

In the Spotlight

PRICES IN GERMANY

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Published in May 2005

Price: EUR 9,80 [D]

Order No.: 1021214-04900-1

ISBN: 3-8246-0749-2

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Sales partner: SFG – Servicecenter Fachverlage GmbH
Part of the Elsevier Group
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72774 Reutlingen
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Foreword

Money and prices influence virtually every area of our lives. How we live, whether we travel by car or rail, where we go on holiday – prices are the decision-making criteria on the market; they provide a framework and set limits. The Federal Statistical Office regularly publishes data on price trends in all relevant economic areas in our country, as well as on international price level comparisons. These official figures concerning developments in the value of money form the basis for countless decisions in the political arena, in the business community and in private life.

The In the Spotlight volume entitled “Prices in Germany” has been written to cater to readers from all areas of our society. It provides a comprehensive overview of price trends in Germany in recent years, and explains the impact of major events on the value of money, such as the introduction of Euro cash or the health reform. At the same time, the volume provides a great deal of background information to help understand and interpret the data, and serves in this respect as an introduction to using the official price statistics. Since price trends move fast, the emphasis is not on concrete results of price statistics. The up-to-date figures can be called up at www.destatis.de.

I would like to express my heartfelt thanks to everyone who has contributed towards this publication. I hope that the In the Spotlight volume entitled “Prices in Germany” will have a broad circulation.

Johann Hahlen

President of the Federal Statistical Office

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1 Introduction

1 Introduction

The inflation rate is a number. It shows how prices have changed in the space of a year. In reality, however, there is a large number of different prices. It frequently happens that the same products do not cost the same in two different places or in two different shops. Price statisticians combine a large volume of data from which to calculate the general price trends. The result – the inflation rate – states by what percentage the average price level has changed within a year. It contains a large volume of information. Just as a seismograph documents movements under the ground, the measured price trends record movements originating in the political arena or in the business community. How therefore does the figure come about which was 1.6 percent in 2004?

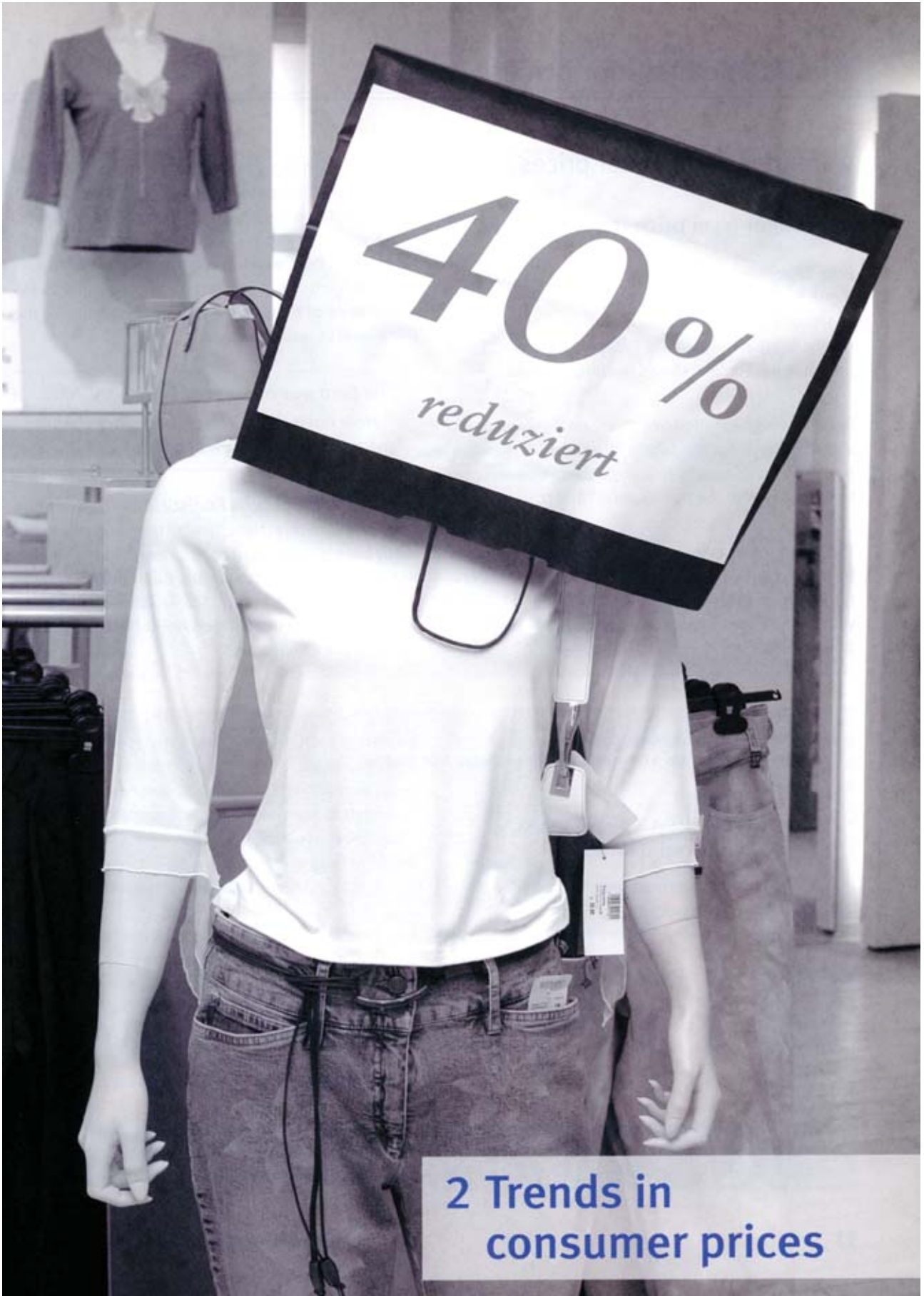
The inflation rate is calculated on the basis of the change in the consumer price index. The consumer price index is an average of the prices of many different goods and services which a household typically needs. These include food and the telephone, occasionally a hair cut and at long intervals also a new refrigerator. Roughly 560 price collectors are deployed all over Germany. Month by month they go through the shops and make a note of the prices of the goods in the so-called basket of goods. Some prices increase over time, whilst others fall.

In evaluating the data, we need to compare like with like: A small car costs more now than it did many years ago, but it is a much better car. The difference is even greater when it comes to computers. Processor performance doubles roughly every two years. Such improvements in quality are accounted for when measuring prices.

The basket of goods is adjusted after each five-year period. It is then necessary to measure the weighting of the goods contained in the basket of goods, meaning how much of their budget a typical household spends for instance on rent. The price trends of

the different types of goods are weighted accordingly. The consumer often makes a different subjective weighting. Anyone who wants to can calculate their own inflation rate, depending on their own consumption habits – instructions for doing so can be found in this brochure.

The inflation rate is not solely influenced by the introduction of the Euro. A rising oil price pushes heating and petrol costs upwards. What was impact of the eco-tax, of the BSE crisis, and what was the influence of the attacks of September 11, 2001? The inflation rate reflects this kind of event.



2 Trends in
consumer prices

Trends in consumer prices

2 Trends in consumer prices

2.1 Longer-term price trends

Price increases have tended to reduce in recent years. If one looks at the inflation rates of the past twelve years, one can see that prices are increasing continually, but that the increase is becoming less and less pronounced. Fig. 2.1 shows the inflation rates.

Relatively high inflation rates were primarily recorded at the beginning of the 1990s, directly after reunification, and were caused to a large degree by massive rent increases in the new Federal Länder.

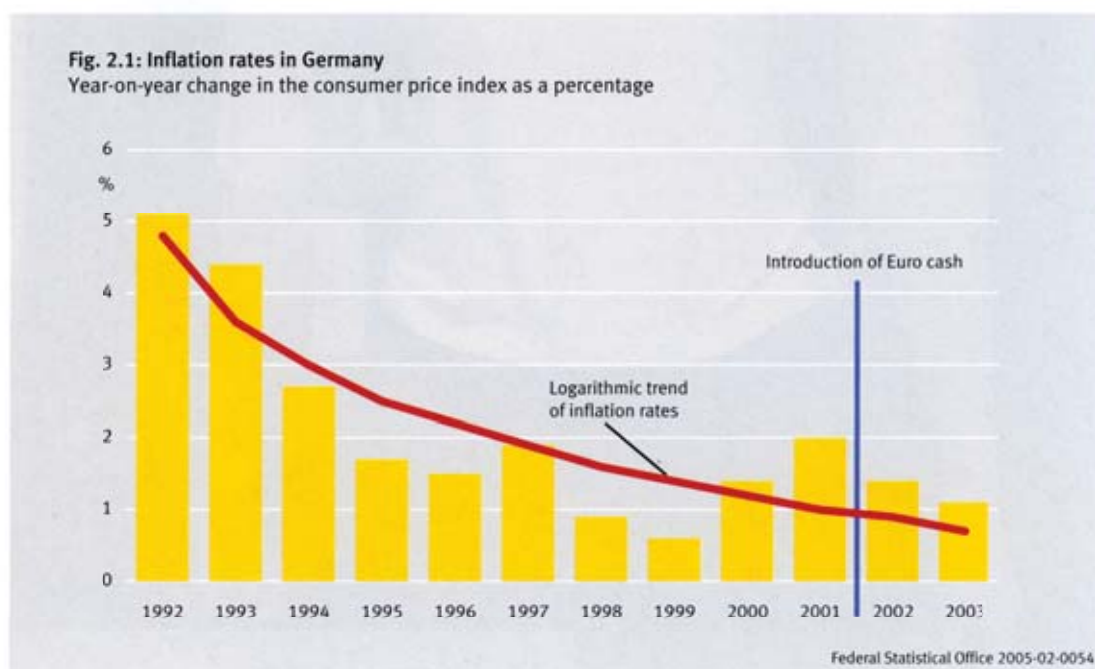
The trend towards lower inflation rates is indicated by the red line. Exceptions to the trend towards falling inflation rates occurred in 1997 and in the two years before the introduction of Euro cash, namely in 2000 and 2001.

Various state measures were carried out in 1997 and 2001 which affected prices. More on this can be seen in the fourth section of this volume. Added to this, there was also the BSE crisis and foot-and-mouth disease in 2001, which caused food prices to rise. In 2000, by contrast, it was largely the major increases in the price of heating oil and petrol that drove the price level upwards.

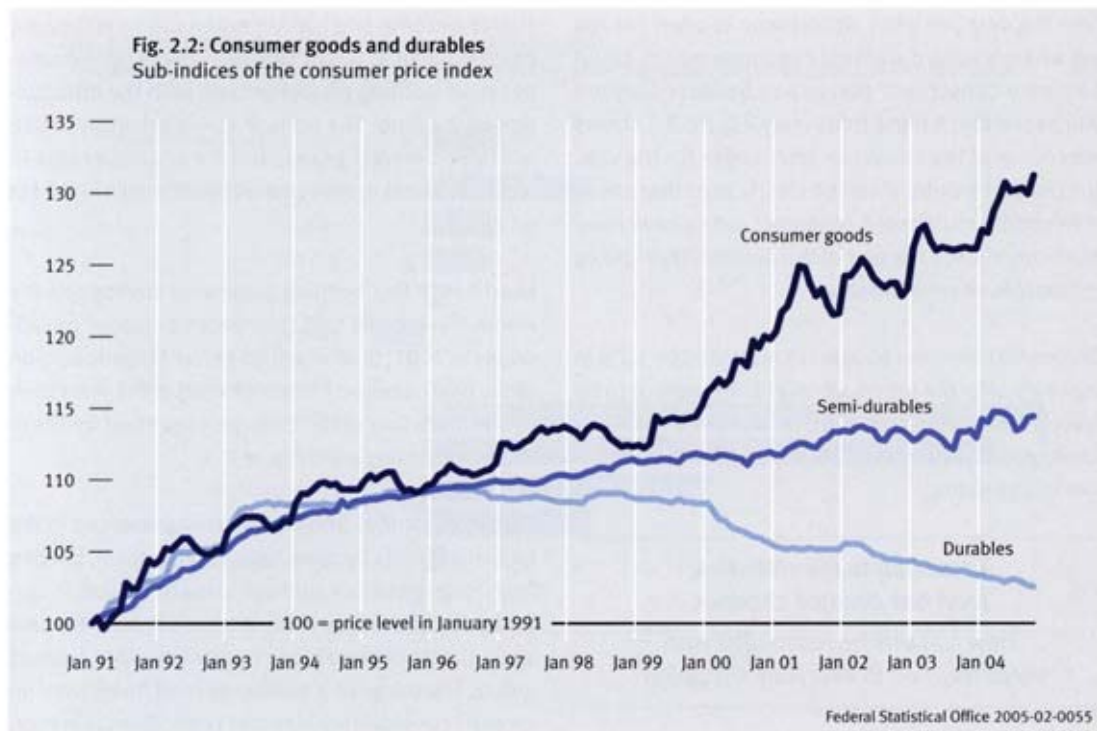
The Euro was introduced in January 2002.

How have prices developed since then from the point of view of official statistics?

The data of the Federal Statistical Office therefore show a longer-term trend overall that runs counter to many people's perception: The increase in prices has not accelerated in recent years, but indeed has tended to slow. How is it that statisticians record falling inflation rates, whilst the population is talking about massive price increases?



Trends in consumer prices



First of all, the inflation rate is very much a combined number. The basket of goods used in consumer price statistics is made up of a total of 750 different types of goods. The measured price increase is therefore the average of a large number of price trends for individual goods which balance one another out by virtue of stronger and weaker price increases.

In order to obtain a detailed picture of inflation, it is possible to take a closer look at some areas of the consumer price index. In Figure 2.2, various goods are sub-divided by the frequency with which they are consumed.

Consumer goods include food above all others. However, consumer goods also include products for personal hygiene or newspapers, periodicals, etc. Furthermore, expenditure on energy, such as heating oil, electricity or petrol, is considered as consumer goods.

These goods are bought relatively often, or are consumed on an almost daily basis.

The population is talking about massive price rises.

Why is it that statistics measure falling inflation rates?

The category of *semi-durables* includes articles which normally keep longer than consumer goods, but nevertheless need to be replaced from time to time. Examples of these are clothing or smaller electrical appliances.

Finally, there are *durables*, such as televisions or washing machines. They are purchased much less frequently.

Trends in consumer prices

Even if a detailed price comparison is often carried out when buying durables, consumer goods could dominate consumers' perception because they are purchased much more frequently. Figure 2.2 shows the course of the consumer price index for the various product groups. It can be clearly seen that prices of frequently-purchased consumer goods have risen much more since the end of the nineties than prices of durables or semi-durables.

The overall consumer price index increased by 3.7% in the years after the introduction of Euro cash, or to be precise from December 2001 to October 2004. Consumer goods, by contrast, became 7.9% more expensive in this period.

***According to the statistics,
food has become cheaper.***

*How can this be reconciled with
my perception in everyday shopping?*

The prices of consumer goods have therefore increased much more on average than those of the other goods contained in the basket of goods. Is there a keener perception of these frequently-consumed goods than when it comes to durables? Is it therefore simply the case that the consumer-friendly price trends in durables are overly neglected in consumers' perception? Is there any way to offset the moderate price trends in durables against the price increases in everyday goods? More information on these questions can be found at the end of the third section, which is about how the various price trends are notionally weighted. First of all, however, it is worth taking a closer look at price trends in consumer goods.

2.2 Price trends in individual consumer goods and in services

Consumer goods include a great number of different types of goods, and accordingly there are very different price trends. Fuel and cigarettes have for in-

stance become much more expensive now they are being paid for in Euros. However, these price increases have nothing whatever to do with the introduction of the Euro: The price of fuel is primarily in line with world market prices, and the price increases in cigarettes were mainly caused by increases in the tax on tobacco.

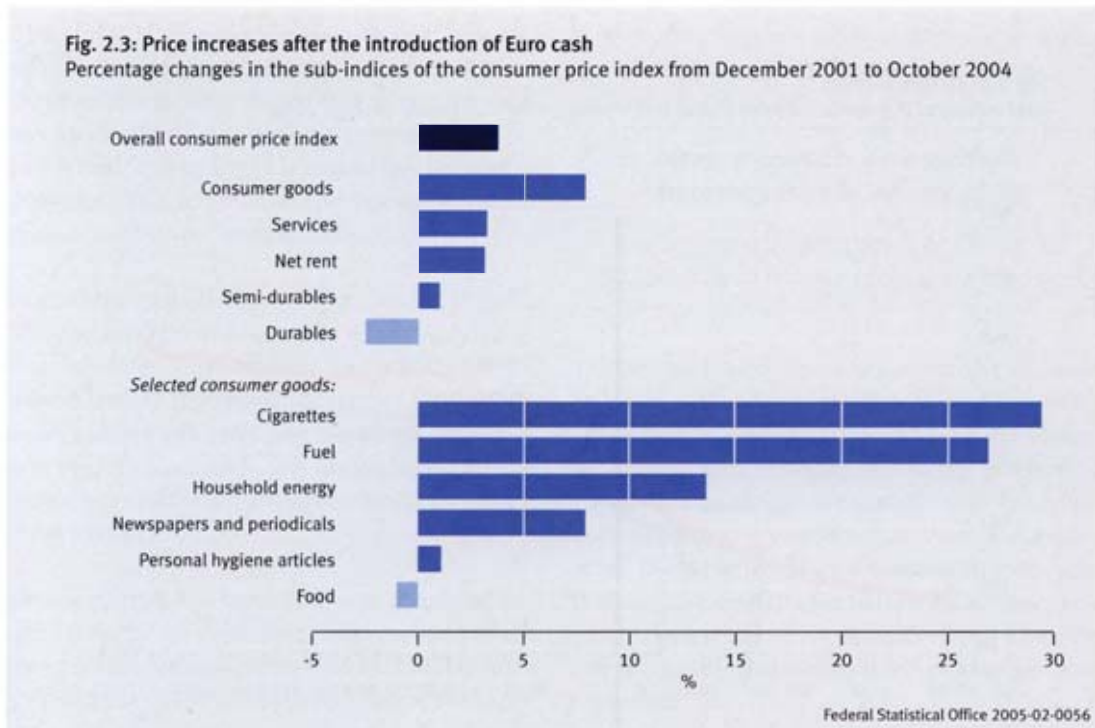
Food has in fact become somewhat cheaper on the whole. Having said that, their prices increased considerably in 2001, in other words before the introduction of the new currency. The price trends in the years after the introduction of the Euro are presented for these and other examples in Figure 2.3.

