

The Development of Euro Prices – Subjective Perception and Empirical Facts

This study compares consumers' subjective price perceptions with official inflation data for the period from the euro cash changeover in 2002 to 2006. At an annual average of 1.7%, the overall rate of inflation has remained low over the past five years despite adverse effects exerted by external factors such as the marked increase in oil prices. In contrast, the prices of frequently purchased consumer goods and services, which people commonly use as price benchmarks, experienced an upward drift. This effect has been potentiated by psychological factors, e.g. price increases tend to fix themselves more firmly in people's minds than price reductions (of which there have also been a considerable number). In addition, some groups within the population have yet to develop sufficiently firm value perceptions in euro and stop converting euro prices into schilling. Mentally comparing current euro prices with schilling prices that are more than five years old simply distorts the perception of inflation. Yet survey data show that consumers' value perception is continually improving. The subjective impression of euro-induced inflation has therefore tended to lessen, and by the end of 2006, it was considerably lower than when euro cash was initially introduced. These developments give rise to the hope that people have largely overcome their impression of a "euro price shock" and that headline inflation and perceived inflation will again develop largely in concert in the future. This trend could be encouraged by increasing efforts to communicate price developments to the public.

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1 Introduction

Although inflation rates in Austria have been very low since the euro cash changeover, the population is under the general impression that prices are increasing more sharply than before. This article investigates how these contradictory observations can be reconciled.

In section 2 of this paper, the actual changes in euro prices are discussed using different price statistics and compared with former schilling prices. Subsequently, actual inflationary developments are contrasted with the population's perception of inflation.² It is well established that in the first few years after 2002, people's perception of inflation and the statis-

tically measured rate of inflation diverged markedly. Section 3 of this paper therefore evaluates the perception of inflation and examines several specific factors: (1) the extent to which the public actually knows about inflationary developments, (2) what influence the population's level of knowledge has on the perception of inflation, (3) whether perceived inflation varies with sociodemographic criteria, and (4) what factors can explain the increase in perceived inflation following the introduction of the euro banknotes and coins. As will be shown, the gap between measured and perceived inflation is – in addition to distortions caused by using outdated schilling reference prices

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² In this study, several inflation-related terms are used. For definitions of these terms and an outline of the terminology used within this area of research, see Fluch and Stix (2005), particularly the glossary (p. 23).

when assessing prices in euro – mostly influenced by the development of prices for certain individual goods and services. For this reason, section 4 uses disaggregated price data to analyze the movement of prices across sectors and industries. This section also presents data on particularly noticeable changes in the prices for individual goods and services and discusses whether these can be regarded as a consequence of the changeover to the euro. Section 5 summarizes the main findings of the study and discusses future challenges.

2 Rate of Inflation Remains Low after Euro Cash Changeover – Level of Perceived Inflation Rises

2.1 Inflation Low in Historical Comparison

Between 1995 and 2006, Austria's price and inflation development has been significantly influenced by several factors, notably EU entry in 1995, accession to the euro area in 1999 and the euro cash changeover in

2002 as well as rising oil prices since 2002. At the same time, the confluence of the Eurosystem's stability-oriented monetary policy and various institutional factors – moderate wage settlements, the pressure to become fit for the euro, liberalization measures in several network industries – provided for very low inflation levels in Austria.

The aggregated indices of the price statistics for individual levels of production and trade do not reflect any notable price hikes since the introduction of the euro banknotes and coins. In the run-up to the changeover, a number of in-depth analyses (e.g. Pollan, 2001; Dirschmid et al., 2001) attempted to assess the potential effects of the euro currency on prices and the rate of inflation in Austria, with the essential conclusion that the overall economic impacts were likely to remain very limited. This principal finding was derived from the combined analysis of individual factors, which when taken separately, might yield quite different results (see table 1).

Table 1

Anticipated Price Effects of the Euro Cash Changeover by Influencing Factors

Influencing factor	Anticipated price effects of the euro		
	Tends to dampen inflation	Tends to have a neutral effect	Tends to fuel inflation
Strong competition on product markets within the EU and the euro area	✓		
Greater price transparency	✓		
Intense competition, particularly in the (food) trade sector	✓		
Lower transaction costs	✓		
Pricing strategies to boost sales (rounding down)	✓		
Statutory and voluntary measures to curb price rises (dual price display)		✓	
Strict monitoring of pricing movements		✓	
Psychological pricing		✓	
Limited competition in service markets (high share of GDP and CPI)			✓
Development of medium-term price structure			✓
Strong psychological expectation of price hikes among consumers			✓

Source: OeNB.

Table 2

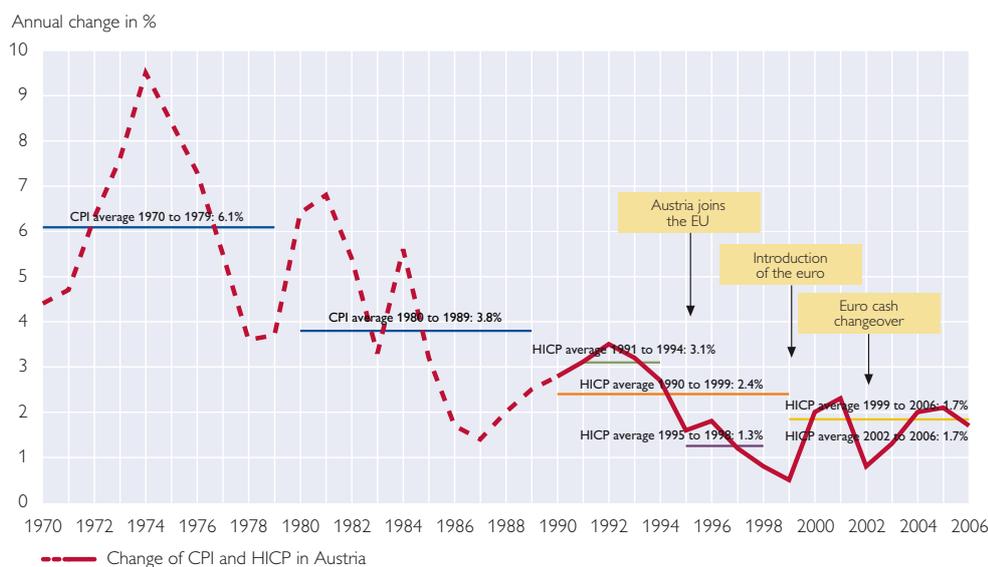
Development of Selected Price Indices before and after the Euro Cash Changeover

	1999 to 2006	2002 to 2006	1997 to 2001
	Annual change in %		
Producer Price Index (PPI)	1.0	1.1	0.4
Wholesale Price Index (WPI)	2.0	2.2	0.9
Consumer Price Index (CPI)	1.8	1.8	1.5
Harmonised Index of Consumer Price (HICP)	1.7	1.7	1.3
HICP at constant tax rates (HICP-CT) ¹	..	1.8	..
CPI for pensioners	..	2.0	..
Negotiated Standard Wage Rate Index (SWI)	2.4	2.3	2.2

Source: Statistics Austria, OeNB.
¹ 2004 bis 2006.

Chart 1

CPI and HICP Inflation Rates in Austria from 1970 to 2006¹



Source: Statistics Austria, OeNB.

¹ CPI up to and including 1989, HICP from 1990.

In the period under observation (1999 to 2006), producer prices showed the lowest increase, while wholesale price levels rose more sharply each year, partly reflecting the surge in crude oil prices between 2004 and 2006, as petroleum products carry strong weight in the index. On the consumer side, inflation remained moderate, with the average rate of inflation as measured by the Consumer Price Index (CPI) standing at 1.8% between 1999 and 2006 (table 2). With the exception of the

period immediately after Austria's accession to the EU, the general upward drift in prices was clearly at a lower level than in the 1990s (+2.4% per annum), the 1980s (+3.8% per annum) and the 1970s (+6.1% per annum; see chart 1).

Since the changeover to euro banknotes and coins in 2002, the average CPI inflation rate and the average rate of inflation as measured by the Harmonised Index of Consumer Prices (HICP), which is relevant for monetary policy, have remained mod-

erate at 1.8% and 1.7%, respectively (see table 1). The HICP inflation rate was thus in line with the Eurosystem's target rate of "below but close to 2%" for the entire euro area.³

Statistics Austria also calculates and publishes special inflation parameters on an ongoing basis. As these parameters were brought into the discussion during the course of the euro cash changeover, they will be discussed briefly below in order to draw a clear distinction between them and the commonly used inflation data derived from the HICP and the CPI.

Not taking into account tax adjustments, which bear no connection to the euro cash changeover, inflation as measured by the HICP increased by 1.8% between 2004 and 2006 (table 2). This means that the HICP was somewhat above the HICP at constant taxes in those years. The difference between the two measures

was largest in 2004 at 0.3 percentage point, due to increases in petroleum tax (on motor fuels and heating oil), energy taxes (on electricity and natural gas) and tobacco tax (on cigarettes) (see Beisteiner and Böttcher, 2006).

An index calculated especially for retired households stood at an average of 2.0% per year between 2002 and 2006, which is somewhat above the general CPI or HICP inflation rates. The reason for this divergence can be attributed to the specific consumption pattern of pensioners, which slightly differs from that of the average household across all groups of the population. The CPI for pensioners gives greater weight to goods that are purchased on a daily basis, and the resulting higher rate of inflation is one of the reasons why retirees tend to view the introduction of the euro banknotes and coins with some skepticism.

Box 1

Supply Shocks Cause Slight Uptick in Inflation since Euro Cash Changeover

The different price indices only show a mild upward trend in prices since 2002. Between 2002 and 2006, euro prices increased by 1.7% per annum (HICP) relative to schilling prices, which rose 1.3% per annum between 1997 and 2001 (the period that immediately preceded the introduction of euro cash).

