment Agency (*Bundesagentur für Arbeit*). The number of gainfully employed seasonal workers is calculated using a model based on the figures obtained from the Agency. The straight number of work permits granted is added to the figures because the calculation intentionally ignores the number of work permits granted but not actually taken up. In 2000 around 86 000 seasonal workers were employed in Germany.

The number of those employed at German embassies abroad is taken from the federal budget (EVAS 71142).

Table 8—1: Numbers of inward and outward commuters during 2000

Outward commuters	Number	Inward commuters	Number
Cross-border commuters.....	71 399	Cross-border commuters	130 148
Employees of foreign embassies, consulates and cultural missions in Germany..	2 698	Employees of German embassies, consulates and cultural missions abroad	1 830
Employees of the allied forces.....	19 875	Seasonal workers	68 383
Total.....	93 979	Total.....	200 361

8.1.2 Average earnings of inward and outward commuters

8.1.2.1 Average earnings of outward commuters

The average earnings of German employees of the Allied forces stationed in Germany are assessed on the basis of annual information provided by the Federal Ministry of Finance.

The Deutsche Bundesbank compiles information on the earnings of employees of international organisations.

The data on gross annual earnings and numbers of employees contained in employment statistics (EVAS 13111) are used to calculate the average earnings of Germans employed by the diplomatic, consular and cultural missions of foreign countries in Germany.

Figures on the average earnings of outward commuters to Luxembourg, France and Switzerland are supplied to the Deutsche Bundesbank by the respective statistical offices. Further average earnings of daily commuters are based on figures recorded by Eurostat on average earnings in industry of the relevant countries.

8.1.2.2 Average earnings of inward commuters

Since 1985, annual figures have been compiled by the German Federal Pension Fund classified by country of origin on the average earnings of inward commuters (cross-border commuters) who are liable to pay statutory pension contributions. These figures are reduced by 2.3%. This percentage is calculated in order to incorporate the combined net effects of the numbers of marginal part-time workers not registered with the German Federal Pension Fund since they do

not make statutory insurance contributions as well as income that is higher than the threshold for payment of statutory contributions.

Figures on the salaries paid to the foreign employees of German diplomatic, consular and cultural missions abroad are recorded in the annual federal budgets and are converted to average earnings since the number of employees is known (see section 8.1.1.2).

The average pay of seasonal workers is estimated on the basis of earnings in Germany. A 10% deduction is made from the earnings recorded in the national accounts to account for the simpler employment structure of seasonal workers.

Table 8—2: Average earnings of inward and outward commuters during 2000

Outward commuters	EUR	Inward commuters	EUR
Cross-border commuters	35 678	Cross-border commuters	23 778
Employees of foreign diplomatic, consular and cultural missions in Germany	22 086	Employees of German diplomatic, consular and cultural missions abroad.....	14 052
Employees of allied forces	35 056	Seasonal workers	22 695

8.1.3 Employers' social contributions for inward and outward commuters

8.1.3.1 Employers' social contributions for outward commuters

Employers' social contributions for German employees of the Allied forces stationed in Germany are assessed on the basis of the German contribution rates. The contributions paid to the insurance funds are allowed for at a rate of 2.5% which is based on information from the Federal Ministry of Finance.

The German contribution rates are also applied in calculating the social-contributions of employers of German staff at foreign diplomatic, consular and cultural missions in Germany.

Details of the rates used to calculate the employers' social contributions of day commuters are provided by the Deutsche Bundesbank in the case of Switzerland, Luxembourg and France. In the absence of information on employers' social contributions for commuters who work in Denmark and Austria, the German contribution rates are applied.

8.1.3.2 Employers' social contributions for inward commuters

The employers' social contributions for cross-border commuters are assessed on the basis of the average rate of contribution for German employees which is applied to the gross wages and salaries of cross-border commuters.

In the case of seasonal workers the average rate of employers' contributions in Germany is also applied.

The employers' social contributions for foreign employees of German diplomatic, consular and cultural missions abroad, although insignificant in terms of scale, are estimated from figures in the federal budget in line with the contributions payable within Germany.

8.1.4 Quality, exhaustiveness and allowances in respect of the calculation of the compensation of inward and outward commuters

To gain an assessment of the quality and exhaustiveness of allowances, as well as the degree to which they are essential, it is necessary to consider the components which make up the compensation of inward and outward commuters in detail.

The figures on the number of employees of the armed forces, at international organisations and at embassies are considered very reliable and complete. The model for determining the number of seasonal workers is built up on good data and, with the aid of the allowance and the fact that cancelled work permits are disregarded, these figures provide a very full picture of employment in this segment of the labour market.

The figure for cross-border commuters is based, for inward as well as outward commuters, on less reliable statistics, because the social-security fund only records employees and remuneration which are liable for payment of earnings-related social contributions. In compensation, an allowance is added to the number of employees and a deduction is made from average earnings. On balance, with the help of these allowances and deductions, the employee structure is now represented fully. However, some of these figures are oriented to the structures on the German labour market, for example with regard to the earnings of seasonal workers.

8.2 Taxes on production and imports

The taxes on production and imports paid to the rest of the world constitute European Union own resources (in as much as they relate to taxes). In 2000, EUR 12.65 bn in taxes was paid to the rest of the world (EU). All of these are classifiable as taxes on products.

Type of tax	2000 EUR m
VAT	8 830
Import duties	3 410
Customs duties	3 400
Levies and monetary compensatory amounts	10
Other taxes on products	410
Co-responsibility levies on milk and cereals	60
European Coal and Steel Community levy	0
Production levy for sugar	350
Taxes on products paid to the European Union.....	12 650

The sources for the calculation of taxes payable to the EU are the balance of payments figures compiled by the Deutsche Bundesbank (EVAS 83111)¹. The payments from EU own resources,

¹ Cf. Deutsche Bundesbank, Statistisches Beiheft zu den Monatsberichten, Reihe 3.

which are made to compensate for imbalances in the budgets in favour of the United Kingdom, have so far been recorded in own resources accruing from VAT. During the 2005 revision, this practice was altered. These payments are now recorded as other current transfers by the government to the rest of the world, which is similar to GNI own resources. VAT is correspondingly attributed to general government and to the rest of the world with adjustment for this amount².

In accordance with European Parliament and Council Regulation governing the recording of taxes and social contributions, the recording of cash receipts is time-adjusted. The date of recording is determined by the collection date prescribed in the Finance Act. For this reason, the cash receipts in respect of customs duties are time-adjusted by one month. With regard to the percentage of VAT receipts handed over to the European Union, these are largely payments on account and clearing payments which bear no relation to the turnover of the respective month. It would therefore be inappropriate to time-adjust the VAT quota that is payable to the European Union. Because of the minimal amounts involved, the same applies to the other taxes that are part of the European Union's own resources.

8.3 Subsidies

EU subsidies are calculated on the basis of Annex E 'Organisation of EU markets' of Chapter 1004 'Organisation of markets, measures and emergency provisions' of the federal budget. In 2000 they amounted to a total of EUR 5.85 bn of which EUR 4.80 bn comprised product subsidies and EUR 1.05 bn other subsidies. This Annex forms the basis for calculating the product subsidies and other subsidies paid by the EU (see the description of product and other subsidies in sections 3.26 and 4.9).

8.4 Gross property income

Apart from the cross-border property income attributed to insurance policy holders and the data for calculating FISIM, the data on cross-border property income are taken exclusively from the balance-of-payments statistics (EVAS 83111) of the Deutsche Bundesbank.

	2000, in EUR m	
	Income from the rest of the world	Payments to the rest of the world
Interest.....	83 530	106 660
+ FISIM	- 3 080	1 450
= Interest including FISIM	80 450	108 110
+ Distributed income of corporations (excl. construction work)....	29 410	17 000
+ Property income connected to construction work	160	-
+ Reinvested earnings	- 1 670	- 5 840
+ Property income attributed to insurance policy holders	-	20
= Property income (estimate for NA), including FISIM	108 350	119 290

² Cf. Council Decision, 2000/597/EC, Euratom, in: Official Journal of the European Union, L253 dated 7 October 2000.

The data relating to returns on outward and inward investments are drawn from the balance-of-payments statistics compiled by the Deutsche Bundesbank.³

The balance of investment returns represents income accruing to German residents from outward investments less the yield from capital invested in Germany by residents of other countries. The distinction between returns on investments and income from service provision follows the dividing line between the balance of payments on current account and the balance of capital transactions; this means that unearned income normally covers returns on investments in the form of shares in companies, securities, loans and deposits, land and movable assets held by German residents abroad. Conversely, expenditure of unearned income as a rule means income from corresponding investments in Germany by residents of other countries. The breakdown of the item 'returns on investments' only partly matches that of the capital account. Although, as with the long-term balance of capital transactions, a distinction is made between direct investments, investments in securities and loans, these items include returns on both short-term and long-term investments; this applies especially to income from loans, which includes all interest accruing in connection with the deposit and short-term loan business conducted by banks.

8.4.1 Interest

Within the balance-of-payments statistics three types of interest are distinguished: interest accrued from direct investments, interest on securities, i.e. that accruing from fixed-interest securities and that from money market instruments, and interest paid against loans.

Under Commission Regulation (EC) No. 1889/2002 of 23 October 2002⁴, financial intermediation services indirectly measured (FISIM) are also to be taken into account in connection with the cross-border payment of interest on bank loans and deposits. The corresponding values for credit and deposit business by German banks with foreign economic entities are included in the valuation of output from domestic banks. Conversely the values for the import of services in connection with credit and deposit transactions by German non-banks with foreign banks must be estimated separately. The basis of assessment is formed by figures compiled by the Deutsche Bundesbank on loans from and deposits with foreign banks for German non-banks. Generally it can be assumed that the transaction is denominated in the currency of the host country and therefore the lending, deposit and reference interest rates valid for this currency apply to the calculation.