Food and alcohol-free drinks are represented in the basket of goods by more than 150 products, ranging from long-grain rice through strawberry jam to carrot juice. Differences in price trends occur here on a scale that is observable in hardly any other product group. The prices of a number of food items have increased considerably in recent years: Buns, pastries, honey and chocolate, for instance, have gone up in price considerably in some cases. But some things have indeed become cheaper. Meat products, butter or coffee beans are now cheaper than in the final phase of the DM.

The answer to the question as to whether something has become more expensive depends to a considerable degree on the period under observation. Milk and meat products had become much more expensive in 2001. The main reasons were the animal epidemics. Furthermore, in 2001 price competition in food retail had become less fierce, and this had enabled retailers to once more achieve higher margins. Food was in fact relatively cheap in 2004 when compared to the high price level attained in food prices at the end of 2001.

We however recorded price increases of up to 100% with some products. For instance, certain types of vegetable were suddenly twice as expensive in the

Trends in consumer prices



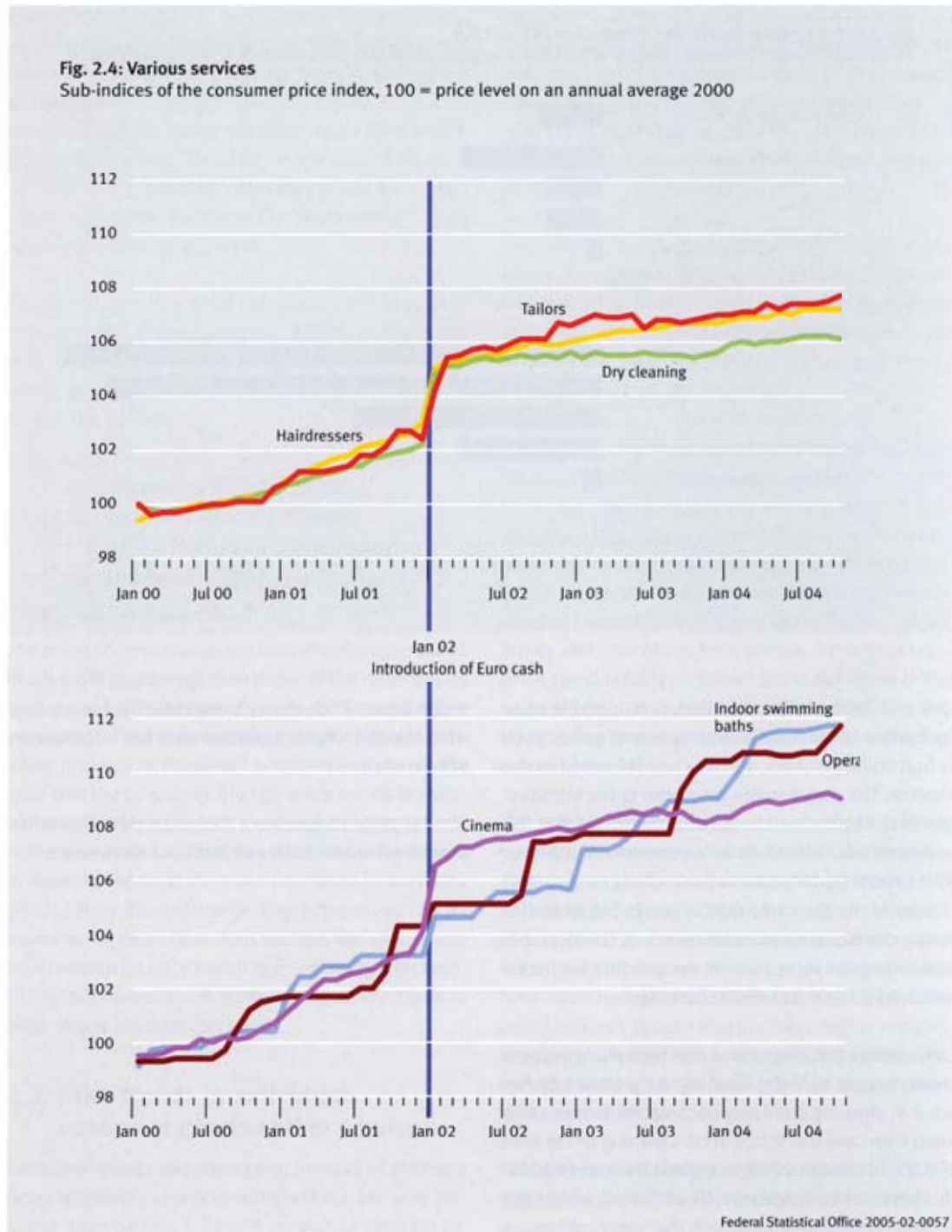
spring of 2002. Having said that, considerable price fluctuation is not unusual with seasonal goods such as fruit and vegetables, and as a rule is caused by the weather. This was also the case prior to the introduction of the Euro. One should also not forget that the individual price observation is summarised together with several hundred other price changes recorded nationwide for the same type of goods before the inflation rate is calculated for this product. Considerable individual price increases for one product are hence balanced out in the statistical average.

Considerable price increases also took place in some services, such as in dry cleaning. As is shown by Figure 2.4, cleaning suddenly became more expensive when Euro cash was introduced. Cleaning prices rose by 2.5% in January 2002 as against December 2001. This amounts to roughly ten times the price changes as against the previous month that were customary

in DM times. Price rises among cleaning businesses were however highly subdued after the introduction of Euro cash.

Similar price surges were also recorded with other service-providers such as tailors or hair dressers.

Trends in consumer prices



Trends in consumer prices

Going to the cinema has also become much more expensive. Tickets cost 2.3% more in January 2002, at the time of the currency change-over, than in the previous month. After that, however, highly moderate price trends were also observed in cinemas. At the start of 2004, for instance, prices for opera tickets increased much faster than for cinema tickets.

The sudden increase of prices experienced after the introduction of the Euro was also quite clearly recognisable in cafés and restaurants. Eating out cost 2.3% more in January 2002 than in December 2001. Drinks in restaurants and cafés went up by 2% compared with the previous month. This is a great deal for one month, since restaurant prices rose by only almost 2% in the whole of 2001.

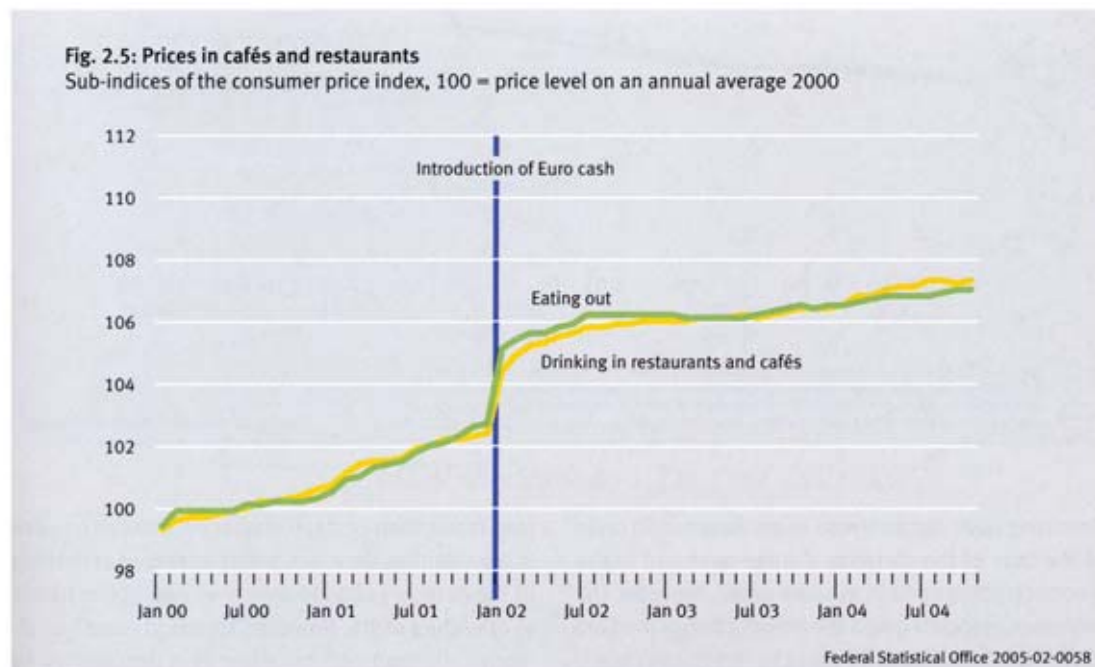
Most restaurant operators had to print new menus when Euro cash was introduced. Many operators took the opportunity to adjust their prices. Notable price surges can be observed across the board at the begin-

ning of 2002. Was this simply a matter of restaurant operators passing on the actual cost increases?

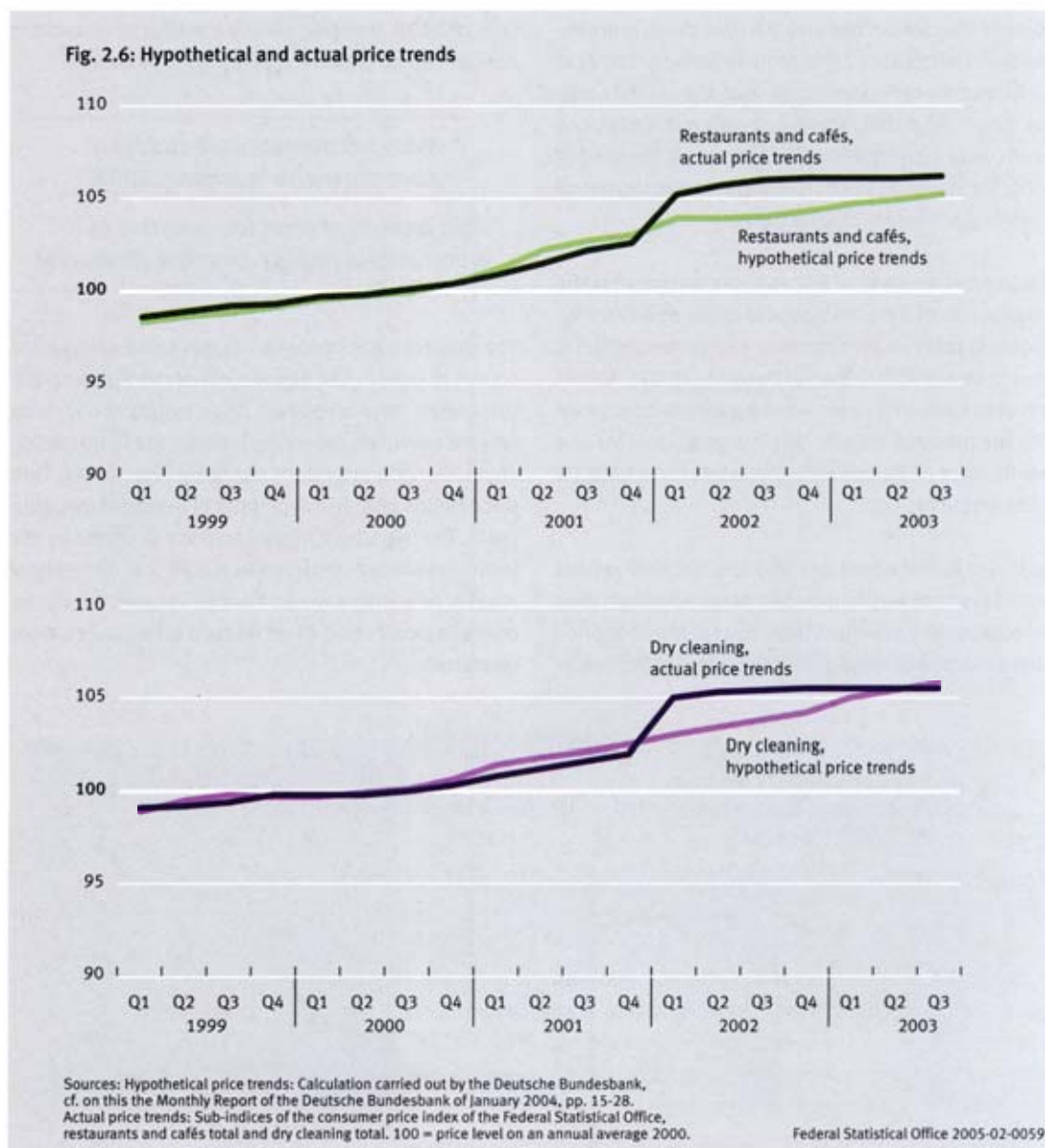
Many restaurants were suddenly more expensive in January 2002.

Did restaurant operators take this as an opportunity to impose excessive increases?

The Deutsche Bundesbank has devised a calculation on this question. The economists of the Bundesbank calculated "hypothetical" price trends for various service-providers emerging from trends in operating costs. Service-providers normally very closely link price trends and developments in average operating costs. The hypothetical price trends calculated by the Bundesbank are depicted in Figure 2.6. They show roughly how prices would have developed if only the operating costs had been passed on as prices were converted.



Trends in consumer prices



Operating costs certainly rose in restaurants and cafés at the time of the currency change-over and in the months leading up to it. In some cases, however, the increases associated with the introduction of the Euro exceeded the increase in costs by far: Prices clearly

rose faster than costs. A similar picture can be seen in dry cleaning. Here too, prices increased at the time of the currency change-over over and above trends in operating costs. However, trends in costs had already caught up with price trends in dry cleaning by

Trends in consumer prices

mid-2003 – a trend which is also shown in restaurants and cafés. Many service-providers had evidently ceased increasing prices by then.

*Sometimes, a specific product is very much too expensive.
Is this reflected in the price statistics?*

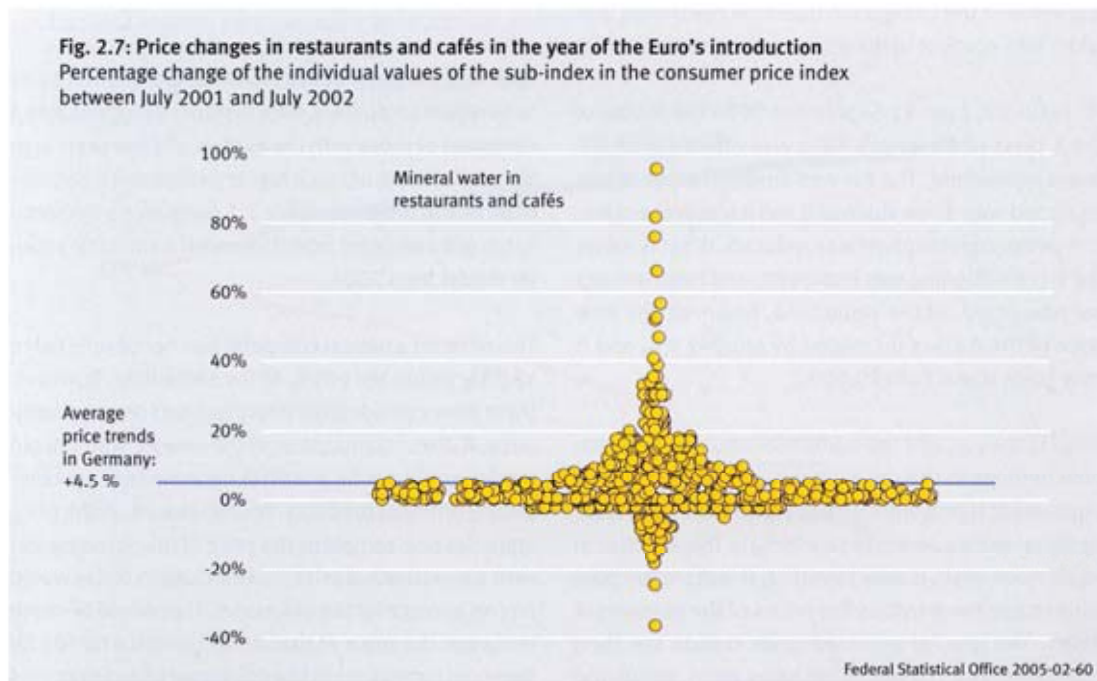
If one takes a look at the six-month period before and after the currency change-over, the prices for drinks in restaurants and cafés increased by about four percent. Four percent in the twelve months around the Euro change-over is still much less than many people perceived. Many consumers report much greater price increases that they have observed in their restaurants and cafés.

The amount of roughly four percent is however a statistical average combined from many individual price changes. Figure 2.7 shows for each individual cater-

ing operation contained in the sample of consumer price statistics how the price for mineral water was adjusted. Each point stands for an individual restaurant or café. The broader the cloud of points is, the more cases there were in this price increase area. The price increase between July 2001 and July 2002 is shown, in other words in the six months before and after the introduction of Euro cash.

This picture reflects the broad range of price changes. There were price increases of almost 100%, but they remained a rare exception. Increases of up to 40% occur frequently, and increases of about 20% were almost "normal" in the catering business. There were also frequent price reductions in this period. The great majority of the price changes is however shown where the cloud of points is broadest, namely between zero and about five percent.