The slight uptick since 2002, however, is far less attributable to the euro cash changeover than to a series of macroeconomic shocks. During the most recent period of investigation, for example, the economy was hit by several supply shocks (see the illustration below) that increased the cost burden and accelerated the upward price momentum, while the schilling period immediately prior to the introduction of the euro was dominated by numerous factors that had a dampening effect on inflation. These developments also contributed to the fact that in 1999, Austria's inflation stood at only 0.5% – the lowest level since 1945. The inflation rates of the five-year periods before and after the introduction of the euro banknotes and coins are therefore only comparable to a limited extent.

³ Statistics Austria prefers the national CPI for its monthly analysis of inflation development and publishes information regarding upward or downward price movements on a very detailed level (around 800 items or individual indices). Therefore, this study uses the national CPI for all analyses relating to individual goods. The authors received part of the data required for this purpose from the Austrian Federal Economic Chamber. In contrast, Eurostat and ECB only use 120 items (indices) for HICP calculation. The OeNB mainly relies on HICP data that are relevant for monetary policy.

Factors Influencing Inflation Development in Austria

1997 to 2001

(pre-euro changeover)

Cumulative price increase: 6.9%

Annual inflation rate: 1.3%

Factors causing inflationary pressure

- ▶ Rise in public service charges and tax burdens (increase in energy tax)
- ▶ Robust economic growth (2000)

Factors dampening inflationary pressure

- ▶ Euro convergence process leads to
 - ⇒ lowest inflation rate since 1945 posted in 1999 (+0.5%)
- ▶ Deregulation of markets (electricity, natural gas, telecommunications)
- ▶ Stronger competition (insurance, retail sector)
- ▶ Weak economic growth in 2001

2002 to 2006

(post-euro changeover)

Cumulative price increase: 9.0%

Annual inflation rate: 1.7%

Factors causing inflationary pressure

- ▶ Supply shocks
 - ⇒ Weather-related failure of the harvest in 2001/2002 in Southern Europe => higher food prices (fruit, vegetables)
 - ⇒ Livestock epidemics (BSE, FMD) => higher food prices (meat, milk)
 - ⇒ Crude oil price boom (January 1, 2002: USD 19.71 per barrel; August 8, 2006: USD 78.74 per barrel, February 2007: approximately USD 55.00 per barrel) => higher energy prices, clear contribution to inflation
- ▶ Dampening effects of market deregulation diminished temporarily (telecom prices stopped going down for a while), boom in crude oil prices more than compensated deregulation effects on energy markets
- ▶ Remaining obstacles to free movement of services
- ▶ Taxation measures (increase in energy tax, petroleum tax, tobacco tax)

Factors dampening inflationary pressure

- ▶ Weak economic growth (especially from 2002 to 2003)
- ▶ Interest rate hikes

2.2 Increase in Perceived Inflation

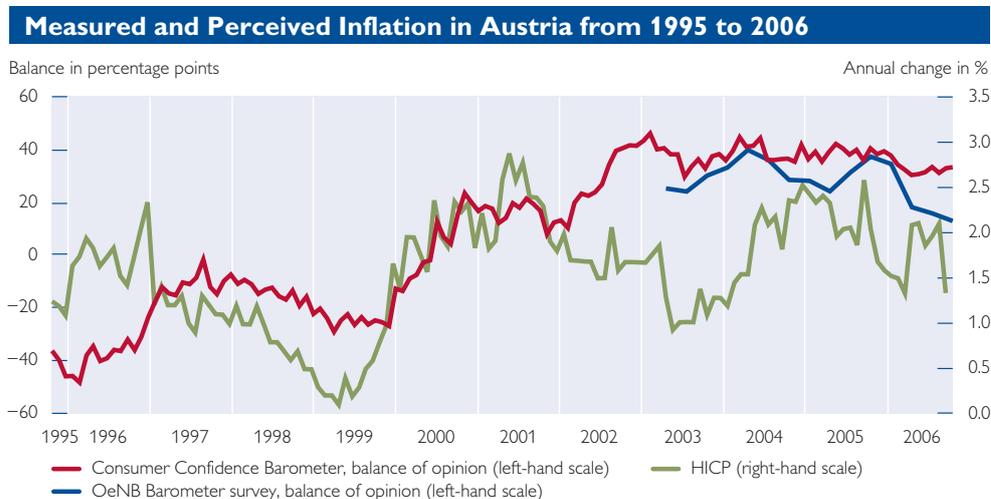
Despite generally low inflation rates, most Austrians believe that inflation has risen since euro banknotes and coins have come into circulation. Chart 2 compares actual HICP changes with the development of perceived inflation.

As a measure to quantify perceived inflation, we use the balance

of opinion among survey respondents.⁴ A balance of opinion of 20, for example, indicates that the proportion of respondents perceiving an increase in price levels is 20 percentage points higher than the share of those perceiving a decrease. A close alignment between the balance of opinion and the official inflation rate would imply that perceived inflation is

⁴ The concept of balance statistics is discussed in more detail in Fluch and Stix (2005, p. 27).

Chart 2



Source: OeNB, European Commission.

broadly in line with measured inflation, whereas diverging paths are generally interpreted as a discrepancy between inflation perception and measured inflation. In this context, it must be pointed out that balance statistics and HICP statistics are scaled differently – the balance of opinion is measured in percentage points of respondents, while the HICP reflects annual changes in percent.

To add statistical power, chart 2 uses the balance of opinion of two different surveys: the European Commission's monthly Consumer Confidence Barometer (CCB) and the quarterly OeNB Barometer survey, which differ in terms of questions asked and sampling methods.⁵

Chart 2 shows that the CCB balance of opinion developed largely in parallel with the HICP inflation rate between 1997 and 1999 and that the two measures were broadly aligned between 1999 and 2001. After the euro cash changeover, however, the

two paths started to diverge, with the following three trends emerging:

- At the beginning of 2002, when the euro banknotes and coins were introduced, perceived inflation rose sharply. This is somewhat surprising given the fact that HICP inflation rates were dropping at this time. The survey results obviously reflect the population's widely-held perception that prices were increasing in the wake of the euro cash changeover.
- Despite HICP inflation rates remaining subdued, perceived inflation persisted at a high level for a long period of time. It was not until late 2004 that the two indicators started to converge again, largely due to the fact that Austria's HICP inflation rate had increased.
- Both measures of perceived inflation depicted in chart 2 have shown a clear downward trend over the past two years – the CCB

⁵ The CCB survey reflects telephone interviews with 1,500 people in Austria, while the OeNB Barometer survey is based on 2,000 face-to-face interviews across Austria. A direct comparison of the question and answer categories in the two surveys is not possible, and therefore their results differ as well. For this reason, the subsequent analyses will focus on the trend in the balance of opinion that emerged over time rather than the absolute figures. The balance of opinion is available from 1995 onward for the CCB, and from 2003 for the OeNB Barometer.

balance of opinion fell from 46% (January 2003) to 32% (October 2006), that of the OeNB Barometer survey dropped from 40% (April 2004) to 13% (October 2006).

3 A Closer Look at Subjective Perceptions of Price Movements since the Euro Cash Changeover

This section takes a closer look at factors that determine perceived inflation. First, we will discuss how well informed Austrians are about the inflation rate. Subsequently, we will demonstrate that the population generally overstates the inflation rate and there are considerable differences in perceived inflation across different societal groups.

These factors have a general effect and are thus relatively independent of the introduction of the euro banknotes and coins. In view of the pronounced rise in perceived inflation since the euro cash changeover, this section will discuss the reasons for this asymmetry with inflation measures and assess the future development of inflation perceptions.

3.1 Some Facts on the Subjective Perception of Price Developments

3.1.1 How Well Informed are Austrians about the Inflation Rate?

In light of the gap between perceived inflation and officially measured inflation rates, the question arises as to how well Austrians are informed about the inflation rate in general. For this reason, respondents of the OeNB Barometer survey were asked in the third quarter of 2006 if they knew how high the inflation rate was

at that time – a question that related more to their knowledge of the regularly published official inflation rate than to their perception of inflation.

The results of this survey are mixed (table 3). On the one hand, Austrians, to the extent they answered the question, were relatively well informed about the approximate level of inflation (which according to Statistics Austria was 1.8% as measured by the HICP and 1.6% as measured by the CPI in the third quarter of 2006): Approximately 46% of the respondents gave a fairly correct estimate (i.e. between 1.5% and 2%) and only 12% believed that the inflation rate was higher than 2%. On the other hand, it is noticeable that 39% of the Austrian population did not know how high the inflation rate was, or claimed not to know (or gave no answer).

Closer examination shows that knowledge about the rate of inflation is mainly dependent on two important sociodemographic aspects: First, there appears to be a significant lack of information among younger people. 58% of the respondents aged less than 30 years were unable to provide an answer to the question of how high the inflation rate was, compared with only 32% among those aged over 30. Among the group of students over 15 years of age, more than two-thirds were overwhelmed by the question, which suggests a need to put a bigger emphasis on teaching economic literacy in school. Second, there was a marked difference in answers between the two genders: the share of female respondents who did not answer the question was 50% as compared to only 27% of their male counterparts.

Table 3

Do You Happen to Know by Roughly How Many Percent the Inflation Rate (CPI) Has Risen in the Past 12 Months?

	Frequency (%)	Balance of opinion
By less than 1%	3	-7
By approximately 1.5%	27	0
By approximately 2%	19	4
By approximately 2.5%	7	13
By approximately 3%	3	29
By more than 3%	2	40
Don't know	39	25

Source: OeNB Barometer survey, third quarter 2006.

