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The OeNB's quarterly publication *Monetary Policy & the Economy* provides analyses of cyclical developments, macroeconomic forecasts, studies on central banking and economic policy topics as well as research findings from macroeconomic workshops and conferences organized by the OeNB.

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Opinions expressed by the authors of studies do not necessarily reflect the official viewpoint of the OeNB.

Analyses

Economic Momentum Slows in the Euro Area
Energy Price Developments Have a Negative Impact

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The U.S. economy continued to expand in the first half of 2005 despite the strong impact of a further rise in oil prices. However, according to OECD estimates, Hurricane Katrina will dampen economic growth by 0.5 percentage point to 3.1% for the whole year 2005. The Japanese economy remained on its growth path in the second quarter of 2005. The other Asian economies – especially dynamic China – also expanded further.

Conversely, GDP growth in the euro area slowed down in the second quarter of 2005. Hit by energy price increases, private consumption generated a marginally negative contribution to growth, while foreign trade and investment made only small positive contributions to growth. Whereas the leading indicators had sent out positive signals since May, these signals recently reversed, so that the outlook for the second half of 2005 deteriorated. Once again, energy price developments are the main culprit; they are also the reason for the persistently high level of inflation.

Growth in most of the Central European new Member States (NMS) as well as the EU candidate countries slowed in the first quarter of 2005 compared to the full year 2004. Only in Bulgaria and in the Czech Republic did GDP growth accelerate somewhat. In the second quarter of 2005, economic activity picked up in all Central European NMS save Slovakia, where it remained stable at a high level. After the upward pressure on prices experienced in 2004 – largely as a consequence of EU accession – 2005 is marked by positive base effects, which have helped slow down inflation in the NMS.

The Austrian economy, which had enjoyed robust export-driven growth in 2004, lost momentum in the first quarter of 2005 but regained speed in the second quarter. The OeNB's short-term economic indicator points to 1.8% real GDP growth for the full year 2005, which corresponds to a downward revision by 0.2 percentage point compared with the forecast that the OeNB published in June. Despite elevated energy prices, inflation has been going down in 2005 so far. The unemployment rate (Eurostat definition) augmented to 5.1% in July 2005 even though employment surged.

1 U.S. and Asian Growth Still Outpaces Euro Area Growth Substantially

1.1 U.S.A.: Hurricane Katrina Causes Temporary Dip in Growth

In the second quarter of 2005, real GDP widened by 3.3% on an annualized basis, following 3.8% growth in the first quarter. Second-quarter activity was propelled primarily by a 3.0% rise in consumption expenditure and a 13.2% jump in exports. Inventory changes, by contrast, dampened growth. Many companies' good quarterly results and the improvement on the labor market signal a pickup in investment and consumer spending. However, skyrocketing fossil fuel prices and the massive impact of Hurricane Katrina, in particular on oil and gas supply and on possible further price hikes thereof, have made it difficult to assess the further development of economic activity. Many experts feel that the hurricane will dent U.S. GDP growth in the second half of the year, but only temporarily, provided the oil price increases are also temporary. The healthy U.S. private real estate market has driven consumer spending so far, but the boom may be nearing its end, so that one of the main pillars of consumption may lose strength. According to OECD estimates, Hurricane Katrina will dampen real economic growth by 0.5 percentage point to 3.1% for the whole year 2005. The OECD expects the economy to expand by 3.4% in 2006; Consensus Forecasts pegs the figure at 3.3%.

The labor market situation brightened further in the U.S.A. in August: The jobless rate shrank further to 4.9% (high in June 2003: 6.3%); 169,000 new jobs (excluding agriculture) were created. All in all, 586,000 new jobs were established in June, July and August.

Consumer prices advanced by 3.2% in July 2005 year on year (highest cyclical rise: +3.5% in April 2005). The speedup in inflation can be pinpointed mostly to higher energy prices. The OECD sees inflation rising by 0.1 percentage point for the remainder of 2005 in the wake of Hurricane Katrina. Core inflation advanced by 2.1% in July, thus slightly exceeding the June reading (+2.0%) but remaining below the high for 2005 so far (February: +2.4%).

The Federal Open Market Committee (FOMC) hiked the official interest rate on August 9, 2005, by another 25 basis points to 3.5%. This increase represented the tenth successive key rate hike since mid-2004 and confirmed the U.S. Federal Reserve's repeatedly expressed intention of removing policy accommodation at a measured pace. The September FOMC meeting was scheduled for September 20, 2005.

The risks for the U.S. economy consist in high energy prices and economic imbalances, above all the high deficit of the external sector (current account deficit in 2005: around – 6% of GDP), elevated consumer debt and the low propensity to save. It is unlikely that these imbalances will be reduced in the near future, as the gap in growth between the U.S.A. and its trade partners will apparently remain for the time being.

1.2 Japanese Economic Growth Continues in the Second Quarter of 2005

Real GDP gained 0.8% quarter on quarter in the second quarter of 2005, marking the third consecutive quarter of growth. With wages having risen and the situation on the job market having improved, consumption expenditure went up by 0.6%. Japanese corporate investment enlarged by 3.6%, exports by 2.9%. Although industrial production dipped temporarily in July, it is expected to rebound. This supports the assessment that the lull in Japan's recovery has ended. High crude oil prices and uncertainty about the continuation of the market-oriented economic policy course after the parliamentary elections of September 11, 2005, represent downward risks to growth. The Japanese government and the Bank of Japan forecast a long-term upturn for the economy. The International Monetary Fund (IMF) considers structural reform is needed to raise productivity and announced that it would revise upward its growth forecast for 2005 and 2006 considerably. The OECD estimates economic growth to come to 1.8% in 2005. Nevertheless, core inflation has remained negative.

1.3 China's Global Importance Rises Steadily

China stayed on the fast-growth track onto which it had changed at the outset of the 1990s. Real GDP was lifted by 9.5% in the first half of 2005, unchanged from 2004. In 2005 as a whole, the growth rate is liable to be only marginally lower despite efforts to reduce the pace. In June, the People's Bank of China announced a careful flexibilization of the exchange rate regime. China follows a managed floating exchange rate regime oriented on a currency basket containing e.g. the U.S. dollar, the Japanese yen and the euro in unknown weights. At the same time, the renminbi-yuan was revalued by 2.1% from 8.28 to 8.11 against the U.S. currency. The revaluation and planned spending caps are supposed to help rein in growth to below 9% in 2006. China has posted low inflation in recent years, in fact deflation was prevalent for long time periods. Infla-

tion was reported at 1.8% in July 2005. The current account surplus for 2005 is likely to surpass the 2004 result of over 4% of GDP. Investment has gained great momentum. The investment ratio of 45% is unusually high in an international comparison, and although inward foreign direct investments represent only a small portion of this percentage, they nevertheless generate most of China's manufacturing exports. The export industry is focused on consumer goods; accordingly, Austrian imports from China consist predominantly of such products (e.g. consumer electronics, clothing, toys, bedding, lighting, and shoes and leather goods). Hence, China now competes with Austria's manufacturers for exports of such articles, as it does with countries with similar exports (e.g. Italy, Central and Eastern Europe).

2 Euro Area: Slowdown in Economic Momentum Continues

2.1 GDP Growth Slows in the Second Quarter of 2005

Eurostat's flash estimate of real GDP development in the euro area in the second quarter signals a renewed slight slowdown in growth. GDP edged up by 0.3% in real terms against the previous quarter; year-on-year growth came to 1.1%. This compares with a quarter-on-quarter advance of 0.4% in the first quarter of 2005.

Whereas consumer spending had still made a positive contribution to growth in the first quarter of 2005, it acted as a slight damper again in the second quarter. One of the key reasons is the further rise in energy prices, compounded by the ongoing unfavorable labor market situation and uncertainty about health care and pension reform. In this vein, consumer confidence as measured by the European

Commission has been below the long-term average since May 2005. Overall, households therefore consumed less and saved instead. Moreover, as confidence in the retail sector has been on the decline, consumer spending is unlikely to improve rapidly. The contribution of government consumption to growth diminished markedly, remaining positive, however.

The depreciation of the euro since the beginning of 2005 fed into export growth, which became positive again in the second quarter (+2.1% quarter on quarter). However, as imports advanced at the same pace, net exports contributed only very little to growth. By contrast, gross fixed capital formation again had a positive impact on growth following a negative contribution in the first quarter of 2005. It looks like companies reacted less sensitively to the rise in oil prices than households. While this may reflect the longer time lags of corporate investment decisions, very high demand growth allowed a number of particularly energy-intensive industries, such as aluminum or steel production, to pass the rising cost of inputs on to output prices. Moreover, years of wage moderation in Germany and other countries and the reduction in labor-related taxes have considerably dampened wage growth, giving enterprises more room to absorb rising energy costs through cuts in profit margins. Furthermore, European firms appear to benefit particularly strongly from the increase in demand for energy-saving technologies and alternative energy systems. Finally, European companies also have an advantage in attracting an above-average share of the rising demand from oil-producing countries. There is evidence that the rate at which oil revenue is recycled into the economy in the form of consumption demand has accelerated.

Chart 1

Contributions to Growth of the Components of Euro Area Real GDP

(quarter-on-quarter change)

percentage points; quarterly data

- Final consumption expenditure of households and nonprofit organizations
- Gross fixed capital formation
- Final consumption expenditure of government
- Net exports (goods and services)
- GDP
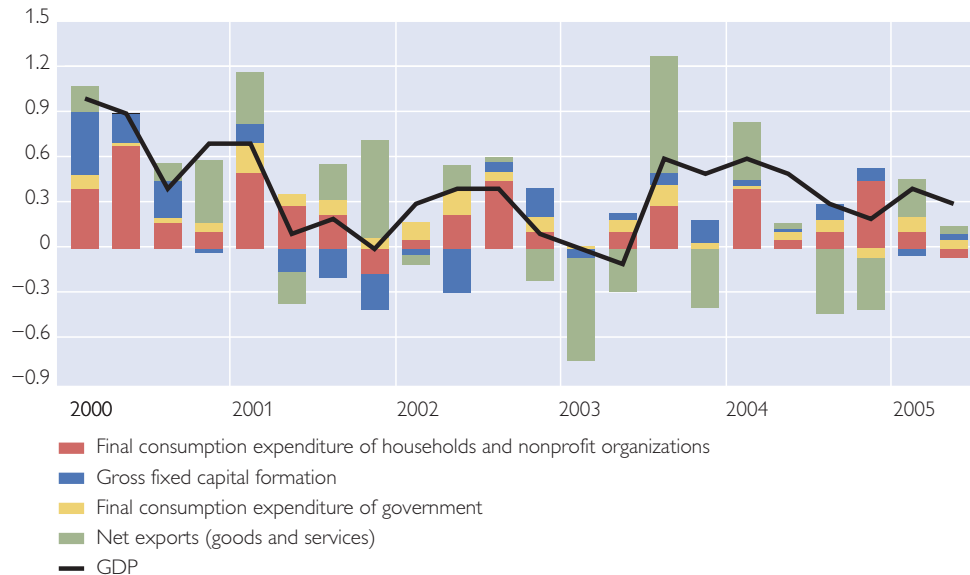
Source: Eurostat.

The reasons are the sharp rise in demographic growth in the oil-producing countries, higher per capita income there and the ensuing increase in demand for quality goods alongside large budget surpluses that enable these countries to implement infrastructure programs rapidly.

2.2 Economic Forecasts Signal only Moderate Acceleration of Growth

Since mid-2004 industrial output growth has displayed a steady but volatile downtrend. Most recently, this downtrend has been flattening noticeably. Furthermore, the leading indicators for industrial production signal that the downward trend may have come to an end: According to the European Commission Business Survey, industrial confidence has brightened since May; incoming orders in industry have also been trending upward again. The most recent confidence indicators of the European Commission, however, were slightly lower again.

While it is still too early to judge whether this result represents a correction of too strong a rise or a change in trend, it is reasonable to assume that the weaker indicator values have been caused largely by the development of energy prices. In this respect it should be added that the last surveys did not yet reflect the most recent highs. The latest figures of the Ifo business climate index were down again as well, with the deterioration attributable only to the worsening sentiment about the current business situation; expectations about future business developments continued to improve. To sum it up, the outlook for the second half of 2005 has deteriorated, above all hopes of a self-sustained upswing have been reduced.

The European Commission's short-term economic forecast for the euro area anticipates a quarterly growth rate of between 0.2% and 0.6% for the third quarter of 2005. Growth is expected to accelerate to between 0.4% and 0.8%

in the fourth quarter reflecting exchange rate developments and the improvement of the international environment. The projections of the ECB's economic experts published September 1, 2005, paint a somewhat more pessimistic picture than the Eurosystem projections of June 2005. Energy price developments and the weak first quarter are cited as the reasons. Current projections place growth in a range of 1.0% and 1.6% for 2005 and 1.3% and 2.3% for 2006. External factors with a positive effect are the increase in world economic growth and the improved price competitiveness of the euro area. Within the euro area, excellent financing conditions and healthy corporate profits support investment. The balance of risks with regard to oil price developments and their consequences for consumer confidence is on the downside.