This makes clear the disadvantage of a statistical average. The average value shows nothing about the



Trends in consumer prices

individual price changes by which people are affected. An average is of no relevance to those eating in a specific restaurant. If their favourite Italian restaurant in Munich has become more expensive, this is an annoyance. It is of little interest whether a French restaurant in Hamburg has become cheaper. Consumer perception is individual; it cannot be depicted using a statistical average.

2.3 Price trends in technical products

When it comes to durables, the quality of the products also plays a very important role in addition to the price trends. Personal computers have much higher performance than ten years ago, and a Volkswagen Golf of today cannot be compared with the car that was launched in 1974. Consumer price statistics take account not only of the price changes, but also of the changes in the quality of the goods. If with a product the quality of the goods changes, a quality adjustment is carried out at this point. This means that the monetary value of the changes in quality is calculated and taken into account in the price comparison.

For instance, from 11 September 2004 the model of the A class of Mercedes Benz was offered with different equipment. The car was amongst other things equipped with a new drive unit and a stronger engine, and petrol consumption was reduced. What is more, the air conditioning was improved, and head airbags are now fitted. At the same time, however, the new price of the A class increased by roughly 8%, and it now costs about Euro 20,000.

What is the value of the additional equipment which now belongs in the car as standard? Many of these equipment items were already available, but were optional extras. In order to estimate the additional equipment which is now standard, it is therefore possible to use the previous list prices of the equipment items. The quality-adjusted price trends are then calculated as a change in the sales price, minus the

value of the improved equipment. However, additional equipment is not really an improvement in quality for all customers, and for this reason only 50% of the equipment value is accounted for in the statistics as improvements in quality. Verifications using other methods have shown that this 50%-rule leads to very good results with cars.

In addition to the equipment items, the lower petrol consumption can also be taken into account in the price comparison. Here, average useful life and mileage are estimated, and the average petrol consumption is calculated for this overall period. The difference in fuel consumption is evaluated with the current petrol prices and provides a good indication of the monetary value of the lower consumption.

Durables are becoming cheaper according to statistics.

There are however cases in which prices for the products are not much lower than they were ten years ago!

Technical progress is even more marked when it comes to personal computers. If for instance one compares a computer of today with the models of a few years ago, the products are of much higher performance because of technical progress. Table 2.1 compares a frequently-bought computer from 1994 with a similarly-popular model from 2004.

The price for a typical computer has hence only fallen slightly within ten years. At the same time, however, there were considerable improvements as to performance. A direct comparison of the new PC with the old model would not be possible because they are completely different products. For this reason, in the price statistics one compares the price of the old computer with a hypothetical price that consumers today would pay on average for the old model. That would be much less than the price at that time! The price trends for personal computers in the consumer price index thus

Trends in consumer prices

Tab. 2.1: Typical characteristics of computers from 1994 and 2004

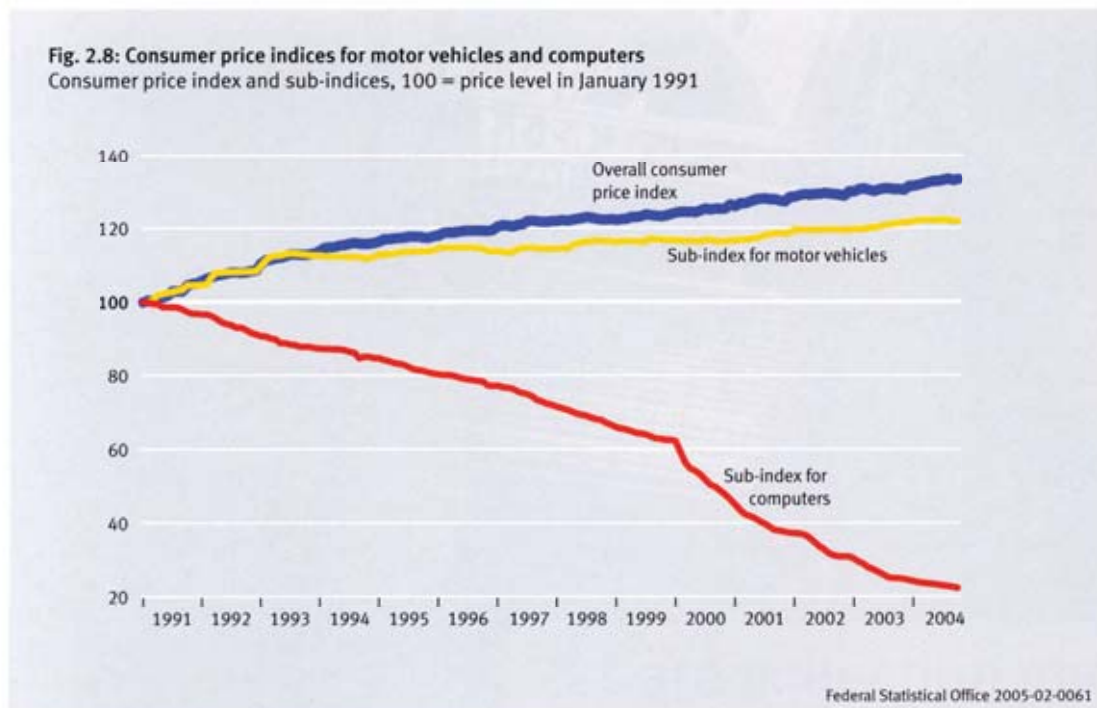
	1994	2004
Processor	486 DX	Pentium 4
Speed	66 MHz	3 000 MHz
Internal memory	4 Megabyte	512 Megabyte
Harddisk	260 Megabyte	120 Gigabyte
Price	2,000 DM (approx. 1,023 Euro)	899 Euro

show a price level that is in steep decline, even if consumers today do ultimately not spend very much less on a new computer. However, they do receive a much better computer for the same money.

Similar trends, even if by no means to the same degree as with computers, can be observed with video cameras, televisions, etc. The graph below illustrates price trends for computers and motor vehicles.

Quality adjustment methods are needed to be able to make any price comparison at all. Were one not to

take account of the changes in quality in the price statistics, we would be trying to “compare apples with pears”. Adjustment for improvements in quality shows the prices for technical products to be relatively flat, or indeed in steep decline.





3 Data collection and index calculation

Data collection and index calculation

3 Data collection and index calculation

3.1 Regional price collection

There are roughly 560 price collectors nationally. They visit specific shops in the middle of every month and write down the prices. Month in month out, the price collectors observe the prices of the same products in the same shops, thus ensuring that prices are comparable. With goods which are subject to technical progress, quality adjustment methods are additionally applied.

If a new product is to be included in the sample, the price collector chooses the most popular variant, i.e. the most frequently sold product within the product description. If this description covers e.g. "chocolate bars", the price collector chooses the most frequently sold type of chocolate bar in each outlet. In the following month, he/she will then collect the price of precisely this type. An article once chosen will therefore only be changed for another if it is no longer sold or rarely sold, in other words has lost "consumer significance".

***The prices collected
should be representative.***

How are prices collected locally?

For the price collection, specific towns and communities are specified to which the collection is then restricted. This saves costs, and the loss of representativeness is very low. The communities are selected such that urban and rural areas, large cities and smaller communities are accommodated in the index. There are a total of 188 reporting communities distributed over the 16 Federal Länder.

However, not all shops within the reporting communities are visited by the price collectors. The shops and service-providers included are also a representative selection. Most will be retailers, but they also include service-providers such as hair dressers or landlords.

There are about 40,000 such "reporting units" nationwide. The selection of these shops is only changed if a shop no longer offers the products included in the statistics.

The various types of shop are also taken into account when selecting the reporting units. The consumer price statistics distinguish between the following types of shop for the retail trade:

- department stores
- consumer markets, self-service department stores
- supermarkets
- discounters, specialist markets
- specialist shops
- other retail

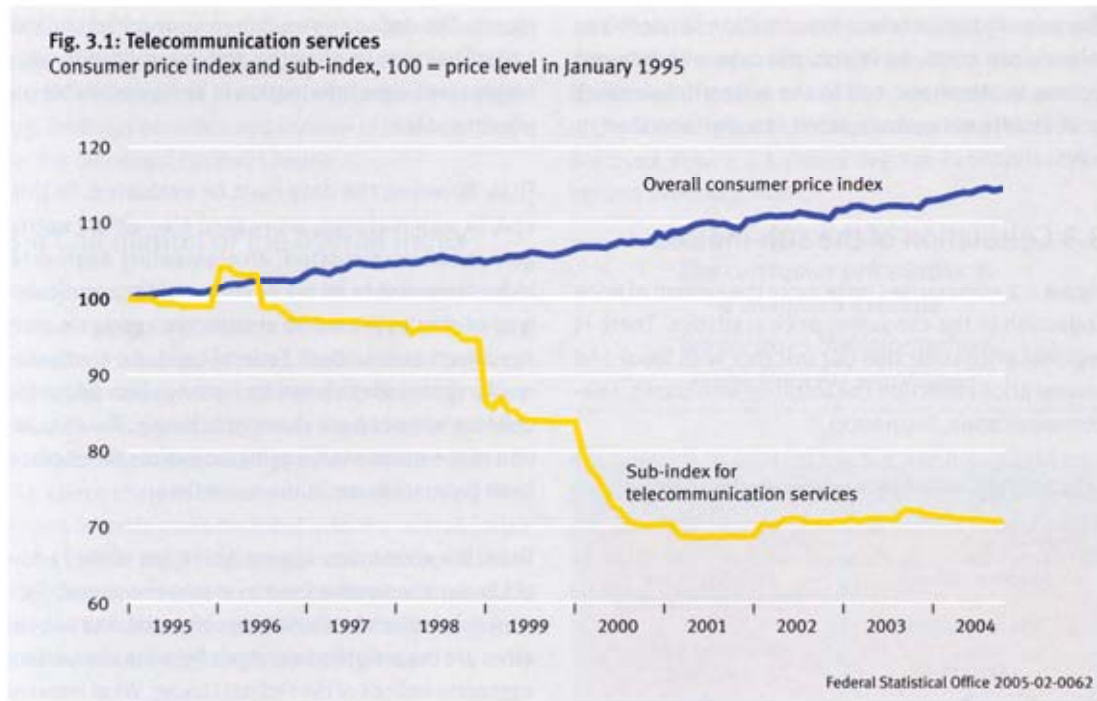
When it comes to collecting prices, therefore, a selection is made firstly of communities, then of shops, and finally within the shops of the most frequently sold product variant. This procedure guarantees the representativeness of the sample. It provides a miniaturised portrayal of the real situation.

3.2 Central price collection

However, the same prices apply all over Germany for specific goods and services, such as mail order products or periodicals. Furthermore, there are a number of services (such as package tours) for which it is relatively easy to ascertain the providers' prices on the Internet. In such cases, it is feasible to collect the prices centrally: Roughly 15 staff members of the Federal Statistical Office are therefore engaged in collecting prices that apply to all of Germany. Amongst other things the prices for books, newspapers and periodicals, tobacco goods, package tours, mail order trade, bank services, insurance, healthcare services, as well as post and telecommunication, are centrally collected.

A typical example of central collection, in other words price observations that are made in the Federal Statistical Office itself, is the consumer price index for telecommunication services. It consists of the sub-indices

Data collection and index calculation



for terrestrial telephony, mobile telephony and Internet use, and contains all telecommunication services used by an average household. Its composition is regularly revised and adjusted to the changed consumption habits in order to meet the changes of this fast-moving market.

The markets are highly changeable today.

How does the sample stay up to date?

In order to facilitate data collection – in addition to the indispensable survey of enterprises – evaluations are drawn up of telecoms' business reports, of press releases, as well as of the activities and annual reports of the Regulatory Authority for Telecommunications and Posts. Statisticians are unable for data protection reasons to access the information that the Regulatory Authority regularly collects from enterprises.

Using the data collected, a distinction is made between three user profiles for the area of mobile telephony which describe various consumers' telephone habits. The user profiles represent those who rarely use the telephone, those who do not use it very much, and those who use it perpetually. According to this model, each user type makes a certain number of calls per month, and sends a certain number of SMS messages. Each month, the calls of these "representative consumers" are then made at the same time with the same length and in the same direction (in the home network, into a different network, into the terrestrial network or abroad). The prices for the individual calls are obtained from the companies' publications, as well as from tariff databases on the Internet. A monthly invoice amount is calculated for each user type, based on the calls, SMS messages and the standing charge. This amount is used to calculate the index.

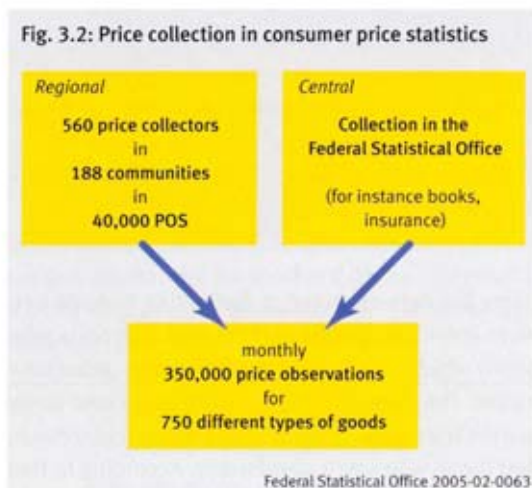
Figure 3.1 shows the price trends in telecommunication services in comparison to general price trends.

Data collection and index calculation

The price index for telecommunication services has fallen since 1995: As is also the case with Internet access, a telephone call in the terrestrial network or in mobile networks is much cheaper now than in 1995.

3.3 Calculation of the sub-indices

Figure 3.2 summarises once more the system of price collection in the consumer price statistics. There is regional price collection (for instance with food) and central price collection (for instance with books, telecommunication, insurance).



The price statistics are unable to and are not intended to monitor each individual price everywhere and at all times. Careful sample selection however ensures that German consumption patterns are accurately reflected. The 350,000 price quotations made per month by the local price collectors and in the Federal Statistical Office form a reliable basis for the calculation of the consumer price index.

Once the prices have been collected, the next step is to evaluate them as quickly as possible. Since most prices are noted around the 15th of the month, a preliminary estimate of the consumer price index can be published as early as about the 25th of the current

month. The definitive result then appears around the 13th of the month after the collection. In this way, highly up-to-date information is always available on price trends.

First, however, the data must be evaluated. To this end, in an initial step, a so-called elementary aggregate index is calculated. An elementary aggregate index summarises all prices collected for a particular type of article. Thus, 750 elementary aggregate indices are created in each Federal Land. An elementary aggregate index shows for instance how prices for children's shoes have changed in Hesse. The calculation of the elementary aggregate indices takes place in all Federal Länder at the same time.

Then, the elementary aggregate indices of the Federal Länder are summarised to create the overall German sub-indices for these types of goods. The sub-indices are the weighted averages from the elementary aggregate indices of the Federal Länder. What remains is hence 750 sub-indices for Germany as a whole – one per type of goods. The weighting corresponds to the economic size of the Federal Länder: It is weighted with the proportion of the total private consumption in Germany which the Federal Land takes up. For instance, more shoes are bought in North Rhine-

Tab. 3.1: Weighting of the Land indices ¹⁾

Federal Land	Weighting in %
North Rhine-Westphalia	23.5
Bavaria	15.4
Baden-Württemberg	13.5
Lower Saxony	9.5
Hesse	7.3
Rhineland-Palatinate	4.8
Saxony	4.6
Berlin	3.8
Schleswig-Holstein	3.3
Brandenburg	2.7
Saxony-Anhalt	2.7
Thuringia	2.5
Hamburg	2.3
Mecklenburg-Western Pomerania	1.8
Saarland	1.3
Bremen	1.0

¹⁾ Proportions of total private consumption expenditure in Germany.

Data collection and index calculation

Westphalia than in the smaller Federal Land Hamburg, which is why the prices for shoes in North Rhine-Westphalia are input into the index with a greater weighting. Table 3.1 provides an overview of the weightings for the individual Federal Länder.

3.4 Calculation of the overall index

Finally, the 750 sub-indices for all of Germany for individual types of goods are summarised to form the overall consumer price index for Germany. The question which arises here is of the weighting with which the individual product groups should be input into the index: For instance, since private households utilise a large share of their expenditure on housing rent, trends in rents must be input into the overall index with a greater weighting. Most households spend relatively little on average on other goods or services, such as food in restaurants, and these items are hence allotted a lesser weighting in the price index.

The so-called *weighting pattern* for the consumer price index states which weighting attaches to the different types of goods. The weighting is in line with the expenditure proportion of the type of goods in private households' total expenditure. The expenditure is calculated by the Federal Statistical Office from the results of the Sample Survey of Income and Expenditure and the annual statistics for the continuous household budget surveys. These samples are as random a selection as possible of voluntary respondents who record precisely what they spend their money on over a specific period. This information is then sent to the Statisti-

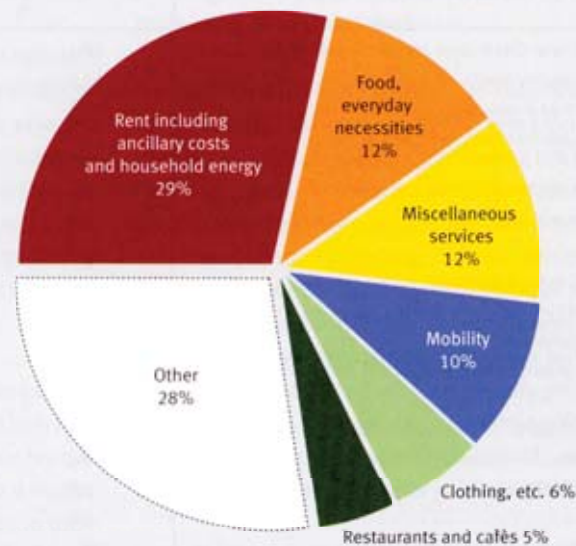
cal Offices. Statisticians use it to calculate the average expenditure proportions for the products included in the basket of goods. In addition, anonymised results of the tax statistics and of many other sources of data are used. Figure 3.3 shows average expenditure for various product groups.