Note: Column 2 shows the percentage of answers to the question about the level of inflation. Column 3 indicates the balance of opinion per group. Example: In the group of respondents who thought that the inflation rate rose by less than 1%, the balance of opinion is -7. This means that in this group the proportion of Austrians who believe that prices were falling is 7% higher than the share of those who believe that prices were increasing.

Box 2

Difficulties in Calculating Perceived Inflation

Every consumer perceives price changes differently, developing a subjective “feel” for price movements in response to individual price signals. One initial problem is that sound research findings about how price signals are processed to create an individual’s perception of inflation are limited. It can be assumed, for example, that personal perceptions are influenced by information other than prices (media reports, advertisements, preconceptions etc.). In addition, the perception of price increases is unlikely to be formed in isolation, but rather in line with people’s income situation and thus their purchasing power. Moreover, it has been argued in the literature that individual price perceptions are biased as people will pay more attention to some reference products than others, or will be influenced more strongly by regularly purchased goods than by less commonly purchased goods (Brachinger, 2006).

If individual price perceptions are difficult to measure, even greater problems arise when we try to pin down the inflation perception of the entire population. For this purpose, individual price perceptions must be aggregated, which raises the question as to what criteria should be used to determine measures that are representative of the entire population. Should individual perceptions of inflation be weighted on the basis of consumer spending, income or other measures?

These reflections show that the term “perceived inflation” is difficult to conceptualize and may represent rather different aspects, depending on the method of calculation used. In principle, the problems of measuring perceived inflation are quite similar to those associated with the calculation of well-established price indices, such as the CPI. While the latter is, however, calculated on a methodologically sound basis and consistently over time, this is definitively not the case with perceived inflation. We therefore always need to keep this caveat in mind.

Perceived inflation is generally calculated using survey data. Different organizations (the European Commission, the OeNB, etc.) conduct surveys at regular intervals in which the population is questioned about their perception of inflation. The survey questions are both qualitative (Have price increases been high, lower etc.?) and quantitative (By what percentage have prices increased?). Answers to questions of this nature can be evaluated relatively easily and therefore deliver a current picture of the population’s feelings about inflation. Survey data are, however, known to be afflicted with a range of problems. These problems are associated with both technical aspects (sample quality, interview method, interviewer skills, etc.) and, as already mentioned, with the scope of the survey – particularly the way in which questions are worded. Moreover, survey data are typically

aggregated to derive representative results with regard to respondents' age, gender and the federal province in which they reside, whereas personal expenditure or income are generally not taken into account.

As an alternative to this simple method, Brachinger (2006) suggests calculating an index of perceived inflation which explicitly incorporates individual responses to price signals and their impact on consumers' perception of inflation. This concept takes into account the fact that consumers tend to attach greater weight to price fluctuations of goods they buy more frequently than of items they buy less frequently. This method, which to date has only been used in Germany and whose results show clear differences to other measures of perceived inflation, is rather complex and subject to controversy (Hoffmann et al., 2005).

3.1.2 Poorly Informed Consumers Tend to Overstate Inflation

It is not apparent from the outset how closely the balance of opinion correlates with other inflation estimates. To shed light on this question, table 3 shows both the frequency of answers and the balance of opinion for each group.

First, these figures reveal that there is a clear correlation between the balance of opinion and the estimated level of inflation: the greater the estimated rate of inflation, the higher the balance of opinion. This means that the balance of opinion can serve as a measure of perceived price developments.

Second, it is also evident that the group of respondents who do not know the current inflation rate (almost 40% of the respondents) tends to believe that prices have increased (with a balance of opinion of 25). In contrast, this figure is markedly lower for the group who is aware of the inflation rate (a balance of opinion of 5). This means that when the population's inflation perception is measured using balance statistics, it is distorted upward by those with little

knowledge or who do not wish to become informed.

This finding, namely that a lack of information as regards the rate of inflation is linked with a high perceived inflation rate, shows a need to improve communication on this point.

3.1.3 Marked Sociodemographic Differences in Inflation Perception

Balance statistics measure inflation perception across the population as a whole. On further consideration, the question arises whether the perception of inflation, apart from the accuracy of price recall, is homogenous throughout the population or whether further differences exist across societal groups.

Chart 3 shows the course of perceived inflation for selected sociodemographic groups. Two significant points stand out. First, the decrease in perceived inflation that has been observed since 2003 is not only evident within the population as a whole but also across all subgroups. Second, inflation perception varies considerably between different sociodemographic groups.⁶

⁶ The interpretation of chart 3 is explained using the gender-specific differences in perceived inflation as an example: In the first quarter of 2003, the proportion of women who perceived upward price movements was 33 percentage points higher than the share of women who perceived reductions in prices. Among the male respondents, the difference was 17 percentage points. Compared over time, two peaks stand out: one in the first quarter of 2004 and one in the third quarter of 2005. Both may be attributable to oil price surges.

On average, women hold higher inflation perceptions than men. An important reason for this phenomenon lies in the fact that women, as has been argued previously, appear to be less well informed about inflation than men. Even if we adjust for the level of knowledge, however, the gap in inflation perceptions between men and women still remains robust. Although not discussed in detail here, this discrepancy is also not attributable to gender-specific differences in income, educational attainment or differing levels of satisfaction with the respondents' personal financial situation.⁷

One possible explanation might be that women respond to more or different price signals than men and therefore hold a higher inflation perception. Frequency of purchase does not appear to be a major factor.⁸ Another explanation might lie in the fact that women are still responsible for a large share of purchases to satisfy their households' daily and weekly needs. As the prices of such items have tended to rise disproportionately with the overall rate of inflation since the introduction of the euro banknotes and coins (a fact that will be explored in more detail in section 4), women perceive inflation to be higher. However, this is a very specific explanation that is primarily related to circumstances following the euro cash changeover and cannot account for the fact that women also hold higher

inflation perceptions at other times and in other countries.

Compared across age groups, perceived inflation was at its lowest level among older people at the beginning of 2003, while in more recent years, primarily younger people tended to hold lower inflation perceptions. Beyond this, age-related differences are not strongly evident. More often than not, the level of perceived inflation barely differs between young and old. To a certain extent, this is surprising, as it has always been assumed that older members of the population are particularly sensitive to prices due to their more critical attitude toward the euro. It is also evident that the oil price-related increase in perceived inflation in the third quarter of 2003 is particularly pronounced in the group aged 29 and over, which is, in statistical terms, the group that is most heavily affected by fuel price fluctuations (and reacts accordingly).⁹

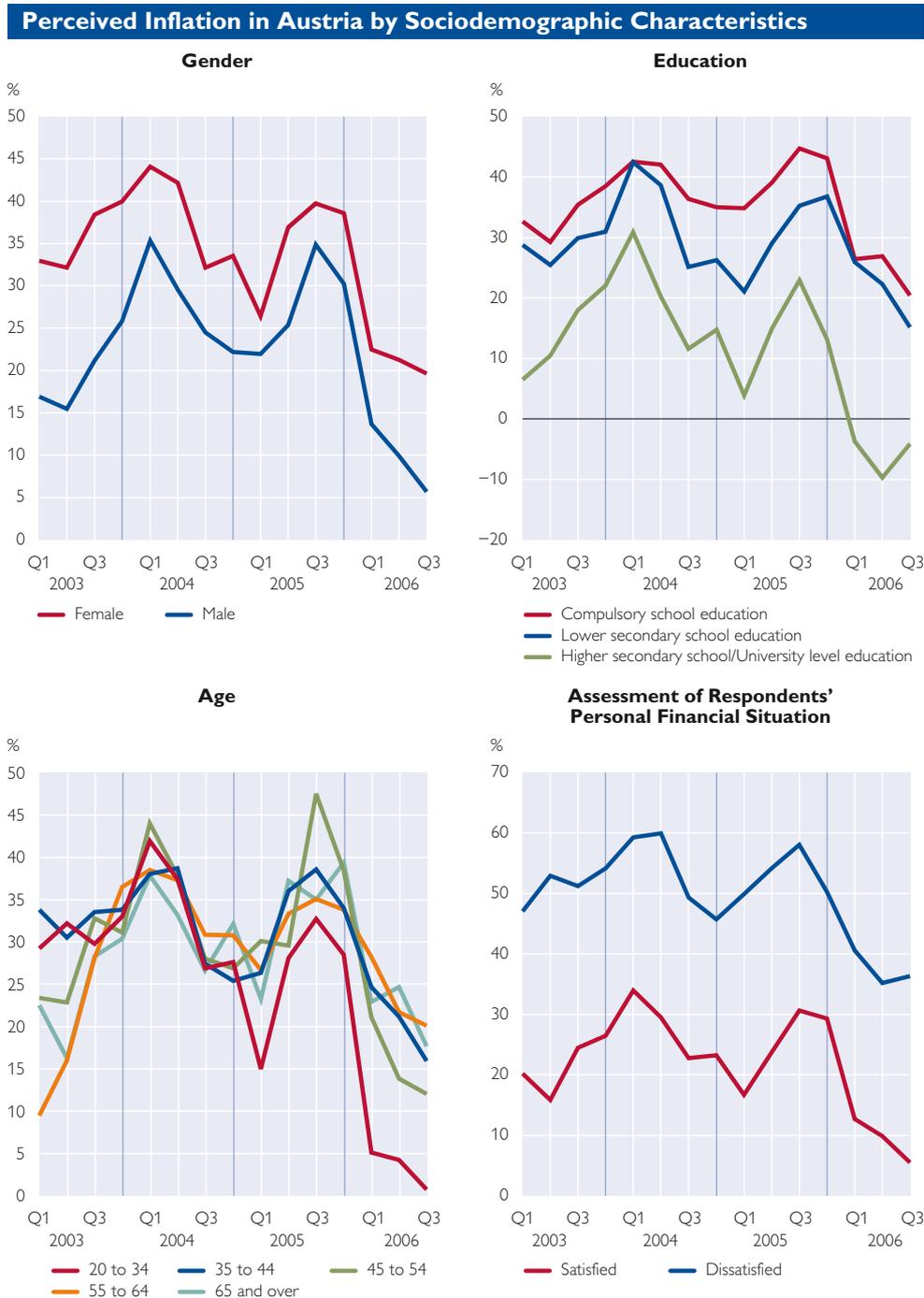
Furthermore, it can be observed that greater educational attainment, which is generally linked to higher income, correlates with decreasing perceived inflation. This is also reflected by the difference between respondents stating that they were satisfied with their personal financial situation and those who were not. This subgroup shows the most profound difference in inflation perception, with respondents who were dissatisfied with their financial situation perceiving a markedly higher increase in

⁷ These gender-specific differences can also be observed using a multivariate regression model, as is demonstrated by Stix (2006). Similar results have also been found for the U.S.A. and Sweden (Bryan and Venkatu, 2001; Jonung, 1981).