The income and payments applicable to the interest components are shown below:

³ Cf. Deutsche Bundesbank, Statistisches Beiheft zum Monatsbericht, Nr. 3. Because of the differing dates of revisions, there may be divergences between the data which have entered the national accounts calculations and data currently recorded in the balance-of-payments statistics. This will be rectified as part of the next revision of the national accounts.

⁴ Cf. Official Journal of the European Communities L286 dated 24.10.2002, Article 1 (1) b), P.12.

	2000, in EUR m	
	Income from the rest of the world	Payments to the rest of the world
Interest on loans as a direct investment	5 180	10 800
+ Interest paid on securities.....	25 680	43 280
+ Interest paid on loans	52 670	52 580
= Interest	83 530	106 660
+ FISIM	- 3 080	1 450
= Interest including FISIM	80 450	108 110

Returns on direct investments comprise all distributed and undistributed profits from direct investment projects, undistributed profits corresponding to the amount of reinvested income, and the interest payable and receivable on loans between affiliated companies. The share of the undistributed profits of dependent companies and branches accruing to direct investors is regarded as a return on investment, whereas the share assigned by fund managers to portfolio investors is not recorded in the balance of payments.

Direct investors' share in the balance-sheet losses of dependent companies and branches are recorded as 'negative' returns on investment. Subsidies paid by a parent to its subsidiary to keep the latter's balance sheet out of the red are likewise registered as 'negative' returns on investment. Subsidisation of current expenditure, on the other hand, is recorded under other services (operating expenses).

Income from securities comprises payments from instruments evidencing shareholdings or titles with an original term of more than one year – excluding direct investments – and all payments of income from short-term securities where these are distinguishable from other instruments. Returns on discountable and non-interest-bearing instruments need not be declared. In the case of German money market securities and zero-coupon bonds, the value of these returns is estimated.

Private interest from loans consists of returns on all sorts of short-term and long-term titles excluding those from securitization. These include deposits on current account, fixed-term deposits and savings deposits with banks, loans on a trust basis and discount credit granted by banks, claims arising from repurchase agreements and, in particular, all short-term and long-term claims of and against financial institutions, businesses and private individuals arising from book credits, including loans against borrowers' notes, and from trade credits. In addition, premiums and discounts that apply to the redemption of loans also count as returns on investment. Interest-like income and expenditure, such as credit, commitment and overdraft commission relating to credit transactions, or forfeiting charges and del credere commission levied in connection with the assignment of claims, are also recorded here, but losses arising from defaults, written-off debt, etc., are not.

Public revenue from interest includes the income accruing to the Deutsche Bundesbank from its foreign investments, income accruing to the Federal Government from development loans and other forms of credit and the returns on capital invested by the German Finance Company for Investments in Developing Countries (*Deutsche Finanzierungsgesellschaft für Beteiligungen in Entwicklungsländern (DEG)*). Public expenditure on interest comprises the payments made by the Deutsche Bundesbank on its foreign liabilities, the interest paid by the Federal Government, the

governments of the Länder and the local authorities on their loans and borrowers' notes from foreign creditors and certain rental payments.

8.4.2 Distributed income of corporations

As already mentioned in section 8.4.1, income from direct investments and that from securities includes not just interest but also dividend distributions and withdrawals. In the case of direct investments, these comprise dividends and other profits and contributions for the coverage of losses. In the case of securities, these are the dividends and income received from investment certificates. The latter includes income reinvested in investment funds. A further component of distributed income of corporations comprises rental from real estate as defined for national accounts purposes.⁵ In detail, the distributed income of corporations is made up as follows:

	2000, in EUR m	
	Income from the rest of the world	Payments to the rest of the world
Dividends and other profits from direct investment.....	17 400	10 170
+ Contributions to cover losses in connection with direct investment.....	– 3 540	– 1 050
+ Dividends paid on securities	9 080	6 040
+ Income from investment certificates	5 370	1 670
+ Rental from real estate	1 100	170
= Distributed income of corporations	29 410	17 000

8.4.3 Reinvested earnings on foreign direct investment

Reinvested earnings represent another form of income from direct investment. In 2000 the relevant revenue was EUR 1 670 m and expenditure was EUR 5 840 m.

Estimation of returns on investment

As far as the accuracy of data concerning returns on investment is concerned, we should mention the particularly profound impact of a declaration threshold on the one hand and of reluctance to declare such income for various reasons. This means that gaps have to be closed, especially on the income side and in particular with regard to income from foreign securities, the value of which is estimated with the aid of data from the international investment position in the balance-of-payments statistics and of assumptions regarding interest and yield rates; another fairly wide gap, relating to income from investments in foreign banks by German non-banks, can be closed – at least for the countries that are major targets for German investment – with the aid of foreign banking statistics. In addition, the value of non-declarable non-distributed (reinvested) profits and losses also has to be estimated. The calculation is based on data from the annual survey of direct investments; it includes disclosed reserves (unrestricted retained earnings) plus accumulated profits less losses carried forward and less profits distributed during the following year, which are, by definition, non-reinvested profits. Provisional estimates are necessary, because the data from the survey become available at a relatively late stage in the valuation

⁵ For more information refer to section 8.4.6.

process, which means that the estimated value of reinvested profits can only be adjusted retrospectively.

Interest payments in respect of outstanding export receivables and import payables are estimated on the basis of average payment periods and interest rates; where such interest payments are already included in the price of the product, they are left in the merchandise account.

8.4.4 Other income from property

Other income from property comprises income from assets arising from German companies' **construction work** outside Germany.

The income and expenditure in respect of construction, assembly and improvement work which are recorded by the Deutsche Bundesbank in the balance of payments comprise highly heterogeneous elements. The Deutsche Bundesbank explains this item as follows:

'This category includes the income of German construction and assembly companies working abroad on a temporary basis for the account of others and the expenditure of Germans received by foreign companies working in Germany on a temporary basis. Expenditure by these companies on purchases of goods and services from external suppliers is also recorded under this heading.'

In the national accounts of the Federal Republic of Germany, the treatment of this income and expenditure is governed by the following considerations:

Foreign construction sites are not German economic units or parts thereof. Only the margin of income over expenditure is economically relevant. The margin of income over expenditure in respect of construction work abroad results in an amount of EUR 160 m, which is entered under the heading of property income received from the rest of the world.

8.4.5 Property income attributed to insurance policy holders

A minimal allowance is added to the account for imputed interest payments arising from claims on insurers' technical reserves. This comes from the fact that, in insurance business conducted on a cross-border basis, business conducted by branches clearly predominates over direct insurance business.

8.4.6 Rent on land and sub-soil assets

In accordance with ESA 95 para. 1.30b, non-resident units in their role as the owners of land or buildings are treated within the country's economic territory as **national resident units** in the case of transactions taking place in connection with the land or buildings in question. By definition, there is therefore no cross-border D.45 rents income. **Income from real estate**, e.g. rents and rents of land, is recorded as withdrawals from the income of quasi-corporations (D.422) (see section 8.4.2) in accordance with ESA 95, para. 4.60.

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Chapter 9 Calculation and effects of FISIM allocation on GNI

Regulation (EC) No. 1889/2002 of 23 October 2002¹ created a basic decision at European level concerning the calculation and recording of bank output in connection with interest-related operations. As part of the major revision of the national accounts carried out at the end of April 2005, the new concepts were incorporated into the German calculations. To clarify the differences, the previous term used ('imputed bank service charge') has now been replaced by the term 'financial intermediation services indirectly measured' (FISIM).

Calculation of output as the sum of turnover, value of own-account fixed capital formation and changes in inventories of own products may not be applied to banks which – apart from certain explicit remuneration (e.g. for consultancy services) – do not generate turnover in the conventional sense. Therefore up to now a surplus of property income received (dividends and interest adjusted for earnings from investing own funds) over interest paid was used as a substitute figure for the missing sales. As no plausible method could be found for allocating the value of these banking services to the users, they were then treated universally as intermediate consumption by the whole economy. As these banking services flowed into output as well as intermediate consumption, they affected neither the level nor the development of GDP or GNI. It was an advantage to be able to differentiate between interest that was received and interest that was paid. On the other hand, a figure was recorded for GDP which was too low by the proportion of the value of banking services that should actually have been attributed in particular to household and general government consumption.

The change in concept that was introduced in the 2005 revision of the German national accounts comprises two components. Firstly, the concept for determining the value of the services produced by banks was changed and secondly, this value was allocated to the consumers of banking services.

9.1 Method of FISIM calculation

The EMU interest rate statistics, which have been collected monthly since January 2003 by the Member States of the European Monetary Union, provide the source data for the calculations which the FISIM arrangements now require. These harmonised interest rate statistics provide

¹ Official Journal of the EC No. L 286 of 24 October 2002, p. 11 et seq.

details of interest rates for new business and for the average portfolios of euro-denominated deposits and loans of the monetary financial institutions in Germany and the eurozone. The EMU interest rate statistics on various types of loans and deposits as well as their maturities distinguish between the sectors of private households and non-financial institutions. The corresponding stocks from the monthly banking statistics compiled by the Deutsche Bundesbank provide another important source of data, allowing the interest for loans and deposits to be determined according to sector.