The consumer price index is a weighted average.

Where does the information come from for weighting?

It is possible to see that the average household employs almost 30% of its expenditure simply on housing. In addition to rent, housing costs also include ancillary costs (refuse collection, etc.) and the cost of heating, electricity, gas and the like.

Fig. 3.3: Weighting in consumer price statistics
Weighting of various groups of expenditure in the base period 2000



Federal Statistical Office 2005-02-0064

Data collection and index calculation

The representative household spends roughly 12% of its budget on food and everyday goods (such as detergent or personal hygiene products).

The weighting of the various services used by households is also roughly 12%. This includes for instance car repairs, kindergarten, haircuts and cleaning or care in retirement homes.

“Mobility” summarises firstly tickets for public transport, then the purchase of a passenger motor vehicle and recurrent expenditure on petrol, diesel fuel, and so on. The area of clothing also includes shoes, jewellery and watches. Expenditure in restaurants, cafés, cafeteria or also in a hotel are included in the area gastronomy.

Table 3.2 also states the price trends since the base period 2000 for this and each further product group.

The overall consumer price index, which summarises the price trends for all types of goods, is therefore also once more a weighted average. The inflation rate therefore does not only depend on how the prices change. The weightings with which the price trends of the individual types of goods are input into the overall index are also key. The weightings used by the Federal Statistical Office apply to the average consumer. They are therefore weightings which are representative for an average German household.

The average consumer however only exists in theory. If for instance one does not have a car, one will also not be spending money on petrol, although fuel is included in the weighting pattern. How much an individual household is affected by inflation depends very much on which goods they buy.

A major advantage of consumer price statistics is that they work like a modular system: The overall

index consists of the sub-indices for individual types of goods. It is therefore possible to calculate one's individual inflation rate by assigning to the products of the basket of goods a new weighting corresponding to one's own expenditure.

Non-smokers can for instance set the weighting for tobacco goods at zero. This creates a personal overall index which better reflects personal consumption habits. In order to calculate the overall index, in principle the sub-indices are multiplied by

Tab. 3.2: Weightings and price trends ¹⁾

Group	Weighting	Price trends since 2000
	%	
Rent including ancillary costs and household energy	28.5	7.7
Food and everyday needs	12.0	3.1
Various services (hairdresser, car repair, etc.)	11.8	10.3
Mobility (public transport, purchase of a car, fuel, etc.)	9.5	11.3
Clothing, shoes, jewellery and watches	5.8	0.4
Restaurants and cafés	4.7	6.6
Furniture	4.2	3.7
Alcohol and tobacco products	3.7	19.9
Health (medicines, visits to doctors, etc.)	3.5	23.4
Electrical appliances	3.3	- 22.1
Hobby and leisure (toys, books, sports appliances, etc.) . .	2.8	5.1
Insurance	2.5	7.5
Telephone charges	2.1	- 4.5
D.I.Y. articles	2.0	1.7
Package holidays	2.0	2.2
Other	1.6	8.0
Overall index	100	6.6

1) Weighting of various expenditure groups in the base period 2000 and percentage change of the summarised sub-indices in October 2004 as against the annual average 2000.

their weightings, and the whole is then divided by the total of the weightings. The building blocks of such a calculation are the sub-indices which are published each month. The precise approach followed in the calculation is described in greater detail in the Annex.

We have placed the index calculator on the Internet in order to provide a simple demonstration of the influence of the weighting. This an experimental consumer price index in which one can for instance change some of the weightings of the basket of goods. Expenditure on specific types of goods can be adjusted using sliders. A graph is then displayed to show how the change in the weightings of the basket of goods impacts the measured price trends. The index calculator is available on the Internet at www.destatis.de/indexcalculator.

Figure 3.4 (next page) shows the graph and the operating field of the index calculator.

3.5 Statistics and perception – Has the Euro led to excessive price increases?

The inflation rate is based on the product variants that are most frequently sold, on the price policy of the most-frequented shops, representatively-selected towns and the consumption expenditure of average households. Since the inflation rate is always an average, it is for instance well-suited for use as a basis for wage negotiations or as an indicator of monetary stability, which the European Central Bank can take as an orientation.

Consumers who feel the brunt of price increases however frequently calculate differently. It is not only that expenditure is distributed differently in each household. For the individual consumer it is also a matter of how strongly they are affected by inflation in their daily shopping. The household does not as a rule calculate its “perceived inflation rate” in the framework of a comprehensive balance sheet at the end of the

month. It feels it locally every time they shop. For instance, if buns have become more expensive, consumers will not as a result go without breakfast, and choose to buy a second television instead – even if televisions have gone down in price.

Scientific studies have shown that people’s price perception is more pronounced when it comes to losses than to gains. If therefore one wished to measure something like “perceived” price increases, one should not directly offset loss of purchasing power caused by price increases against gains in purchasing power because of price reductions elsewhere.

***Buns go up and television sets go down.
Is it possible to set off one against the other?***

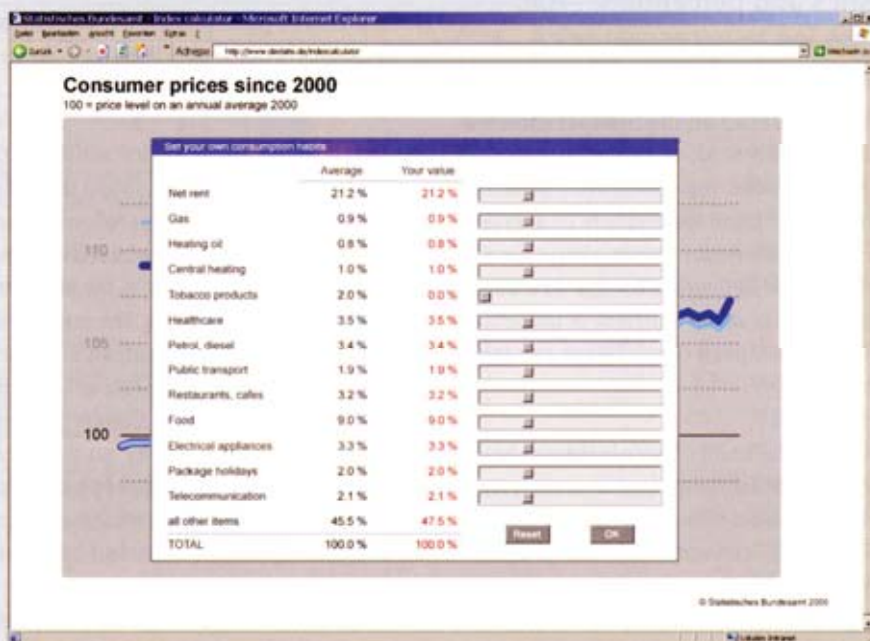
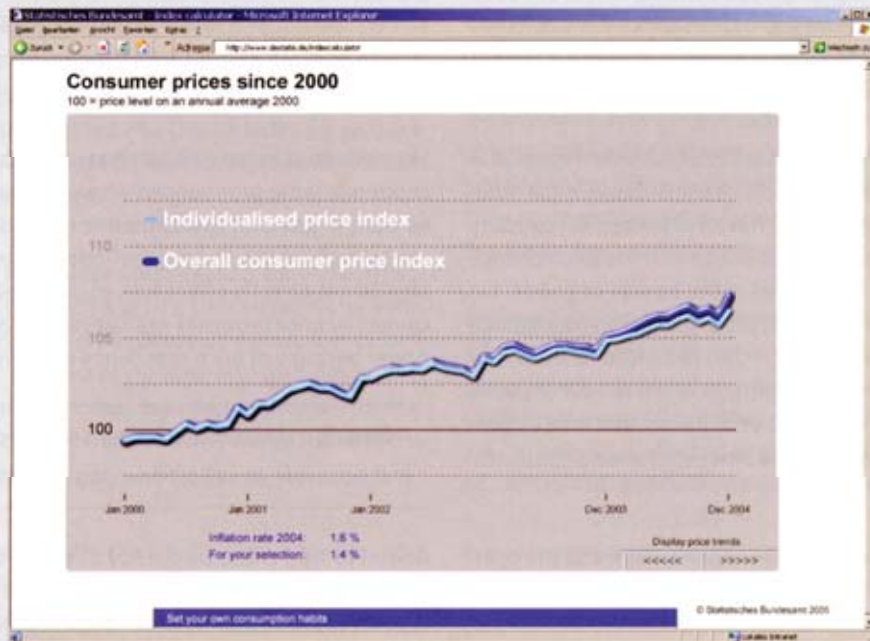
Added to this is the frequency at which things are bought. Consumers constantly feel price increases in everyday necessities, whilst durables that are purchased more seldom are only stressed in the purchase period. In their perception the price increase in consumer goods is not simply balanced out by moderate price increases for durables.

The “perceived price increases” are likely to be higher for many people than the inflation rate calculated by official statistics. At the latest following the introduction of the Euro, the calculated inflation rate no longer corresponds for many people to the price trends which they perceive when shopping. The main reason is to be found in the fact that price statistics pursue a concept with calculating the inflation rate which aims to calculate a general average value. Greater price increases in one place are balanced out by moderate price trends elsewhere. This average value is a theoretical value which cannot correspond to what individual consumers subjectively perceive. Nor is it intended to.

The inflation rate shown in official statistics is however a generally-recognised figure. It does not refer to individual cases, but to an objectively-comprehensible

Data collection and index calculation

Fig. 3.4: Index calculator



Federal Statistical Office 2005-02-0065

Data collection and index calculation

average value. This concept has proved itself useful for many purposes. The most important user of the inflation rate is likely to be the European Central Bank, which orientates its monetary policy in line with the respective consumer price indices of the Euro countries. To put it precisely, monetary policy in Europe is based on so-called harmonised indices of consumer prices – there is more information on this in Section Four of this volume.

The inflation rate does not measure the perceived loss of purchasing power.

What is it actually good for?

The price indices of official statistics are also very frequently used as a guide for so-called stable-value clauses in contracts. For instance, rental contracts frequently specify that payment of the rent is to be indexed to trends in the consumer price index. However, such stipulations are also to be found in other contracts, such as when agreeing maintenance payments after a divorce. When using stable-value clauses, it is extremely important for the parties to a contract to be able to rely on a generally-recognised standard for price increases. The consumer price index is hence well-suited for use as a representative average value for such agreements. The Federal Statistical Office receives an annual total of roughly 30,000 enquiries from users referring to contractual clauses. There is a Call Center responding to telephone enquiries and supporting households and enterprises in selecting the price increase figures relevant to the specific contract. Over and above this, an interactive program is available on the Internet which can be used to calculate price increase values independently.

The telephone number of the Federal Statistical Office for information on stable-value clauses is +49 (0) 611 / 75 - 37 77.

The Internet address is www.destatis.de/wsk

Important users of consumer price statistics also include parties to collective agreements, which use amongst other things the general price trends as an orientation in wage negotiations. From the point of view of the labour representatives, the consumer price index is a recognised guide when it comes to reductions in the value of money which are to be compensated for by wage increases where possible. But even though the inflation rate plays a major role in negotiating collective agreements, there is no generally-agreed mechanism which automatically leads to wage increases in the event of a loss of purchasing power. Many other factors also play a major role in the wage negotiations. For instance, it is future sales and production costs which are of decisive relevance to employers. For them, the question arises as to how the sales prices of their own products will develop and how much their costs will increase.

The results of consumer price statistics are, finally, also used as input for a number of other sets of statistics in the Federal Statistical Office. For instance, they are used to calculate the rate of change in real gross domestic product – in other words economic growth. To calculate real gross domestic product a price adjustment is carried out. In highly simplified terms, all sales by enterprises resident in Germany are added up, the intermediate goods/consumption are deducted, and the result then divided by the respective price level. The price trends are also reflected in the real gross domestic product: From a purely notional point of view, the lower the price increase in this period is, the higher is the real economic growth measured for a period.

Data collection and index calculation

Information on consumer price statistics:

+49 (0) 611 / 75 - 47 77

Data sources: Specialist Series (Fachserie) 17

Sub-series (Reihe) 7:

Consumer price indices for Germany

Available free of charge in the statistics shop at

www.destatis.de/shop

GENESIS-Online database:

www.destatis.de/genesis

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4 Causes of price increases



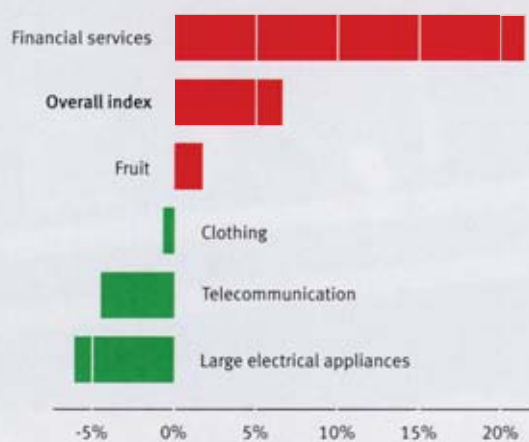
Causes of price increases

4 Causes of price increases

4.1 General price level and relative prices

Why do prices actually go up? To answer the question, it is necessary to distinguish between two manifestations in price trends: The change in the *general price level* and the change in *relative prices*. The price statistics measure both. The change in the general price level can be determined from trends in the general consumer price index. Shifts in relative prices are shown when a sub-index of the consumer price index develops differently than the index as a whole. The diagram below compares trends in sub-indices with those in the overall consumer price index. It is shown that for instance prices for financial services have increased much more noticeably in the last ten years than the consumer price index as a whole. Financial services have hence become more expensive in relative terms.

Fig. 4.1: Price change since 2000
Percentage change of the consumer price index and some sub-indices in October 2004 as against the annual average 2000



Federal Statistical Office 2005-02-0066

Inflation however always indicates an increase in the *general price level*. More intense price increases in sub-areas do not necessarily need to lead to higher inflation, as they can be compensated for by weaker price increases, or indeed by price reductions, in other areas.

Increased prices in sub-areas can for instance be caused by shifts in demand or by increased production costs – as shown by the examples below. Whether such price increase impulses in sub-areas also lead to higher inflation in the long term depends on how they affect the price trends in other areas. This in turn is determined by two factors: How flexible are the prices in the other area, and how much money is available in the national economy as a whole? More on this topic can be found in Section 4.6.

4.2 Redistribution of demand – The example of rent

Using rent as an example, it is possible to show clearly how redistributions of demand can lead to increasing prices in sub-areas. Rents have not been a notable motor for price increases in recent years. Net rents, in other words rents not including ancillary costs and household energy, have risen in price in Germany somewhat less rapidly since 2000 than consumer prices as a whole. In October 2004 they were 4.7% higher than in the base period 2000, whilst the overall consumer price index increased by 6.6%.

Anyone living in Berlin or Munich may see things differently, however. There are pronounced differences between the regions when it comes to trends in rent



prices. Figure 4.2 reflects the trends in net rent for different Federal Länder. It provides a summary for several of the larger Länder, as well as Berlin.

Rents have been rising for a long time in Baden-Württemberg, Bavaria and Hesse, whilst net rents in the Eastern Länder are virtually stable. Having said that, rents increased very significantly in the new Federal Länder in the first half of the nineties. There have also been tangible increases in recent years in rents in Berlin.

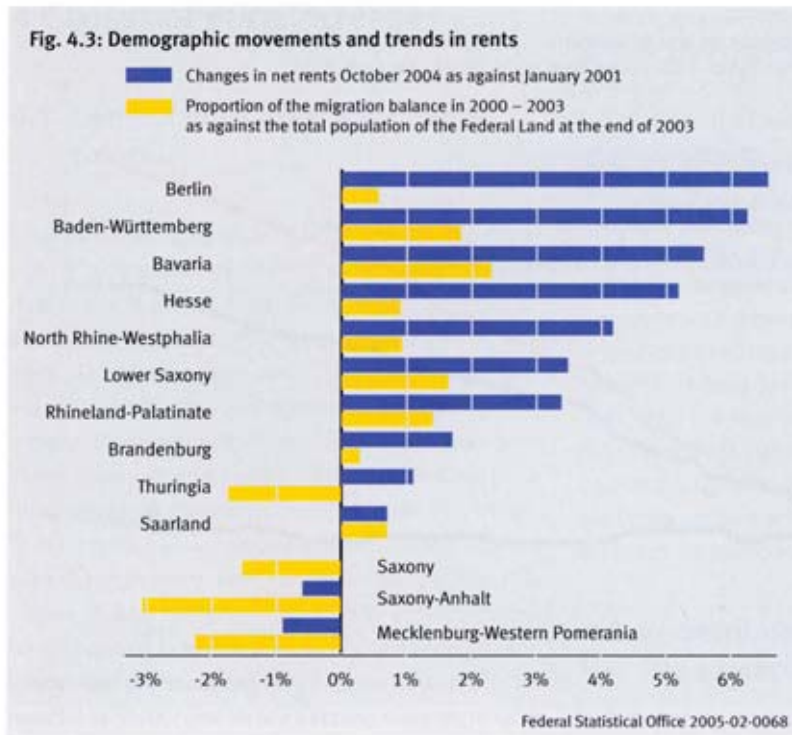
A look at the figures for the demographic trends goes a long way towards explaining this phenomenon. In addition to trends in rents, Figure 4.3 also shows the migration balance of some Federal Länder. What we see is an unmistakable link between migration movements and trends in rents in the individual Federal Länder. The trend is as follows: If more people migrate to one Federal Land, demand for housing is higher there, and rents increase in step with this trend.