⁸ It might be assumed that women shop more than men (given that they are typically responsible for a higher proportion of purchases). Bryan and Venkatu (2001), who address this question in greater detail, find this argument unconvincing: "While someone with more shopping experience may have more accurate perceptions of price behavior, there is no obvious reason why they would be systematically higher (...) than those who do less shopping." (ibid., p. 2)

⁹ See the expenditure on transport from Statistics Austria's consumer survey (www.statistik.at/konsumerhebung/struktur2.shtml) as at February 15, 2007.

Chart 3



Source: OeNB Barometer survey.

prices. One reason for this finding might be that low-income households usually spend a larger part of their budget on basic commodities. If the prices of such items increase disproportionately with other goods, as has

been the case in recent years, these households “suffer” more from price increases than those with higher incomes. This leads to the conclusion that the weak growth in real income experienced by a relatively large part

of the population contributed to a higher perception of inflation among this subgroup.¹⁰

3.2 The Euro Cash Changeover and Perceived Inflation

The increase in perceived inflation is closely linked to the introduction of euro banknotes and coins – a phenomenon experienced by almost all countries within the euro area.¹¹ This section discusses the reasons for this development.

3.2.1 Why Did Perceived Inflation Increase after the Euro Cash Changeover?

Fluch and Stix (2005) and Stix (2006) argue that one reason for the high level of perceived inflation among the

population as a whole lies in the fact that between 2001 and 2005, the prices of frequently purchased goods rose more sharply than those of less frequently purchased goods. Therefore, the impression of price increases was justified when frequently purchased products and services were taken into consideration, which would be expected as consumers' perception of prices tends to be focused on these goods (see Brachinger, 2006). As is shown in box 3, according to calculations by Statistics Austria, the prices of some high-demand goods and the index of daily and weekly purchases rose more steeply than the CPI between 2001 and 2004 (see Beisteiner and Schimper, 2006).

Box 3

Steeper Price Hikes in Goods with a Strong Signaling Effect for the Population

As a general rule, the population's perception of prices in relation to the value of purchased goods is based on frequently consumed products whose price levels are closely monitored and which are commonly used as price benchmarks. Characteristic products in Austria are bread, milk, a cup of Melange (half espresso, half milk) bought in a coffee shop, and a glass of beer and the set meal of the day purchased at a restaurant. Following the introduction of euro banknotes and coins, the prices of such goods and services most likely served as important benchmarks for a subjective assessment of price changes.

The price data reflected in the national CPI (for which disaggregated data are available for individual goods) support the population's impression of price increases – in some cases of considerable magnitude – that occurred for these products in the wake of the euro cash changeover.

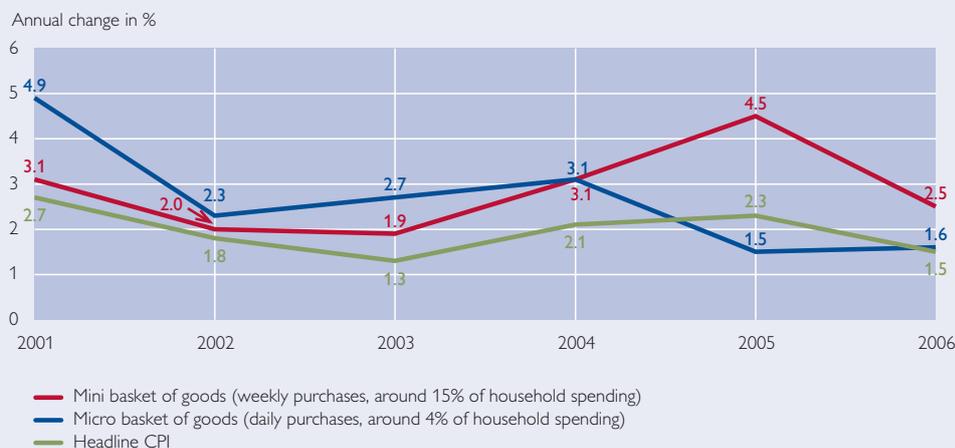
For almost all reference goods and for every year since the introduction of euro banknotes and coins, price rises were above the overall CPI inflation rate. In 2001 and 2003 specifically, price hikes were quite noticeable, while in 2002, when the public paid especially close attention to price movements and private consumption in Austria underwent a period of stagnation, they tended to be somewhat lower. The more pronounced price hikes before and after 2002 appear to reflect anticipatory effects in 2001, and catching-up effects thereafter in 2003, when dual pricing had been phased out, consumer demand improved gradually and more and more companies were switching back to psychological pricing (chart B). Beer prices, for instance, increased somewhat more strongly, while the cost of a set meal in a restaurant developed in line with the general rate of inflation.

¹⁰ See also Guger and Marterbauer (2005).

¹¹ See also the discussion in Fluch and Stix (2005).

Chart A

Price Development of Mini and Micro Baskets of Goods from 2001 to 2006

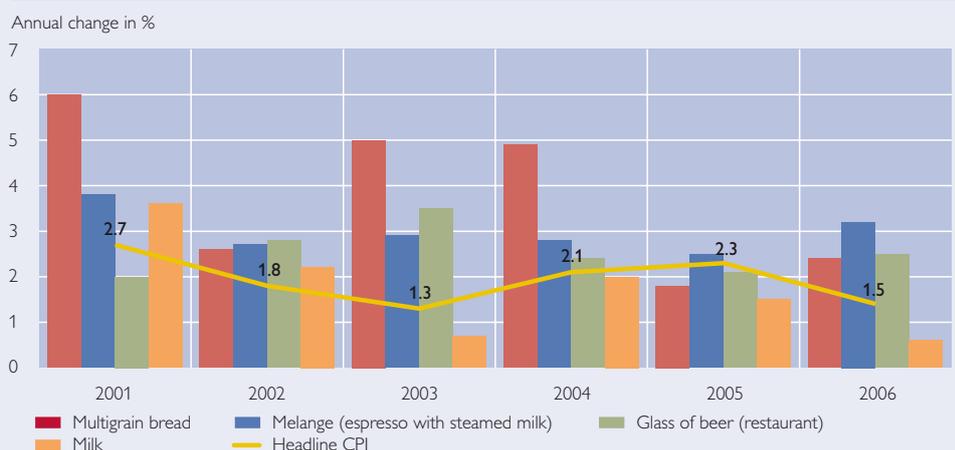


Source: OeNB, Statistics Austria.

Specially calculated “baskets of goods”¹ typically purchased on a daily or weekly basis (chart A) show above-average price increases. Between 2002 and 2006, the prices for the goods contained in the mini basket² and the micro basket³ experienced an annual increase by 2.8% and 2.2% respectively, which exceeds the rise in the overall CPI of 1.8% per annum.⁴ The population’s perception of rising prices for basic commodities is corroborated by the empirical data.

Chart B

Price Changes in Selected Goods and Services



Source: OeNB, Statistics Austria.

¹ These baskets of goods, which have been calculated by Statistics Austria since 2001, contain products and services that represent consumers’ characteristic daily and weekly buying patterns.

² Including 55 goods and services that are typical for a week’s worth of shopping and represent 15% of the money spent on the entire basket used for measuring CPI inflation.

³ Including 19 goods purchased on a daily basis (although some products were selected at random), which account for 4% of the amount spent on the entire basket used for measuring CPI inflation.

⁴ The cumulative price changes for the period between 2002 and 2006 are as follows: mini basket: +14.7%, micro basket: +11.7%, headline CPI: +9.3%.

Another reason is that consumers' perceptions are also influenced by psychological factors. People who expected the euro cash changeover to increase prices were also more likely to notice them when they actually occurred.¹² These two factors may help to explain why a large part of the population perceived price increases despite the low level of officially measured inflation rates. However, can these factors also explain why perceived inflation proved to be remarkably persistent and only began to slowly decline after some years?

In this regard, Stix (2006) demonstrates that the widespread use of schilling reference prices also plays an important role in inflation perception, since these reference prices, which are already outdated by several years, have been "frozen" at their pre-changeover levels, while schilling prices would of course also have increased in line with normal inflation developments

Survey data from the European Commission underscore the profound impact of the conversion to schilling. In fall 2006, around 30% of Austrians did not count mentally in euro when making purchases (European Commission, 2006; Fluch et al., 2007). For large purchases, as many as three quarters of those surveyed still converted prices into schilling, which is a considerable proportion five years after the euro cash changeover. Viewed over time, it is evident that the percentage of Austrians who convert prices into schilling is decreasing, but that this process is taking longer than expected.