The method of calculating FISIM can be described in the following steps:

Firstly the assets and liabilities, i.e. particularly the loans and deposits classified by sector, are taken from the banking statistics. For this, the Federal Statistical Office makes the same changes to the sector allocations as are made in the financial account. These changes apply in particular to loans drawn on by government bodies under the rules of the national accounting system.

Secondly, a model is established. Interest rates are allocated to the (adjusted) loans and deposits of the banks. For this purpose the Deutsche Bundesbank's statistics on interest rates from the years 1991 to 2002 were used. These statistics have now been replaced by fresh statistics on interest rates which are produced by the European Central Bank (from January 2003 onwards).

The salient improvement in the suitability of the new interest rate statistics compiled by the European Central Bank with regard to the valuation of FISIM lies in the fact that now the surveys include not just the interest rates applied for new business in certain investment instruments (short-term loans, term money, etc.), which were formally registered with the Deutsche Bundesbank, but also cover the average interest rates of stocks by sector (ESA definition).

Estimates of the banks' interest revenue and expenses are obtained by combining the loans and deposits with the corresponding interest rates. The results of the model then have to be refined to match the actual interest revenue and expenditure of the banks, as recorded in the annual profit and loss accounts.

Before this process of refining takes place, the banks' interest revenue and expenditure as recorded in their profit and loss accounts have to be adjusted. The profit and loss accounts of the banks are drawn up according to the concept of enterprises. In other words, they include the interest streams of the (legally dependent) foreign branches of the German banks. As these foreign branches of German banks are not domestic economic units, their interest income and expenditure need to be eliminated. For this, the Federal Statistical Office uses estimates produced by the Deutsche Bundesbank. As profit and loss accounts have to be prepared for (legally dependent) branches of foreign banks in Germany, no correction is needed in the reciprocal instance. To give a comprehensive picture, it should be said that it is unnecessary to adjust the figures for the banks' assets and liabilities because from the start only the domestic portion of the entity with its assets and liabilities is counted.

The results of the model have to be reconciled with the modified actual values of the profit and loss accounts. However, a further step is necessary before actually reconciling these reference values. In some cases, such as the interest paid by insurance companies to banks or the interest received by insurance companies from banks, reliable information can be obtained from the

insurance companies' accounts. The figures concerning insurance replace the estimates used in the model. This also applies to the cross-border interest paid and received by banks. In this case, the balance-of-payments statistics provide the external source. Because ultimately the interest flows from (domestic) interbank relationships have to be equal (since the amount a domestic bank has to pay another domestic bank in terms of interest must match what the second bank receives), the estimated value of the interest paid by domestic banks to other domestic banks is also entered on the income side of the banking sector. The same procedure is applied to the interbank assets and liabilities. The value of interbank liabilities is what counts: accordingly, the difference between the (partially corrected) result of the model and the (modified) result from the profit and loss account is distributed over the items which are not fixed (insurance and cross-border interest).

As well as the actual interest, the reference interest rate represents a further constituting element in the calculation of the FISIM. The reference interest rate is found from the interbank liabilities and the interest paid by domestic banks to other domestic banks. Since, as described, reciprocity has been ensured beforehand, this reference rate will correspond exactly to the interest received from the interbank assets and the interest received from domestic banks.

When the loans and deposits of the banks according to sector are multiplied by this reference rate, the difference from the actual interest income and expenditure (after all modifications and adjustments) represents the service charge.

When interpreting the data it should be noted that the new calculation of the banks' service charge is based on the theory that this service charge can be determined based on the difference between the actual average interest rates for loans and deposits and a real reference rate regarded as 'service-free'. The average current interbank interest rate is viewed as a 'service-free' reference interest rate. The interest rate actually payable by borrowers is thus made up of the reference interest rate and a service charge which is also measurable in percentage points, whilst depositors are allocated interest comprising the reference interest rate which is increased by the addition of the service charge. The stability of the service charge, measured in percentage points, depends on how rapidly changes to the current reference interest rate affect the average loan and deposit interest rates. Supplementary investigations indicate that the assumption of a rapid implementation of changes to reference interest rates is certainly correct in the case of banks' new business. However, the reference basis of the calculations is not formed by interest rates for new business, but, as mentioned, by the average interest rates payable on loan and deposit stocks. If variable interest rates have been agreed, then a rapid adjustment to changes in the reference interest rates must also be assumed to take place. However, since in Germany¹, just as in Belgium, France and the Netherlands, contracts are mainly arranged at an interest rate which is fixed over a (long) period, this leads to a slackness in the adjustment of the average interest rates towards the current reference rate. This results from the fact that the loan and deposit stocks in a particular year represent arrangements made in earlier years that included fixed undertakings regarding the rate of interest. Considering, moreover, that maturity transformation is part of the banks' core business, then from the outset it must be expected that the interest rates for the more short-term deposits will generally be adjusted at shorter time intervals than those of more long-term loans. This has consequences for the corresponding 'service charge', because the interbank interest rate to be applied within the calculation does not relate in terms

¹ See: European Central Bank: monthly report, November 2004, p. 16.

of content to these earlier contracts. They were, after all, concluded on the basis of the interbank interest rates that were valid earlier.

The FISIM concept is legally binding in respect of the national accounting systems of the European Union and therefore also applies to the Federal Statistical Office. As reality in Germany nonetheless deviates from the conceptual ideal in the ways described, any interpretation of the results should consider these divergences.

9.2 Impact of FISIM allocation

The first component of the change in method, that which affects the overall volume of FISIM, has no impact in itself on the level of GDP. This is because the full value of the banking services has so far been treated as intermediate consumption and therefore – regardless of the actual value of the banking services – has always been included in the accounts without affecting value added. By contrast, the second component, in other words the allocation of the FISIM to the consumer sectors, has resulted in obvious changes in GDP and GNI.¹

On the expenditure side, FISIM, being the implicit service charge, is added to the individual expenditure categories. Where borrowers or depositors are consumers, the implicit service charge component increases consumer expenditure. If borrowers or depositors are treated as producers in the national accounts system, then FISIM is entered as intermediate consumption. In the case of general government too, intermediate consumption is increased and, due to the calculation of the value of output by addition, the general government final consumption expenditure deriving from it is also increased. An example of the impact of the new FISIM rules is shown in the following table for the year 2000.

Changes to the latest domestic consumption, gross domestic product and gross national income because of FISIM

Figures for 2000 in EUR m

	Household final consumption expenditure	+ 14 580
+	Consumption expenditure by private non-profit institutions	+ 630
+	Government final consumption expenditure	+ 4 560
=	Final national uses	+ 19 770
+	Net exports of goods and services	+ 4 530
=	Gross domestic product	+ 24 300
+	Net cross-border primary income	– 4 530
=	Gross national income	+ 19 770

The Council Decision of 29 September 2000 on the system of the European Communities' own resources² envisages that the GNI is used for own resource purposes, as assessed when applying ESA 95 according to the Council Decision (EC) No. 2223/96³. In Article 2(7) of the Council Decision on the system of the European Communities' own resources it is stated that

¹ A full explanation of the calculation of FISIM is provided in section 3.16.1 of this inventory and also an explanation of the impact of the calculation of FISIM on other areas in the overall system of national accounts in: Eichmann, W., Finanzserviceleistung, indirekte Messung (FISIM), in *Wirtschaft und Statistik* 7/2005, Wiesbaden, p. 710-716.

² Official Journal of the EC No. L 253 of 7 October 2000.

³ Official Journal of the EC No. L 310 of 30 November 1996.

modifications to the ESA 95 will not automatically affect those own resources. Should modifications to the ESA 95 result in significant changes in the GNI, the Council, acting unanimously on a proposal of the Commission and after consulting the European Parliament, shall decide whether these modifications shall apply for the purposes of this Decision¹. The allocation of FISIM to consumer sectors is a modification of the ESA which requires a Council Decision so that it can be taken into account for the purposes of the budget plan and the Communities' own resources². Since so far there has been no Council Decision on including this ESA revision, the effect of FISIM-allocation has to be excluded from GNI-compilation for own resource purposes.

At present, this reflects the legal position for annual budgets from the year 2002 onwards.³ For prior years the GNP will continue to provide the authoritative basis for the assessment of the European Communities' own resources⁴. For the years 1995 to 2000, these are GNP data assessed **prior** to the 2005 revision, which are adjusted by the modifications to the calculations resulting from reservations raised by Eurostat. For 2001 they are the GNP results **after** the 2005 revision, but excluding the effects of FISIM allocation.

¹ Official Journal of the EC No. L 253 of 7 October 2000, p. 44.

² See: Regulation (EC) No. 448/98, Article 8, in: Official Journal of the EC No. L 58 dated 27 February 1998.

³ See the Council decision of 29 September 2000 on the system of the European Communities' own resources (2000/597/EC, Euratom), in: Official Journal L253 of 7 October 2000, which came into force on 1 March 2002 with effect from 1 January 2002, in conjunction with Council Regulation (EC, Euratom) No. 1150/2000 of 22 May 2000 implementing Decision 94/728/EC, Euratom, on the system of the Communities' own resources in: Official Journal of the EC No. L130 of 31 May 2000 and Council Regulation (EC, Euratom) 2028/2004 of 16 November 2004 amending Regulation (EC, Euratom) No. 1150/2000 implementing Decision 94/728/EC, Euratom on the system of the Communities' own resources in: Official Journal of the EC No. L352 of 27 November 2004.

⁴ See: Council Regulation (EC) No. 2223/96 of 25 June 1996, Article 8, in: Official Journal of the EC No. L310 dated 30 November 1996.