Chart 2

Business Climate Indicators

Deviation from the mean value of the indicator relative to the standard deviation

- Euro area (industrial confidence, European Commission Business Survey)
- Germany (Ifo business climate index)
- Euro area (Purchasing Managers' Index; Reuters NTC)
- NBB/BNB indicator (Belgium/euro area)

Source: European Commission, Ifo, Reuters NTC, OeNB.
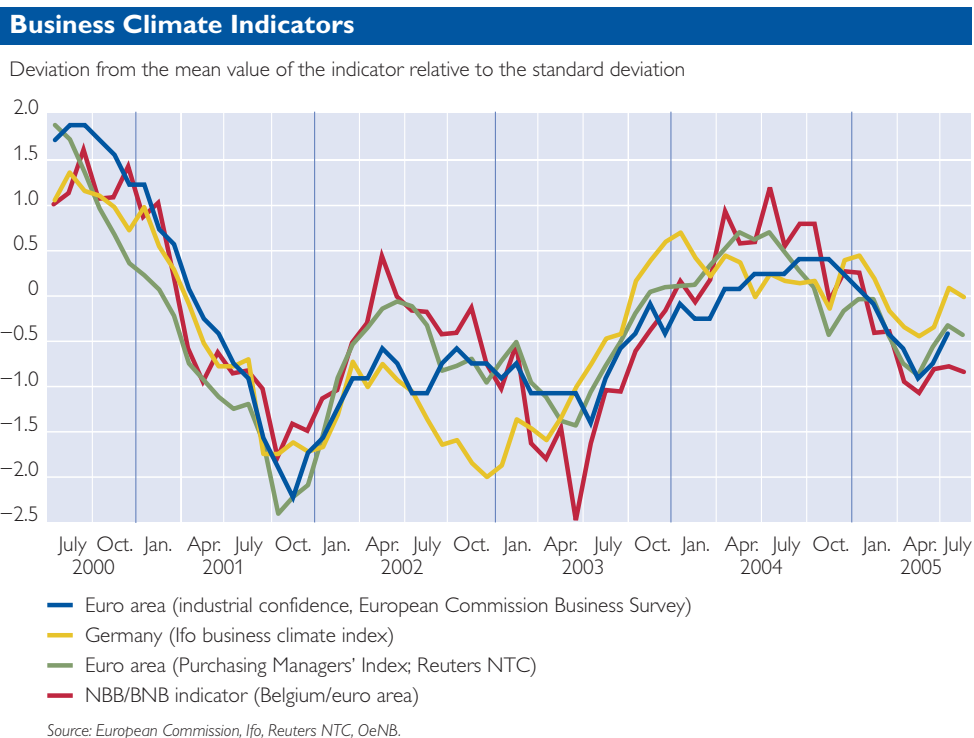
2.3 Signs of Labor Market Improvement Strengthen

After the seasonally adjusted unemployment rate in the euro area had persisted at 8.8% around the turn of 2004/05, it sank to 8.6% in two steps from April 2005. At this level, the jobless rate is 0.3 percentage point below the high of 2004, which supports the impression of a gradual recovery on the labor market. Until April, unemployment had risen, above all in Germany, partly because of labor market reforms that led to the reclassification of welfare recipients to the unemployed. Since May, German unemployment has been on the decline again. The number of job openings as a percentage of the total working population in the euro area went up again in the third and fourth quarters of 2004 after having contracted steadily since the beginning of 2001. The number of vacancies has also been augmenting in countries for which data for 2005 have become available. Em-

ployment went up by 0.1% quarter on quarter in the first three months of 2005; job growth was concentrated in the service sector.

2.4 Energy Prices Continue to Predominate Inflation Developments

The crude oil price stayed on an uptrend, reaching nominal highs of around USD 67 per barrel of Brent in August 2005. This represents a 75% rise from the beginning of 2005. Compounded by the depreciation of the euro, this translates into an oil price rise of about 80% in euro terms. There are many reasons for soaring oil prices, ranging from the hurricanes in the Atlantic and the Gulf of Mexico to political tension between the West and Iran, temporary production outages and transport failures in Iraq, strikes in Ecuador and oil stock developments. At the beginning of September, the U.S.A. requested that the International Energy Agency permit its mem-

ber countries to sell strategic oil reserves to alleviate bottlenecks in the wake of Hurricane Katrina. Several countries announced that they would market part of their emergency stock, which immediately elicited the hoped-for dampening of oil prices. OPEC countries are currently producing 30.3 million barrels a day, with reserve capacities at 2 million barrels a day. As production already exceeds the agreed quota of 28 million barrels, the discussion about a widening of quotas has been relegated to the background. By the end of 2006, OPEC members' crude production capacities are to be expanded by 10% to 33 million barrels a day and to 38 to 39 million barrels a day by 2009/10. By contrast, production growth is shrinking substantially in non-OPEC countries.

For months, the development of crude oil prices has been responsible for the faster rise in the Harmonised Index of Consumer Prices (HICP). From June through August 2005, the rate of

Chart 3

HICP Components: Contributions to Inflation

percentage points; monthly data
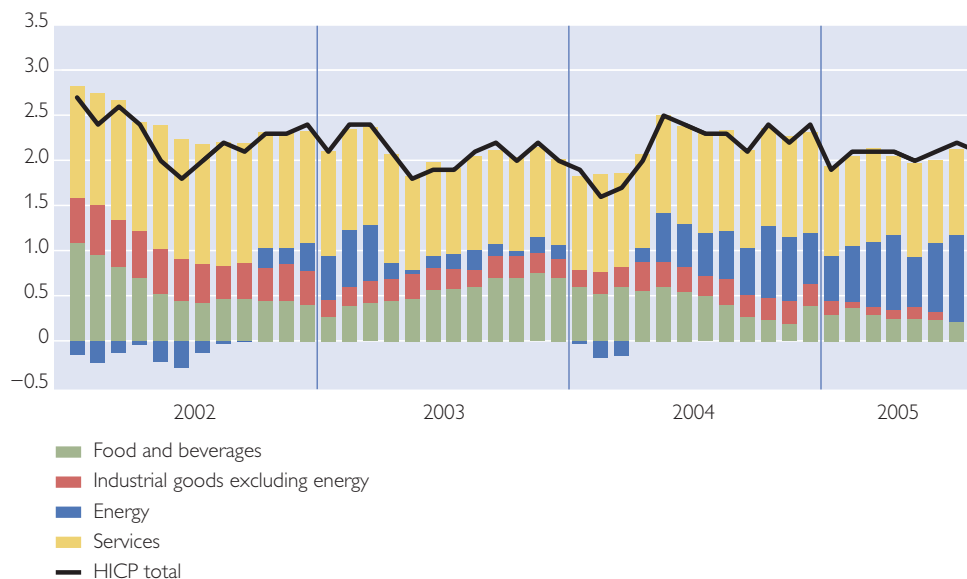
Source: Eurostat.

inflation came to between 2.1% and 2.2%. The energy price component rose by roughly 10%. By contrast, the price of unprocessed food merely edged up in the past few months, as did the price of industrial goods excluding energy. Core inflation (the rise in the HICP excluding energy and unprocessed food) has stood at about 1.5% since the beginning of 2005, roughly ½ percentage point below the average for 2004. The unwinding of the base effect of the health reform in several countries is mainly responsible for the decline at the turn of 2004/05. The development of prices for processed foods remains influenced by various base effects of past and recent tobacco tax hikes.

In the coming months, inflation should stagnate at the current level. Hence, the base effect of the oil price will remain the primary inflation driver; it was this effect that prompted ECB experts to revise upward their projections. Currently, inflation is forecast to average between 2.1% and 2.3% in 2005 and between 1.4% and 2.4% in 2006. In view of continued labor market tightness, wage settlements and thus domestic pressures on prices should remain moderate. Hence, the forecast risk can be pinpointed primarily to unexpected second-round effects of oil price developments and unanticipated fiscal policy measures.

2.5 Monetary Growth Accelerates Further

The three-month average of the annual growth rate of M3 has been on an uptrend since mid-2004. In the period from May to July 2005, M3 growth stood at 7.6%. The continuous acceleration of monetary growth stems from the sustained heavy demand for fairly liquid funds. This development may be traced to households' unbroken risk aversion, the flat structure of interest rates and the historically low level of interest rates. The strong demand for cash may be explained among other things by the higher demand from abroad for euro banknotes.

The upturn in total lending continued to show a positive trend. In particular, loans to the private sector have risen since mid-2003. Total lending growth stabilized due to the flagging expansion of lending to the public sector. The upturn in private sector lending is basically attributable to an increase in home loans owing to low long-term interest rates. By contrast, consumer loans advanced less dynamically.

2.6 The Effects of Hurricane Katrina Sap the U.S. Dollar's Strength

In the second quarter, the euro slipped against the U.S. currency, mainly because more powerful U.S. economic activity and the developments of interest rate differentials on the money market in an environment of heightened political uncertainty in the EU after the rejection of the EU Constitutional Treaty by referendum in France and the Netherlands. In June and July 2005, the USD/EUR exchange rate remained largely stable at low trading volumes; the announcement of Chinese exchange regime reform has no significant influence on this currency pair. From the beginning of August 2005, the euro started to gain strength despite the growing U.S. interest rate advantage. This uptrend was probably started by the publication of positive euro area economic data and was reinforced by the reports about the dramatic damage wreaked by Hurricane Katrina.

A spate of reports of more positive economic data from the end of June led

Chart 4

Interest Rate Developments in the Euro Area and in the U.S.A.

From January 1, 2003 to September 14, 2005

- Ten-year euro bonds
- Ten-year U.S. bonds
- Three-month euro interbank interest rates
- Three-month U.S. interbank interest rates

Source: Thomson Financial.

to a steeper interest rate structure on euro area money markets. Long-term interest rates in the euro area increased by 25 basis points to roughly 3.4% at the beginning of August 2005. Rises in nominal interest rates were triggered above all by higher real interest rates; inflation risk premia remained largely constant despite high oil prices. From mid-August, long-term interest rates reversed course; the interest curve flattened again as a consequence of unfavorable economic reports and especially of the development of oil prices. Long-term interest rates signal that money market players expect key interest rates in the euro area to remain unchanged.

3 Economic Performance in the Central European New Member States and in EU Candidate Countries

3.1 Economy Weakens in the First Quarter; Signs of a Revival of Activity in the Second Quarter

In the first quarter of 2005, year-on-year economic growth in the Central European New Member States (NMS) ranged from 2.1% (Poland) and 5.1% (Slovakia). This means that growth rates were perceptibly weaker than in 2004 as a whole. The candidate countries posted stronger growth at 6.0% (Bulgaria) and 5.9% (Romania) than the

Table 1

Real GDP Growth in Central and Eastern Europe

Year-on-year change in %

	2001	2002	2003	2004	Q4 04	Q1 05	Q2 05
Poland	1.0	1.4	3.8	5.4	4.0	2.1	2.8
Slovenia	2.7	3.3	2.5	4.6	4.3	2.6	5.2
Slovakia	3.8	4.6	4.5	5.5	5.8	5.1	5.1
Czech Republic	2.6	1.5	3.2	4.4	4.6	4.7	5.1
Hungary	3.8	3.5	2.9	4.2	4.1	2.9	4.1
Bulgaria	4.1	4.9	4.5	5.6	6.2	6.0	..
Croatia	4.4	5.2	4.3	3.8	3.6	1.8	..
Romania	5.6	5.1	5.3	8.4	9.7	5.9	..

Source: Eurostat, national statistical institutes, wiiw.

NMS. However, Croatia (1.8%) lagged far behind the other candidate countries.

Among the Central and Eastern European countries (CEECs), first-quarter growth slowed most by comparison to whole-year 2004 growth in Poland (–3.3 percentage points), Slovenia (–2.0 percentage points), Croatia (–2.0 percentage points) and Romania (–2.5 percentage points). Growth accelerated marginally only in the Czech Republic and in Bulgaria.

In most CEECs, consumption expenditure diminished in the first quarter of 2005 by comparison to the previous year. The decline was most pronounced in Poland (–1.7 percentage points to 1.7%) and Croatia (–1.5 percentage points to 2.4%) and can be attributed to low (or decreasing) real wage growth in the economy as a whole in the second half of 2004 and at the beginning of 2005. Indeed, the rise in inflation which had been triggered in 2004 by the impact of EU accession and the oil price rise was not or only marginally reflected by additional nominal wage rises. By contrast, Slovakia, Bulgaria and Romania reported higher consumption expenditure growth in the first quarter of 2005 than in 2004, with growth especially strong in Slovakia and Bulgaria. Romania topped the list, with consumption expenditure growth in the double digits once again (12.5%). In these countries, real wage increases had speeded up noticeably already at the end of 2004. Moreover, at the beginning of 2005 private-sector disposable income surged in Romania as a result of the introduction of a uniform corporate and income tax rate of 16%, far lower than the rates it replaced.

Gross fixed capital formation growth slackened in all CEECs except Slovakia, in some countries quite substantially. In Slovenia, the rate of increase dropped by 7.3 percentage points to –0.5%; it fell by more than 4 percentage points in Croatia (to 0.3%) and Romania (to 5.5%). Gross fixed capital formation lost momentum in these countries as a result of slower consumer spending and foreign demand growth. In Slovakia, the rise in gross fixed capital formation accelerated by 2.8 percentage points to 5.8%; GDP growth decreased despite higher domestic demand because inventory changes made a smaller contribution to GDP growth.