The Eastern Federal Länder have been undergoing strong emigration pressure in recent years. An extremely large number of people left in 2001, whilst the number has been falling somewhat since then. New housing construction has now dropped considerably in the Eastern Federal Länder, and some housing is unoccupied.

The situation is different in the South of Germany, where marked positive migration was recorded and housing is rather in short supply in some metropolises. The increased demand for housing has led to rising rents here. The more rapid upward price trends do not lead to an acceleration in the general price trends, however, in other words in the inflation rate, because the higher-than-average price increases are notionally compensated for by the moderate rent trends in the other regions.

Housing has also become more expensive in other respects. There were marked price increases in expen-

Causes of price increases



58% of private households' energy expenditure is accounted for by the above mentioned household energy. The remaining 42% of energy expenditure is accounted for by fuel, in other words mainly petrol and diesel.

Energy prices had continued to develop relatively favourably in the second half of the nineties, and had in fact fallen slightly as against 1995. However, sudden increases took place in 1999 and 2000, in particular in heating oil and fuel prices, and to the present day there is a marked upward trend in energy prices. A major reason

for this is the drastic price increase on the world markets for crude oil. Figure 4.6 shows an index for international crude oil prices, along with trends in German energy prices. This price index is calculated by the Hamburg Institute of International Economics (HWWA), an economic research institute, from prices quoted on raw material exchanges. It hence reflects price trends on the world markets, quoted in Euros.

Both price indices frequently show similar trends over time, whilst crude oil prices are much more volatile than energy prices in Germany. The right-hand side of the diagram therefore provides a much larger value range for the crude oil price index than is the case on the left-hand side for the index of energy prices for German households.

German energy prices are hence clearly less volatile than international crude oil prices. This is caused amongst other things by the processing and storage

diture on household energy, in other words electricity, gas, heating oil or community heating, as well as for ancillary housing costs, such as water, refuse collection, etc. Price trends in ancillary costs and household energy are portrayed in Figure 4.4. Households' energy bills were 21.3% higher in October 2004 than in the base period 2000. Trends in household energy prices clearly reflect the considerable increases the world market prices for crude oil – the topic of the next section.

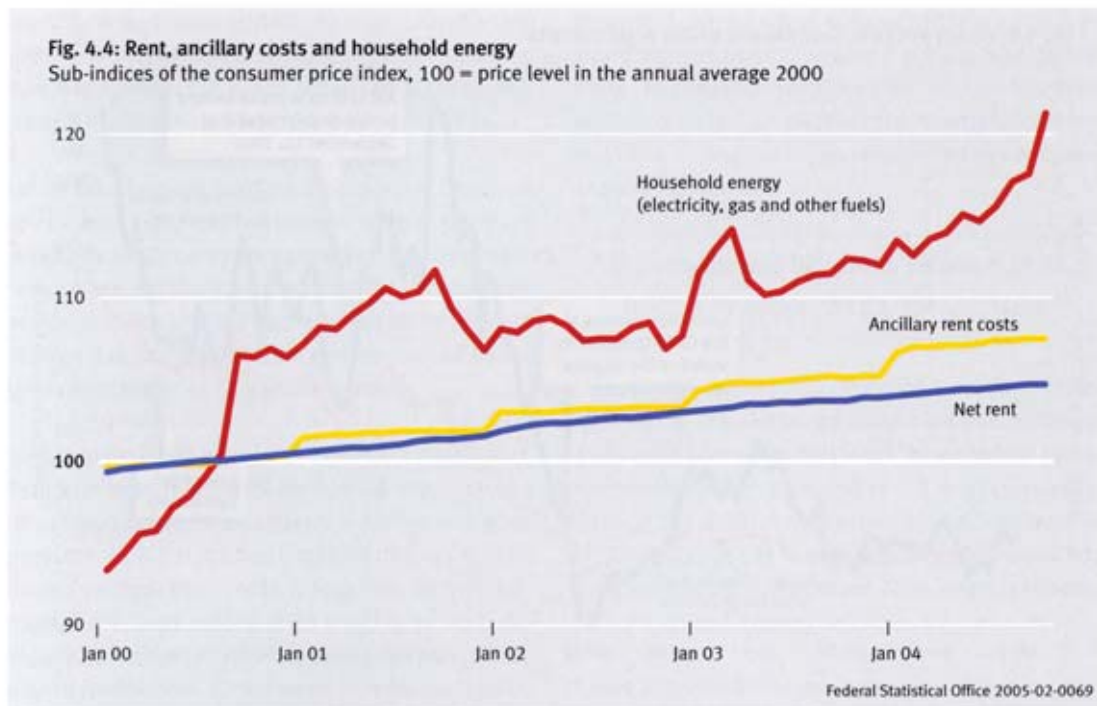
4.3 Production costs – The example of energy

Expenditure on energy plays a major overall role in the consumer price index. At 8% of total expenditure, it accounts for a major element in the weighting pattern of consumer price statistics. The inflation rate is hence to some degree drastically-influenced by trends in energy prices.

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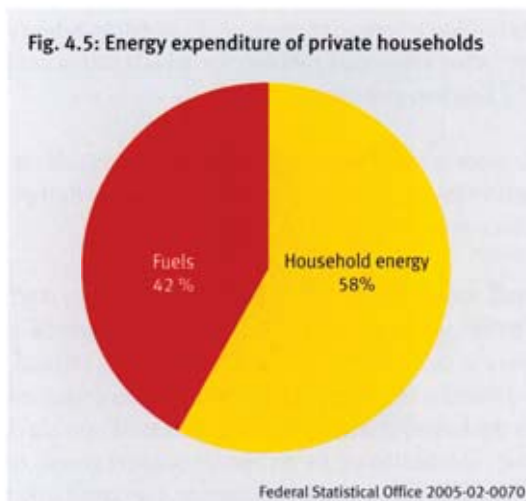
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Causes of price increases



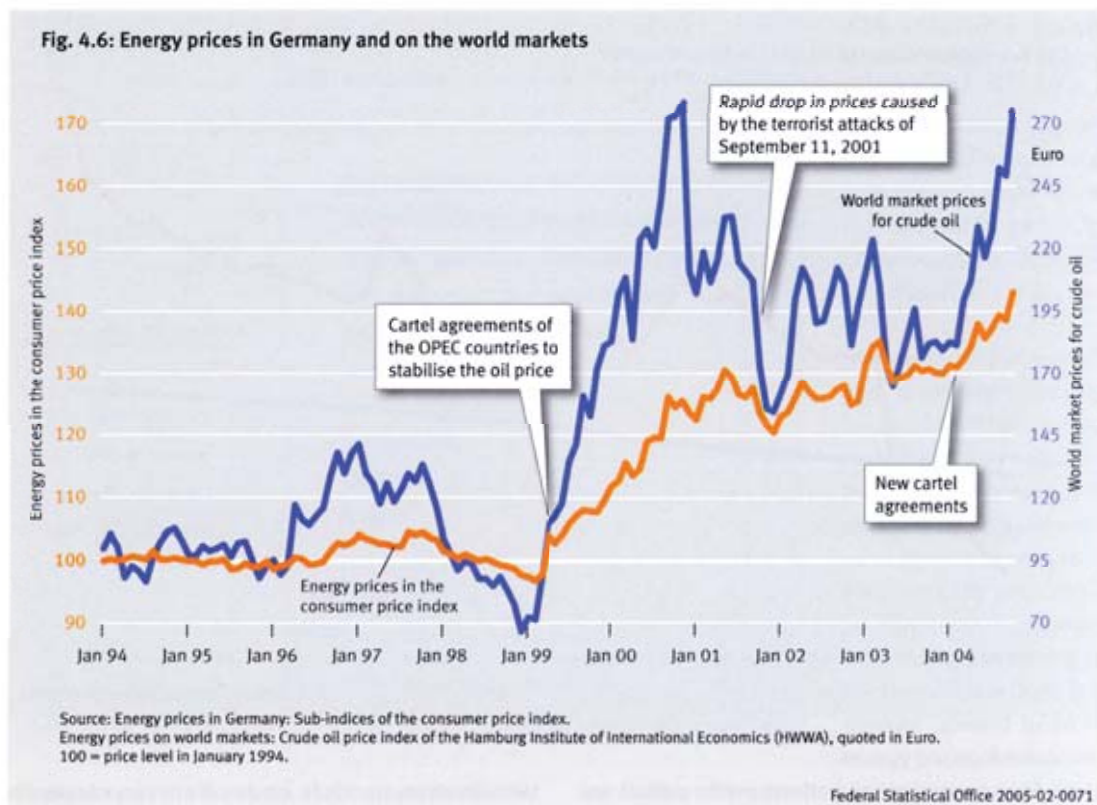
of oil. Furthermore, prices in Germany for certain energy items, such as electricity, are frequently only adjusted once per year by the suppliers, so that the fluctuations are cancelled out.

Nevertheless, trends in crude oil are very clearly reflected in the consumer price index. The prices paid in Germany for heating oil and fuels frequently change at the same time as world market prices for crude oil. Gas prices also follow the general trend, but generally do not react until several months later.



The considerable price increases in 1999 were a consequence of the cartel agreements of the states that are united in OPEC (Organisation of Petroleum Exporting Countries). At a conference in March 1999, the OPEC countries agreed to reduce supply. The prospect of shortfalls in supply, together with rapid growth in the world economy, made the world market price for crude oil increase dramatically.

Causes of price increases



Crude oil prices fell quickly after the terrorist attacks on September 11, 2001. Instead of shortages, the fear suddenly arose of a worldwide recession – and there was speculation for a time of demand that was generally weak.

Considerable movements took place on the world markets for crude oil.

What was the impact of global political events on our electricity and heating oil bills?

The price trough was short-lived, however. Developments in the Middle East and concerns regarding wider conflicts drove crude oil prices up once more. There was however no price escalation after the outbreak of the war in Iraq in March 2003. This was helped by the fact that the cessation of produc-

tion in Iraq as a result of the war was partly compensated for by production increases in the other OPEC countries – above all Saudi Arabia and Venezuela. As the war in Iraq continued, crude oil prices actually fell, after which they remained relatively stable until the beginning of 2004.

In order to avoid further price reductions, OPEC decided in February 2004 to restrict oil production further. Since then oil prices have been rising again.

How strongly does the inflation rate in Germany react to changes in energy prices? The direct influence is easy to calculate. Since the inflation rate is calculated from increases in the prices of products contained in the basket of goods, one may determine how big is the contribution of the respective product groups to the total price increase. For instance, the contribution

Causes of price increases

made by energy towards inflation is calculated as the difference between the total inflation rate and an inflation rate in which the goods contained in the energy group were eliminated from the basket of goods.

Let us take January 2001 as an example: Crude oil prices were high, and the inflation rate in Germany was 1.4%. If all energy prices are eliminated from the consumer price index, we find that the inflation rate at that time was only 0.7 percent. Half of the inflation observed in January 2001 was hence caused by the increase in the price of sources of energy.

Trends in crude oil prices can however have further, indirect effects. Heating oil and fuel are important factors of production for enterprises in Germany. If energy prices show a sustained increase, this has a major impact on production costs. If possible, such cost increases are partly passed on to final consumers: Rising prices for fuel mean an increase in costs, for instance for hauliers. At the trade or wholesale level, there are then higher prices to pay for transportation at the downstream economic level. This may ultimately lead to products becoming more expensive at retail level.

Domestic energy prices are not influenced only by world market prices for crude oil, but also by the State. In particular with the eco-tax, fuel has been burdened since April 1999 with an additional cost factor which is tangible in households' energy bills and at petrol stations.

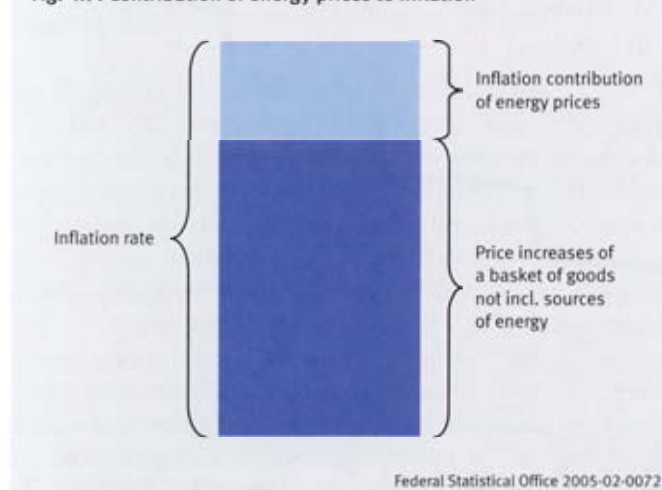
The eco-tax has been with us since 1999. What is its impact on consumer prices?

One example is the consumer price index for electricity. Most of the electricity consumed in Germany is generated domestically. Electricity prices are therefore somewhat less subject to the marked fluctuations on the world markets than for instance heating oil. Electricity prices in the consumer price index had increased by 19% in October 2004 when compared with the annual average in 2000.

Figure 4.8 shows the consumer price index for electricity, together with the trends in the eco-tax for this source of energy. The yellow line shows a theoretical trend in consumer prices for electricity: How would electricity prices have developed if electricity utilities' costs and profits had not changed from 1999 onwards, and they had only added the precise amount of the eco-tax onto the prices? This would in have led in April 1999 to a month-on-month price increase of 8 percent. In the following years until 2003, the prices would in each case have increased in January by about 2 percent as against the previous month.

The diagram shows the actual trends in electricity prices by the blue line. It demonstrates that electricity prices in fact rose in April 1999 to a degree that corresponds to passing on almost the complete eco-tax to consumer prices. Still in the same year, the price in-

Fig. 4.7: Contribution of energy prices to inflation



Causes of price increases

crease was however taken back again. The liberalisation of the electricity market is likely to have played a major role in the particularly low electricity prices at the end of 1999 and at the beginning of 2000. Electricity customers have been free to choose their suppliers since April 1998. The first new electricity suppliers appeared in mid-1999, which led to greater competition on the electricity market.

In the ensuing years, however, the increases in electricity prices once more echoed the increases in the eco-tax, and in some cases exceeded them. In January 2004, for instance, there was an increase in electricity prices, but not in the eco-tax. The considerable price reductions from the initial phase of liberalisation had hence been completely compensated for in the meantime, and the link with changes in the eco-tax is visible once more.

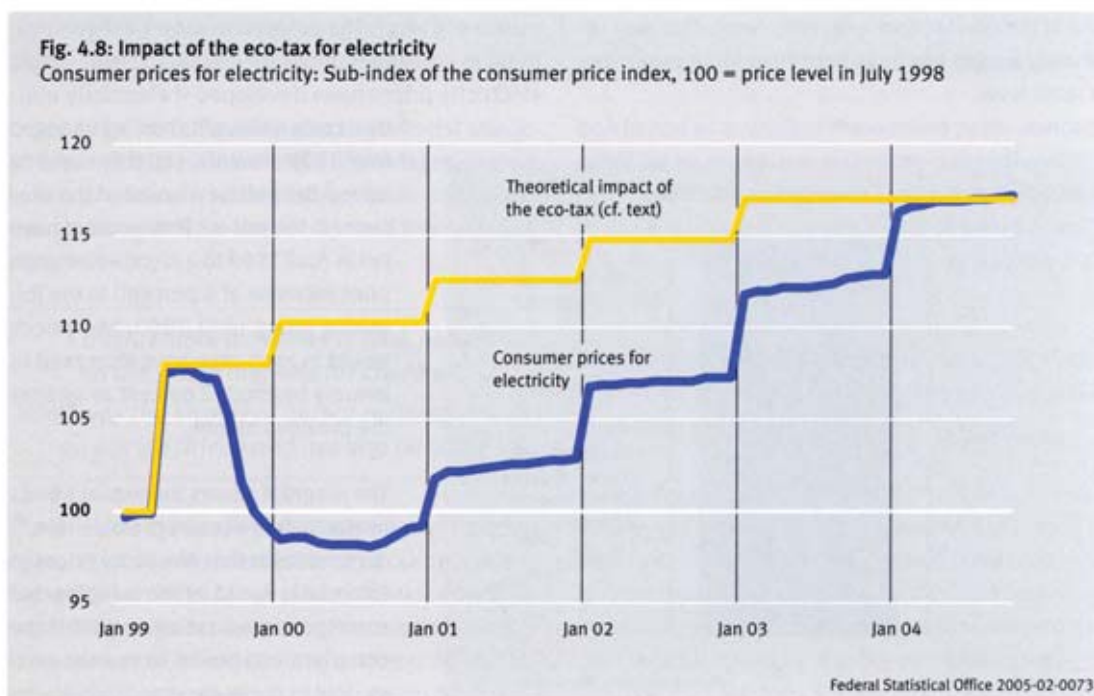
The actual trends in the consumer price index for electricity however have a large number of causes. Apart

from the tax burden and other levies imposed by the State, for instance trends in wholesale prices for electricity and the network use fees to be paid by electricity suppliers played a major role. These cost factors are in turn influenced by a variety of causes, such as necessary investments to build new power plants. All these factors are incorporated in the price increases observed annually.

4.4 Administered prices – The example of the health reform

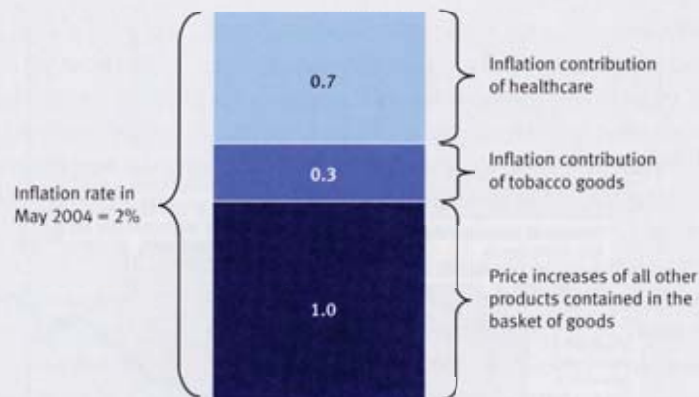
Further state measures influencing price trends were for instance the health reform and the increase in the tobacco tax in 2004. The inflation rate rose markedly as a result of these measures.