At this point, it must be noted that the task of determining the proportion of Austrians who still convert into schilling is not easy to accomplish. As studies by Kirchler (2002) and Kamleitner et al. (2006) illustrate, consumers employ many different strategies to get a feel for the "new" currency. The strategy of conversion individuals apply may therefore be difficult to determine on the basis of just one question. In the survey mentioned above, for example, respondents were asked whether they primarily calculated prices in euro, in schilling, or as often in euro as in schilling.¹³ If 55% of Austrian consumers state that for larger purchases they primarily convert into schilling, this does not mean that 55% always convert into schilling and that the euro does not play any role at all. It is quite possible that a proportion of these people already calculate in euro, but then "work back" into schilling to make sure that their euro calculations were correct.

In view of these considerations, it seems more appropriate to directly focus on consumers' perception of value. The OeNB Barometer survey provides information on this subject. Specifically, respondents are asked the following question: "How difficult or easy do you find it at present to calculate in euro or assess the value of euro prices?" The results for 2006 confirm a clear connection between the perception of prices and the perception of value (table 4).

Of those respondents who stated that they found it hard or very hard to evaluate euro prices, 94% also an-

¹² The effects of expectations on perceived inflation were first demonstrated in psychological experiments (Traut-Mattausch et al., 2004). Stix (2006) confirmed these effects for Austria using survey data.

¹³ The precise question in the original survey reads: "Today, when purchasing, do you count mentally: most often in euro, most often in schilling, or as often in euro as in schilling when it concerns common (exceptional) purchases (...)?" (European Commission, 2006).

Table 4

Connection between Perceived Inflation and Value Perception

(Survey Results)

		How difficult or easy do you find it at present to calculate in euro or assess the value of euro prices?	
		Very difficult or difficult	Very easy or quite easy
		(% of the respective group)	
As to prices: In your opinion, have the price increases over the past 12 months been very high or high?	94	70
	... moderate or quite low?	6	30
	Total	100	100

Source: OeNB Barometer survey.

Note: This table shows, for example, that 94% of those respondents who found it either very difficult or difficult to calculate in euro or assess the value of euro prices also thought that price increases over the past 12 months were either very high or high. Only 6% of this group thought that price rises had been moderate or quite low. The figures cited represent the average of the surveys conducted from the first to the third quarter of 2006 and are based on 5,888 respondents.

swered that price increases in the last twelve months had been very high or high, while the proportion of those who found it easy or very easy to assess the value of euro prices was “only” 70%. This implies that consumers who find it difficult to get a feel for the euro are more likely to use schilling reference prices and will tend to harbor higher inflation perceptions.¹⁴

3.2.2 Improved Perception of Value Leads to Further Decreases in Perceived Inflation

Since a connection between the perception of value and the perception of price increases has been established, it is to be expected that improved value perceptions will bring perceived inflation closer to the headline rate. We therefore need to look at how consumers’ value perceptions have developed over the past years.

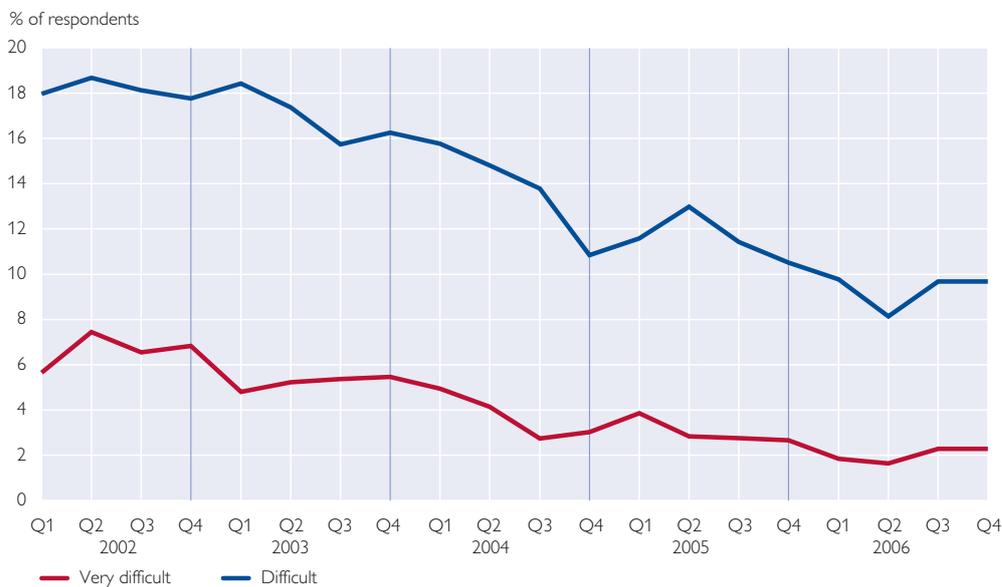
Chart 4 shows how the proportion of Austrians who found it difficult or very difficult to work with euro prices developed over time. In 2002, around 7% fell into the latter category (very difficult) and 19% into the former (difficult). Both percentages have gradually declined over time, and in the fourth quarter of 2006, only 2% found it very difficult and around 10% difficult to assess the value of euro prices.

The proportion of Austrians using schilling reference prices or having difficulties developing a good feel for the euro thus declined largely in parallel with the pronounced decrease in perceived inflation. As the number of consumers who find it difficult to deal with euro prices is expected to drop further, the proportion of people who overstate the level of inflation can also be anticipated to decrease in the near future.

¹⁴ Theoretically, the causal link illustrated in table 4 might also work in the opposite direction: If they perceive price increases, people’s attitude toward the euro worsens and they are thus more likely to calculate in schilling.

Chart 4

**How Difficult or Easy Do You Find It at Present
to Assess the Value of Euro Prices?**



Source: OeNB Barometer survey.

Note: The chart shows the proportion of respondents who answered that they either found it very difficult or difficult to calculate in euro or assess the value of euro prices.

4 Price Development of Groups of Goods and Individual Products

On a macroeconomic level, price increases have remained moderate. It is therefore reasonable to suspect that the public's strong feeling of accelerated inflation and the widely-shared impression that "everything is more expensive" can be ascribed to the increase in prices of individual products and services. Based on data collected by Statistics Austria and the OeNB, the following section attempts to determine which sectors were affected by noticeable price changes and which goods and services only experienced slight price increases. In a further step, we will try to identify the key factors accounting for these findings. The results of this analysis will show that in individual branches of the economy the population's perception of price increases is supported

by empirical facts. The reasons for price increases are, however, not primarily attributable to the euro cash changeover but rather to market-related or other special factors. Market- and competition-related price reductions occurring at the same time had little impact on people's perception and therefore reinforced the asymmetry in price rises.

4.1 CPI Inflation Based on 39,000 Individual Prices Representing 770 Goods and Services

The following analysis is based on the monthly price data collected by Statistics Austria. Around 39,000 individual prices are recorded from about 4,200 outlets in the 20 largest cities in Austria (and some of the adjacent shopping centers). From the price series obtained, indices are computed for approximately 800 goods and services (reduced to 770

items in 2006; see Beisteiner, 2006).¹⁵ Aggregated information is published on a regular basis and includes, in addition to headline HICP/CPI, the indices for the 12 most important expenditure groups.¹⁶ This collection of consumer price data differs from many other sources (such as random samples taken by polling agencies or ad-hoc surveys conducted by miscellaneous media) in that it is sufficiently large in quantity and highly representative in quality. In particular, it allows the prices of comparable products to be measured (“measuring like with like”) and also provides an excellent basis for longitudinal and cross-section analyses.

The following sections first investigate price changes of the category of industrial goods (excluding energy), then analyze the food sector and finally consider the development of prices within the very heterogeneous service sector.

4.2 Prices of Industrial Goods Increase Minimally; Clear Downward Price Trend in Durable Consumer Goods

Highly competitive product markets experienced a very moderate rise in prices both before and after the euro cash changeover. This indicates that the level of prices in this segment is primarily governed by market factors

and the introduction of the euro banknotes and coins seems to have made a minimal impact.

At an annual increase of 0.2%, the prices of industrial goods (excluding energy) remained almost unchanged over the last five years and therefore helped to lower the level of inflation.¹⁷ The individual products included in this group, however, experienced more or less significant price fluctuations between 2002 and 2006, with increases reaching more than 20% in some cases (see chart 6).¹⁸ At the same time, prices for electronic devices (personal computers) dropped by over 60% and the prices of durable consumer household and leisure goods also declined (see chart 5). As such (major) purchases are usually made at longer intervals, consumers’ perception of price levels, and, to a greater extent, of price changes, is much lower in this category.¹⁹ Particularly reductions in the prices of individual consumer goods and the associated dampening effect on the inflation rate are only noticed to a very limited degree. There is also, in part, a lack of understanding as to why the prices of goods purchased so infrequently (as is the case with durable consumer goods) are included in the calculation of the inflation rate. In accordance with the conventions for defining particular baskets

¹⁵ For each product or service, around 50 individual prices are collected throughout Austria. In actuality, the number of individual prices collected varies considerably. In some industries, significantly more individual prices per product are recorded, in others less (in some cases, this means only one price if there are no variations throughout Austria, e.g. passport fees).