The interplay of weakening domestic demand and diminishing export growth on account of more tepid euro area growth and a perceptible appreciation in some countries resulted in a faster slowdown of import growth than of export growth. Hence, the contribution of net exports to GDP growth improved in most of the reviewed countries. In the Czech Republic, the growth contribution widened from just 0.4 percentage point in 2004 as a whole to nearly 6 percentage points in the first quarter of 2005, offsetting the slump in domestic demand growth and preventing GDP growth from declining. However, all three EU candidate countries posted negative growth contributions of net exports, with a rising trend. In Romania, the negative contribution enlarged from –2.8 percentage points in 2004 to –8.5 percentage points in the first quarter of 2005; in Bulgaria and Croatia, the figures deteriorated somewhat to –5.4 and –0.8 percentage points, respectively.

A look at the region's trade balances shows that in the first quarter of 2005, Bulgaria, Croatia and Romania recorded the highest deficits at –14.7%, –23.5% and –7.8% of GDP, respectively. The Czech Republic was the only country to achieve a surplus

(+2.8% of GDP). The current account shortfall in Croatia (19.8% of GDP) and Romania (6.4% of GDP) was lower than the trade deficit, as other subbalances posted surpluses. In Bulgaria and the Czech Republic, however, the negative income subaccount in particular worsened the current account balance to –15.9% of GDP and 0.2% of GDP, respectively.

The first second-quarter economic growth figures for the NMS covered in this section have become available. They show that except in Slovakia, annual GDP growth was markedly stronger in the second quarter than in the first quarter of 2005. Poland registered 2.8%, Slovenia 5.2%, the Czech Republic 5.1% and Hungary 4.1% growth. The stepped-up momentum can be traced to higher export growth coupled with low import growth in Poland, Slovenia and Hungary and to the more rapid drop in import growth than in export growth in the Czech Republic. In all four countries, lower import growth was attributable to shrinking domestic demand (in Slovenia, stagnating domestic demand). The (higher) GDP growth in these countries therefore was fueled exclusively by the (higher) contribution of net exports. Slovakia posted unchanged annual GDP growth on the previous quarter, with export growth losing pace and gross fixed capital formation growth surging. Second-quarter GDP data for the candidate countries have not yet become available, but Romania is likely to post a much smaller quarterly year-on-year growth following the flood disaster of early summer.

3.2 Inflation Eases Markedly in the First Half of 2005

In most CEECs, inflation flagged in the first quarter of 2005 by comparison to the previous year. Except in Hungary, the rise in the HICP in the NMS covered in this report continued to lose pace in the second quarter of 2005, amounting to between 1.2% and 3.6% year on year. Accession-related factors propelling inflation in 2004, such as tax increases, caused a positive base effect in 2005 and thus a decline in price increases, as no significant second-round effects occurred. Moreover, despite the upward pressure of international energy price developments, stronger currencies, falling unit labor costs in industry and dampened inflation expectations bolstered the disinflation process.

Table 2

Inflation Developments in Central and Eastern Europe

Year-on-year change of the HICP in %

	2000	2001	2002	2003	2004	Q1 05	Q2 05
Poland	10.1	5.3	1.9	0.7	3.6	3.6	2.2
Slovenia	8.9	8.6	7.5	5.7	3.6	2.8	2.2
Slovakia	12.2	7.2	3.5	8.5	7.4	2.6	2.4
Czech Republic	3.9	4.5	1.4	−0.1	2.6	1.4	1.2
Hungary	10.0	9.1	5.2	4.7	6.8	3.5	3.6
Bulgaria	10.3	7.4	5.8	2.3	6.1	3.8	4.9
Croatia[1]	6.4	5.0	1.7	1.8	2.1	3.1	3.1
Romania	45.7	34.5	22.5	15.3	11.9	8.9	9.9

Source: Eurostat, national statistical institutes, wiiw.

[1] CPI.

3.3 Slovak and Romanian Ratings Improve in 2005

Standard & Poor's as well as Moody's again gave Slovenia the top rating (AA–/Aa3) for long-term foreign currency debt among all countries covered in this section. Both agencies rank the Czech Republic and Hungary second (A–/A1). Standard & Poor's rates Slovakia the same as the Czech Republic and Hungary; Moody's sees it in third place, alongside Poland, ever since it was upgraded in January 2005. Both agencies rate Croatia (BBB/ Baa3) right behind the NMS and before Bulgaria and Romania (both BBB–/ Ba1). Moody's upgraded Romania in March 2005; Standard & Poor's followed with an upgrade in September.

Table 3

Rating for Long-Term Foreign Currency Debt

Currency	Moody's			Standard & Poor's		
	former rating	latest change	current rating	former rating	latest change	current rating
PLN	Baa1	12.11.02	A2	BBB	15.05.00	BBB+
SIT	A2	12.11.02	Aa3	A+	13.05.04	AA–
SKK	A3	12.01.05	A2	BBB+	13.12.04	A–
CZK	Baa1	12.11.02	A1	A	05.11.98	A–
HUF	A3	12.11.02	A1	BBB+	19.12.00	A–
BGN	Ba2	17.11.04	Ba1	BB+	24.06.04	BBB–
HRK	..	27.01.97	Baa3	BBB–	22.12.04	BBB
ROL	Ba3	02.03.05	Ba1	BB+	06.09.05	BBB–

Source: Bloomberg.

Economic Outlook for Central and Eastern European Countries

The OeNB compiles on a biannual basis forecasts of economic developments in Poland, Hungary, the Czech Republic as well as Russia. The above-mentioned three new EU countries together account for more than 75% of the GDP of the ten new EU Member States and are thus representative of trends in this region of the EU.[1]

In the three NMS covered here, whole-year GDP growth in 2005 is expected to be virtually unchanged, perhaps a bit higher than in 2004 in the Czech Republic, somewhat weaker in Hungary and noticeably weaker in Poland. The renewed uptick in international energy prices since the second quarter of 2005 and their persistence at a fairly high level is liable to rein in consumer spending growth in the third and fourth quarters. However, it appears unlikely for inventories in Hungary to be drawn down much more than in the second half of 2004 in the remainder of 2005. As the negative contribution to GDP growth of inventories shrinks, GDP growth should gain pace in the second half of 2005. In Poland, too, GDP growth, which starts from relatively low level, should be much stronger in the rest of 2005 than in the second quarter. Arguments which support this assumption are the further pickup in gross fixed capital formation (high corporate profits along with dropping unit labor costs in manufacturing, transfers from EU structural funds) and the moderate improvement on the labor market (rising employment). The rapid formation of a consolidation-oriented government after parliamentary elections at the end of September 2005 would probably further support investment both in the remainder of 2005 and in the coming year. At the same time, the accelerating growth of gross fixed capital formation, which tends to be import-intensive, is likely to marginally reduce the contribution of net exports to growth.

Robust export growth is anticipated for 2006, provided euro area growth quickens as expected. This would also add to gross fixed capital formation and its positive repercussions for the labor market and consumer spending. This development will be accompanied by a parallel rise in import growth, leading to a more balanced structure of growth. In Poland, consumer spending will be reinforced by a hike in social transfers because of the surpassing of an indexation threshold. However, possible additional consolidation

measures of the new government could act as a damper. Both in Hungary and in the Czech Republic, parliamentary elections in 2006 may provide growth impulses in the form of tax cuts or additional public expenditure, or of wage increases.

The risks to the forecasts for these three NMS include the marked deviation of euro area growth and oil prices from expectations and stronger exchange rate fluctuations, which would detract from the additional demand effects expected to emanate from the widely anticipated acceleration of euro area growth.

In Russia, economic growth lost momentum in the first half, declining to 5.6% year on year according to estimates of the economics ministry compared to 7.2% annual growth in 2004. This slowdown may be pinpointed to sagging gross fixed capital investment and consumer spending growth as well as a sharp decline in real export growth. However, with import growth also weakening in turn, the contribution of net exports to GDP growth was no more negative than in 2004 as a whole. The deceleration of growth despite high energy prices is attributable above all to the deterioration of the investment climate in the wake of the Yukos affair, to persistent intervention by the tax and judicial authorities and the drastic tightening of the tax regime for the energy sector. While economic activity appears to have gained some momentum in the summer of 2005 on the back of record-level oil prices, whole-year growth in 2005 and 2006 is nevertheless expected to slide. Capital formation may recover, but consumer spending is expected to slacken further from its current robust level. On the other hand, the upcoming elections may induce moderate fiscal easing in 2006 (reduction of the budget surplus). Major efforts to restart bogged-down structural and institutional reform are not in the cards in 2005 and 2006.

Russia's persistently high inflation differential with the rest of the world and nominal upward pressure will most likely result in the ruble's continued appreciation. Around mid-2005, the real effective exchange rate of the ruble reattained the level it had stood at immediately prior to the severe economic and financial crisis of 1998. The upshot is that the import pull caused by burgeoning domestic demand will be compounded by the growing competition of cheaper goods from abroad; this will further reduce net exports.

The Russian economy's even greater dependency on sources of energy in the last few years remains a key risk factor for both growth and this forecast. Furthermore, there is the risk that the ruble will appreciate excessively and rapidly in real terms, which would adversely affect the competitiveness of industrial goods. Finally, it is also difficult to currently assess the macroeconomic consequences of the continuing uncertainty about the course of reform and the respect for property rights by the authorities.

Three New Member States and Russia: Forecast of September 2005

Year-on-year change at constant prices in %

GDP	2001	2002	2003	2004	2005[1]	2006[1]
Poland	1.0	1.4	3.8	5.4	3.8	4.3
Czech Republic	2.6	1.5	3.2	4.4	4.7	4.6
Hungary	3.8	3.5	2.9	4.2	3.9	4.3
Russia	5.1	4.7	7.3	7.2	6.0	5.8

Source: Eurostat, national statistical institutes, OeNB.
[1] Forecast.

[1] *These forecasts (Russia's, in particular, is compiled in collaboration with Suomen Pankki, Finland's central bank) are based on preliminary global growth projections and technical assumptions about oil prices and USD/EUR exchange rates, which are prepared by the ECB for the Eurosystem by means of broad macroeconomic projection exercises. These assumptions are central to the current outlook owing to two factors: first, the sizeable export links of these three new EU countries with the euro area and, second, the fact that Russia is one of the world's biggest oil-producing nations.*

4 Austria: Exports Sustain Growth – Domestic Activity Remains Subdued

4.1 Growth in 2004 Robust on the Back of Healthy Exports; Weakening in the First Half of 2005

Healthy exports brought real GDP growth to 2.4% in Austria in 2004, which surpassed the euro area average of 1.8%. The torrid pace of world economic growth in 2004 boosted Austrian exports. However, export growth peaked in the first half of 2004 – from the second half of the year, export activity began to slow down, a trend which continued throughout the first quarter of 2005. In the second quarter, exports recovered again, with goods exports developing especially dynamically.

Domestic activity did not provide any significant impulses, though. Consumer confidence is marked by growing uncertainty caused by social reforms already implemented and in

the pipeline and the fear of job losses. Uncertainty has also prompted consumers to save more. The development is clearly reflected in the European Commission's survey of consumer confidence, which has stagnated at a below-average level since its sharp decline at the beginning of 2003. Figures for the saving rate in 2004 have not yet become available, but the rise of net financial investment as shown by financial accounts data by 4.8% in 2004 indicates an increase in the saving rate, a trend which is likely to have continued throughout the first half of 2005. Sluggish imports since the start of 2005 aptly mirror weak domestic activity.

Consumer spending has been on the decline since 2003. Despite impulses emanating from the second stage of Austria's tax reform, consumer spending did not gain momentum in the first half of 2005, either. The quickening of inflation as a result of rising oil prices noticeably dampened households' purchasing power.

Table 4

National Accounts Figures for Austria (in Real Terms)

	2003	2004	Q1 05	Q2 05
	Year-on-year change in % (not seasonally adjusted)		Quarter-on-quarter change in % (seasonally adjusted)	
GDP	1.4	2.4	0.1	0.4
Consumer spending	1.7	0.7	0.2	0.1
Public spending	1.7	1.0	0.3	0.3
Gross fixed capital formation	6.1	0.6	−1.1	−0.9
Exports	2.3	9.0	0.2	1.1
Imports	5.6	6.2	−0.3	0.3

Source: 2003, 2004: Statistics Austria (published July 2005);
2005: WIFO (quarterly annual accounts data).

In 2003, the investment backlog stemming from declining investment activity in 2001 and 2002 and temporary investment subsidy fueled power-

ful gross fixed capital formation growth. In 2004, investment stagnated at the year-earlier level.[1] The drop in investment observed in the first half

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[1]   However, the gross fixed capital formation growth figure for 2004 is surrounded by considerable uncertainty. According to the estimate WIFO made in the quarterly national accounts release of June 2005, growth came to 3.6%. The results of WIFO's investment survey of the spring of 2005 also point toward stepped-up growth. Moreover, imports of machinery and transport equipment, a key capital goods category, jumped in 2004 (+15.8% in nominal terms) but has been on the decline since January 2005 (January to June 2005: −4.5% year on year).

of 2005 may be attributed to the un-winding of the investment subsidy at the end of 2004. The subsidy is likely to have motivated above all the manu-facturing industry to frontload invest-ment.