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Chapter 10 Main classifications used

Classifications are used in order to record and clearly present the vast volume of data collected during the examination of complex material. They are therefore an important instrument without which it would be impossible to present or analyse the information so gained. The growing international intermeshing of national economies has brought about an obvious rise in the need for comparable and current data on those economies. With it, the need to harmonise the statistical classifications at an international level has also grown. To some extent, this has reduced the importance of the national viewpoint due to the need to gain better comparison of the data. Nonetheless national interests have benefited from the fact that, for example, extra classification levels have been added in order to generate national versions of the internationally agreed classifications.

Below we describe the main classifications, as used in describing the national accounting system, and particularly the way in which they relate to the classifications adopted as part of the ESA 95. We also state which sections of the national accounting system the individual classifications affect.

10.1 German classification of Economic Activities¹, Edition 2003 (WZ 2003)

WZ 2003 is based on the General Industrial Classification of Economic Activities within the European Community (NACE Rev. 1.1), which was published in Commission Regulation (EC) No. 29/2002 of 19 December 2001, and is structured on the basis of the United Nations' International Standard Industrial Classification of All Economic Activities (ISIC Rev. 3.1). The fact that WZ 2003 is based on international standards takes account of the fact that, nowadays, it is essential to have access to comparable statistical data covering not just Europe but the whole world, so enabling political and business decisions to be taken.

¹ "Classification of Economic Activities" is the officially used term for the German classification. In the context of the National Accounts according to ESA 95 generally the term "Classification of Industries" is adapted in this inventory.

WZ 2003 was formally developed as follows out of ISIC Rev. 3.1 and NACE Rev.1.1:

- The first level of ISIC Rev. 3.1 is adopted in NACE Rev. 1.1 and given a set of letter categories (sections A-Q). In various areas it is broken down into subdivisions with a two-letter code.
- The second level of ISIC Rev.3.1 (divisions) is adopted without changes in NACE Rev. 1.1.
- The third and fourth levels (groups and classes) of ISIC Rev.3.1 are subdivided in NACE Rev. 1.1 according to the European requirements. However, the groups and classes of NACE Rev. 1.1 can always be aggregated to form the groups and classes of ISIC Rev.3.1 from which they were derived.
- The lowest level of NACE Rev. 1.1 comprises four-digit numerically coded classes.
- Using NACE Rev. 1.1 as basis, WZ 2003 is completed by adding a further level of classification which contains the five-digit numerically coded subclasses.

The following table summarises the formal structure of the UN, EU and German classifications of economic activities:

Classification level	ISIC Rev. 3.1	NACE Rev. 1.1	WZ 2003	Code
Sections.....	17	17	17	A-Q
Subsections.....	-	31	31	AA-QA
Divisions.....	62	62	60	01-99
Groups.....	161	224	222	01.1-99.0
Classes	298	515	513	01.11-99.00
Subclasses	-	-	1041	01.11.1-

In order to include the production activities of households for their own final use in certain economic analyses, two divisions were created in ISIC Rev. 3.1 and included in NACE Rev. 1.1. There is no need to include these divisions in the national statistics. Because of this, and with Eurostat's approval, they were left out of WZ 2003. The same applies to the two groups and classes which have identical content.

Class 95.00 of WZ 2003 only covers the activities of private households in their role as the employers of domestic servants. The national accounting system treats the outcome of these activities as output, and for this reason as well as for particular surveys this class has been included in NACE Rev. 1.1 and WZ 2003.

In WZ 2003 some names of areas of activity differ from the names used in NACE Rev. 1.1. This is intended so as to enable users at national level to carry on using the terms they are accustomed to. The explanatory notes have also been adapted to suit German requirements. Naturally, these terminological differences do not change the actual content of WZ 2003 from NACE Rev. 1.1. The idea behind the use of known terms that are familiar among specialist users and the inclusion of national features in the explanatory notes is designed to ensure more clarity regarding the nature of the areas of activity and so, in particular, to prevent the allocation of statistical units diverging from the European concept.

While preparing NACE Rev. 1, the Member States of the EU and the European Commission had already elected to introduce this classification in the same form and at the same time within all the Member States. On 9 October 1990 the Council promulgated a corresponding regulation which is valid in all member states of the European Union. The EEA Agreement also embodies a reference to NACE Rev. 1, which the EFTA countries are also required to adopt.

Under Articles 10 and 11 of this Regulation, all statistics compiled by EU Member States since 1995 and containing a classification by areas of economic activity must be generated on the basis of NACE Rev. 1 or a classification system that is derived from it and approved by Eurostat. Derived classification systems which change the structure of the EU system of classifying economic activities are not permissible, even for national purposes.

Commission Regulation (EC) No. 29/2002 of 19 December 2001 formally alters the appendix relating to the aforementioned Council Regulation, which contains the EU classification of areas of economic activity. However, it does not affect the rules governing Member States' use of the classification system. The German classification WZ 2003 therefore has to keep to the structural and hierarchical framework of NACE Rev. 1.1.

The activity-related allocations and classification criteria also apply to the organs of general government. Therefore they are not all classified in section L of WZ 2003. Units carrying out activities at the central, federal or local levels that are specifically named in or attributable to other areas of activity are classified in the appropriate section (for example, education in section M, health and social work in section N) rather than in section L 'public administration and defence; compulsory social security'. WZ 2003 does not contain a breakdown by sectors.

Source statistics are available for the general government sector. The relevant statistics are not classified into areas of activity. The budget systems of the Federation and Länder define the structure of the data applying to them, classifying the information into economic categories combined with functional attributes. The source material of the local authorities and special-purpose associations is available in line with the budget system of the local authorities. Among the individual branches of the social security subsector, the various specific accounting frameworks are used in preparing the results. The output values, and indeed all the other characteristics, are assessed for the general government sector and its subsectors separately to begin with, and the functional structure of the annual accounting results in the public finance statistics then enables the results to be distributed among the appropriate NACE categories of economic activity.

The data in the production approach in particular are recorded in the system of areas of activity, but individual figures or aggregates in the expenditure and the income approach are also arranged according to the breakdown in the following table.

Classification of areas of economic activity recorded in the national accounts

Serial no.	Description	German classification of economic activities, 2003 edition ¹⁾	
		Activity	WZ no.
1	Agriculture, hunting and fishing	Agriculture, hunting and forestry; fishing	A, B
2	Agriculture and forestry	Agriculture, hunting and forestry	A
3	Agriculture and hunting	Agriculture, hunting and related service activities	01
4	Forestry	Forestry, logging and related service activities	02
5	Fishing and fish farming	Fishing, fish farming and related service activities	B
6	Industry, including energy and construction	Mining and quarrying, manufacturing, electricity, gas and water supplies, construction	C, D, E, F
7	Industry including energy	Mining and quarrying, manufacturing, electricity, gas and water supply	C, D, E
8	Mining and quarrying	Mining and quarrying	C
9	Mining and quarrying of energy producing materials	Mining of coal and lignite, extraction of peat, extraction of crude petroleum and natural gas, mining of uranium and thorium ores	CA
10	Mining of coal and lignite; extraction of peat	Mining of coal and lignite; extraction of peat	10
11	Extraction of crude petroleum and natural gas, service activities incidental to oil and gas extraction	Extraction of crude petroleum and natural gas, service activities incidental to oil and gas extraction, excluding surveying	11
12	Mining of uranium and thorium ores	Mining of uranium and thorium ores	12
13	Mining of iron ores, quarrying of stone, other mining and quarrying	Mining of iron ores, quarrying of stone, other mining and quarrying	CB
14	Mining of metal ores	Mining of metal ores	13
15	Other mining and quarrying	Other mining and quarrying	14
16	Manufacturing	Manufacturing	D
17	Manufacture of food products and tobacco	Manufacture of food products, beverages and tobacco	DA
18	Manufacture of food products	Manufacture of food products and beverages	15
19	Manufacture of tobacco products	Manufacture of tobacco products	16
20	Manufacture of textiles and textile products	Manufacture of textiles and textile products	DB
21	Manufacture of textiles	Manufacture of textiles	17
22	Manufacture of wearing apparel	Manufacture of wearing apparel; dressing and dyeing of fur	18
23	Manufacture of leather and leather products	Manufacture of leather and leather products	DC
24	Manufacture of wood and wood products, except furniture	Manufacture of wood and wood products, except furniture	DD
25	Manufacture of pulp, paper and paper products; publishing and printing	Manufacture of pulp, paper and paper products; publishing and printing	DE
26	Manufacture of pulp, paper and paper products	Manufacture of pulp, paper and paper products	21
27	Publishing, printing and reproduction	Publishing, printing and reproduction of recorded media	22
28	Manufacture of coke, refined petroleum products and nuclear fuel	Manufacture of coke, refined petroleum products and nuclear fuel	DF
29	Manufacture of chemicals and chemical products	Manufacture of chemicals, chemical products and man-made fibres	DG
30	Manufacture of rubber and plastic products	Manufacture of rubber and plastic products	DH
31	Manufacture of other non-metallic mineral products	Manufacture of other non-metallic mineral products	DI
32	Manufacture of basic metals and fabricated metal products	Manufacture of basic metals and fabricated metal products	DJ
33	Manufacture of basic metals	Manufacture of basic metals	27
34	Manufacture of fabricated metal products except machinery and equipment	Manufacture of fabricated metal products except machinery and equipment	28
35	Manufacture of machinery and equipment	Manufacture of machinery and equipment n.e.c.	DK
36	Manufacture of office machinery and computers; electrical engineering	Manufacture of electrical and optical equipment	DL
37	Manufacture of office machinery and computers	Manufacture of office machinery and computers	30
38	Manufacture of electrical machinery and apparatus n.e.c.	Manufacture of electrical machinery and apparatus n.e.c.	31
39	Manufacture of radio, television and communication equipment and apparatus	Manufacture of radio, television and communication equipment and apparatus	32
40	Manufacture of medical, precision and optical instruments, watches and clocks	Manufacture of medical, precision and optical instruments, watches and clocks	33
41	Manufacture of transport equipment	Manufacture of transport equipment	DM
42	Manufacture of motor vehicles, trailers and semi-trailers	Manufacture of motor vehicles, trailers and semi-trailers	34
43	Manufacture of other transport equipment	Manufacture of other transport equipment	35
44	Manufacture of furniture, jewellery, musical instruments, recycling	Manufacturing n.e.c.	DN
45	Manufacture of furniture, jewellery, musical instruments, sports equipment, etc.	Manufacture of furniture; manufacturing n.e.c.	36