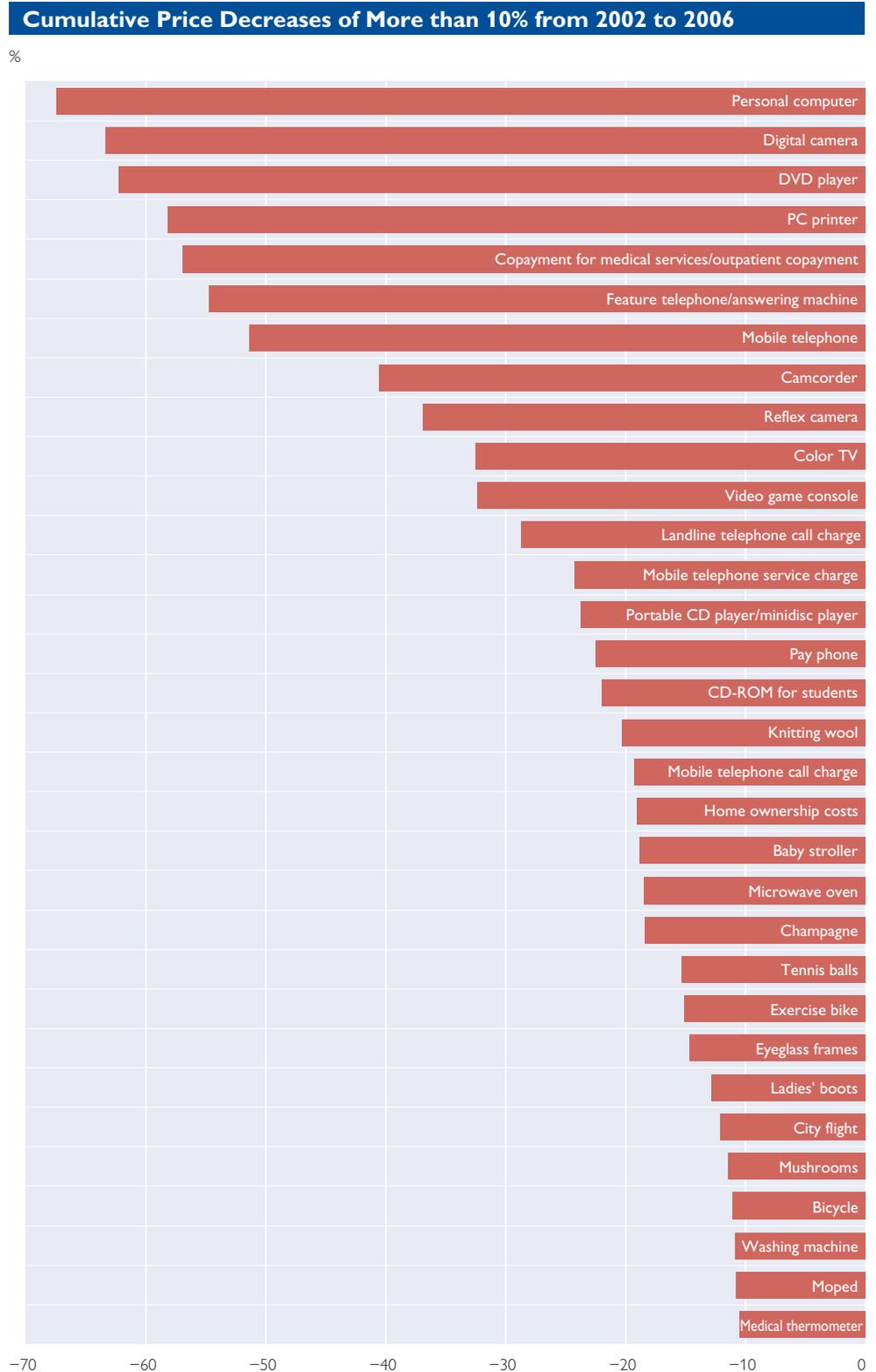
¹⁶ See also www.statistik.gov.at and Statistics Austria’s monthly publication “Statistische Nachrichten.”

¹⁷ Industrial goods (excluding energy) account for around 30% of households’ total consumer spending.

¹⁸ The mapping of price movements on the level of individual goods over longer periods of time is only possible to a limited extent because the composition of the baskets of goods changes over time. To illustrate extreme price movements (charts 5 and 6), two baskets of goods were used, namely the basket of goods for the period from 2000 to 2005 and the reviewed basket of goods applicable from 2006 onward. The comparison is based on products and services contained in both baskets.

¹⁹ Surveys conducted by GfK Panelmarkt as well as Beisteiner and Schimak (2006) show, for example, that on average a new piece of electronic equipment (TV set, DVD recorder) is purchased only every six to seven years.

Chart 5



Source: OeNB, Statistics Austria, Austrian Federal Economic Chamber.

Table 5

Price Reductions in Clothing and Footwear since the Euro Cash Changeover

%	2006 HICP weight	Price change		
		2002 to 2006 per annum	2002 to 2006 cumulative	1997 to 2001 cumulative
Headline HICP	100.00	1.75	9.05	6.92
Clothing and footwear	5.69	-0.35	-1.74	-1.55
Clothing	4.59	-0.27	-1.33	-2.69
Clothing materials	0.02	-0.24	-1.21	-5.08
Garments	4.21	-0.28	-1.37	-3.58
Other articles of clothing and clothing accessories	0.22	-0.93	-4.57	1.74
Cleaning and repair of clothing	0.15	1.32	6.77	9.38
Footwear including repair	1.10	-0.71	-3.48	3.61

Source: Statistics Austria, OeNB.

of goods, such products represent expense items in household budgets and must therefore be factored proportionately into the weighting and regular price compilation.²⁰ Their share of total household outlays is – as illustrated in table 6 – quite small. Because individuals do not “offset” price rises against price falls in the same manner as official statistical measurements and because consumers attach more importance to price increases than to price reductions in products they do not purchase on a regular basis, the impression of upward price pressures prevails, although in actuality, the prices within the group of industrial goods (excluding energy) have hardly changed at all.

At this point, we will take a closer look at selected goods that displayed substantial price movements which were, however, less commonly noted than price changes in other products. The clothing and footwear market, for example, has been characterized by price falls that were stronger in the last five years than in the final five

years of the schilling era (table 5). This might be explained by the greater price transparency created by the euro, but also by the influx of cheap imports from China and Eastern Europe, as well as the intense competition within Austria.

The markets for electronic goods in the leisure and entertainment sector are characterized – as has already been mentioned – by a serious price slump. In almost all areas, price levels dropped by half within only a few years (table 6). This phenomenon must be taken into account when measuring prices. Given the fast-paced nature of this particular market, it is nearly impossible to accurately compare product prices over longer periods of time. Goods in this segment only remain on the market for a short period of time and, once sold out, are replaced by other products of better quality. To arrive at meaningful price comparisons, quality adjustments must be made to separate the change in a product’s price due to quality improvements from

²⁰ This means that the annual total for household expenditure on, say, TV sets as measured by consumer survey and cross-checked for plausibility against data provided by national accounts is averaged across all households to calculate the proportion of TV sets in the overall budget of all households. This figure represents the weight assigned to TV sets (0.16% since 2006) in the ongoing calculation of inflation.

Table 6

%	2006 HICP weight	Price change		
		2002 to 2006 per annum	2002 to 2006 cumulative	1997 to 2001 cumulative
Headline HICP	100.00	1.75	9.05	6.92
Audiovisual, photographic and data processing equipment	1.67	-9.36	-38.84	-22.59
Equipment for the reception, recording and reproduction of sound and pictures	0.52	-7.73	-33.12	-12.92
Photographic and cinematographic equipment and optical instruments	0.21	-11.10	-44.49	-31.01
Data processing equipment	0.49	-18.18	-63.32	-60.86
Recording media	0.42	-2.62	-12.44	-6.62
Repair of audiovisual, photographic and data processing equipment and accessories	0.05	1.42	7.33	15.90

Source: Statistics Austria, OeNB.

the change that truly represents inflation. If, however, prices and quality move in different directions, for example when price reductions go hand in hand with quality improvements (and vice versa), price movements, by convention, will be fully reflected in the index.

The consumer primarily focuses on the price of a product. Price changes attributable to improvements in quality – which are taken into account in the construction of price indices and, in some cases, may be associated with considerable inflation-dampening effects – go largely unregarded. Consequently, subjective price perceptions and price measurements diverge once more and interfere with the consumer's ability to correctly assess price movements.

4.3 Less Pronounced Rise in Food Prices since Euro Cash Changeover

The food sector, which is undoubtedly the most significant sector in terms of individual price perception, was observed very closely during and

after the euro cash changeover, both by consumers and public monitoring bodies, in an effort to prevent significant price increases. Nevertheless, the population had a strong feeling that “everything was getting more expensive” when purchasing their daily necessities. The following analysis shows that in this sector, special factors and supply shocks (see further below) were the most influential factors determining price level developments while the introduction of euro banknotes and coins only played a minor role.

Between 2002 and 2006, price increases in the food sector averaged 1.4% per year and thus remained below headline inflation. This is broadly in line with the price trend recorded for the period from 1997 to 2001, which leads to the conclusion that, on aggregate, a visible “euro effect” does not exist. Individual goods only experienced significant price hikes in some isolated instances, particularly for bread and cereal products (see box 2), but also for oils and fats. Fruit prices remained stable (table 7).²¹

²¹ This is partly attributable to the high initial price level in 2001, caused by harvest failures in Southern Europe, and also explains the drastic increase in fruit prices of almost 46% in the period from 1997 to 2001.

Table 7

Price Rises in the Food Sector since the Euro Cash Changeover

%	2006 HICP weight	Price change		
		2002 to 2006 per annum	2002 to 2006 cumulative	1997 to 2001 cumulative
Headline HICP	100.00	1.75	9.05	6.92
Food and nonalcoholic beverages	12.36	1.40	7.20	7.49
Food	11.05	1.44	7.41	8.46
Bread and cereals	2.18	2.07	10.79	7.92
Meat	2.82	1.33	6.84	6.70
Fish and seafood	0.34	1.28	6.57	15.34
Milk, cheese and eggs	1.83	1.35	6.93	4.32
Oils and fats	0.38	1.62	8.39	5.02
Fruit	0.93	0.08	0.38	45.84
Vegetables	1.19	1.40	7.20	2.56
Sugar, jam, honey, chocolates and confectionery	1.01	1.53	7.88	3.14
Food products n.e.c.	0.36	1.43	7.37	10.34
Nonalcoholic beverages	1.31	1.10	5.62	-0.73
Coffee, tea and cocoa	0.45	0.21	1.05	1.21
Mineral waters, soft drinks, fruit and vegetable juices	0.86	1.61	8.31	-1.90
Alcoholic beverages and tobacco	3.02	3.09	16.44	8.38
Alcoholic beverages	1.16	0.75	3.82	0.12
Spirits	0.14	1.12	5.72	2.77
Wine	0.50	0.52	2.62	-1.67
Beer	0.52	0.86	4.37	2.06
Tobacco	1.86	4.02	21.77	16.05

Source: Statistics Austria, OeNB.