Data Revision Markedly Changes Assessment of Economic Activity

In July 2005, Statistics Austria published first annual data for 2004 and the revision of 2003 data. These newly released data represent a major revision of the preliminary data. Whereas the initial data had indicated a slump in growth from 2001 to 2003 with a slight recovery in 2002, the data released in July indicate that growth was actually quite strong at +1.4% in 2003 (as compared to the obsolete value of +0.8%). Accordingly, the period of sluggishness was shorter and less pronounced than previously assumed.

Revisions of the National Accounts Figures for Austria

Year-on-year change in %

	2003			2004		
	July 05	Oct. 04	Revision	July 05	June 05[1]	Revision
BIP	1.4	0.8	0.6	2.4	2.2	0.2
Consumer spending	1.7	0.6	1.1	0.7	1.5	−0.7
Public spending	6.1	6.2	−0.1	0.6	3.6	−2.9
Gross fixed capital formation	1.7	0.4	1.3	1.0	1.1	−0.1
	2.3	1.4	0.9	9.0	8.9	0.1
Imports	5.6	4.8	0.8	6.2	6.4	−0.2

Source: Statistics Austria.
[1]) WIFO (quarterly national accounts data).

Turning to the demand components, the revision showed important changes only for consumer spending and investment. While it had been assumed that the weakness of consumption expenditure displayed from 2001 to 2003 had been overcome in 2004; the revised figures show that Austrians stepped up spending fairly strongly in 2003, but saved more in 2004. Moreover, investment activity stagnated in 2004. Hence, domestic demand rose at a much weaker rate in 2004 than previously supposed.

4.2 Export-Led Growth to Continue in the Second Half

The lull in growth in the first quarter of 2005 resulted both from the stagnation of exports and from the weakness of domestic demand. The strengthening of activity in the second quarter, which drew on more dynamic export activity, should continue throughout the second half of 2005. Exports will continue as the mainstay of growth; domestic activity is expected to be subdued.

Investment fell in the first half because companies had invested heavily in 2004 to take advantage of the temporary investment subsidy before it ended; it is expected to rise again in the second half, but the available indicators signal that the rise will be meager. This is also what the WIFO invest-ment survey of the spring of 2005 indicates. The surveyed manufacturing companies expect nominal investment to stagnate in 2005; marginal increases in construction investment are expected. Only the surveyed power, transport and other utility companies plan to hike investment substantially. New capital goods orders as compiled by Statistics Austria plummeted during the first half of 2005. WIFO's business cycle survey of August 2005 confirms this trend. The surveys indicate that manufacturing companies have seen their orders books deteriorating continuously since the second half of 2004. The assessment of current business conditions has also become increasingly gloomy.

Construction investment, which had been picking up since mid-2004, lost momentum at the end of 2004 and stagnated in the first half of 2005. This decline reflects the unfavorable weather conditions during the first quarter of 2005. The measures to stimulate growth passed at the beginning of May 2005 hold out hope of positive impulses, especially for rail and road construction. The short-term outlook for consumer spending is not very rose, considering the sharp rise in oil prices and low consumer confidence. Both sagging consumer confidence and persistently low retail confidence signal an unchanged consumer spending growth trend.

Results of the OeNB Short-Term Indicator of October 2005:

OeNB expects 1.8% growth for the whole of 2005[1]

The OeNB expects the pace of GDP growth observed in the second quarter of 2005 to be sustained throughout the second half of 2005. The OeNB's short-term indicator forecasts 0.4% seasonally adjusted growth in Austria's real GDP for the third and 0.5% for the fourth quarter of 2005 (each compared with the previous quarter). For full-year 2005, growth thus comes to 1.8%. This represents a decline by 0.2 percentage point compared to the June forecast of the OeNB.

Short-Term Outlook for Austrian Real GDP

for the Third and Fourth Quarters of 2005 (Seasonally Adjusted)

2003				2004				2005			
Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Quarterly year-on-year change in %											
1.3	1.3	1.4	1.5	1.5	2.2	2.9	2.9	2.4	1.8	**1.4**	**1.5**
Quarter-on-quarter change in %											
0.7	0.3	0.1	0.4	0.7	1.0	0.9	0.4	0.1	0.4	**0.4**	**0.5**
Year-on-year change in %											
1.4				2.4				1.8			

Source: OeNB.

[1] *Since the first quarter of 2003, the short-term indicator of the OeNB has been published four times a year. It forecasts real GDP growth for the current quarter and the next (in each case, on a quarterly basis, using seasonally adjusted data). The figures are based on the results of two econometric models: a stochastic state space model and a dynamic factor model. Further details on the models employed can be found at www.oenb.at in the Monetary Policy and Economics section. The next publication is scheduled for January 2006.*

The course of oil prices is crucial for the further development of the economy. The current oil price high is the result of a combination of supply and demand factors. With demand powerful, even small uncertainties about production capacities suffice to drive up prices. Apart from immediate demand, the demand scenario is affected by speculative purchases.

4.3 Rate of Inflation Declines in the Course of 2005 despite High Energy Prices

Inflation has slowed down noticeably in the course of 2005. August 2005 marked the lowest rate of increase – 1.9% – in the Harmonised Index of Consumer Prices (HICP) so far in 2005. In the first quarter of 2005, the rate of price increase had still averaged

2.4%. The drop in inflation can be attributed to the development of unprocessed food prices. Low and falling core inflation (rise in the HICP excluding energy and unprocessed foods) of 1.4% most recently in July above all reflects the decline in prices of industrial goods excluding energy. The cost of energy and housing is currently exerting the biggest upward pressure on prices. As before, no price pressure is forthcoming from wages. Negotiated standard wages advanced by 2.2% in the first eight months of 2005 and thus by the same rate as the HICP in the same period. Measured in terms of the national CPI (+2.5%), employees in fact suffered a real wage loss.

4.4 Unemployment Continues to Rise

Conditions on the Austrian labor market have been driven by the concurrent rise in employment and unemployment for some time now. In more detail, payroll employment widened by 1.1% year on year from January through August 2005 despite the weak cyclical conditions. An increase of this size was last registered during the boom year 2000. The reason is probably the delayed effect of the fairly robust economic growth of the second half of 2004. It must be said, however, that a large share of theses 35,000 new jobs are part-time jobs, which is corroborated by the perceptible rise in employment among women. In spite of this solid employment growth, joblessness, which had come to a temporary halt in the second half of 2004, expanded further. In September 2005, 11,800 persons were registered unemployed, a rise by 5.7% year on year that brought unemployment (Eurostat definition) to 5.2%.

Revision of the Austrian Rate of Unemployment

Eurostat has revised the values of the harmonized unemployment rate for Austria upward from January 2004. For example, the value for June 2005 was revised upward from 4.6% to 5.1%. This puts Austria on fifth place in the EU, behind Ireland (4.3%), the United Kingdom (4.7%), Denmark and the Netherlands (both 4.8%). Still, Austria's jobless rate is well below the EU average of 8.8%. The reason for the revision is that Statistics Austria introduced a new continuous labor force survey concept with regular household surveys in January 2004. The new method is better suited to capturing seasonal fluctuations of employment and unemployment.

The surge in unemployment has its origins in the sharp rise in labor supply. Burgeoning labor supply is largely caused by the pension reforms of 2000 and 2003, which lifted the minimum retirement age, and the increase in the employment of foreigners.

Perceived Inflation in Austria –
Extent, Explanations, Effects

Manfred Fluch,
Helmut Stix[1]

In the euro area countries, the euro cash changeover was accompanied by the development of a significant gap between actual inflation – as measured by the Harmonised Index of Consumer Prices (HICP) – and the inflation perceived by the general public; in Austria, this difference was temporarily up to 1.9 percentage points.

The present study shows that the difference in question can in part be attributed to the fact that people's perception of inflation seems to be based mainly on the prices of goods they buy frequently, whereas official price indices also take into account goods that are purchased less often. According to recent hypotheses on perceived inflation (Brachinger, 2005a), the public furthermore perceives price increases more strongly than price reductions. Since the prices of frequently bought goods rose faster after the cash changeover than those of rarely purchased goods, and a higher (unweighted) share of goods became more expensive, people may have perceived the general price rise to have been more pronounced than it actually was. This perception seems to have been reinforced by the fact that consumers expected prices to rise as a result of the euro cash changeover and that they used outdated schilling reference prices when assessing prices in euro. Moreover, the initial lack of psychological prices may have made it more difficult for consumers to become used to prices in euro.

Perceived inflation proved to be unexpectedly persistent: It was not until the beginning of 2005 that the gap between perceived inflation and actual inflation was more or less closed. Since then, the close link between actual and perceived inflation that was prevalent before the euro cash changeover seems to have gradually resurfaced. The fact that the above-mentioned gap opened up again in the middle of 2005 can probably be explained by the sharp increase in oil prices.

1 Introduction

As in many other euro area countries, the euro cash changeover in Austria was accompanied by considerable complaints about – what was perceived to be – marked price increases. However, HICP inflation, which was 1.8% in 2002 and 1.3% in 2003, points to only modest price developments. Obviously, the euro cash changeover caused a divergence between perceived inflation and actual inflation.

The present study deals with this divergence and analyzes it from various perspectives, focusing on the following questions: What is the degree of inflation perceived by the general public? In this context, we discuss an index of perceived inflation, inflation estimates taken directly from public surveys, and the development of various price indices over time. At the same time, we examine the degree of perceived inflation in Austria in an international con-

text. Another interesting question is how perceived inflation has developed over time: Three and a half years after the introduction of euro cash, is perceived inflation still high or has it begun to approach the statistically measured inflation rate again?

Given that perceived inflation did not correspond to actual inflation, one must ask what caused this divergence. There is scientific evidence that the price changes perceived by consumers differ from those recorded by official inflation statistics. In the case of the euro cash changeover, this discrepancy may have been reinforced by special factors, such as the initial lack of a good feel for the euro's value and consumers' expectation that prices would increase. We discuss these factors, supporting our argumentation with empirical results from Austria. The latter are based on prices of individual items recorded by Statistics Aus-

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tria and on survey data derived from the monthly *Consumer Confidence Barometer* of the European Commission and a survey on perceived inflation involving 2,000 Austrian citizens, which was carried out on behalf of the OeNB in the summer of 2004 (FESSEL-GfK, 2004). The data collected by FESSEL-GfK in particular facilitates a detailed analysis of the extent to which Austrians perceived price rises in the course of the cash changeover and of the factors which influence the subjective perception of inflation.

In a further section, the effects on monetary policy are evaluated, particular emphasis being placed on the im-pact of perceived inflation on inflation expectations. Furthermore, we examine the degree of public confidence in different price measures.

The idea that the euro cash change-over caused general price increases is still widespread among the public. In this context, we would like to point out that it is not the aim of this study to disprove consumers' perception of inflation – in a sense, subjective perceptions are always "right." What our paper aims to do is to give a comprehensive account of the phenomenon perceived inflation, and to examine it in connection with the statistically measured inflation rate.

Box 1

Definition of Inflation-Related Terms Used in This Study

Glossary

In the present study, several inflation-related terms are used. This box presents definitions of these terms and relevant synonyms.

Actual inflation: inflation as measured by the Harmonised Index of Consumer Prices (HICP), which is calculated and published monthly by Statistics Austria. The HICP is defined by EU regulations and based on price index methods. In some cases, however, this study uses the inflation rate based on the national consumer price index (CPI), which – methodologically speaking – somewhat differs from the HICP (for instance for defining special baskets of goods and services, such as mini and micro baskets).

Synonyms used in this study: HICP inflation, statistically measured inflation rate.

Perceived inflation: the subjective perception of price changes by the general public. This perception is influenced by several factors (general psychological phenomena and/or special circumstances, as in the case of the euro cash changeover), which makes it difficult to quantify it. In assessing the development of perceived inflation, analysts currently rely on results gained from the Consumer Confidence Barometer surveys of the European Commission. The latter are carried out every month and include all EU Member States, thus enabling an international comparison. Usually, the percentage balance between respondents stating that prices have risen and those who believe prices have fallen serves as a basis for calculation in this context. Alternatively, perceived inflation may be estimated from survey results. This process is, however, subject to restrictive assumptions.

Index of perceived inflation: a special type of index developed by Brachinger (2005a) which combines elements of price index theory with prospect theory. Related empirical results for Germany will be available soon.

Expected inflation: estimates of price developments in a certain period of time (which usually covers the 12 upcoming months). Similar to perceived inflation, expected inflation cannot be measured directly; it has to be derived from various sources. The present study uses results from the Consumer Confidence Barometer surveys of the European Commission to estimate expected inflation rates. These surveys are based on representative samples and reflect the estimates of the general public.

Synonyms used in this study: expected inflation rate, inflation expectations.

2 Euro Cash Changeover Causes High Perceived Inflation

2.1 Austria's EU Accession and the Euro Cash Changeover "Distort" Inflation Perception

The difference between perceived inflation in Austria and actual inflation as measured by Statistics Austria is shown in chart 1.[2] A long-term comparison makes it possible to identify three distinct phases in the development of perceived inflation:

— *Low perceived inflation at the time of and after Austria's EU accession*: From 1995 to mid-1997, the inflation rate perceived by Austria's general public was below HICP inflation. This may have been due to the fact that EU accession and integration into the Single Market – supported by scientific opinions and comprehensive information campaigns in the media – led people to expect falling prices or at least reduced price increases. Indeed, price cuts did take place, in particular for agricultural and food products, i.e. products which are frequently bought but cover only around 20% of the consumer price basket (Fluch and Rumler, 2005). In other sectors of the economy, however, such significant price changes did not take place.