Serial no.	Description	German classification of economic activities, 2003 edition ¹⁾	
		Activity	WZ no.
46	Recycling	Recycling	37
47	Electricity, gas and water supply	Electricity, gas and water supply	E
48	Electricity, gas steam and hot water supply	Electricity, gas steam and hot water supply	40
49	Collection, purification, distribution of water	Collection, purification, distribution of water	41
50	Construction	Construction	F
51	Service activities	Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods, hotels and restaurants; transport, storage and communication; financial intermediation; real estate, renting and business activities; public administration and defence; compulsory social security; education; health and social work; other community, social and personal service activities; private households with employed persons	G to P
52	Wholesale, retail, hotels and restaurants, transport and communications	Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods, hotels and restaurants, transport and communications	G, H, I
53	Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods	Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods	G
54	Sale, maintenance and repair of motor vehicles and motorcycles; retail sale of automotive fuel	Sale, maintenance and repair of motor vehicles and motorcycles; retail sale of automotive fuel	50
55	Wholesale trade and commission trade, except of motor vehicles and motorcycles	51 Wholesale trade and commission trade, except of motor vehicles and motorcycles	51
56	Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods	Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods	52
57	Hotels and restaurants	Hotels and restaurants	H
58	Transport, storage and communication	Transport, storage and communication	I
59	Land transport; transport via pipelines	Land transport; transport via pipelines	60
60	Water transport	Water transport	61
61	Air transport	Air transport	62
62	Supporting and auxiliary transport activities; activities of travel agencies	Supporting and auxiliary transport activities; activities of travel agencies	63
63	Post and telecommunications	Post and telecommunications	64
64	Financial intermediation; real estate, renting and business activities	Financial intermediation; real estate, renting and business activities n.e.c.	J, K
65	Financial intermediation services	Financial intermediation	J
66	Banking	Financial intermediation, except insurance and pension funding	65
67	Insurance	Insurance and pension funding, except compulsory social security	66
68	Activities auxiliary to banking and insurance	Activities auxiliary to financial intermediation	67
69	Real estate, renting and business activities	Real estate, renting and business activities n.e.c.	K
70	Real estate activities	Real estate activities	70
71	Renting of machinery and equipment without operator and of personal and household goods	Renting of machinery and equipment without operator and of personal and household goods	71
72	Data processing and databases	Computer and related activities	72
73	Research and development	Research and development	73
74	Other services mainly for business purposes	Other business activities	74
75	Other service activities	Public administration and defence; compulsory social security; education; health and social work; other community, social and personal service activities; private households with employed persons	L – P
76	Public administration and defence; compulsory social security	Public administration and defence; compulsory social security	L
77	Education	Education	M
78	Health, veterinary and social work	Health and social work	N
79	Other community, social and personal service activities	Other community, social and personal service activities	O
80	Sewage and refuse disposal, sanitation and similar activities	Sewage and refuse disposal, sanitation and similar activities	90
81	Activities of membership organisations, church and religious associations	Activities of membership organisations n.e.c.	91
82	Recreational, cultural and sporting activities	Recreational, cultural and sporting activities	92
83	Other service activities	Other service activities	93
84	Private households with employed persons	Private households with employed persons	P

¹⁾ 'Renting of dwellings' is defined according to function. So, apart from commercial letting as the main activity, 'real estate, renting and business activities' includes the auxiliary activity of commercial letting. Units which are allocated to other areas of activity according to the main emphasis of their activity, and the non-commercial letting of dwellings, including the use of owner-occupied dwellings, are therefore included in real estate, renting and business activities.

10.2 Classification of products

The national accounts results by product categories are presented within the German Systematic Classification of Commodities for Production Statistics, 1995 edition (GP 95) respectively the Classification of Products by Activity (CPA).

GP 95 is a less aggregated German version of CPA, which is the official EU-wide central statistical classification of products in conjunction with areas of activity in the European Economic Community. By combining the hierarchical levels of the CPA in the areas of mining and quarrying, manufacturing and electricity, gas and water supplies with the subdivisions of the PRODCOM list (the list of products for European production statistics) and expanding the classification system to include code numbers specially for national purposes, the German Systematic Classification of Commodities for Production Statistics (GP) was created.

GP 95 classification contains nine digits; the coding of the first six digits and the descriptive text are identical with the six-digit classification system of the CPA. The first eight digits agree in the areas covered by the PRODCOM with the numbering system of the PRODCOM list, while the ninth digit is reserved for national subdivisions.

In the German national accounts, household final consumption expenditure, exports and imports are shown in the following table according to commodity groups:

Classification of product categories recorded in the national accounts

Groups of products		German Systematic Classification of Commodities for Production Statistics GP 95/CPA 96	
Description		Department	
1	Products of agriculture and hunting	Products of agriculture, hunting and forestry	01
2	Products of forestry, logging and related services	Forestry products	02
3	Fish and other fishing products	Fish and other fishing products	05
4	Coal and lignite; peat	Coal and lignite; peat	10
5	Crude petroleum and natural gas; services incidental to oil and gas extraction, excluding surveying	Crude petroleum and natural gas; services incidental to oil and gas extraction, excluding surveying	11
6	Uranium and thorium ores	Uranium and thorium ores	12
7	Metal ores	Metal ores	13
8	Other mining and quarrying products	Other mining and quarrying products	14
9	Foodstuffs and animal feeds, beverages	Food products and beverages	15
10	Tobacco products	Tobacco products	16
11	Textiles	Textiles	17
12	Clothing	Garments	18
13	Leather and leather goods	Leather and leather products	19
14	Wood; wood, cork and basketry goods (excluding furniture)	Wood and products of wood and cork (except furniture); articles of straw and plaiting materials	20
15	Pulp, paper and paper products	Pulp, paper and paper products	21
16	Printed matter and recorded media	Printed matter and recorded media	22
17	Coke and petroleum products, nuclear fuel	Coke, refined petroleum products and nuclear fuel	23
18	Chemical products	Chemicals, chemical products and man-made fibres	24
19	Rubber and plastic goods	Rubber and plastic products	25
20	Glass, ceramics, processed stone and soil	Other non-metallic mineral products	26
21	Metals and semi-finished metal products	Basic metals	27
22	Metal products	Fabricated metal products, exc. machinery & equipment	28
23	Machinery and equipment	Machinery and equipment	29
24	Office machinery and computers	Office machinery and computers	30
25	Electrical machinery and apparatus n.e.c.;	Electrical machinery and apparatus n.e.c.;	31

Groups of products		German Systematic Classification of Commodities for Production Statistics GP 95/CPA 96	
Description		Department	
26	Communications technology, radio and television sets, electronic components	Radio, television and communication equipment and apparatus	32
27	Medical, metrology and regulation, optical products; clocks and watches	Medical, precision and optical instruments, watches and clocks	33
28	Motor vehicles and motor vehicle parts	Motor vehicles, trailers and semi-trailers	34
29	Other vehicles (water, rail, aircraft etc.)	Other transport equipment	35
30	Furniture, jewellery, musical instruments, sports equipment, games/toys, etc.	Furniture; other manufactured goods n.e.c.	36
31	Secondary raw materials	Recovered secondary raw materials;	37
32	Energy (electricity, gas) and energy supply services	Electrical energy , gas, steam and hot water	40
33	Water and water supply services	Collected and purified water and water distribution services	41
34	Construction	Construction works	45
35	Trading in motor vehicles; repairs to motor vehicles; retail trade in fuel	Trade, maintenance and repair services of motor vehicles and motorcycles; retail trade in fuel	50
36	Commission trading and wholesale	Wholesale trade and commission trade, except of motor vehicles and motorcycles	51
37	Retail trade; repair of personal and household goods	Retail trade except of motor vehicles and motorcycles; repair of personal and household goods	52
38	Accommodation and catering services	Restaurants and hotels	55
39	Land transport and transport in long-distance pipes	Land transport and transport via pipeline services	60
40	Shipping	Water transport services	61
41	Aviation	Air transport services	62
42	Services relating to auxiliary and ancillary activities for the transport sector	Supporting and auxiliary transport services, travel agency services	63
43	Communication services	Post and telecommunication services	64
44	Banking services	Financial intermediation services	65
45	Insurance-related services (excluding social security)	Insurance and pension funding services, except compulsory social security services	66
46	Credit and insurance auxiliary services	Services auxiliary to financial intermediation	67
47	Real estate services	Real estate services	70
48	Services in the letting of movable assets (excluding personnel)	Renting services of machinery and equipment without operator and of personal and household goods	71
49	Data processing and database services	Computer and related services	72
50	Research and development	Research and development services	73
51	Business services	Other business services	74
52	Public administration services, defence, social security	Public administration and defence services; compulsory social security services	75
53	Educational services	Education services	80
54	Health, veterinary and social services	Health and social-work services	85
55	Sewage, waste disposal and other allied services	Sewage and refuse disposal services, sanitation and similar services	90
56	Services by representatives of interest groups, churches, etc.	Membership organisation services n.e.c.	91
57	Cultural, sports and recreational services	Recreational, cultural and sporting services	92
58	Other services	Other services	93
59	Services provided by private households	Services provided by private households	95