The first phase of the health reform for those with statutory health insurance at the beginning of 2004 led to considerable price increases in healthcare products. In particular the surgery fee for visits to doctors, the



cessation of subsidies for spectacle lenses, changes in co-payments for medicines and hospital stays, etc., were all influential. A further step in the health reform as on 1 April 2004 – the arrangement for the assumption of costs for non-prescription medicines – also had the effect of slightly increasing prices. The inflation contribution of healthcare increased in April 2004 to a total of 0.7 percentage points.

Fig. 4.9: Inflation rate in May 2004



Federal Statistical Office 2005-02-0074

A price increase in tobacco goods had already been added in March 2004 with the increase in the tobacco tax which (together with simultaneous price increases by the tobacco industry) accounted for an inflation proportion of 0.3 percentage points.

If one therefore looks for instance at May 2004, the inflation rate was 2%. Of this 0.7 percentage points is attributable to the influence of price trends in healthcare, and 0.3 percentage points to increases in tobacco goods prices.

Accordingly, almost half the inflation in May 2004 was caused by new administrative arrangements. These price increases each have an influence on the inflation rate for one year: From the time of the measure, the price level moves up and the prices are then compared in the ensuing twelve months with the lower price level which applied prior to the measure.

In order to be able to estimate the inflation proportion of the various state measures, a sub-index for goods with so-called "administered prices" is always also published in the consumer price statistics. Figure 4.10 shows the sub-index for administered prices to-

gether with the consumer price index. Unmistakable price increases were also caused by State measures, for instance in January 1997 when the TV licence fee was increased. The motor vehicle tax was reformed in July 1997, and at the same time the medicine co-payment was increased. The third phase of the eco-tax reform and a further increase in motor vehicle tax impacted price trends in 2001.

4.5 The distribution of price increase impulses – The example of steel prices

In 2004, there were unusual price trends in raw materials for steel production. The prices for iron ore and scrap had been stable for a long time, but then increased massively. This was caused by the increased consumption of raw materials in the up-and-coming states of Asia. Chinese industry was growing very quickly, and the accelerated expansion of the infrastructure in the Middle Kingdom was noticeable in that demand for raw materials was increasing considerably on the world markets. Moreover, the need for raw materials was heated up by the economic recovery in the USA. The metallurgic industry in the USA now consid-

Causes of price increases



erably increased its stocks as against the low levels prevalent during the economic downturn.

The increased demand for raw materials led to a wave of price increases which soon reached Germany. In addition to the consumer price index, the Federal Statistical Office publishes a series of further indices making it possible to follow such price changes.

Growth in China drives raw material prices up.

How is this noticeable in Germany?

First of all, imported goods become more expensive if international raw material prices increase. This is reflected in the *German import price index* produced by official statistics. Domestic industry requires raw materials for production. If therefore the import prices of raw materials increase, German manufacturers pass on the additional costs where possible, and ad-

just their sales prices upwards. This can be measured by the *producer price index for Germany* calculated by the price statistics.

Figure 4.11 compares trends in world market prices for raw materials to those in the German producer price index. As a rule, a sustained increase in international raw materials prices is echoed roughly between three and four months later by a rise in German producer prices. This is however much less than the original increase in raw materials prices. Producers cannot always pass on their cost increases, and a part of the price increase is cushioned by narrowing the profit margin.

If a price increase is very strong, it spreads further and also reaches the wholesale market. This is shown in the *German index of selling prices in wholesale trade*. This measures trends in prices charged by wholesal-

Causes of price increases

ers when selling goods produced domestically or imported.

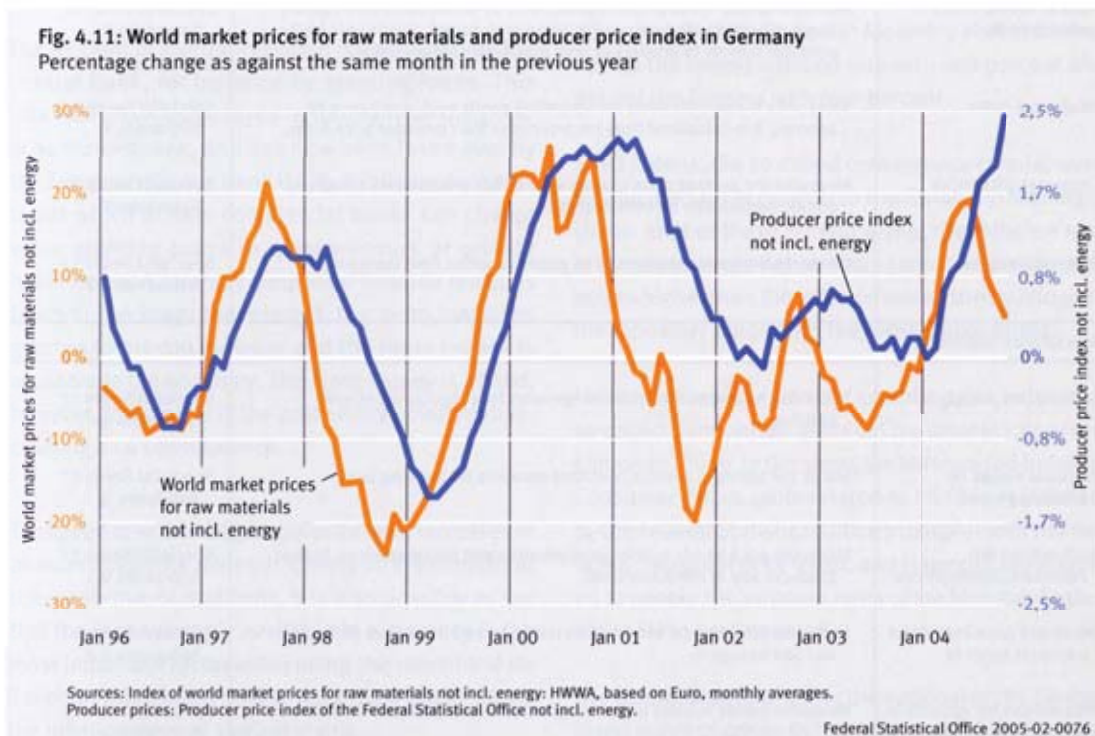
Further economic phases for which price indices are calculated in the official statistics are the retail trade, and ultimately the phase of final consumers in the shape of the consumer price index. In addition, there are specific indices, such as the construction price index. The price indices of the various economic levels are depicted in Table 4.1.

However, the distribution of the price increase cannot always be statistically pursued through to the consumer level. Trade margins are added at wholesale and retail levels, by means of which price increases are slowed down. Long-term supply contracts frequently apply between enterprises of the economic levels, so that price increases cannot be passed on until the contracts have expired. This leads to the price wave being weakened and to the impact of the increase in

raw materials prices no longer being directly felt in the wholesale index.

With individual sectors which are particularly affected, one can however still identify the impact of individual price pushes. Such as the construction industry. Its requirement for reinforced concrete and other products of the steel industry leads to price increases in steel products also being felt in the construction price index, which measures the trends in prices for construction of new buildings. The price index for construction of new residential buildings showed a year-on-year price increase of 1.7% percent in August 2004, whilst there had been virtually no price increases in the construction industry in the previous years.

It is also possible that the automotive industry, which is one of the largest buyers of steel, must pass on the price increases in raw materials to its customers sooner or later. Hence, an increase in motor vehicle prices,



Causes of price increases

which would be incorporated in the consumer price index, is also not ruled out. There is no indication of this in the consumer price index as yet.

Table 4.1 contains an overview of the price indices calculated by official statistics in Germany. In addition to price indices for the price comparison over time,

there are also indices for the spatial price comparison. These are described in Section 5. All Specialist Series can be called up free of charge in the statistics shop (www.destatis.de/shop).

Specialist information is available from the contacts named on p. 69.

Tab. 4.1: Indices for the price comparison over time

Price indices of the economic levels		Data source
Import price index	Measures the trends in prices of all goods imported to Germany.	Specialist Series (Fachserie) 17 Sub-series (Reihe) 8.1
Producer price index	The index of the producer prices of commercial products measures the development of prices for the products produced and sold by manufacturing, energy and water management and in mining in Germany.	Specialist Series 17 Sub-series 2
Index of selling prices in wholesale trade	Measures trends in the prices of goods sold by wholesalers domestically. These may be goods produced at home or imported. Goods sold by the producer directly to retailers or final purchasers are excluded.	Specialist Series 17 Sub-series 6
Retail price index	Sales price index exclusively incorporating goods sold, and hence no services. It is calculated from price series in the consumer price index.	Specialist Series 17 Sub-series 7
Consumer price index	Measures the average price change of all goods and services bought by private households for consumption.	Specialist Series 17 Sub-series 7
Export price index	Measures the trends in prices of all goods exported from Germany.	Specialist Series 17 Sub-series 8.2
Special price statistics		
Construction price index	This index measures the price change rates for construction of new buildings.	Specialist Series 17 Sub-series 4
Purchase values for building ground	States the trends in average purchase amounts for building land.	Specialist Series 17 Sub-series 5
Price indices for communication services	Measures price trends in telecommunication and postal services, both at producer and at consumer level.	Specialist Series 17 Sub-series 9.1
Prices and price indices for transport services	Measures price trends in rail and air transport and in services of hauliers and sea transport.	Specialist Series 17 Sub-series 9.2
Price indices for agriculture and forestry	Measures trends in sales prices of agricultural products sold domestically.	Specialist Series 17 Sub-series 1

4.6 The role of monetary policy

The examples have shown that price increase impulses are caused for instance by increases in import prices, by administrative measures or by rising energy prices. Such price increase impulses in sub-areas of the consumer price index do not necessarily lead to higher inflation in the long term. Inflation means that the general price level increases. A broad-based price increase is however only possible if households also have enough money available to pay the higher prices. Otherwise, not all suppliers would be able to sell their goods at increased prices.

Inflation is hence contingent on a growing money supply. Conversely, with inflation: Even if households have more money available, this does not mean that they have more income in real terms – the goods have indeed become more expensive.

The amount of money available is controlled by the Central Bank, for instance by granting loans. This role was previously played in Germany by the Deutsche Bundesbank, and has now been taken over by the European Central Bank (ECB). It influences the interest which private commercial banks can charge when granting loans to entrepreneurs or private households. A strongly simplified formula reads as follows: The lower the interest, the more loans are granted to private industry and the more money is available in the economy. The more money is added, however, the greater is the probability of inflation increasing as a consequence.

The speed at which the general price level increases in an economy hence depends heavily on the conduct of the respective central bank. It is also possible to say that the money supply available in a currency is the most important factor influencing the amount of inflation in this country. Figure 4.12 (next page) shows the inflation rates of various states.

The European Central Bank in Frankfurt is responsible for monetary policy in the countries in which payments are made in Euro. The main task of the ECB is to maintain the purchasing power of the Euro, and hence to safeguard price stability in the Euro area. In concrete terms, this means for the guardians of the currency that the inflation rate in the Euro area should be not much more and not much less than two percent per year.

Even if there is a uniform monetary policy within the monetary union, clear differences in national inflation rates are still manifest. In comparison to other countries which are not participating in monetary union, the inflation rate of the Euro countries is however within a relatively narrow range. There have been no very high inflation rates or falling price levels.

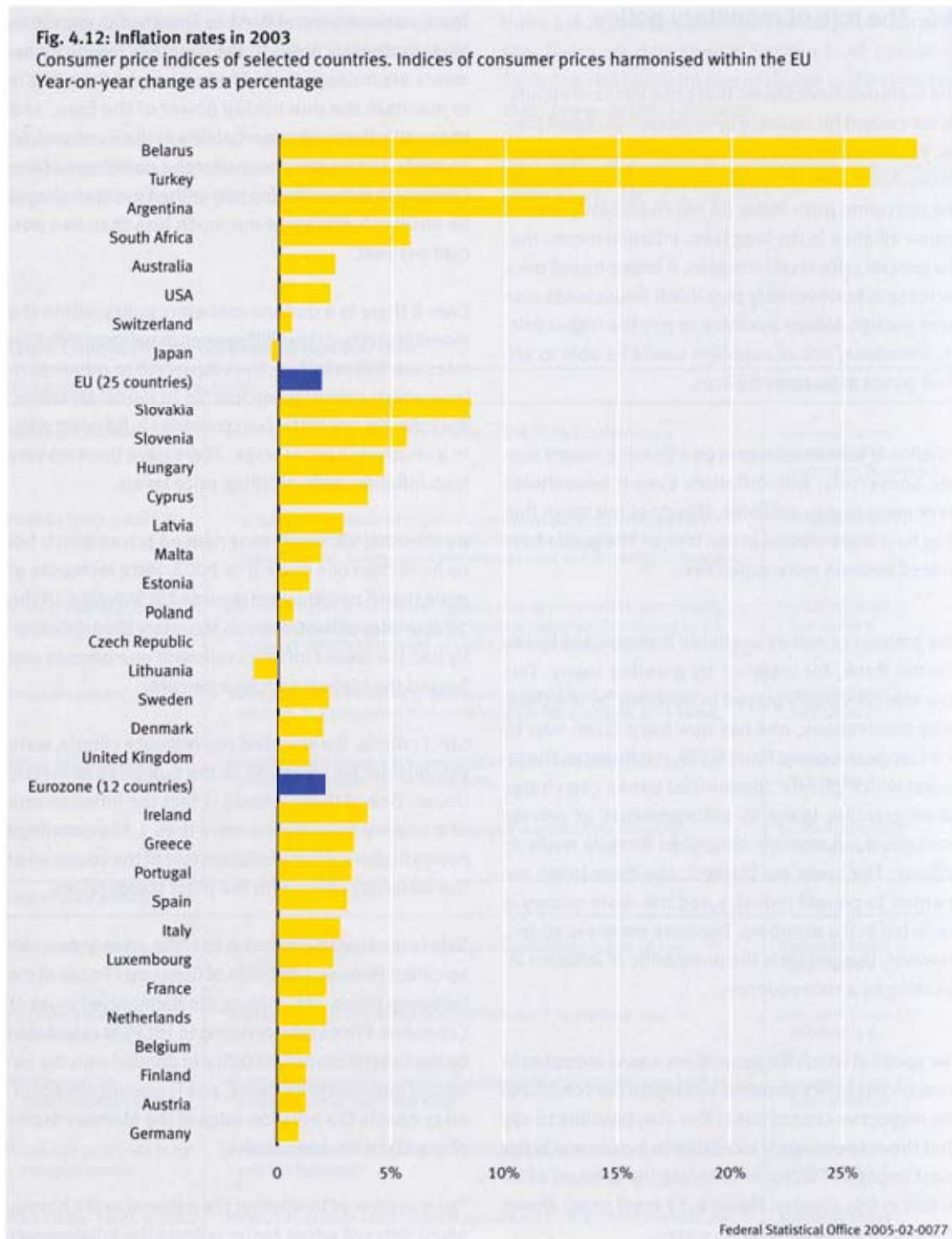
By contrast, Lithuania experienced prices which fell by more than one percent in 2003. Price increases of more than 8 percent were recorded in Slovakia. Of the 12 countries of the European Monetary Union, Germany had the lowest inflation rate with one percent and Ireland the highest with four percent.

Strict criteria, the so-called convergence criteria, were established for accession to the European Monetary Union. One of these criteria is that the inflation rate of a country must not be more than 1 ½ percentage points higher than the inflation rate of the countries of the monetary union with the most stable prices.

This is measured against a specific price index, the so-called Harmonised Index of Consumer Prices of the European Union. In Germany, the Harmonised Index of Consumer Prices (abbreviated to HICP) is calculated by the Federal Statistical Office in parallel with the national consumer price index, and is specifically adapted to enable the inflation rates of the Member States of the EU to be compared.

The question as to whether the national or the harmonised index of prices better reflects the inflation rate

Causes of price increases



Causes of price increases

is not relevant, however: Since the introduction of the Harmonised Index of Consumer Prices in 1997, it has become more and more similar to the consumer price index, as is made clear by Table 4.2. For instance, services of the healthcare and education systems were not initially covered by the Harmonised Index of Consumer Prices, whereas now they are. The difference of 0.1 percent in 2003 is mainly explained by differences in collecting privately-used residential property and by motor vehicle tax. Otherwise, the indices are practically identical in their structure.

Tab. 4.2: National and Harmonised Index of Consumer Prices ¹⁾

Year	National Consumer Price Index	Harmonised Index of Consumer Prices
1997	1.9	1.5
1998	0.9	0.6
1999	0.6	0.6
2000	1.4	1.4
2001	2.0	1.9
2002	1.4	1.3
2003	1.1	1.0

¹⁾ Year-on-year change as a percentage.

The obstacle posed by the convergence criteria led to an increasing approximation of price trends in the candidate countries in the nineties. The third phase of monetary union started on 1 January 1999, and the exchange rates of the then Member States were irrevocably locked. Since then, the differences in the inflation rates between these countries have increased slightly once more. In spite of this, the range of the inflation rates is not anything like as wide today as it was in the mid-nineties.

Where do the remaining differences in the inflation rates of the Euro countries come from? One reason arises from the construction of the price indices. Each country also has its own weighting pattern in the harmonised index of consumer prices. The types of goods are therefore differently weighted from one country to another. If for instance more money is spent on average on energy in one country, increases in oil prices

have a greater effect on the inflation rate there than in countries with lower energy expenditure. However, only a small part of the inflation differences can be explained by means of such differences in the weightings of the basket of goods.