— *Roughly parallel development between mid-1997 and 2002*: From 1997 to around 1999, perceived inflation and actual inflation were virtually the same. At the turn of the millennium, perceived inflation was again lower than the statistically measured inflation rate. This may be attributable to the liberalization of several formerly protected markets. The telecommunications sector, for instance, was opened up at the time, which brought about noticeable price reductions for households.

— *Euro cash changeover increases perceived inflation*: The introduction of euro cash produced fundamental changes in the previously parallel development of perceived and actual inflation. A gap began to develop in February 2002 and did not start to narrow again until the end of 2004, when HICP inflation in Austria was increasing. By February 2005, the difference had dropped to below 0.5 percentage point. Then, perceived inflation rose again, which was probably linked to the strong oil price increases.[3]

The fact that the increase in perceived inflation at the beginning of 2002 and the introduction of euro cash were linked is evident from survey data. A survey conducted in the summer of 2004 shows that 57% of respondents thought that "many" products were more expensive than two or three years before and 35% thought the same was true for "some" products. A mere 7% thought that no price changes or price reductions had taken place (FESSEL-GfK, 2004). Asked for possible reasons, 59% of those stating that prices had increased answered that this development had been caused by the euro cash changeover. Approximately

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[2] *If not stated otherwise, this analysis uses HICP inflation, i.e. the relevant inflation rate from the monetary policy point of view (see also box 1 for the definition of inflation-related terms). The rate of perceived inflation used here is based on survey results obtained from the European Commission's Consumer Confidence Barometer.*

[3] *The correlation between the product group entitled "liquid fuels and fuels and lubricants for personal transport equipment" and perceived inflation has been approximately 0.37 since January 2002. A similar positive correlation can be observed for services related to housing and in the electricity and gas sector, all of which have been subject to considerable price increases.*

8% blamed economic policy, whereas 7% and 6% held the EU (enlargement) and the economy responsible, respec-

tively. Increasing raw material prices were cited by another 5%.

Chart 1

Perceived and Actual Inflation in Austria
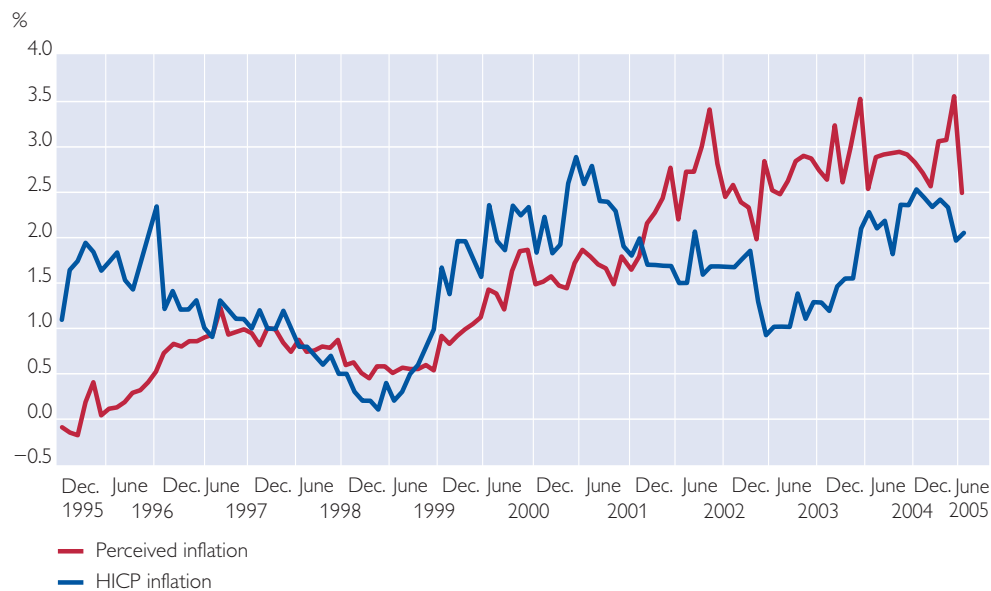
Source: Consumer Confidence Barometer of the European Commission, Statistics Austria.
Note: The perceived inflation levels indicated in this chart have been derived from surveys carried out among Austrian households. See box 2 for a detailed discussion of the methodology used.

2.2 Other EMU Members Also Experience Gap between Perceived and Actual Inflation

The association of price increases with the euro cash changeover is not specific to Austria. According to the results of an ongoing international survey carried out by the European Commission, consumers in other EU Member States, too, think that the euro cash changeover had a negative effect on price developments. In spite of low HICP inflation rates throughout the Economic and Monetary Union (EMU), perceived inflation was high in all countries participating in Stage Three of EMU; some of them experienced a gap between perceived and

actual inflation that was much wider than that in Austria.

Chart 2 shows the difference between the share of respondents stating that prices have risen over the last 12 months and the share of respondents stating that prices have fallen or remained unchanged over the same period.[4] At the beginning of 2002, this difference increased in all EU Member States, indicating that consumers who perceived price increases by far outnumbered those perceiving price reductions. In all Member States except for France, Italy and Belgium, the difference in question peaked in late 2002. By contrast, HICP inflation in-

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[4] Thus, a value of 40, as observed in Austria at the end of 2002, means that the share of those stating prices have risen is 40 percentage points higher than the share of those stating prices have not risen.

creased only slightly at the beginning of 2002 and, in many Member States, it was lower during 2003 than prior to the introduction of euro cash.

Latest survey results show that the gap has narrowed in Austria, Germany, the Netherlands and Italy. It has, however, persisted in other Member States.

Chart 2

Perceived Inflation and HICP Inflation in Selected Euro Area Countries

— Perceived Inflation – percentage balances (left-hand scale)
— HICP inflation in % (right-hand scale)
▨ Euro cash changeover
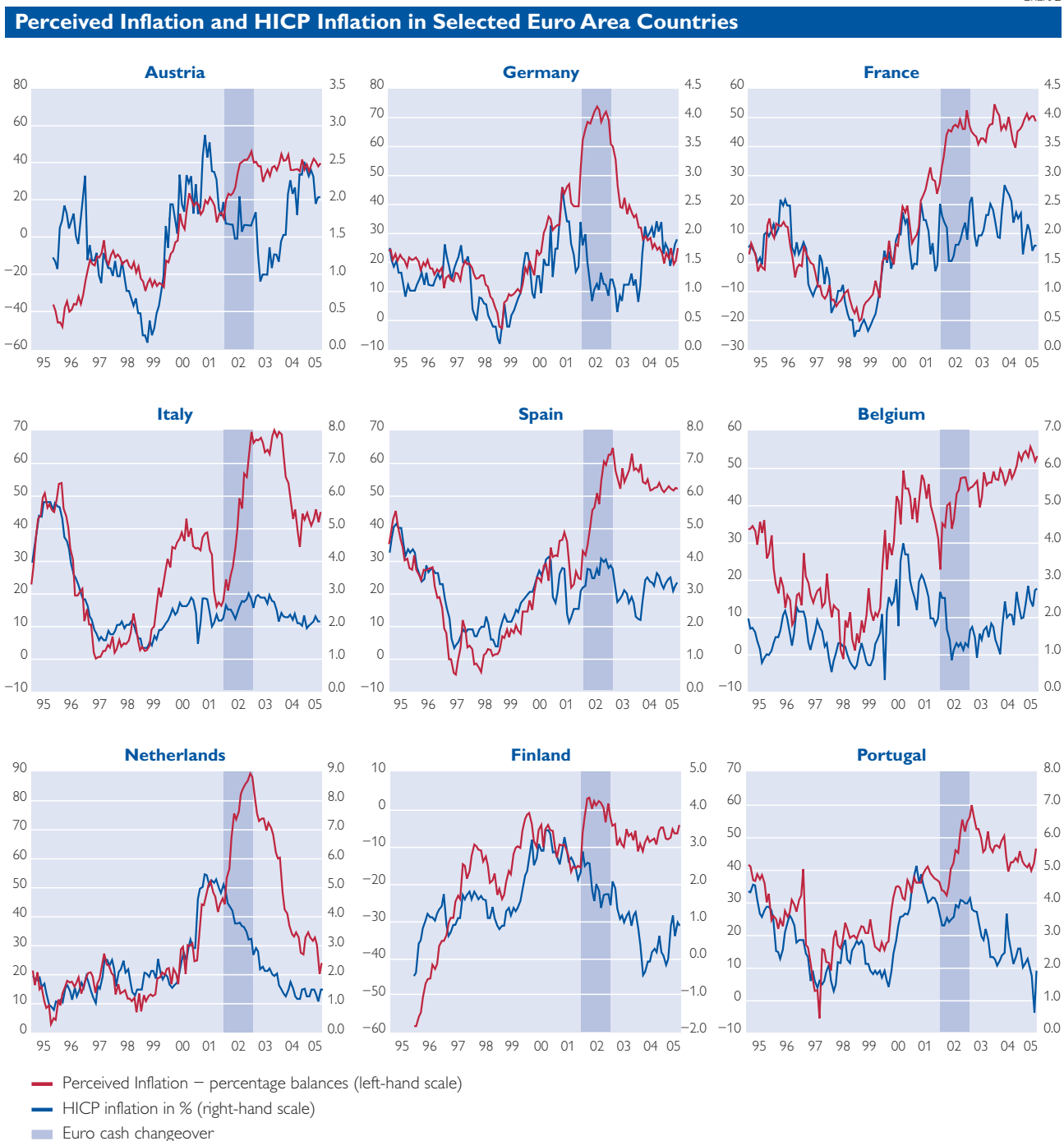
Source: Consumer Confidence Barometer of the European Commission (seasonally adjusted), OeNB.
Note: The chart provides a summary of monthly survey results regarding perceived inflation and annual HICP inflation developments. The measure used for perceived inflation is the percentage balance between respondents stating that prices have risen and those who believe that prices have fallen.

Box 2

How are Actual and Perceived Inflation Measured?

Consumers constantly perceive price signals that they process and translate into their individual perception of inflation, consciously or unconsciously using additional information (produced, for instance, by the media or expectations). This means that all consumers perceive their own rate of inflation which is characterized by personal experience. There are different ways of aggregating the multitude of individually perceived inflation rates in order to arrive at a measure of the inflation rate perceived by the general public.

One possibility of measuring perceived inflation consists in calculating the percentage balance between survey respondents stating that prices have risen and those stating the opposite. In Austria, perceived inflation is estimated from the results of the Consumer Confidence Barometer, a survey commissioned by the European Commission. In this survey, 1,500 people are questioned about price developments over the last and in the upcoming 12 months. The data and results are published on the website of the European Commission.[5]

The exact wording of the pertinent question is: "How do you think that consumer prices have developed over the last 12 months?" The possible responses are that these have (a) "risen a lot," (b) "risen moderately," (c) "risen slightly," (d) "stayed about the same," (e) "fallen," (f) "don't know."

Answers (a) and (e) indicate significant price changes, while answers (b) and (d) imply modest changes in prices. When the percentage balance between the different answers is calculated, this fact is taken into account in the following way.

balance = percentage (a) + 0.5 x percentage (b) − 0.5 x percentage (d) − percentage (e).

Thus, a value of 20 would indicate that the share of those who think prices have risen is 20 percentage points higher than the share of those who think the opposite. This measure was used in chart 2. A disadvantage of this method is the fact that the values derived cannot be directly compared with actual inflation. The development of the percentage balance over time only permits conclusions about trends in perceived inflation, such as: a growing number of citizens are perceiving price increases. Furthermore, it does not allow international comparisons. However, literature on this issue has revealed that one can convert survey data into a figure which can be compared directly with the statistically measured annual inflation rate. This measure is depicted in chart 1.

To be more precise, the estimate of the perceived annual inflation rate used here is based on Berk (1999) as well as Forsells and Kenny (2002), and thus on the assumption that the inflation rate perceived by people is normally distributed with a certain mean and a certain variance. It follows that the shares of different survey responses can be interpreted as probabilities. The proportion of certain responses (e.g. "fallen") thus can be interpreted as the probability that perceived inflation is between certain upper and lower thresholds. Additionally assuming that these thresholds are symmetrically located around zero, one can, by means of the probabilities derived, derive the relation between the mean and the variance of the distribution in request. In order to calculate the mean of the distribution, one then has to assume that the mean of perceived inflation equals the mean of the statistically measured inflation rate. The mean of the distribution estimated in this way is interpreted as the inflation rate perceived by the general public. All in all, this estimation procedure depends on several assumptions, the plausibility of which may certainly be questioned.

As an alternative to the use of survey data, Brachinger (2005a) suggests to directly calculate a price index which is based on a methodology similar to that of existing price indices, but differs from the latter in that it expressly includes psychological factors surrounding perceived inflation.[6] This innovative index has been calculated for Germany and will be published soon.

The table below summarizes the most significant characteristics of perceived inflation as derived from survey results which are available for all EU Member States.[7] It has to be emphasized that perceived

[5] See http://europa.eu.int/comm/economy_finance/indicators/businessandconsumersurveys_en.htm.

[6] In Brachinger (2005a) both the theoretical framework and the methodological basis for the index of perceived inflation are discussed in detail.