The classifications for fixed capital formation are also based on GP 95 and CPA as shown below:

Classification of fixed capital formation¹ by product groups

Description	Classification in GP 95 ¹⁾ and CPA ²⁾
Cultivated assets	ex 1, 2, 5
Fabricated metal products	ex 28
Machinery:	ex 29
Office machinery and computers	ex 30
Electrical machinery and apparatus n.e.c.;	ex 31
Radio, television and communication equipment and apparatus	ex 32
Medical, precision and optical instruments, watches and clocks	ex 33
Motor vehicles, trailers and semi-trailers	ex 34
Other transport equipment	ex 35
Furniture; other manufactured goods n.e.c.	ex 36
Miscellaneous other machinery and equipment	ex 17 to 20, ex 22, ex 25 to 27
Dwellings	ex 45
Other buildings and structures	ex 45

¹⁾ German Systematic Classification of Commodities for Production Statistics 1995. ²⁾ Classification of Products by Activity.

10.3 Classification of the purposes of household final consumption expenditure

Household final consumption expenditure is classified according to purpose in the German Classification of Household Income and Expenditure (SEA 98). This is a national classification which is structured as follows and includes:

- 14 divisions (two-digit codes), two of which are also groups,
- 52 groups (three-digit codes), 14 of which are also classes,
- 158 classes (four-digit codes), 56 of which are also subclasses,
- 242 subclasses (five-digit codes), 87 of which are also categories,
- 630 categories (six-digit codes), 469 of which are also types, and
- 1062 types (seven-digit codes)

The two-, three- and four-digit codes are identical with the categories used in the Classification of Individual Consumption by Purpose (COICOP), which is referred to in the ESA 95 in the same way. For continuous household budget survey purposes Eurostat has subdivided the four-digit classifications of COICOP still further. This five-digit level is included in SEA 98. The six- and seven-digit codes, finally, are purely national subdivisions.

Household final consumption expenditure in Germany is shown in the following breakdown:

¹ Fixed capital formation also includes intangible fixed assets, which are shown separately in the German national accounts, but are included in neither the GP-95 commodity groups nor those of the CPA.

COICOP	SEA no.	Household final consumption expenditure by purpose
01	01	Food and non-alcoholic beverages
01.1	011	Food
01.1.1	0111	Bread and cereals
01.1.2	0112	Meat
01.1.3	0113	Fish and seafood
01.1.4	0114	Milk, cheese and eggs
01.1.5	0115	Oils and fats
01.1.6	0116	Fruit
01.1.7	0117	Vegetables (including potatoes and other tuber vegetables)
01.1.8	0118	Sugar, jam, honey, chocolate and confectionery
01.1.9	0119	Food products n.e.c.
01.2	012	Non-alcoholic beverages
01.2.1	0121	Coffee, tea and cocoa
01.2.2	0122	Mineral waters, soft drinks, fruit and vegetable juices
02	02	Alcoholic beverages, tobacco and narcotics
02.1	021	Alcoholic beverages
02.1.1	0211	Spirits
02.1.2	0212	Wine
02.1.3	0213	Beer
02.1.4	0214	Refreshing beverages with alcohol content below 6% (excl. mixers for spirits)
02.2	022	Tobacco
03	03	Clothing and footwear
03.1	031	Clothing
03.1.1	0311	Clothing materials
03.1.2	0312	Garments
03.1.3	0313	Other articles of clothing and clothing accessories
03.1.4	0314	Cleaning, repair and hire of clothing
03.2	032	Footwear
03.2.1	0321	Shoes and other footwear
03.2.2	0322	Repair and hire of footwear
04	04	Housing, water, electricity, gas and other fuels
04.1	041	Actual rentals for housing
04.2	042	Imputed rentals for housing
04.3	043	Maintenance and repair of the dwelling
04.3.1	0431	Materials for the maintenance and repair of the dwelling
04.3.2	0432	Services for the maintenance and repair of the dwelling
04.4	044	Water supply and miscellaneous services relating to the dwelling
04.5	045	Electricity, gas and other fuels
04.5.1	0451	Electricity
04.5.2	0452	Gas (including liquid gas)
04.5.3	0453	Liquid fuels
04.5.4	0454	Solid fuels
04.5.5	0455	Heat energy
05	05	Furnishings, household equipment and routine households maintenance
05.1	051	Furniture and furnishings, carpets and other floor coverings
05.1.1	0511	Furniture and furnishings
05.1.2	0512	Carpets and other floor coverings
05.1.3	0513	Repair of furniture, furnishings and floor coverings
05.2	052	Household textiles
05.3	053	Household appliances
05.3.1	0531	Major household appliances whether electric or not
05.3.2	0532	Small electric household appliances
05.3.3	0533	Repair of household appliances
05.4	054	Glassware, tableware and household utensils
05.4.0.1	05401	Glassware and tableware

COICOP	SEA no.	Household final consumption expenditure by purpose
054.0.2	05402	Cutlery, knives and silver goods (excluding plastic cutlery)
054.0.3	05403	Kitchen and household appliances
054.0.4	05404	Glassware, tableware and household utensils
05.5	055	Tools and equipment for house and garden
05.5.1	0551	Major tools and equipment
05.5.2	0552	Small tools and miscellaneous accessories
05.6	056	Goods and services for routine household maintenance
05.6.1	0561	Non-durable household goods
05.6.2	0562	Domestic services and household services
06	06	Health
06.1	061	Medical products, appliances and equipment
06.1.1	0611	Pharmaceutical products
06.1.2	0612	Other medical products
06.1.3	0613	Therapeutic appliances and equipment
06.2	062	Outpatient services
06.3	063	Hospital services
07	07	Transport
07.1	071	Purchase of vehicles
07.1.1	0711	Motor cars
07.1.2	0712	Motor cycles
07.1.3	0713	Bicycles
07.1.4	0714	Animal-drawn vehicles
07.2	072	Operation of personal transport equipment
07.2.1	0721	Spare parts and accessories for personal transport equipment
07.2.2	0722	Fuels and lubricants for personal transport equipment
07.2.3	0723	Maintenance and repair of personal transport equipment
07.2.4	0724	Other services in respect of personal transport equipment
07.3	073	Transport services
07.3.1	0731	Passenger transport by railway
07.3.2	0732	Passenger transport by road
07.3.4	0734	Passenger transport by sea and inland waterway
07.3.5	0735	Combined passenger transport
07.3.6	0736	Other purchased transport services
08	08	Communication
08.1	081	Postal services
08.2	082	Telephone and telefax equipment
08.3	083	Telephone and telefax services
09	09	Recreation and culture
09.1	091	Audio-visual, photographic and information processing equipment
09.1.1	0911	Equipment for the reception, recording and reproduction of sound and pictures
09.1.2	0912	Photographic and cinematographic equipment and optical instruments Instruments and accessories
09.1.3	0913	Information processing equipment
09.1.4	0914	Recording media
09.1.5	0915	Repair of audio-visual, photographic and information processing equipment
09.2	092	Other major durables for recreation and culture
09.2.1	0921	Major durables for outdoor recreation
09.2.2	0922	Musical instruments and major durables for indoor recreation
09.2.3	0923	Maintenance and repair of other major durables for recreation and culture
09.3	093	Other recreational items and equipment, gardens and pets
09.3.1	0931	Games, toys and hobbies
09.3.2	0932	Equipment for sport, camping and open-air recreation
09.3.3	0933	Gardens, plants and flowers
09.3.4	0934	Pets and related products
09.3.5	0935	Veterinary and other services for pets

COICOP	SEA no.	Household final consumption expenditure by purpose
09.4	094	Recreational and cultural services
09.4.1	0941	Recreational and sporting services
09.4.2	0942	Cultural services
	0943	Games of chance
09.5	095	Newspapers, books and stationery
09.5.1	0951	Books
09.5.2	0952	Newspapers and periodicals
09.5.3	0953	Miscellaneous printed matter
09.5.4	0954	Stationery and drawing materials
09.6	096	Package holidays
10	10	Education
11	11	Restaurants and hotels
11.1	111	Catering services
11.1.1	1111	Restaurants, cafés and the like
11.1.2	1112	Canteens
11.2	112	Accommodation services
12	12	Miscellaneous goods and services
12.1	121	Personal care
12.1.1	1211	Hairdressing salons and personal grooming establishments
12.1.2	1212	Electric appliances for personal care
12.1.3	1213	Other appliances, articles and products for personal care
12.3	123	Personal effects n.e.c.
12.3.1	1231	Jewellery, clocks and watches
12.3.2	1232	Other personal effects
12.4	124	Social protection
12.5	125	Insurance
12.6	126	Financial services n.e.c.
12.6.1	1261	FISIM
12.6.2	1262	Other financial services n.e.c.
12.7	127	Other services n.e.c.