A certain role is also likely to be played by economic adjustment processes, such as the trend to adjust wages to an international level, which may lead to different price increases in the various countries.

Finally, countries' economic development is significant to the differences in inflation. If a country is in a phase of economic boom, production is working to capacity there. Further increases in demand then quickly lead to price increases, and inflation increases in that country. In this case, inflation acts as an economic adjustment mechanism: Price increases lead to a reduction in the competitiveness of the country in question. The international demand for trade goods is then diverted to other countries in which production is not yet working to capacity.

A photograph showing several white, rectangular bars of hand-made soap stacked on a dark surface. A small, light-colored card is placed on top of the stack, with handwritten text in black ink. The text reads "Hand-made soaps" on the first line and "\$4.50/slice" on the second line. The background is dark and out of focus, suggesting a market or shop setting.

Hand-made
soaps
\$4.50/slice

5 International comparison
of price levels

International comparison of price levels

5 International comparison of price levels

International competitiveness also plays a major role for Germany. The German economy accounted for 10% of global exports in 2003, and hence led the export nations. German cars and electrical engineering are particularly popular.

As well as factors such as the quality and image of the products, it is above all the price level of exported goods that decides how a country is able to assert its position on world markets. A good indicator of the price level in an international comparison is the so-called real exchange rate. The nominal exchange rate, in other words the currency rate printed in the financial section of the daily newspaper, is less suited by comparison. The currency rate is heavily influenced by flows of finance between the countries, and per se does not reflect the real exchange circumstances well.

The real exchange rate measures what a concrete basket of goods costs at home and abroad. This depends not only on the currency rate, but also on the cost and price levels of the countries. The higher the price level at home, the higher here are frequently the production costs as well. Whether for a German export enterprise the sales price achieved abroad is then high enough to cover their own costs depends not on the exchange rate, but on the foreign price level.

The relationship between the domestic and foreign price level is referred to as purchasing power parity. The calculation of purchasing power parities is also one of the tasks of official price statistics. In order to be able to compare prices internationally, statisticians in the countries involved agree on a joint approach. The worldwide coordination of price statistics was pushed forward in the seventies and eighties above all by the United Nations. In Europe today, the Statistical Office of the European Communities (Eurostat) takes over a large proportion of coordination.

To calculate purchasing power parities, statisticians establish a common basket of goods the elements of which are precisely defined. The goods are selected such that they represent the consumption structures of all the countries involved. The data are generally collected twice yearly. The prices of the basket of goods are mostly collected in one town and then adjusted to the average price level of the country. In Germany, the price collectors of the Federal Statistical Office work for the international comparison project in Berlin and in Bonn.

The rate of the Euro has been rising since 2001.

What does this mean for our export economy?

If one looks at trends in real exchange rates, Germany's international competitiveness has improved in recent years. The German economy has been able to gradually improve its price competition position over many years as against the countries of the European Monetary Union. Germany is also slightly more competitive today with regard to its trading partners outside the Euro zone than the long-term average since 1975. Germany's competitive position had considerably improved at the end of the nineties because of the nominal devaluation of the Euro against the US Dollar. As the currency rate has risen since mid-2001, this then corrected itself downwards, and in 2004 Germany roughly reached the level of 1999 once again.

The purchasing power parities calculated by the price statisticians are also used for international comparisons of overall economic performance. If one intends to compare the real gross domestic product of two countries, the respective values have to be made comparable using price indices. The price is so to speak the smallest unit for measuring a country's real turnover. In order to be able to make an international comparison of economic performance, the mathematical unit must be the same in all countries.

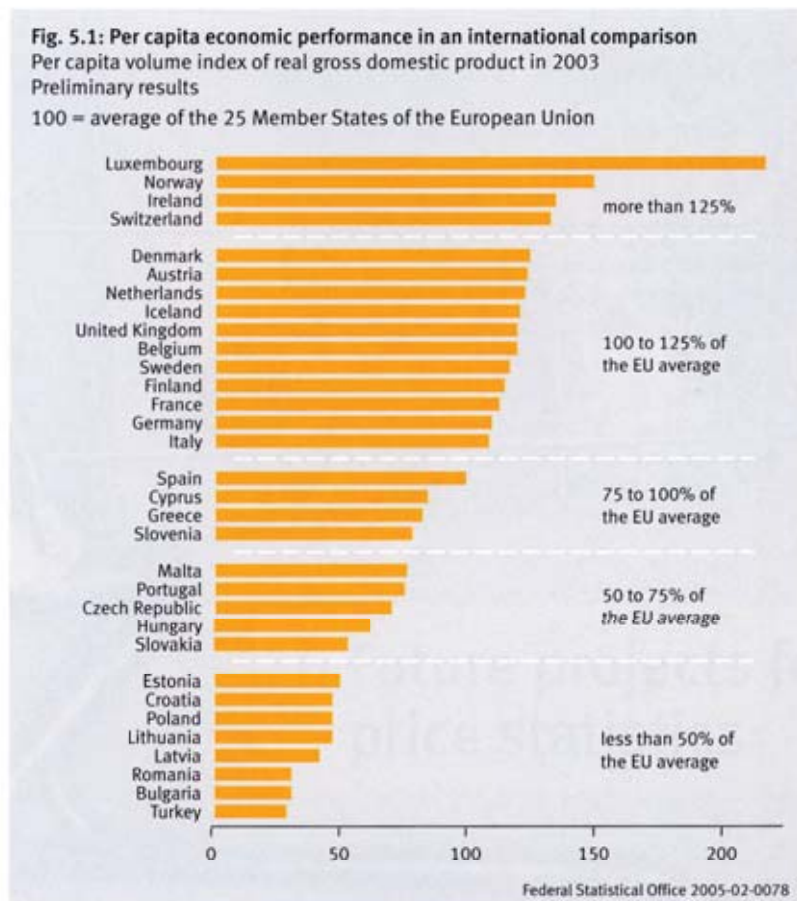
International comparison of price levels

Figure 5.1 shows an internationally-comparable index for the real per capita gross domestic product for the EU Member States and other European countries. If the index for a country is higher than 100, the economic performance per inhabitant is higher in this country than the average of the European Union.

Per capita economic performance in Luxembourg reaches by far the highest value. This is caused amongst other things by there being a large number of commuters from neighbouring countries here. These people contribute towards the creation of economic performance in Luxembourg, but are not included in the country's population. The lowest values in this

comparative project were measured in Romania, Bulgaria and Turkey.

Furthermore, the so-called purchasing power parities for private consumption are calculated at the Federal Statistical Office. In these calculations, statisticians presume German households which move abroad and largely retain their consumption habits there. The purchasing power parities for private consumption therefore refer to a basket of goods which is typical of German private households. Amongst other things, they differ in this from the abovementioned purchasing power parities, which are coordinated by the European Statistical Office (Eurostat).



International comparison of price levels

Data sources on international price level comparisons

- Coordinated calculated purchasing power parities (international basket of goods)

Available via the European Data Service
EDS at www.eds-destatis.de

Information on how to obtain data:
+49 (0) 18 88 / 644 - 94 27 or - 94 28

- Purchasing power parities for private consumption (German basket of goods)

Specialist Series (Fachserie) 17
Sub-series (Reihe) 10

Available free of charge in the Statistics Shop at
www.destatis.de/shop

Telephone information on purchasing power
parities for private consumption on
+49 (0) 611 / 75 - 24 17.



6 Future projects for price statistics

6 Future projects for price statistics

The products of price statistics form a comprehensive system which is orientated towards the various purposes to which users would like to put them. In addition to price trends over the passage of time which are measured in parallel at different economic levels, indices are also available for a place-to-place price comparison. In order to guarantee the high quality of the results – also with regard to international standards – the price statistics indices are subject to constant improvement.

An example of the refinement of price statistics is the introduction of the so-called hedonic methods with which technical progress can be better accommodated in the measurement of prices. Further major projects in price statistics which are tackled now or in the future are the completion of real estate price observation, the calculation of producer price indices for services provided to enterprises, optimisation of the sample of the consumer price statistics and the spatial price level comparison within Germany.

6.1 Hedonic price measurement

A larger further development project in recent years was the introduction of hedonic price measurement. Quality adjustment has already been described in Section 2.3 – it is a matter of changes in the quality of a good having to be accommodated when measuring prices. The hedonic method is a special quality adjustment technique using regression analysis. Anyone wanting to know more about methodological details will find an overview of the basic principle of the calculation method in the box on p. 56.

In Germany, hedonic quality adjustment is so far being employed in the consumer price statistics with computers, second-hand cars, washing machines and televisions. Furthermore, the Federal Statistical Office uses the method for the price measurement of EDP in-

vestment goods: Hedonic price indices are calculated for the following products in import, export, producer and wholesale price statistics:

- desktop computers
- notebooks
- servers
- inkjet printers
- laser printers
- multifunctional printers
- hard disks
- processors
- memory chips

The introduction of hedonic price measurement in the area of EDP investment goods has had a significant impact on the results of the overall indices. As a rule, so-called matched model indices had previously been calculated for EDP investment goods, measuring only the prices of those products which were observed in the same quality in the current month and in the previous month.

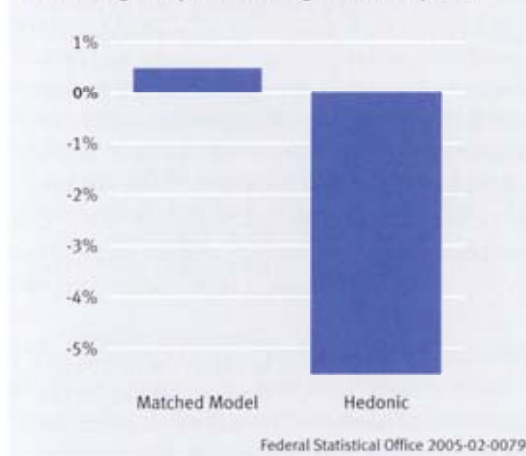
However, the introduction of hedonic quality adjustment means that price impacts can also be measured which arise indirectly by means of improved product quality, such as when sales prices remain roughly the same. If one uses the hedonic method of quality adjustment to measure the price of a product, technical progress with this product can be better portrayed. This means that price increases which can be attributed only to quality improvements can be eliminated from the price index through calculation.

As a result, the use of this quality adjustment method frequently leads to less severe increases in the price index. Hence, the import prices for EDP investment goods fell by 5.5% in April 2004 as against January 2004 if hedonic quality adjustment is applied, whilst the matched-model index showed a price increase of 0.5 percent.

EDP investment goods play a major role for imports in particular. The goods for which the price indices are now hedonically calculated take on a weighting totalling 8.8 percent in the basket of goods used for

the German import price index. EDP investment goods only account for a weighting of 1.3 percent in the producer price index.

Fig. 6.1: Import price index for EDP investment goods
Price change in April 2004 as against January 2004



The quality adjustment of price statistics is also important for measuring the real gross domestic product. As already mentioned, the nominal gross domestic product is converted into real values using price indices. The conversion is carried out in principle such that the nominal values are divided by the corresponding price indices. The lower the price trends are within a product category, the higher is the measured real sales growth in this sector. Falling prices, or prices that are increasing less rapidly because of an improved quality adjustment method being employed in price statistics are hence also reflected in the measurement of real economic growth.

Hedonic methods have been in use for several years in the USA to quality-adjust the price statistics, and lead there to notionally higher real economic growth rates. Because of the differences in economic structures in the USA and in Germany, the effects caused by the introduction of hedonic methods in Germany were however by no means as strong. In particular, many more EDP investment goods are imported to Germany

than to the USA. For this reason, the expansive effects of hedonic price measurement on economic growth were partly compensated for. The introduction of the hedonic method, however, makes it easier to precisely calculate the composition of the real gross domestic product in Germany.

In addition to hedonic quality adjustment, there are also traditional quality-adjustment methods which may lead to results very similar to those of the hedonic method. In analyses of the consumer price index, for the products "Computers" and "New cars" only slight differences were shown in the result between the hedonic calculation and the traditional quality adjustment already in use there. This is because technical progress was already being depicted accurately using the traditional procedure. The introduction of hedonic methods in the consumer price index hence also clearly had weaker effects on the measured price trends than in the producer, import, export and wholesale area, where quality adjustment had previously been incomplete.

Future projects for price statistics

Hedonic method of quality adjustment

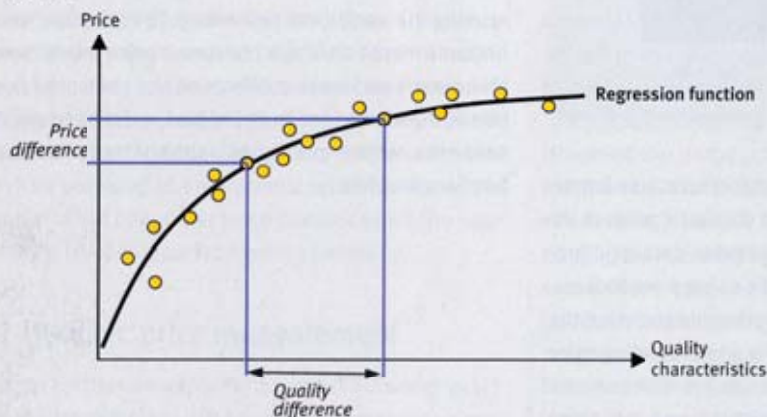
When measuring prices for personal computers in the consumer price index, the price collector was able for instance to select for the sample the following PC, amongst others:

Athlon XP 2400+ with 2000 MHz processor speed, 256 MB internal memory and 40 GB harddisk.

Several months later, this computer was no longer available in the shop, but it was now possible to buy the successor there:

Athlon XP 2800+ with 2250 MHz processor speed, 512 MB internal memory and 80 GB harddisk.

Fig. 6.2



In this case, the price collector exchanges the originally-selected PC for the successor model in his/her sample. In order to be able to compare the price of the old product with the price of the new computer when exchanging, the so-called monetary value of the difference in quality is calculated.

The monetary value of the difference in quality is the amount of money that consumers are prepared to pay on average for the quality difference between the new and the old PC. It is determined using regression analysis. In order to be able to carry out the regression analysis, in the current pe-

riod all computers located in the price observation are sorted according to price and product quality. Product quality is measured by processor speed, internal memory capacity, hard disk size and so forth. This is outlined in simplified form in the diagram below. Each point in the diagram stands for one of the roughly hundred computers from the sample of consumer price statistics in the current month. The rising line – the so-called regression function – provides a notional connection between the prices and the product quality of the computers. The higher the quality, the higher is the price

that purchasers are prepared to pay for the product.

Consumers' willingness to pay for the quality difference between the old and the new computer then emerges from the price difference shown by the regression function for the quality difference in question. This price difference is referred to as the monetary value of the quality difference. A quality evaluation therefore emerges from purchasers' measured average willingness to pay.

The quality-adjusted price alteration caused when models change in the sample is calculated, in simple terms, from the difference in the shop price between the old and the new computer – minus the monetary value of the quality difference.

A detailed documentation of the use of hedonic methods in German price statistics can also be found on the Internet at

www.destatis.de/hedonics

6.2 Real estate prices

The price events on the housing markets have been closely observed in recent years by financial market observers. The reason is considerable increases in real estate prices in some countries which may have unpleasant consequences. If real estate prices increase significantly in a country, this gives house owners strong value increases. This increases private consumption and in turn leads to greater demand for housing. This may lead to housing being over-valued, something which often ends in tears. The bursting of such a real estate bubble, together with turbulence on the share markets, has plunged whole economies into crisis in individual cases.

This was already highly visible in Japan at the beginning of the nineties. After the economic boom of the eighties, real estate and shares were increasingly overvalued there. A sudden price drop made the speculation bubble burst – consumers' willingness to buy and enterprises' tendency to invest were suddenly brought to a standstill. Economic stagnation led consumer prices to fall dramatically in the ensuing period, and the inflation rate was negative for several years. A period of sustained falling prices – known in the jargon as deflation – is normally a cause for concern for those shaping economic policy. Monetary policy can only be applied to a limited degree if prices are falling. Trends in Japanese consumer prices are depicted in Figure 6.3.

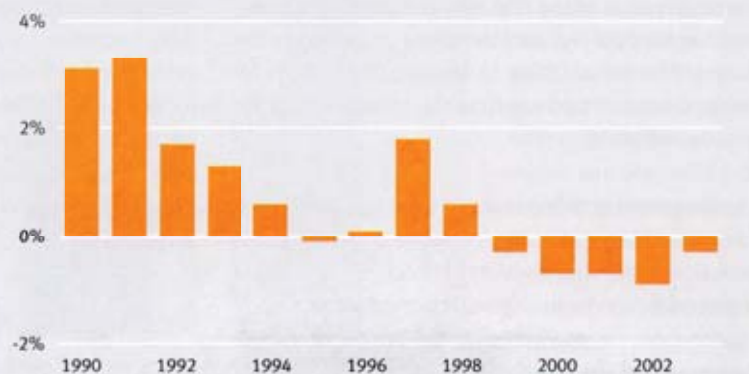
In recent years, there have also been considerable increases in real estate prices in the USA, Ireland, the United Kingdom and Spain. Financial market experts are also warning about excessive prices here. Germa-

ny has not yet witnessed such a price dynamic on the housing market. In order however to be able to recognise the potential to go off course in future in good time, a complete price observation in the real estate area is urgently needed. In addition to rents in the consumer price index, official statistics currently calculate above all price indices for construction services and the so-called purchase values for building ground.

The construction service price indices largely contain the wages for construction workers and the material costs incurred in construction. They cover a broad range of construction work. In addition to residential buildings, also office buildings, factory buildings, roads, bridges and the like are included.