[7] It should be pointed out that the values given are based solely on the percentage balance between respondents stating that prices have risen and those indicating that prices have fallen in the European Commission's Consumer Confidence Barometer. They do not take into account any elements of the index developed by Brachinger.

inflation is not measured, but estimated on the basis of surveys which, in turn, take as their starting point individual perceptions of inflation. These are usually formed during the act of buying and thus mainly concentrate on goods that are purchased on a daily basis in shops, most often near people's homes. Additionally, one can assume that the average consumer weights individual goods and services in a way that is different from that used in the HICP.

Actual and Perceived Inflation

Differences in Methodology

Criteria	HICP/CPI	Perceived inflation[1]
Level	whole economy	individual consumer
Household	average household	individual household
Prices observed/ basket	about 800 representative goods and services	convenience goods
Region	20 Austrian towns and cities	local shops
Weighting	according to expenditure shares derived from consumer surveys and national accounts, expert advice	possibly according to the frequency of purchase
Price collection	about 40,000 per month	during the act of buying
Calculation	all price changes (weighted) translated into an index	based on surveys on the public's estimation of price developments over the last 12 months
Methodology	Laspeyres index, for HICP modified and translated into a chain index	weighted percentage balance between "prices have risen" and "prices have fallen" responses, conversion into perceived inflation rate
Use	established and widely used indicator for economics, economic statistics (monetary policy, wage policy)	monetary policy: estimates of inflation by consumers, inflation expectations
Availability	published monthly	monthly, published on the Internet
Public perception	press releases, contracts	consumers' purchases

Source: OeNB.
[1] Based on the Consumer Confidence Barometer of the European Commission.

By contrast, the Austrian HICP and CPI are based on the budget of a representative household and its average expenditure for a wide range of currently some 800 goods and services.[8] At regular intervals (at least every five years), the basket of goods is derived from comprehensive consumer surveys among about 7,000 households analyzing their expenditures over a one-year period. In order for possible distortions in expenditure-sensitive products (such as alcohol) to be adjusted, the plausibility of the data obtained in the surveys is checked against information from national accounts. Expert advice is also taken into account.

Based on the basket of goods and services, 40,000 prices of individual items – collected in about 3,500 shops in the 20 biggest Austrian towns and cities and centralized surveys by Statistics Austria – are processed and translated into an index that serves as a measure of inflation at the household level. Most importantly, each good or service is assigned a certain weight which is derived from its share in total household expenditure (= private consumption). In this context, not only goods that are consumed regularly and most often are taken into account, but also expenditures on durable goods (e.g. cars, personal computers, mobile phones or skis) as well as services (e.g. domestic and international travel, fees for after-school care or many types of insurances). Taken together, these items form a basket of goods and services representative for Austrian households, even if this basket – in this particular composition – is most probably not consumed by any individual household.[9]

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[8] *For a detailed description of the Austrian CPI and HICP see Statistics Austria (2001).*

[9] *The definition of special baskets for certain types of households and social groups is in principle possible. For example, a specific price index for pensioners is being created at the moment.*

The rate of inflation derived from the HICP/CPI by official statistics is a crucial economic figure. It does not refer to individuals, but is an objective average value. Since the HICP is designed to capture macroeconomic developments of consumer prices, it is the central indicator for inflation developments and, consequently, monetary policy.

These methodological differences have a significant impact on the gap between HICP inflation and perceived inflation.

3 What Factors Fuel Perceived Inflation?

The question why perceived inflation may differ from the statistically measured inflation rate has most notably been dealt with by Brachinger, who, in his latest research work, has incorporated elements of *Prospect Theory* into a theory of perceived inflation (see Brachinger 2004, 2005a and 2005b). Brachinger puts forth the following hypotheses:

— Consumers perceive price changes more powerfully for goods they buy more frequently than for goods they buy less frequently.

— Price increases are perceived more powerfully than price reductions.

Besides these hypotheses of perceived inflation, there are also other explanatory approaches, which focus specifically on factors related to the euro cash changeover that may have had an additional impact on the perception of prices. These explanations are:

— The perception of inflation is distorted by expectations (Traut-Mattausch et al., 2004; Hofmann et al., 2005).

— The use of schilling reference prices reinforces perceived price increases (see e.g. Kamleitner et al., 2005).

— The initial lack of psychological prices made it more difficult for people to get a good feel for the euro's value and, at the same time, reinforced the perception of price increases (see e.g. Kamleitner et al., 2005; Deutsche Bundesbank, 2004).

In the following, we will discuss these factors in detail, supporting our argumentation with empirical results from Austria. In the discussion below, a difference is made between general factors that always apply and factors which are specific to the euro cash changeover.

3.1 General Factors

3.1.1 Perceived Price Changes in Relation to the Frequency of Purchases

In the summer of 2004, Austrian survey participants were asked in which areas price increases had upset them the most; 21% of respondents named food, 17% said fuels, 13% cited hotels and restaurants, another 7% complained about convenience goods. Expenditures on other products, such as textiles or services (hairdresser, etc.), were named by a mere 3% of respondents (FESSEL-GfK, 2004).[10] Significantly enough, frequently bought goods are often cited, whereas those purchased more rarely are hardly mentioned. Other studies on the gap between perceived inflation and actual inflation also regard convenience goods as the main reason for the divergence between perceived and actual inflation (ECB, 2003 and 2005).

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[10] The question asked was: "When you think of the past years, do you remember a situation in which you felt particularly irritated by higher prices? Do you recall what the product concerned was?" (Multiple responses were possible.) In the present text, only some answers are cited.

Brachinger (2005a) has utilized the findings of *Prospect Theory*, according to which the perception of economic facts depends on the form and framework in which they present themselves, and incorporated them into a measure of perceived inflation. Specifically, Brachinger (2005a) states that price changes are perceived during the act of buying; if goods are purchased more frequently, price changes will be noticed more often. Thus, the perception of changes in prices of products that are bought more regularly is more powerful than that of equal price changes for products that are purchased less frequently or paid via transfer from bank accounts (e.g. rents). This also implies that perceived inflation is higher at times when the prices of frequently bought items are rising faster than those of rarely bought products. This can be verified by price data on products available in Austria that cover the time of the euro cash changeover.

Since there are hardly any data available that show how often households buy certain goods, the analysis concentrates on price changes in so-called mini and micro baskets. These represent goods and services purchased on a weekly and daily basis, respectively; the goods and services contained in the baskets were defined in a common effort by Statistics Austria and an expert panel (Haschka, 2004; Haschka and Schimper, 2005). The expenses on the contents of these baskets represent 16% (mini basket, weekly purchases) and 5% (micro basket, daily purchases) of the money spent on the entire basket that is used for measuring CPI inflation. For both mini and micro baskets, price developments from 2001 to 2004 have been calculated (chart 3).[11] Price developments for the individual goods included are shown in chart 8 (annex).

Chart 3

Inflation Rates for Frequently Bought Goods vs. Change in CPI
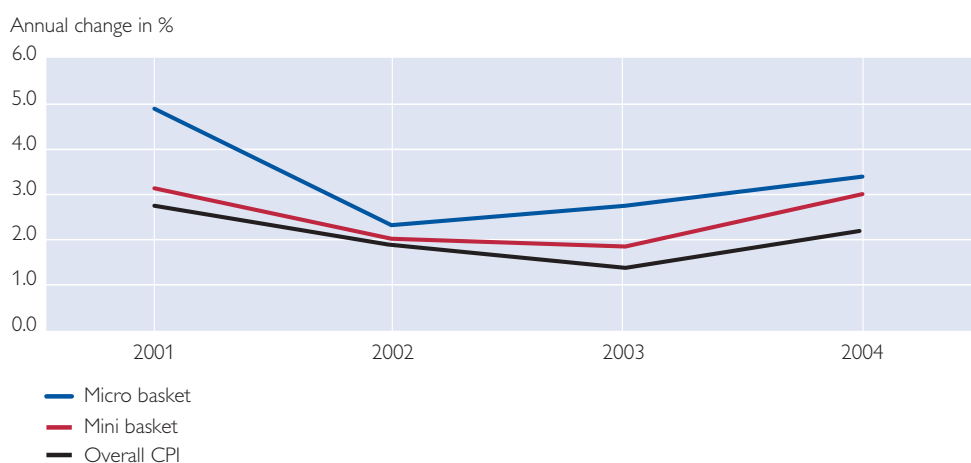
Source: Haschka and Schimper (2005).

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[11] *2001 has been included, since even during the run-up to the euro cash changeover, noticeable price increases were recorded, in particular as regards goods purchased on a daily basis. This might to some extent be attributable to extraordinary factors, such as the BSE crisis or crop failures in Southern Europe.*

The most important results may be summarized as follows:

— In the period under review (from 2001 to 2004) average annual inflation recorded for both the micro basket (+3.3%) and the mini basket (+2.5%) significantly exceeded the average CPI inflation rate (+2.0%).
— Both in the micro basket and the mini basket the majority of goods became more expensive.
— In the micro basket, only 2 out of 19 goods purchased on a daily basis were offered at a lower price after the euro cash changeover. In the mini basket, this was true for only 3 out of 55 observed products.
— Prices of 17 goods purchased on a daily basis and of 32 goods purchased on a weekly basis rose more sharply than the CPI; a quarter of these goods showed twofold to threefold price increases.

Thus, measured price increases of frequently purchased goods were above average. Since according to Brachinger's hypothesis consumers perceive inflation via regular purchases, these price increases are likely to leave a lasting impression, although the goods in question represent only a small part of the CPI basket of goods and services. Thus, a great part of perceived inflation may be attributable to this factor. In addition, goods/services whose prices used to be round figures in ATS, such as ATS 10, 50 or 100, now in many cases have round prices in EUR, such as EUR 1,5 or 10[12], which would imply an inflation rate of nearly 40%[13].

Although not directly linked with the above hypothesis, an interesting fact is that not only the prices of more frequently purchased goods increased, but that the overall share of goods affected by price rises was higher after the euro cash changeover than before. In concrete terms, during the period from 1999 to 2001, 70% of products became more expensive (9% of products remained more or less unchanged; 21% became cheaper). During the weeks leading up to the euro cash changeover and the weeks that followed (December 2001/January 2002), most prices remained unchanged: In Austria, 60% of prices (Fluch and Rumler, 2005) did not change at all in this period; among those 40% which did change, price increases and price reductions were equally distributed (table 1). Thus, if consumers observed only this brief period of time, there would be hardly any reason for perceived inflation to rise. Since, however, it takes much longer to "learn" new prices, these two months were not of essential importance to consumers. Prices perceived in the following months and years played a more crucial role. From a longer-term perspective it becomes evident that approximately 80% of those products permanently observed in the CPI basket of goods and services have become more expensive since the euro cash changeover; this share is even slightly higher for frequently purchased goods. The larger share of goods which have become more expensive since the euro cash changeover has probably also contributed to consumers' perception of a higher inflation rate.

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[12] These include, for instance, small and modest donations, pocket money for children, repair services and the like provided e.g. in neighborly help or in private house construction.
[13] Based on the following calculation: ATS 100 = EUR 10 = ATS 137.603, which equals an increase of 37.6%.

Table 1

Registered Price Changes in the CPI between 2001 and 2004

2001 to 2004
in the CPI basket containing about 620 goods and services

482	became more expensive	78%	Extreme value: university fees: +1,577.2%
43	remained unchanged	7%	
93	became cheaper	15%	Extreme value: personal computer: −66.3%

in the mini basket containing 55 goods purchased on a weekly basis (16% of the CPI)

48	became more expensive	87%	Extreme value: prescription charge: +26.0%
4	remained unchanged	7%	
3	became cheaper	6%	Extreme value: coffee beans: −18.7%

in the micro basket containing 19 goods purchased on a daily basis (5% of the CPI)

17	became more expensive	89%	Extreme value: potatoes: +24.1%
0	remained unchanged	0%	
2	became cheaper	11%	Extreme value: lettuce: −2.1%

December 2001 to January 2002
in the CPI basket containing about 620 goods and services

became more expensive	20%	
remained unchanged	60%	
became cheaper	20%	

Source: OeNB, Statistics Austria.

3.1.2 Asymmetrical Perception of Price Developments Supports Higher Perceived Inflation

Based on the findings of *Prospect Theory*, Brachinger (2005a) puts forth the hypothesis that the perception of price changes is asymmetrical: As consumers have a loss aversion they perceive losses (price increases) more strongly than gains (price reductions).

Chart 4 illustrates the consequences of this effect (chart 4a), juxtaposing it with statistically measured inflation (chart 4b). While the official price index assesses price increases and price cuts symmetrically, consumers perceive price increases more powerfully than equal price reductions; the degree of overestimation seems to be by a factor between 1.5 and 2.5 (Brachinger, 2005a).[14]

If Brachinger's hypothesis is true, this asymmetry is likely to have reinforced the perception of high inflation which had already been fueled by the price increases in frequently purchased goods and the higher share of goods that became more expensive after the euro cash changeover.