10.4 Classification of government revenue and expenditure according to area of activity

The annual results from the public finance statistics for the Federation, the Länder and the local authorities are processed by combining grouped budget, which means categorisation of income and expenditure by economic transaction (e.g. earnings of civil servants, earnings of salaried employees, manual workers' wages, etc.) with functional categorisation by purpose. The division into status and activity categories must follow the budget structure of the Federation, the structure of the states budgets and the structure of the local authorities' budgets. For the individual branches within the system of social security, the Federal Ministry of Health lays down its own binding and detailed accounting framework.

Processing according to the grouped budget and, in the case of social security, according to the accounting framework, provides access to the components that are required for the compilation of government output and final consumption expenditure (e.g. employees' remuneration, intermediate consumption and sales). The functional breakdown makes it possible to assign the local KAUs within the general government sector to the appropriate industries as defined in WZ

2003, to break down government final consumption expenditure into individual and collective final consumption and to allocate government expenditure to the relevant COFOG (Classification of the Functions of Government) categories. Up to now, the breakdown by function is done by means of assigning to the primary purpose at the level of the single-digit COFOG classifications.

According to this, the government revenues and expenditures are shown in the national accounts within the following major categories:

- 1 General public services
- 2 Defence
- 3 Public order and safety
- 4 Economic affairs
- 5 Environmental protection
- 6 Housing and community amenities
- 7 Health
- 8 Recreation, sports, culture and religion
- 9 Education
- 10 Social protection

At present, however, the possibilities of a more detailed record by functions at the level of the COFOG two-digit classification is being investigated in a project commissioned by the Federal Ministry of Finance.

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Chapter 11 Main data sources used

Section 11.1 contains a description of the official statistics that have been used. They are frequently included in a number of areas of the GDP compilation. They are catalogued in an integrated list of all statistics compiled by the Federal Statistical Office and the Statistical Offices of the Länder (EVAS) and are shown with their catalogue numbers in the various parts of the foregoing description. This information refers to the catalogue version dated 1 July 2006, which is currently in force.

In the case of the other data sources set out in section 11.2, a separate column in the combined list of data sources shows in which chapter or section the data source has entered the calculations.

11.1 Official surveys used in the GNI compilation

Serial no.	EVAS No.	Published	Name
1.	12111	FS (Subject-matter series) 1, Heft (Heft) 1-2	Population census
2.	12211	FS 1; R 3	Microcensus (standard programme)
3.	12212	FS 1; R 1 FS 5; Heft 1-2	Microcensus (supplementary programme) 'Living conditions of households' (supplementary programme, 1998)
4.	13111	FS 1; R 4.2.1	Quarterly analyses of the number of employees subject to social insurance contributions
5.	13231	WiSta 02/04, 06/04, 12/04	Labour market and unemployment statistics based on the ILO concept
6.	22411	Specialised publication: Bericht zur Pflegestatistik	Statistics of home care services
7.	22412	Specialised publication: Bericht zur Pflegestatistik	Statistics of in-patient nursing homes
8.	23121	FS 12; R 6.3	Cost data of hospitals
9.	31111	FS 5; R 1	Statistics of building permits
10.	31121	FS 5	Statistics of construction work completed
11.	31211	FS 5; Heft 1 - 9	Census of buildings and dwellings
12.	31221	FS 5; Heft 2 FS 5; Heft 1-3	Sample survey of buildings and dwellings - 1% sample of buildings and dwellings -
13.	32211	FS 19; R 2.1	Survey of public water supply
14.	32212	FS 19; R 2.1	Survey of the public sewerage system
15.	41361	FS 3; R 4.5 Ceased: 31.12.2003	Statistics of sea and inshore fisheries
16.	42111	FS 4; R 4.1.1	Monthly report including survey of orders received for local units in manufacturing, mining and quarrying
17.	42131	FS 4; R. 3.1	Quarterly production survey in manufacturing, mining and quarrying
18.	42231	FS 4; R 4.2.1	Survey of investments in manufacturing, mining and quarrying
19.	42241	FS 4; R 4.2.4	Statistics of materials and commodities received in manufacturing, mining and quarrying
20.	42251	FS 4; R 4.3	Cost-structure survey in manufacturing, mining and quarrying
21.	42252	FS 4; R 4.1.2	Structural survey of small enterprises in manufacturing, mining and quarrying
22.	42311	FS 4; R. 8.1	Iron and steel statistics
23.	431	FS 4; R 6	Short-term surveys in the area of energy and water supply
24.	43111	FS 4; R 6.1	Monthly report in the area of energy and water supply
25.	43211	FS 4; R 6.1	Survey of investment in the area of energy and water supply
26.	43221	FS 4; R 6.1	Cost-structure survey in the area of energy and water supply
27.	43311	Selected figures on the energy sector	Monthly report on electricity supply
28.	43321	Selected figures on the energy sector	Monthly report on gas supply
29.	43391	Selected figures on the energy sector	Annual survey of liquefied gas

Serial no.	EVAS No.	Published	Name
30.	44111	FS 4; R 5.3	Monthly report on primary construction (including indices of orders received)
31.	44131	FS 4; other publication	Quarterly survey of secondary construction
32.	44211	FS 4; R 5.2	Annual survey including survey of investments in primary construction
33.	44231	FS 4; R. 5.1	Exhaustive survey of primary construction
34.	44241	FS 4; R 5.1	Supplementary survey of secondary construction
35.	44251	FS 4; R 5.3	Cost-structure survey of the construction industry
36.	45211	FS 6; R 1.1	Monthly survey in wholesale trade and commission trade
37.	45241	FS 6; R 3.1	Monthly survey of motor vehicle sales and retail trade and of motor vehicle maintenance and repair
38.	45251	FS 6; R 4	Annual survey in wholesale and retail trade and of maintenance and repair of motor vehicles and personal and household goods
39.	45411	FS 6; R. 7.4	Monthly survey in the hotel and restaurant industry
40.	45421	FS 6; R 7.3	Annual survey in the hotel and restaurant industry
41.	45511	FS 6; R 7.1	Monthly survey in tourism
42.	46111	FS 8; R 2	Statistics of enterprises in rail transport (incl. accidents)
43.	46211	FS 8; R. 3	Statistics of enterprises in road passenger transport
44.	46221	FS 8; R 3	Statistics of transport performance in road passenger transport
45.	46251	Report of the Federal Motor Transport Authority	Statistics of motor vehicles and trailers, and of defective vehicles
46.	46311	FS 8; R. 4	Statistics of enterprises in inland waterways transport
47.	46411	FS 8; R 6	Statistics of enterprises in air transport
48.	47121	Monthly report of BBK	Statistics of prices and yields of fixed-interest bearing securities
49.	47251	Monthly report of BBK	Statistics of deposits and borrowing
50.	47261	Monthly report of the Deutsche Bundesbank	Statistics of profit and loss accounts of credit institutions
51.	47271	Monthly report of the Deutsche Bundesbank	Statistics of assets and liabilities
52.	47411	FS 9; R 1, 2	Services statistics in accordance with NACE Section I
53.	47415	FS 9; R 1, 2	Services statistics based on the EU-Regulation concerning structural business statistics
54.	511	FS 7; R. 1-3, 7	Intra-Community trade
55.	51111	FS 7, R 1, 3	Dispatch
56.	51121	FS 7; R 1, 3	Arrival
57.	51211	FS 7; R. 1-3, 7	Exports
58.	51221	FS 7; R. 1-3, 7	Imports
59.	52111	WiSta 07/2004	Business register system 95 (URS95)
60.	52121		Business register system, new (URS-Neu)
61.	525	FS 2; R 1	Cost structures
62.	52551	FS 2; R 1	Statistics of the cost-structure in the area of liberal professions and other services
63.	53111	FS 4; Heft 1 - 3	Crafts census
64.	53121	FS 4; Heft 3	Census in the crafts related industries
65.	53211	FS 4; R 7.1	Quarterly crafts report
66.	61111	FS 17; R 7	Consumer price index for Germany

Serial no.	EVAS No.	Published	Name
67.	61241	FS 17; R. S 2	Index of producer prices for industrial products
68.	61281	FS 17; R. 6	Index of selling prices in wholesale trade
69.	61411	FS 17; R. 8.1	Index of import prices
70.	61421	FS 17; R. 8.2	Index of export prices
71.	61611	FS 17; R 10	International comparison of consumer prices (purchasing power parities)
72.	62321	FS 16; R 2	Survey of earnings in production industries, distributive trade and the credit and insurance industry
73.	631	FS 15; R 1	Continuous household budget surveys
74.	63111	FS 15; R 2	Continuous household budget surveys: general information
75.	63121	FS 15; R 1	Continuous household budget surveys: household book
76.	63221	FS 15; Heft 4, 5	Sample surveys of income and expenditure: household book
77.	63911	Selected working papers concerning federal statistics; brochure 'Wo bleibt die Zeit?'; this concerns day-to-day life in Germany and provides analyses on how time is spent; Forum der Bundesstatistik, Bd. 43; WiSta 4/2005	Time-use survey (§7 II BStatG Federal Statistics law)
78.	71131	FS 14; R. 2	Quarterly cash results on the overall public budget
79.	71132	FS 14; R. 2	Quarterly cash results of the federal government
80.	71133	FS 14; R. 2	Quarterly cash results of the special federal funds
81.	71134	FS 14; R. 2	Quarterly cash results of EU shares
82.	71135	FS 14; R. 2	Quarterly cash results of the social security
83.	71136	FS 14; R. 2	Quarterly cash results of the Länder
84.	71137	FS 14; R. 2	Quarterly cash results of the local authorities
85.	71141	FS 14; R 3.1	Accounting results of the overall public budget
86.	71142	FS 14; R. 3	Accounting results of the Federal Government
87.	71143	FS 14; R. 3	Accounting results of special federal funds
88.	71144	FS 14; R. 3	Accounting results of EU shares
89.	71145	FS 14; R. 3	Accounting results of the social security
90.	71146	FS 14; R. 3	Accounting results of the Länder
91.	71147	FS 14; R 3	Accounting results of the local authorities
92.	71148	FS 14; R. 3	Accounting results of the special-purpose associations
93.	71151	FS 14; R 3.4	Key data of public financial regarding education, science and culture (including institutions of higher education)
94.	71211	FS 14; R 4	Statistics of the tax revenue of the Federation and the Länder
95.	72111	Statistical Yearbook, publication of the Federal States	Annual accounts of public funds, institutions and enterprises with an accounting system of their own
96.	72112	FS 14; other publication	Quarterly data of public funds, institutions and enterprises with an accounting system of their own
97.	73111	FS 14; R 7.1	Wage and income tax statistics
98.	73311	FS 14; R 8	VAT statistics (turnover tax statistics)
99.	74111	FS 14; R 6	Personnel statistics of the General Government