Table 8

Changes in Meat Prices since the Euro Cash Changeover

Change in %	2001	2002	2003	2004	2005	2006	2001 to 2006
Beef, loin	0.6	1.9	4.5	1.1	5.1	1.5	15.7
Beef, hind shank	2.8	0.8	15.2	7.4	7.6	..	37.8 ¹
Beef, fore shank	2.2	2.2	1.4	3.1	3.5	..	13.0 ¹
Beef, sirloin	4.0	1.3	4.6	2.8	2.4	3.1	16.1
Veal cutlet	1.5	1.7	2.2	3.0	2.3	4.2	11.2
Belly	13.7	-3.3	-0.7	5.8	5.5	0.0	21.7
Pork neck	10.6	-0.2	-0.4	3.9	3.0	-0.4	17.7
Pork cutlet	11.1	-0.4	-1.2	3.1	3.8	-1.6	17.1
Loin	5.3	0.3	1.6	2.4	3.3	1.3	13.5
Roast chicken	6.1	0.9	0.3	3.0	1.9	-1.6	12.7
Turkey breast	5.2	0.4	0.3	0.8	0.2	-2.2	7.0
Chicken, frozen	5.0	0.9	2.8	6.1	-1.2	-0.5	14.1
Smoked meat	6.3	1.2	-0.4	0.5	2.5	-2.4	10.4
Bacon	9.3	0.0	2.7	3.4	2.2	1.3	18.6
Headline CPI	2.7	1.8	1.3	2.1	2.3	1.4	12.3

Source: Austrian Federal Economic Chamber, Statistics Austria.

¹ 2001 to 2005.

Rises in the cost of drinks were moderate. The strong surge in the price of tobacco products can be attributed to the numerous occasions in the past five years when the tobacco tax was increased.

The livestock epidemics that struck Europe in 2001 and early 2002 were another special factor that led to a slump in demand and price reductions, in particular for beef. As consumers switched to alternative prod-

Table 9

%	2006 HICP weight	Price change		
		2002 to 2006 per annum	2002 to 2006 cumulative	1997 to 2001 cumulative
Headline HICP	100.00	1.75	9.05	6.92
Services	47.33	2.50	13.16	6.03
Accommodation	8.84	3.77	20.31	13.01
Transport	6.65	1.96	10.18	13.76
Telecommunications	2.47	-3.26	-15.26	-8.80
Recreational and personal services	22.10	2.13	11.13	10.44
<i>Package holidays and accommodation</i>	6.93	1.48	7.63	13.44
<i>Other recreational services</i>	15.17	2.43	12.73	9.41
Education, tuition, health, social services	7.19	3.15	16.78	13.79
Other services ¹	7.28	2.27	11.85	43.19

Source: Statistics Austria, OeNB.

¹ Financial services, insurance premiums, funeral costs, cemetery fees, lawyers' charges, passport fees etc.

ucts, the prices of other meats increased strongly (table 8). This trend also affected secondary products such as sausage, milk and cheese, which showed above-average price increases in this period. After the livestock epidemic was successfully combated, beef prices went up in 2002 and 2003, while the price levels of pork and poultry remained largely constant. From 2004 onward, the upward trend in the prices of meat products accelerated markedly. With only a few exceptions, the prices of individual meat products increased more strongly (some significantly so) than those of the basket components overall. As consumers frequently purchase meat, this development reinforced the public's perception of higher inflation.

4.4 Services Driving up Prices?

Over the past five years, the increase in the prices for energy and services clearly exceeded that of headline inflation. While the surge in energy

prices may be explained by persistently tight crude oil markets, tax increases, the remnant effects of deregulation and considerable increases in the standing charges for gas and electricity meters,²² it is not immediately clear which factors stand behind the disproportionate price increases recorded in the service sector. This makes it even more difficult to pinpoint any potential euro-related price effects.

Between 2002 and 2006, prices in the service sector increased by 13% – more strongly than in the economy as a whole and about twice as much as between 1997 and 2001 (table 9). The following factors played a part:

- stronger price adjustments implemented or influenced by the government;
- continuing weak competitive position of various industries; and
- cost factors that may also be related to the introduction of euro banknotes and coins.

²² Between 2002 and 2006, these amount to +87% for the electricity metering service charge and +61% for the gas service charge.

4.4.1 Notable Increases in Fees and Charges

In recent years, pronounced price hikes have been recorded in the housing sector, transport, education, and in the health sector – areas where price changes are influenced to a greater or lesser degree by the government. In many cases, public rates, charges and fees were raised in an effort to finance the tight budgets of federal, regional and municipal authorities, and to improve cost efficiency measures implemented to maximize cost savings. Therefore, increases are not or only marginally associated with the introduction of the euro banknotes and coins (because new euro prices were set for these services as well). A considerable proportion of the rise in rent prices can be explained by increases in day-to-day running costs, such as fees for garbage collection, sewer and water services, which are levied by the municipalities.²³ Another noticeable change was the increase in the prices of parking labels, which was also implemented by the municipalities (see chart 6). Rises in charges for health-care (hospital system), childcare and nursery facilities, welfare and public transport services (rail travel, road tolls, etc.) or for publicly administered cultural facilities (higher entry prices for museums and exhibitions) all have a similar background. As far as health is concerned, higher charges for prescription medications and a reduction in the scope of medical services covered by public health insurance (e.g. dental services) placed a significant additional financial burden on households. Moreover, in October 2001, university tuition fees were in-

troduced in Austria, which raised the inflation rate for services in the schooling and education sector. The ranking of goods and services experiencing strong upward price movements between 2002 and 2006 therefore includes many services from the sectors mentioned above (chart 6).

4.4.2 Pronounced Increase in Cost of Private Services Along with Strong Decrease in Prices for Telecommunications Services

The sectors that experienced price surges of 20% to 30% since the euro cash changeover include mechanical and plumbing services, driving lessons, liability insurance and hair-dressing services (chart 6). In some of these sectors, competition can be expected to grow as a result of the EU Directive on Services. In the highly competitive building trade, on the other hand, the price rises on services either progressed in line with headline inflation (painting services) or even remained below it (bricklaying and masonry services).

Upward price trends were not characteristic of all services, however. One sector that had a continuing downward effect on inflation in recent years is the telecommunications industry (table 10). Since the deregulation of the market in 1997, prices almost universally trended down, with the smallest decreases being registered between 2002 and 2003, when the introduction of a new generation of mobile telephones put a temporary brake on the cycle of deterioration. In the last five years alone, the prices for telecommunications services fell by around 15%, which is nearly twice as much as in the comparable

²³ Moreover, the sampling basis for recording residential rents was reset in January 2004 (see Haschka, 2004). From mid-2004 to mid-2005, rental prices in Austria saw a particularly steep hike.

Cumulative Price Increases for Selected Goods and Services from 2002 to 2006



Source: OeNB, Statistics Austria, Austrian Federal Economic Chamber.

Table 10

Price Reductions in the Telecommunications Sector since the Euro Cash Changeover

%	2006 HICP weight	Price change		
		2002 to 2006 per annum	2002 to 2006 cumulative	1997 to 2001 cumulative
Headline HICP	100.00	1.75	9.05	6.92
Communications	2.47	-3.27	-15.33	-8.81
Telephone and telefax equipment, telephone and telefax services	2.29	-3.58	-16.64	-11.11
<i>Telephone and telefax equipment</i>	0.08	-15.31	-56.43	-59.49
<i>Telephone and telefax services</i>	2.21	-3.01	-14.15	-8.42
Postal services	0.18	2.16	11.27	24.41

Source: Statistics Austria, OeNB.

schilling period. For consumers, however, these decreases as depicted in the CPI are not immediately apparent.²⁴ The complex tariff structure of telecommunications services is difficult to grasp and therefore makes price comparisons more complicated, and the aggressive advertising strategies employed by the industry tempt many consumers into extensive use. Despite cheaper tariffs, the phone bill still runs higher in many cases, which means that declining telecom prices, notwithstanding their palpable impact on CPI inflation, are not or only peripherally perceived by individual households.

4.4.3 Above-Average Price Increases Throughout the Restaurant and Catering Sector

As with daily necessities, price increases in the hotel, hospitality and bar industry attract a high level of public notice. On average, 15%²⁵ of household outgoings are spent on goods and services from this sector,

which, in the opinion of most consumers, was affected by particularly strong upward price adjustments in the course of the euro cash changeover. Official price data substantiate this impression, as price increases were, at 2.4% per year, higher than in other areas of the economy, although not extremely so. The upward price trend was only slightly stronger than during the equivalent schilling period prior to the euro cash changeover (see table 11) and is, in part, attributable to higher energy costs and increasing rents for business premises, as well as one-off costs resulting from the introduction of the euro (e. g. new menus expressed in euro). However, a closer look at individual products and services reveals price increases that were two or three times higher than the overall CPI average. According to Statistics Austria (2007), for example, the price of a typical Austrian meal, the “Wiener Schnitzel,” rose by 11% since 2001, Wiener sausages cost 21% more, and

²⁴ In addition, it is also an extremely complex task to map the heterogeneous tariff structure for telecommunications services in a price index.