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[14] *According to Brachinger (2005a), the size of this factor, which has been derived from the findings of Prospect Theory, has yet to be examined by empirical studies in the context of price changes.*

Chart 4a

Subjective Assessment of Price Changes According to Prospect Theory
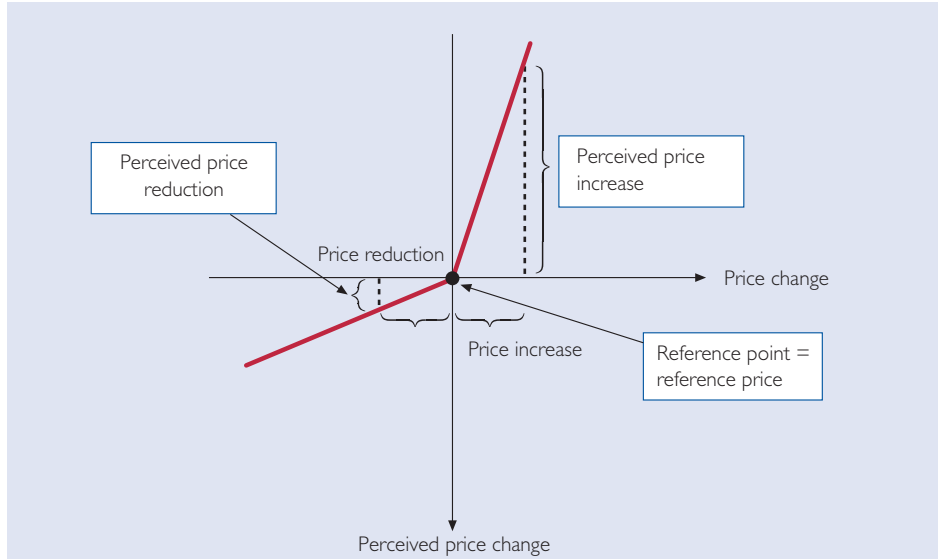
Source: Brachinger (2005a).

Chart 4b

Neutral Assessment of Price Changes in the CPI

Source: Brachinger (2005a).

3.2 Special Factors in the Course of the Euro Cash Changeover

3.2.1 Perception of Prices Distorted by Expected Price Increases

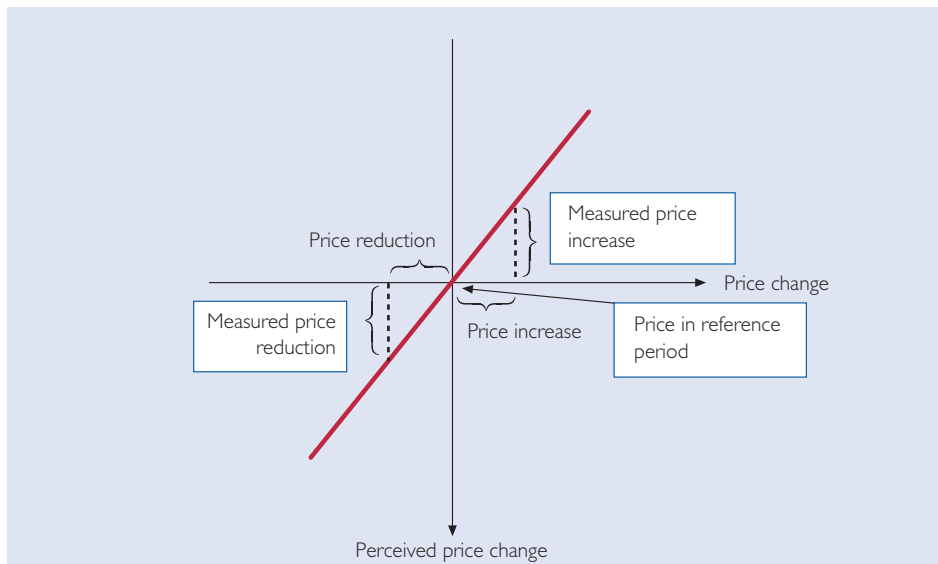Results from the psychological literature show that expectations play a crucial role in the subjective perception of prices – if price increases are expected, they are also more likely perceived.

These insights are based on an experiment carried out by Traut-Mattausch et al. (2004): Three different groups of students were shown menus, first with prices listed in Deutsche mark, then, in euro. For one group, prices had been converted correctly; in the case of the two other groups, the euro prices displayed were 15% too low and 15% too high, respectively. Then, participants were asked to estimate in percent the difference between the Deutsche mark prices and the euro prices. Interestingly enough, participants detected price increases even where the conversion had been correct. Where the euro prices quoted had been too low, participants estimated that prices had remained unchanged. The group which was confronted with euro prices that were too high overestimated the price increases.

Hofmann et al. (2005) confirmed the results of this experiment for Austria as well. Furthermore, these authors showed that wage increases in euro were more likely to be underestimated than rises in schilling wages. Thus, the *impression* of increased prices on the one hand and constant or decreasing wages on the other hand induces a *subjective* loss of purchasing power.[15]

Traut-Mattausch et al. (2004) and Hofmann et al. (2005) attribute these distortions in perception to the role of expectations: If price increases were expected before the euro cash changeover, they were also more likely to be perceived afterwards, even if, objectively speaking, no price rises took place (a phenomenon referred to as "Teuro" illusion in German, "Teuro" being a portmanteau word combining "euro" and "teuer," the German word for expensive). In addition, the results produced by Hofmann et al. (2005) point out that this effect could still be observed two years after the introduction of euro cash. The practical significance of this explanatory approach is dependent on how many people actually expected price increases. Here, various survey results have provided a clear picture: According to a survey carried out by the European Commission in November 2001, 70% of all euro area residents feared that prices would go up as a result of the euro cash changeover.[16] In France, Italy and Portugal, this was true for 75% to 80%. The lowest percentages were recorded in Austria (52%) and Finland (59%).[17] In the survey carried out in the summer of 2004, about 55% of respondents answered yes when asked if they had already expected before the cash changeover that prices would go up.

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[15] See also the results contained in Janger, Kwapil and Pointner in this issue of Monetary Policy & the Economy.
[16] Flash Eurobarometer 115 (November 2001), question 7.
   See http://europa.eu.int/comm/public_opinion/flash/fl115_en.pdf.
[17] In Austria, this relatively low percentage can probably be attributed to the comprehensive set of measures taken before the euro cash changeover for the purpose of preventing price increases.

3.2.2 Comparison with Outdated Reference Prices in Schilling Fuels Perceived Inflation

In a survey conducted in the summer of 2004, that is when people had already had two and a half years to become familiar with euro cash, about 13% of Austrians stated they always converted prices into schilling, 27% said they did so often and 34%, sometimes. A mere 26% of respondents said they rarely or never converted into schilling (FESSEL-GfK, 2004).

The fact that reference prices in schilling are still widely used has an immediate effect on the degree of perceived inflation, since these reference prices, which are already three years old, have been "frozen" at their pre-changeover levels, while current prices have increased in line with normal inflation developments. It follows that the bigger the time gap between the reference period (before the introduc-tion of euro cash) and the current period is, the higher the degree of perceived inflation will be (see also Kamleitner et al., 2005).

Apart from the fact that comparing current prices with outdated reference prices in schilling results in an overestimation of inflation, the conversion into schilling as such influences the degree of perceived inflation as well. If, as a rule of thumb, consumers convert prices with a factor of 1:14 instead of the correct 1:13.7603, they will overestimate prices by 1.7%, which roughly equals an annual inflation rate. That this effect is of considerable relevance has been shown by survey results: When faced with the statement, "When I convert euro into schilling, I usually round liberally, taking 1 euro as the equivalent of 14 schilling," 60% of Austrians "absolutely agreed" and 16% "strongly agreed" (FESSEL-GfK, 2004).

Table 2

How Are Prices in Euro Converted into Schilling (Summer 2004)?		
	When purchasing convenience goods	When purchasing expensive goods
I do not convert at all, but I buy what I need	65	17
I convert exactly by means of a calculator or a table	6	33
I memorize the prices of some products and learn more prices step by step	55	20
I know the equivalent of round euro prices (e.g. EUR 5 and EUR 10) in schilling and estimate other amounts based thereon	56	50
I calculate prices approximately by means of mental arithmetic	65	71

Source: OeNB.
Note: The values given represent percentages relative to the total number of respondents stating that they at least sometimes convert into schilling. Multiple responses were possible.

Table 2 summarizes how Austrians convert into schilling (those who do so at least sometimes). As expected, there are price-related differences. In other words, people are (more) likely to con-vert exactly when purchasing expensive goods, whereas they hardly do so anymore when purchasing cheaper goods.

3.2.3 Initial Lack of Psychological Prices May Have Fueled Perceived Inflation

Psychological prices (i.e. prices ending with 00, 50, 90 or 99) influence consumer decisions in various ways: They stimulate impulse buying, have signaling functions and provide consumers with points of reference. Therefore, they are widespread in the food sector and are applied to some industrial goods as well (they are less widely used in the services and energy sectors).

As shown in chart 5, in 2001, about 50% of prices in Austria ended with 90 in the schilling and/or groschen place (threshold prices); 40% ended with 50 or 00 in the schilling and/or groschen place (even prices). The remaining share was made up by other prices (odd prices).

Chart 5

Price Structures in Austria before and after the Euro Cash Changeover

Share in %

Source: 2001 to 2003: 40,000 prices of individual items as included in the CPI; 2005: 500 prices of individual items as quoted by grocery chains.

These psychological prices disappeared temporarily during the time of the euro cash changeover. Under the Euro-Related Pricing Act (Euro-Währungsangabengesetz, EWAG), Austrian businesses were obliged to price goods both in schilling and in euro between October 1, 2001, and February 28, 2002. Dual pricing and exact conversion were meant to prevent possible rounding-up and, consequently, inflationary tendencies. This, however, in many cases resulted in odd euro prices which made it more difficult for consumers to familiarize themselves with the new prices (Kamleitner et al., 2005). Thus, the loss of consumers' previously reliable sense of value and proportions may have fueled perceived inflation. The share of psychological prices decreased from about 90% in 2001 to less than 20% in 2002 (chart 5). The same trend was observed in Germany, where the comparable share fell from 80% to 40% (Chlumsky and Engelhardt, 2002; Deutsche Bundesbank, 2004).

It was not until toward the end of the dual pricing period that businesses gradually returned to a pricing policy promoting threshold prices. In Germany, for instance, psychological prices once more constituted the clear majority in 2003, amounting to approximately 70%. In Austria, changes in this direction did not happen as fast: That same year, the share of psychological prices was only some 35%. This percentage, however, probably continued to increase significantly after this point. In particular, the prices of food or frequently purchased goods are now, once more, to a very large extent subject to psychological pricing. According to a sample of May 2005 involving 500 goods, 70% of them had threshold prices, 23% even prices and only 6% had other prices.[18] Thus, price structures are once again characterized by psychological prices, though it will probably take some time for consumers to get used to them and to memorize them.

3.3 Austrian Microdata Confirm the Influence of Psychological Factors

Several possible explanations for the divergence between actual and perceived inflation have been presented so far. Where possible, the hypotheses in question have been backed with empirical results.

The importance of psychological factors, which has already been discussed at length, is also corroborated by available microdata. Stix (2005), for instance, makes use of individual data of the previously mentioned survey, which was conducted in the summer of 2004 (FESSEL-GfK, 2004), in order to validate some of the discussed psychological explanations by means of econometric techniques.

In his study he relied on a regression model which uses the answers to the following questions as dependent variables: "Do you think that the introduction of the euro has caused price changes?" and "Recently discussions about price developments have abounded. What is your personal view of price developments over the last six months?"[19] For each question, respondents could choose among the following answers: "many products have become more expensive," "some products have become more expensive," "no change," as well as "some products have become cheaper" and "many products have become cheaper." Based on the responses, the study examines the influence individual characteristics and conversion patterns exert on the probability that somebody will perceive price rises. For instance, one explanatory variable measures if respondents run the household they live in. If so, the hypothesis of selective perception suggests that these people, who do the daily shopping, perceive price increases more strongly than others. Additionally, people were asked whether they converted prices from euro into schilling. The answers were divided into "always," "often," "sometimes" and "rarely or never" categories. For the reasons discussed earlier it can be assumed that those converting into schilling more often perceive stronger price rises than those who rarely or never convert.

As was outlined before, many consumers apply the 1:14 approximation,

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[18] The sample was based on the prices of about 500 food products and industrial goods as listed on leaflets distributed by various grocery chains (Billa, Dehner, Hofer, Lidl, Merkur, Penny, Mondo, Zielpunkt) in May 2005.

[19] To be more precise, an ordered probit model is estimated. The dependent variable is categorical with the three categories "many products have become more expensive," "some products have become more expensive" and "no change/ some or many products have become cheaper." The error term is assumed to be normally distributed.

which in itself would provide an explanation for the overestimation of prices. Since respondents were asked about it, this effect can be tested. Furthermore, the imprecision in conversion is taken into account. Survey participants were asked to convert the amount of EUR 1.80 into schilling offhand. In the regression, those respondents who arrived at an overestimation of more than 10% were compared with the rest.

Finally, the model presented by Stix (2005) analyzes the influence of inflation expectations on the evaluation of price developments. The hypothesis of expectation-induced perception, which was discussed above, implies that consumers who had a negative attitude toward the euro before the cash changeover are more likely to perceive price increases now than those who had a positive one. This hypothesis can be examined by analyzing the responses to the following question: "What was your attitude toward the euro before its introduction? Was it very positive, rather positive, neutral, rather negative or very negative?"[20]

3.3.1 Role in the Household and Household Income Influence the Probability of Perceiving Price Rises

The results are summarized in table 3 (left column). It can be found that consumers with a monthly household income of EUR 2,900 or more (first two rows) state more rarely that price rises have taken place. This could be explained by the fact that expenses on frequently purchased goods, which have indeed become more expensive, form a smaller proportion of these households' income. By contrast, age does not seem to play a role. Furthermore, table 3 shows that people who run a household are more likely to perceive price increases than others. This result is statistically significant and may be interpreted as an indirect verification of the hypothesis of selective perception (perception of price changes is mainly influenced by frequently purchased goods).