Location is also a vital factor in the price of an item of real estate. This factor is to be taken into account when calculating purchase values for construction land. The purchase values are however average prices which are paid for specific plots of land – differentiated in each case by types of construction land, community size classes and regions. These average values are only restrictedly applicable to a comparison over time because the quality of the plots of land can vary widely. For instance, the transport infrastructure of the construction land also plays a major role, and

Fig. 6.3: The inflation rate in Japan
Year-on-year change in the consumer price index as a percentage



Federal Statistical Office 2005-02-0081

Future projects for price statistics

this is not taken into account when comparing average values over time.

The price trends in construction services and with construction land are above all relevant when an enterprise or a private household has an item of real estate built at its initiative. The construction service price indices and purchase values for building ground then provide indications of how the “price of building” has changed. However, the price indices can only be used to a highly restricted degree for the observation of price trends on real estate markets:

Constructions, in particular residential buildings, are frequently bought second hand. The current construction service prices are not relevant to the purchase price of an existing house – the price of the real estate as it stands is rather determined by the current market situation. However, even if a new house is bought, it is frequently a finished piece of real estate. The responsibility for the building has been taken over by the construction company. In that case, the construction company’s profit, in addition to the prices for construction services, become relevant to the purchase price of the house.

There are as yet no indices in the official statistics for the price trends in existing real estate and finished new buildings. Such indices must be available at least on a quarterly basis to support an authoritative observation of the real estate market. A comprehensive pilot project was therefore launched in the Federal Statistical Office to create price indices for finished houses and apartments. Initial results are already available.

A further element to improve real estate price observation is checking rent collection in the consumer price statistics. A measure consists of checking the sample of rent collection for its regional coverage. The various regions are to be represented in the sample in accordance with their actual significance. Another field of work involves better accommodating the term of the

rental agreement in the collection of rents. The duration of tenancy plays a major role in the amount of the rent. For this reason, it is necessary for the sample to also be representative as to the duration of the rent for totality of the sample.

6.3 Producer prices for services

The area of services provided to enterprises is also still underrepresented in price statistics. Whilst the production sector is well covered, service products such as software development, legal advice, personnel placement and so on are still not accommodated in price statistics to a sufficient degree. Services account for 70 percent of Germany’s economic performance today, and roughly 71 percent of those in employment work in the service sector.

The significance of services provided to enterprises has increased in particular. Hence, in the past years many new service areas such as services related to telecommunication or the IT industry have developed. In order to better accommodate these services provided to enterprises in particular, a comprehensive project has been implemented to introduce service price indices in the *producer field*.

In some cases, existing consumer price indices for services can be extended to producer price indices. This is possible for instance in rail and air transport, telecommunications or the post, where only the business customer area must be expanded and the basket of goods enlarged. For the largest part of the service sectors, however, new indices must be developed because there are no consumer prices – for example with personnel placement. The sub-projects to introduce new producer price indices for services are portrayed below.

Future projects for price statistics

Developing new producer price indices

- Freight transport by road
- Storage and warehousing
- Post and courier services
- Hardware consultancy
- Software publishing
- Data processing, database activities and online distribution of electronic content
- Maintenance and repair of office, accounting and computing machinery
- Data processing services
- Legal activity, auditing activity and tax consultancy services
- Market research and public opinion pooling
- Architectural and engineering activities and related technical consultancy (covers only Engineering)
- Technical testing and analysis
- Advertising (placement)
- Labour recruitment and provision of personnel
- Investigation and security activities
- Industrial cleaning

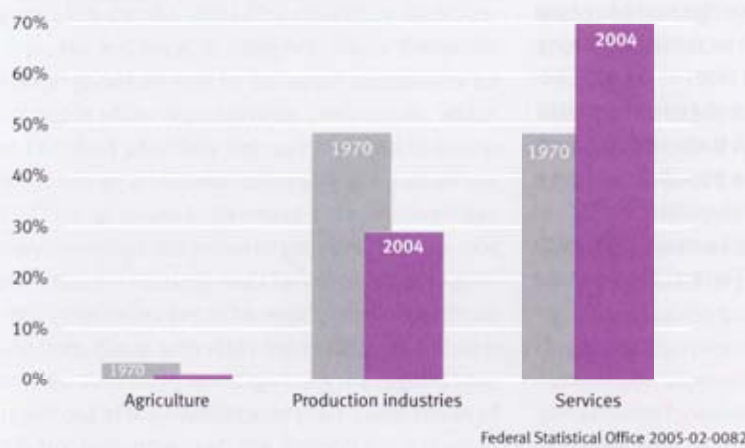
In April 2003, development began and initial surveys were carried out in the field of telecommunication services, legal advice, tax advice and auditing. There have been regular price collections since the beginning of 2005.

6.4 Optimisation of the sample of consumer price statistics

The structural change is also continuing in the retail trade. Some aspects of the structural change in wholesale and retail trade are described in the boxes on p. 60. The consequence of the changes in the wholesale and retail trade landscape is that it is becoming more and more important to precisely accommodate the various types of business in the consumer price statistics. When it comes to the place-to-place distribution of price collection, by contrast, potential savings are more likely in the area of retail trade. Consumers are less tied to local providers today, and the differences in offers between the towns are diminishing. A consumer price statistics project to optimise the sample aims to use this savings potential in order to be able to achieve better coverage of the types of business.

The types of business of retail trade are already being accommodated in price collection. The prices collected are however not yet explicitly weighted with the significance of the type of business. Such weighting is planned for the future in order to better accommodate the market shares of the types of business. At the same time, the number of the collection communities is to be optimised: The wider the place-to-place distribution of the price trends in a type of goods, the more communities should be included in the sample. When determining the number of the collection communities, a distinction is made between durables, clothing, consumer goods and rent. Special data analyses calculate for each of

Fig. 6.4: Creation of economic performance in Germany
Shares of the economic areas in the total gross added value in the third quarter of 2004 and in 1970



Future projects for price statistics

Structural change in retail trade

Developments which have been visible for many years are still not completed: Consumers' price awareness is continuing to increase, whilst at the same time there is an increasing demand for high-value consumer goods, increased orientation towards experience and the expectation of individual products and retail services is tailored to cater for specific needs. Here, consumers are increasingly taking as an orientation a large number of different ways of shopping, and loyalty to specific outlets is falling.

Trends in consumer conduct lead to developments in the wholesale and retail trade landscape which are also continuing today. This includes the ever-increasing significance of the rather large types of shop, specialist market and consumer market/self-service department stores and discounters. In estimates, it is presumed that today already roughly half of all retail turnover is made in these types of shops. In the food trade, the strongly price-orientated discounters and self-service department stores already have a market share of 50%.

From a spatial point of view, consumers' radius of operation is less and less characterised by a central location-based system. Goods are no longer necessarily bought in the closest centre. Rather, a growing multiple orientation of consumers is being recorded in which purchases are also made in neighbouring or indeed in far-off centres.

Added to this is an increase in the average sales area per retail shop, and hence larger catchment areas of shops, ongoing suburbanisation, and the concomitant extensive motorisation of the population. The various development tendencies are closely interlinked, and have led to a situation in which the areas surrounding the towns have become much larger in terms of area. Typical of the transport conduct of the modern worker, but also of the leisure and experience landscape, is the tendency towards greater distances and expanding the radius of operation. This applies to all reasons to travel, but more and more to shopping trips. Traditional links of close-by locations, by contrast, are constantly losing significance.

these types of goods how many collection communities are needed to correctly portray the regional nature of the price trends.

In a careful estimate using the information currently available, it can be presumed that the number of the reporting communities should be increased for the implementation of the model with rents in the old Federal Länder. With all other types of goods, in particular with goods relevant to retail trade whose prices are collected locally, it might be possible to reduce the number of reporting communities. The principle of creating results for an individual Land which in each case are representative for the Federal Land should however definitely be retained.

6.5 Price level comparisons between locations within Germany

Regional price level differences within Germany's borders are only measured in official statistics at irregular intervals. This is because such statistics are highly laborious, and thus very expensive. Whilst the monthly calculation of the consumer price index provides comprehensive, detailed information on price trends *over time*, the figures collected for the consumer price index however cannot be directly used for price comparisons between locations.

The prices of the same products must be placed side by side in order to carry out a price comparison. With the price comparison over time, this is guaranteed by the same goods being observed at the same points of sale. If the prices of the same products are always observed in the same shops from one month to another, the basket of goods can be represented by other products in for instance Bavaria than in Schleswig-Holstein. This does not present a problem for the price comparison over time. On the contrary, this better accommodates regional differences in shopping habits. The regional difference of the selected products however leads to a situation in which the data of the consumer price index are not directly suitable for a *multilocality* price comparison.

The problem can be solved by collecting additional data. For instance, in selected towns a specific basket of goods should be collected exclusively for the purpose of the regional price comparison, which then contains precisely the same products everywhere. Such an additional collection was carried out in 1993 for 50 towns in Germany. One disadvantage of the very narrow definition of goods is however that in particular the housing rents for which major regional price differences are to be anticipated are difficult to compare. Since with rents the residential location cannot be defined in isolation from the region, they were left out of the multilocality price comparison of 1993. Not including rent, the general price level in

the Western German towns selected was 6.2 percent higher in 1993 than in the Eastern German towns included in the survey.

The major disadvantage of an additional collection such as the multilocality price comparison of 1993 lies in the very high cost involved. The question therefore arises for the Federal Statistical Office of how current data on regional differences in price levels within Germany can be provided more cheaply. In doing so, the following concept was discussed:

For the area of rents, one could use a joint sample to compare prices both over time and between locations. This could be done using hedonic price measurement. Hedonic methods are already being used currently in some communities to create the so-called "rent mirrors", in other words rent level comparisons between locations. According to the same principle, and with little additional effort, it would then also be possible to insert the hedonic price measurement for the comparison of rents over time. The calculation of hedonic rent price indices would however be contingent on a fundamental conversion of the current rent collection in consumer price statistics. With rents, one would however already have covered the lion's share of the price differences between locations, since the greatest regional differences in the price level are likely to be in rents. They also account for the greatest individual weighting in the basket of goods of consumer price statistics.

Equally, the data of consumer price statistics could be adjusted with a number of durables so that they may also be used for price comparison between locations. The quality adjustment of consumer price statistics has been considerably refined since 1993. Differences in monetary value have now been calculated for most durables between various product variants. One could also proceed in the same way for the price comparison between locations, and by these means compensate for quality differences between the products from various regions.

Future projects for price statistics

In a third product group, the products are so homogeneous that the prices of the consumer price statistics can be used directly for the comparison between locations – such as with petrol. What is left is those goods which are heterogeneous and whose quality is difficult to define, such as clothing. In this case, it is not possible to avoid a parallel collection for the price comparison between locations. The additional collection would however only have to be implemented about every ten years, and in the meantime the results could be expanded using price trends over time in the respective product groups, meaning by using the consumer price index. In this way, it would be possible to minimise the cost of the additional collection.

If the price statistics were to be adjusted in this manner, it would be relatively simple to create results annually at the level of price comparisons between locations. Such a conversion would however be very expensive despite all its advantages. Currently, there is too little user demand for data on price comparisons between locations within Germany. The considerable investment that would be required for such a conversion of the price statistics hence does not appear to be justified at present.



**7 Annex: Individual price increases
– Calculation, data sources**

7 Annex: Individual price increases – Calculation, data sources

7.1 The principle of index calculation

The consumer price index is calculated as a weighted average from the sub-indices for the various types of goods. The weightings used by the Federal Statistical Office apply to an average consumer and are representative of German households as a whole.

In order to calculate an *individual* inflation rate, it is possible to replace the weightings of the consumer price statistics with individual personal expenditure proportions. This provides a personal overall index which better portrays individual consumption habits. One can also calculate a personal index for individual areas, such as only for the area of food.

The elements for such “individual consumer price indices” are the sub-indices of the so-called COICOP sub-division. This sounds very technical, but is easy to explain: A sub-index portrays the price trends for a specific type of goods. The term COICOP refers to the sub-division of the types of goods which is used by most Statistical Offices in Europe. (COICOP stands for Classification of Individual Consumption by Purpose.)

The COICOP sub-division exists in various levels of detail. The more detailed the sub-division, the more sub-indices are identified, and the longer the number of the sub-index is. The four-digit level is well suited to most purposes. A COICOP-4-digit is a sub-index which bears a four-digit number and which states price trends for a specific type of goods, for instance for books (COICOP No. 0951) or for electricity (COICOP No. 0451). German consumer price statistics distinguish between 106 such sub-indices at four-digit level. At this level, the product groups are relatively homogeneous, and at the same time there are not too

many sub-indices, so that the data volume remains comprehensible.

The sub-indices at four-digit level may be found in a monthly publication of the Federal Statistical Office, the so-called Specialist Series (Fachserie) 17 Sub-series (Reihe) 7, Consumer Price Indices for Germany. This can be downloaded free of charge on the Internet or ordered on the telephone through our sales partner.

Specialist Series (Fachserie) 17
Sub-series (Reihe) 7:

Consumer price indices for Germany

Available free of charge in the Statistics Shop at www.destatis.de/shop

Telephone information on consumer price statistics on
+49 (0) 611 / 75 - 47 77

The steps used in calculating an individual inflation rate are simple in concept. The sub-indices are multiplied by the personal expenditure proportions and the whole divided by the total expenditure. If however one wishes to completely calculate an individual index, the calculation steps would have to be implemented for all 106 sub-indices at four-digit level, which is highly laborious. (Furthermore, for some types of goods there are no four-digit entries, in which case three-digit entries would have to be used.) We are therefore able to show here as a simple example an individual index for the sub-area of food.

Individual price increases

7.2 Example: Individual index for food

1st step: Calculate a value figure for each sub-index

The value figures for the sub-indices are calculated by the following formula:

$$\begin{aligned} \text{Value figure} \\ &= \text{expenditure share} \cdot \text{sub-index value} \end{aligned}$$

In the field of food, the four-digit level provides the eleven sub-indices portrayed in Table 7.1. In this example, set your total expenditure for food at 100%. You could for instance expend a share of 10% of this expenditure on fruit. Your individual value figure for fruit (COICOP No. 0116) would then be calculated as follows:

$$\text{Individual value figure for fruit} = 10 \cdot 101.7$$

This is exactly how all other value figures from the area of food must be calculated. If you do not spend any money at all on a product area, set your expenditure weighting there to zero.

2nd step: Calculate your current index number

To calculate the current index number, add all value figures and divide the total of the value figures by the total of all expenditure proportions:

$$\text{Current index number} = \frac{\text{Total of all value figures}}{\text{Total of all expenditure shares}}$$

You therefore continue to add all value figures for bread, meat, fish and so forth and divide the total by 100.

3rd step: Calculate your individual price change

Finally, you can calculate an individual price change from the current index number. The price change since 2000 is a percentage and emerges from the following formula:

$$\begin{aligned} \text{Individual price change since 2000} \\ &= \text{Current index number} - 100 \end{aligned}$$

If you are interested in the price change in comparison with the previous month, you also have to calculate an index number for the same month of the previous year (exactly as described in the 2nd step). The individual price change as against the same month of the previous year is then calculated according to the following formula:

$$\begin{aligned} \text{Individual price change as against the same month} \\ \text{of the previous year} \\ &= \left(\frac{\text{Current index number}}{\text{Index number in the same month}} \cdot 100 \right) - 100 \\ &\quad \text{of the previous year} \end{aligned}$$

The example shows that the consumer price index is composed of the sub-indices for individual types of goods. If one carries out the calculation using the sub-indices at four-digit level, the data volume is relatively small.

The disadvantage of the calculation at four-digit level is however that it may be imprecise with the decimal spaces because of rounding off. If you want to calculate precisely, the sub-indices at ten-digit level must be used. You can call up the sub-indices at ten-digit level in our GENESIS online database.

The calculation at the ten-digit level is carried out using the formulae in exactly the same way as the example shown here. However, even when using ten digits, there may still be slight rounding off differences as against the results calculated by the Federal Statistical Office.

Individual price increases

Tab. 7.1: Sub-indices for food ¹⁾

Sub-index at 4-digit level	COICOP No.	Sub-index value in October 2004	Sub-index value in October 2003
Bread and cereals	0111	107.2	106.8
Meat	0112	106.2	106.1
Fish	0113	113.7	112.7
Milk, cheese and eggs	0114	105.4	107.0
Oils and fats	0115	101.3	102.4
Fruit	0116	101.7	102.7
Vegetables including potatoes and other tubers	0117	90.2	101.0
Sugar, jam, honey, syrups, chocolate and confectionery	0118	108.1	108.1
Food products n.e.c.	0119	105.7	104.9
Coffee, tea and cocoa	0121	90.5	94.1
Mineral waters, soft drinks and juices	0122	103.1	102.9

1) 100 = price level in 2000

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Index of prices for agricultural and forestry products	agrarpreisstatistik@destatis.de	+49 (0) 611 / 75 - 45 91
Construction prices	baupreisstatistik@destatis.de	+49 (0) 611 / 75 - 24 40
Purchase values for building ground and agricultural plots of land	bodenmarkt@destatis.de	+49 (0) 611 / 75 - 24 40
Wholesale prices	grosshandelspreise@destatis.de	+49 (0) 611 / 75 - 23 02 or - 45 91
Foreign trade prices	aussenhandelspreise@destatis.de	+49 (0) 611 / 75 - 23 02 or - 45 91
Prices for transport and telecommunication	dienstleistungspreise@destatis.de	+49 (0) 611 / 75 - 26 29
International prices and international price comparisons	dietmar.ames@destatis.de	+49 (0) 611 / 75 - 24 17
Hedonic methods in price statistics	hedonik@destatis.de	+49 (0) 611 / 75 - 24 28 or - 45 91
Producer prices for services provided to enterprises	astrid.stroh@destatis.de	+49 (0) 611 / 75 - 43 47 or - 45 91
General price statistics information service		+49 (0) 611 / 75 - 45 91