Serial no.	EVAS No.	Published	Name
100.	74121	FS 14; R 6	Personnel statistics of the Länder, local authorities and associations
101.	79111	FS 14; R 9.1.1	Statistics on tobacco tax
102.	79121	FS 14; R 9.2.1 FS 14; R. 9.2.2 FS 14; R 9.5	Statistics on beer and sparkling wine tax
103.	83111	Statistical supplements to the monthly reports; BBK series 3	Balance of payments statistics
104.	84321	FS 17; R 10	Statistics of foreign exchange rates
105.	84331		Statistics of interest rates
106.	92111		Survey of the science and research-related expenditure and receipts of public and state-subsidised institutions

11.2 Other non-official data sources used in the GNI compilation

Serial no.	Published	Designation of source/feature employed	Chapter/section
1.	Deutsche Bundesbank	Annual balance of accounts statistics (profit situation and financial position of German enterprises)	3
2.	Monthly natural gas balance sheet and development of cross-border prices from 1991 onwards	Bundesministerium für Wirtschaft und Arbeit (Federal Ministry of Economics and Labour)	3
3.	Obligatory publication in the Federal Gazette	Bundesanzeiger (Federal Gazette)	3
4.	Bundesanstalt für Landwirtschaft und Ernährung (Federal Institute for Agriculture and Food)	Business report	3
5.	Erdölbevorratungsverband (German Oil Storage Association)	Business report	3
6.	Bundesamt für Wirtschaft und Ausfuhrkontrolle (Federal Office of Economics and Export Control)	Official mineral oil data for the Federal Republic of Germany	3
7.	BMELV (Federal Ministry of Food, Agriculture and Consumer Protection)	Results of the agricultural accounts in accordance with the Manual of Economic Accounts for Agriculture and Forestry, EC, Luxembourg 1989	3.7
8.	Bundesministerium für Ernährung, Landwirtschaft und Verbraucherschutz (Federal Ministry of Food, Agriculture and Consumer Protection)	Yearbook	3.7
9.	W.E.G., Wirtschaftsverband der Erdöl- und Erdgasgewinnung e.V. (Association of the oil and natural gas production industries)	Presentation of the business activities of member enterprises	3.9/3.10
10.	Bundesmonopolverwaltung für Branntwein (Federal Spirits Monopoly Authority)	Business report	3.9/3.10
11.	Deutsche Bahn (national railways)	Annual financial statements	3.15
12.	DB Cargo AG	Annual financial statements	3.15
13.	DB Reise und Touristik AG	Annual financial statements	3.15
14.	DB Regio AG	Annual financial statements	3.15
15.	Deutsche Bahn AG	Annual financial statements	3.15
16.	Deutsche Flugsicherung (German Air Traffic Control)	Business report and annual financial statements	3.15
17.	DB Station & Service AG	Annual financial statements	3.15
18.	Lufthansa AG	Business report	3.15
19.	Deutsche Verkehrsflughäfen	Annual financial statements	3.15
20.	Deutsche Post	Business report, annual financial statements	3.15
21.	Deutsche Telekom	Annual financial statements	3.15
22.	Deutscher Factoring-Verband e.V. (German Factoring Association)	Turnover; annual financial statements	3.16
23.	Gesellschaft für Zahlungssysteme mbH (payment systems company), Eurocard	Turnover, business report	3.16

Serial no.	Published	Designation of source/feature employed	Chapter/section
24.	Zentralverband Deutschen Pfandkreditgewerbes e.V. (German Pawnbrokers Association)	Turnover; annual financial statements	3.16
25.	Deutsche Börse AG (German stock exchange)	Annual report	3.16
26.	Deutsche Bundesbank	Profit-and-loss accounts of insurance companies	3.16
27.	Bundesverband deutscher Wohnungsunternehmen (GdW)	Data from affiliated housing companies concerning average rents, service charges, intermediate consumption and investments broken down by the federal states	3.17
28.	Bundesministerium für Gesundheit und soziale Sicherung (Federal Ministry for Health and Social Security)	Data from statutory health insurance funds	3.20
29.	Kassenzahnärztliche Bundesvereinigung (KZBV, Federal Association of Panel Dentists)	KZBV yearbook, baseline data on dental services, including, inter alia, cost-structure surveys	3.20
30.	PKV (Private Health Insurance Association)	Figures report and other data on the economic progress of PKV	3.20
31.	ARD (Public-service broadcasting consortium, also responsible for TV and radio advertising)	ARD Yearbook	3.21
32.	ARD (Public-service broadcasting consortium, also responsible for TV and radio advertising)	ZDF Yearbook	3.21
33.	Filmförderungsanstalt (FFA, Film Promotion Board)	Film statistics pocket book, evaluation of balances of accounts	3.21
34.	Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin, Federal Financial Supervisory Authority)	Pension funds	4.7
35.	Versorgungsanstalt des Bundes und der Länder (VBL), Kommunale Zusatzversorgungskassen, Bahnversorgungsanstalt (VBL [the Federal and Land pensions institution], local authority supplementary pension funds, railways pension fund)	Social contributions, business report	4.7
36.	Bundesagentur für Arbeit (Federal Employment Agency)	Unemployment insurance	4.7
37.	PKV (Private Health Insurance Association)	Business reports	4,7
38.	Bundesministerium für Gesundheit und soziale Sicherung (Federal Ministry for Health and Social Security)	Pension funds for the self-employed, social welfare budget	4.7
39.	Federal Ministry for Health and Social Security, Berufsgenossenschaften (employers' liability insurance funds)	Statutory accident insurance	4.7
40.	Deutsche Rentenversicherung Bund (DRV-Bund, German Association of Pension Insurance)	Special analysis concerning foreigners liable to pay social insurance contributions who live abroad	4,7

Serial no.	Published	Designation of source/feature employed	Chapter/section
41.	Wirtschafts- und Sozialwissenschaftliches Institut in der Hans-Böckler-Stiftung (WSI)	Documentation on collective agreements	4.7
42.	Pensions-Sicherungs-Verein (PSVaG)	Net allocations, company pensions	4.7
43.	Gesamtverband der Versicherungswirtschaft (GdV)	Business statistics	4.7
44.	Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin, Federal Financial Supervisory Authority)	Funded retirement pensions	4.7
45.	Bundesverband Investment und Asset Management (BVI)	Funded retirement pensions	4.7
46.	Deutsche Bundesbank	Documentation of supplementary old-age pensions	4.7
47.	Infratest Sozialforschung GmbH	Marginal part-time employment and ancillary employment in Germany	4.7
48.	Mineralölwirtschaftsverband (Association of the German mineral oil industry), Hamburg	Mineral oil products data	5.7.4.1
49.	AGEB	Energy balance	5.7.4.1
50.	KW e.V. (Association of the coal industry)	Statistik der Kohlenwirtschaft e.V. (coal industry statistics - silver book)	5.7.4.1
51.	DIW (German Economic Research Institute)	Study	5.7.4.1
52.	Schwacke	Schwacke car list - purchases/sales prices	5.7.4.1
53.	DERDATA table of turnover trends for travel agencies	Table of travel agency turnover trends	5.7.3.9
54.	Niedersächsisches Landesamt für Bodenforschung	Gas and oil deposits in Germany	5.10.2
55.	Institut für Handelsforschung, (Institute for Trade research University of Cologne)	Report comparing estate agents' enterprises	5.10.2/5.12
56.	Landesversicherungsanstalt Oldenburg-Bremen (Oldenburg-Bremen state social insurance office)	Internal statistical analysis of the Künstlersozialkasse (artists' social security fund)	5.11.3
57.	Federal Office of Economics	Cross-border film royalties, statistics on films	5.11.3
58.	Börsenverein des Deutschen Buchhandels e.V.	Books and the book trade in figures	5.11.3
59.	German Patent and Trademark Office	Collecting societies; business report	5.11.3
60.	German Association of Pension Insurance	Special analysis concerning foreigners liable to pay social insurance contributions who live abroad (inward commuters)	8.1
61.	Bundesagentur für Arbeit, Zentralstelle für Arbeitsvermittlung (ZAV) (Federal Employment Agency, central office for job placement)	Seasonal workers (inward commuters)	8.1
62.	Eurostat/National Accounts	Earnings of outward commuters	8.1
63.	Bundesministerium für Finanzen (Federal Ministry of Finance)	Documentation of employees of the Allied forces	8.1
64.	Deutsche Bundesbank	Numbers of employees and earnings at international organisations	8.1