²⁵ The expenditure weights for the category of “restaurants and hotels” differ greatly between the national CPI (7.3%) and the HICP (14.7%) because the two indices employ different expenditure concepts. The CPI adheres to the resident concept (and includes all such spending by Austrian households), whereas the HICP applies the domestic concept (which also includes spending by foreign tourists visiting Austria).

Table 11

Price Rises in the Restaurant and Catering Sector since the Euro Cash Changeover

%	2006 HICP weight	Price change		
		2002 to 2006 per annum	2002 to 2006 cumulative	1997 to 2001 cumulative
Headline HICP	100.00	1.75	9.04	6.92
Restaurants and hotels	14.65	2.44	12.82	10.32
Catering services	10.44	2.29	12.01	9.36
Restaurants, cafés and the like	10.06	2.30	12.06	9.29
Canteens	0.38	2.33	12.23	10.78
Accommodation services	4.21	2.75	14.52	13.01

Source: Statistics Austria, OeNB.

for drinks purchased at a snack stand, consumers now pay 19% more. Between 2002 and 2006, the price for a glass of apple juice or a small glass of wine ordered in a restaurant increased by 17%, and the cost of mineral water went up by 16%, while the cumulative price increase for catering services as measured by the CPI only amounted to 9.3%. For these services, which frequently serve as price barometers for the general public, subjective perceptions and empirical facts were largely in line.

Price trends in the tourist industry were also affected by increasing demand (mostly for winter vacations and city breaks) and good capacity utilization, which may have contributed to the fact that, at 2.7% per year, prices in the accommodation sector increased slightly more substantially between 2002 and 2006 than in other areas of the tourist industry (table 11).

4.5 Above-Average Price Increases in Hairdressing and Restaurant Services throughout the Euro Area

The following section compares the price movements of several commonly purchased goods and services, which experienced sharp increases in Austria relative to other euro area

countries according to public perception and statistical measurements. Some non-euro area countries – Switzerland, Sweden and the United Kingdom – are also included in the comparison.

Movements in the prices of bread and cereal products, hair styling and beauty services as well as services rendered by hotels, cafés and restaurants are put in contrast with the general rate of inflation (table 12). This comparison reveals the following results:

In the period between 2002 and 2006, HICP inflation rates in the euro area were generally moderate and ranged between 1.1% per year (Finland) and 3.4% per year (Greece), with Austria ranking in third place. Compared to the period from 1997 to 2001, inflation rates – barring a few exceptions – thus tended to run slightly higher after the euro cash changeover, which is attributable to similar economic factors as those discussed above with respect to Austria (box 1).

Between 2002 and 2006, the prices for nearly all of the goods and services selected for this comparison accelerated more strongly – in some cases significantly so – than headline inflation across almost all euro area countries. The same holds true for

Table 12

Inflation Development in the Euro Area and Selected Non-Euro Area Countries

% per annum

	Headline HICP		Bread and cereal products		Hairdressing services		Restaurants, cafes etc.	
	2002 to 2006	1997 to 2001	2002 to 2006	1997 to 2001	2002 to 2006	1997 to 2001	2002 to 2006	1997 to 2001
Euro area	2.2	1.7	1.9	1.5	2.6	2.3	3.3	2.3
Austria	1.7	1.3	2.1	1.5	3.5	1.9	2.3	1.8
Belgium	2.0	1.7	3.0	1.8	3.2	2.0	3.0	1.8
Germany	1.6	1.2	1.0	0.9	1.2	2.2	1.4	1.3
Spain	3.3	2.4	3.9	1.7	4.1	2.7	4.6	3.5
Finland	1.1	1.9	1.1	1.4	3.0	2.4	2.0	2.4
France	2.1	1.2	1.6	1.8	2.3	1.5	2.9	1.7
Greece	3.4	3.7	3.7	3.5	6.2	7.2	4.2	6.0
Ireland	3.2	3.0	1.4	3.5	7.2	7.9	4.7	4.4
Italy	2.4	2.1	1.5	1.4	2.6	2.3	3.4	2.5
Luxembourg	2.9	1.9	2.9	2.0	3.1	1.9	3.4	2.1
Netherlands	2.1	2.6	0.6	1.8	3.8	3.5	3.0	3.3
Portugal	2.9	2.7	3.4	2.5	4.8	5.5	4.0	3.2
Switzerland	0.9	0.8	0.4	-1.1 ¹	1.5	1.4	1.4	1.3
Switzerland			1.5	0.8 ²				
Sweden	1.5	1.5	0.3	1.4	3.7	3.8	2.7	1.7
United Kingdom	1.7	1.3	1.4	0.1	4.6	5.4	3.0	3.3

Source: ECB, Eurostat, OeNB, Swiss Federal Statistical Office.

¹ Bread.

² Small breads and bakery products.

the equivalent pre-euro period from 1997 to 2001. This trend is most clearly visible in the prices for restaurant and café services (2.4% per year from 1997 to 2001; 3.3% per year from 2002 to 2006 throughout the euro area) and also, to a lesser extent, in the cost of bread products and hairdressing services.

By comparison with the euro area average, bread products saw striking price increases in Austria. This may partly be explained by the fact that, in contrast to other countries, the Austrian market offers a greater variety of bakery items and organic products. The same may also apply to Switzerland where small baked goods, unlike bread, posted above-average increases in price. The most sizeable upward price adjustments for bread products relative to headline inflation

were experienced in Belgium, while in some other euro area countries, most notably the Netherlands, price pressures remained quite moderate.

Hairdressing services in all countries (excepting Germany²⁶) saw price increases that not only considerably exceeded headline inflation, but also occurred over a much greater range (around 6 percentage points). Relative to overall inflation performance, Austria experienced a highly dynamic price development in this segment.

Prices in the hospitality and bar industry also (excepting Germany) advanced more sharply than the rest of the economy, with Austria, alongside Finland and Germany, recording the lowest increases. Across the euro area, the services provided by this industry posted average price adjustments of 3.3% per year, which is

²⁶ According to the German Federal Statistical Office and the German hair stylists' trade association (www.friseurhandwerk.de/daten-fakten_umsaetze_20_26.html), this might be the result of a sustained decline in sales figures from 2001 to 2005.

1 percentage point above the average inflation recorded for the economy as a whole.

Interestingly, with the exception of bread products, the price developments for the selected goods and services followed roughly the same course in both euro area and non-euro area countries. While price hikes for bread products remained significantly below the national headline inflation rate in Switzerland (bread only), Sweden and the United Kingdom, the two service components (hair salons and restaurants) posted considerable increases in price, which were in part even more pronounced than those recorded by some euro area countries.

Overall, it becomes evident that, since the euro cash changeover, noticeable price increases occurred in selected goods and services throughout the euro area. However, a comparison with non-euro area countries shows that they did not outpace the price developments experienced there, but, on the contrary, in some segments even rose at a more moderate rate than in non-euro area countries.

5 Conclusion: Perceived Inflation Must Be Brought Closer in Line with Price Developments

Between 2002 and 2006, the overall rate of inflation in Austria as measured by the HICP stood at an average of 1.7% per year – one of the lowest levels throughout the euro area. An examination of macroeconomic developments therefore does not provide evidence of significant price increases. Upon detailed analysis, however, it turns out that the prices of some frequently purchased goods and services, which have a strong signal-

ing effect on consumers' perception of price trends, showed above-average increases and therefore had a sustained impact on the population's subjective inflation perceptions. The measured price development of these products thus explains the widespread feeling that "the euro makes everything more expensive." Consumers' expectations that the euro would drive up prices, as well as the use of outdated schilling reference prices when assessing prices in euro, further fueled this perception. In contrast, the price-driving effect of a series of economic market factors (such as supply shocks in the food sector, energy price booms, tax increases, the lingering effects of deregulation, partially disproportionate hikes in the fees for public services, etc.) went largely unnoticed. Moreover, the above-average price adjustments experienced in some individual service sectors were predominantly caused by special factors and only in part by any effects resulting from the euro cash changeover. This contributed to the fact that the upward price pressures experienced throughout the entire service industry remained above those of the economy as a whole. The public's subjective perception of more pronounced price hikes occurring in individual segments, for example in hotel and catering services, can also be substantiated by empirical findings.

Although market forces boosted the rate of inflation, they also had a dampening effect on prices, particularly in industries characterized by strong competition. As a result, euro price levels in the clothing sector, but above all in the electronics and telecommunications sectors, fell clearly below the old schilling prices. This empirical fact, however, only plays a

subordinate role in shaping people's perception of inflation because consumers take much more note of price increases than price decreases.

It also must be noted that the indicators used to evaluate public price perceptions are based on survey results. Consequently, the respondents' level of knowledge is an additional factor that comes into play. Upon closer analysis, it becomes evident that the degree of knowledge about inflation correlates with the perception of inflation. Poorly informed people hold higher inflation perceptions, and the same holds true for consumers who are still having difficulties in getting a feel for the euro. Yet recent survey data also show that the perception of a high rate of inflation declines as people's perception of value improves.

How can this trend be supported in the future? To get a better feel for the euro, people must be encouraged to think and calculate in euro terms, even when making larger purchases. Referring to outdated schilling prices is of little practical benefit. The public must also be made more aware of

the fact that inflation is not primarily driven by the euro, but rather the global economic environment, changes in the marketplace, pricing mechanisms, supranational and national economic policy measures, and institutional changes.

It is therefore essential to raise the general level of knowledge about price developments, with particular emphasis on providing consumers with comprehensive information about price developments and the key factors that determine inflation, as well as the difference between perceived and officially measured inflation. As a result, perceived inflation and inflation measures should once again move broadly in line. This is of great importance for the monetary policy of the Eurosystem, which is firmly committed to the primary objective of price stability, as it will facilitate its task to anchor medium- and long-term inflation expectations at a level consistent with price stability (i.e. to maintain an inflation rate of close to but below 2% throughout the euro area).

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