3.3.2 Those Converting into Schilling Are More Likely to Perceive Price Rises

Moreover, the table shows that people who always convert into schilling perceive significantly higher price rises, compared to those who sometimes or never convert. This is true even for those who only convert into schilling "often." No significant difference in the perception of prices is found between those who sometimes and those who never convert. What is more, people who, when converting the amount of EUR 1.80, overestimate the equivalent in schilling by more than 10% and those who calculate with an exchange rate of 1:14 are more likely to perceive price rises. Furthermore, the attitude toward the euro before the cash changeover is shown to have a significant influence on the perception of price increases. People with a negative attitude are more likely to perceive price rises than those with a positive attitude.

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[20] Ideally, respondents should have been asked this question before the introduction of euro cash. Then, the answers would have been exogenous. In the present case, it cannot be ruled out that actual experience with the euro has influenced the way in which individual attitudes (going back more than two and a half years) were recalled. This means that the variable cannot be interpreted causally. As will be shown later, the results are, however, not influenced by this variable.

In a next step, the regression is repeated for the question about price increases over the last six months (right column). This allows an examination of the persistence of the above-mentioned psychological factors, in other words: of the extent to which they have an effect even in a period during which price rises cannot be attributed to impacts caused by the euro cash changeover.

Table 3

Influence of Selected Variables on the Perception of Price Increases

	Perceived price increases caused by the euro	Perceived price increases over the last six months
Monthly household income between EUR 2,900 and EUR 3,600	−	n.s
Monthly household income over EUR 3,600 (relative to other incomes)	−	−
Runs the household	+	n.s
Negative attitude toward the euro before its introduction (relative to positive attitude before its introduction)	+	+
Converts by using 1:14 approximation (EUR 1 = ATS 14)	+	n.s
Always converts into schilling	+	+
Often converts	+	n.s
Sometimes converts (relative to never)	n.s.	n.s
Conversion of EUR 1.80: overestimation by more than 10%	+	+

Source: Stix (2005).

Note: The table gives a summary of estimation results of Stix (2005). The + and − characters symbolize the significant impact of a variable on the probability of having perceived price increases (+ = higher probability, − = lower probability, n.s. = not significant). Since most of the variables are mutually exclusive, their impact is represented relative to a reference group (e.g. those running a household relative to those not). The results are based on an − "ordered probit" model. This type of model is used when the dependent variable is qualitative and ordered (no change, some products have become more expensive, many products have become more expensive).

3.3.3 Effect of "Euro-Specific Factors" Is Persistent

Generally speaking, the results of this regression show less significant psychological factors – in particular, the effects of running the household and converting by means of a 1:14 approximation are insignificant. Yet, the effects of comparing prices with reference prices in schilling and of overestimating prices when they are converted are still significant. Similarly, respondents with a negative attitude toward the euro much more often recorded perceived price rises than those with a neutral or positive attitude.

Thus, these results confirm the influence of psychological and conversion factors on the degree of perceived inflation. Moreover, they show that the latter were relevant even in the case of questions which only referred to 2004, which means the euro cash changeover could not be (directly) linked with perceived price increases. This indicates that the effects of these factors have been surprisingly persistent.

4 Monetary Policy Implications of Higher Perceived Inflation
4.1 Higher Inflation Expectations

Perceived inflation can influence inflation expectations and thus also actual inflation.[21] Inflation expectations cannot be measured directly, which is why they are usually estimated indirectly from financial market data or surveys (Garcia, 2003). In the above-mentioned *Consumer Confidence Barom-*

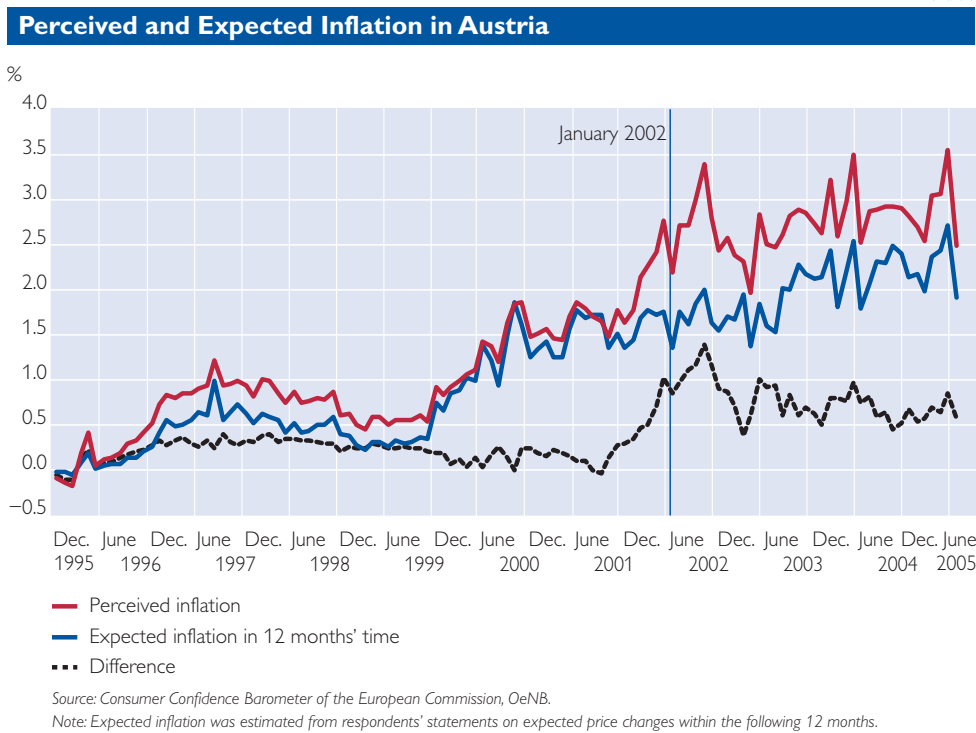[21] *By means of wage negotiations, for example.*

eter, Austrians are also monthly asked about *expected* price developments. The relevant question is: "How do you expect that consumer prices will develop in the next 12 months?" Possible responses include that they will "increase more rapidly," "increase at the same rate," "increase at a slower rate," "stay about the same" or "fall." As with perceived inflation, the answers given may serve as a basis for calculating average expected inflation. This, however, requires a reference value relative to which price expectations rise, remain unchanged or fall. It seems plausible to assume that consumers use perceived inflation for this purpose.[22] If

this assumption is correct, perceived inflation can indirectly influence the expected inflation rate.[23]

4.1.1 Perceived Inflation Strongly Influenced Inflation Expectations Over a Long Period Of Time

Chart 6 shows how perceived inflation and inflation expectations developed over time. The values for expected inflation, e.g. for March 2003, indicate the average inflation rate that the Austrian general public expected to materialize 12 months later, i.e. in March 2004. The difference between perceived inflation and expected inflation is represented as well.

Chart 6

Perceived and Expected Inflation in Austria

Source: Consumer Confidence Barometer of the European Commission, OeNB.
Note: Expected inflation was estimated from respondents' statements on expected price changes within the following 12 months.

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[22] It is likely that, in reality, the general public estimates future inflation based on a mixture of the latest perceived and actual inflation values. Since it is not known how the various components are weighted exactly, it was assumed here that people estimate future inflation developments in relation to perceived inflation only. Starting from this, the expected inflation rate is estimated by applying some restrictive assumptions (Berk, 1999). Obviously, the assumption that consumers' inflation expectations are based on perceived inflation has a significant impact on the development of the expected inflation rate.

[23] Other methods of deriving measures for expected inflation, for instance using financial market data, may produce different results.

As can be seen from chart 6, perceived and expected inflation developed very similarly over a relatively long period of time: Until the end of 1999, inflation expectations were slightly lower than perceived inflation (the difference came to less than 0.5 percentage point); from 2000 until early 2002, the two rates were almost identical. This picture, however, changed with the euro cash changeover, when perceived inflation rose sharply, while inflation expectations remained relatively constant. For a short period (until mid-2003, approximately), the difference between perceived and expected inflation was 1.5 percentage points. Then, expected inflation was significantly revised upward and, since then, it has come closer to perceived inflation again – the difference between the two rates decreased from about 1 percentage point to slightly above 0.5 percentage point.

4.1.2 Did the Euro Cash Changeover Alter the Way in Which Expectations Are Formed?

The development described above shows that people mainly rely on their current perception of inflation in assessing future price developments, assuming that current (perceived) prices indicate what prices will look like in the following year. However, the euro cash changeover seems to have altered the way in which people's expectations are formed. This may have two reasons: First, it seems that consumers may have regarded (perceived) price increases as a purely temporary phenomenon which would not have any influence on future inflation. In line with this hypothesis, the fact that the gap between perceived inflation and expected inflation narrowed again from mid-2003 may be explained as follows: Over time, people "learned" that perceived inflation was more persistent than they had expected, which is why

Chart 7

How Accurate Were Inflation Expectations?
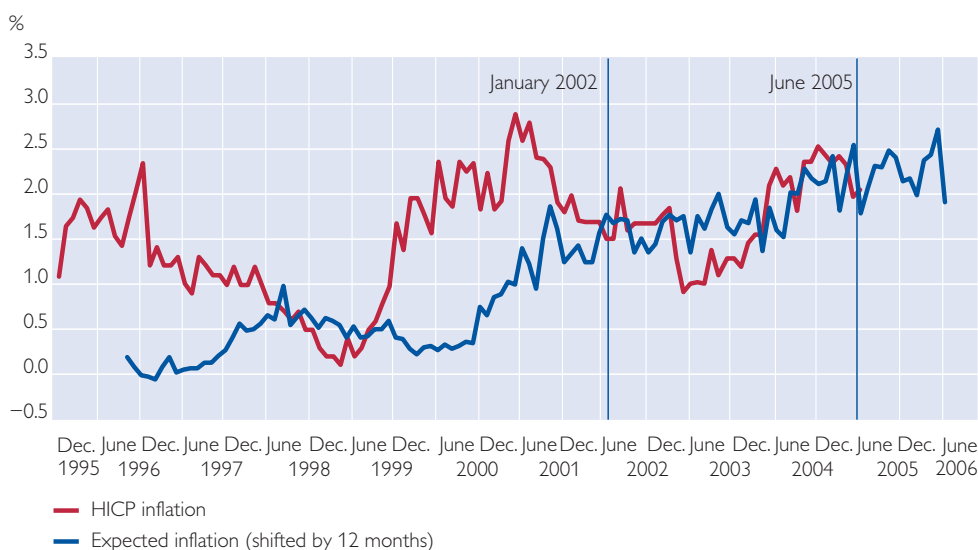
Source: Consumer Confidence Barometer of the European Commission, OeNB.

they increasingly based their inflation expectations on perceived inflation again (in this case causing an upward trend). Second, the developments observed would also be in line with the hypothesis that the process of forming expectations as such changed: Instead of relying on the current degree of perceived inflation as a basis for inflation expectations, consumers switched to other reference values after the euro cash changeover, such as an inflation rate of below, but close to 2%, corresponding to the Eurosystem's definition of price stability. In line with this explanation, the increase in perceived inflation since mid-2003 could be attributed to the fact that the reference inflation rate was revised upward due to higher oil prices, etc.

Since this analysis is purely descriptive and as the observation period is short, it is not possible at this point to conclusively assess which hypothesis is true. Nevertheless, the fact that inflation expectations rose in 2003 — although actual inflation was very low and an oil price-induced increase in inflation was not yet in sight – strengthens the case for the hypothesis that the formation of inflation expectations has again become more strongly dependent on perceived inflation.

4.1.3 The Eurosystem's Monetary Policy Makes It Easier for Consumers to Gauge Future Inflation Developments

How "correct" were expectations in reality? In order to shed light on this question, chart 7 compares inflation expectations with actual inflation (the inflation expectations represented in chart 6 now are shifted by 12 months, that is, the value shown for March 2004 represents the average inflation

rate the Austrian general public expected in March 2003 for the following 12 months). This comparison reveals that there were periods during which actual inflation developed quite differently from expected inflation and periods when people's expectations were almost correct. Significant underestimations can be observed in particular in 1997, 2000 and 2001. The average difference between expected and actual inflation was 1.1 percentage points (1997), 2.1 percentage points (2000) and 1.3 percentage points (2001).[24] An overestimation took place in 2003, when expected inflation was 0.6 percentage point higher than actual inflation (which was probably due to the unexpectedly low economic growth). In the other years, the recorded differences were mostly minor, ranging from −0.1 to −0.2 percentage point.

On the whole, it seems that forecast errors have declined since 2002, relative to the period before. Even if the number of available observations is probably too small to draw concrete conclusions, this development may be interpreted as a consequence of the stability-oriented monetary policy of the Eurosystem, which makes it easier for consumers to gauge future inflation developments.

4.2 The Public Perception of Price Measures

4.2.1 90% of Austrians are Familiar with the CPI – Only 20% with the HICP

The persistent, if narrowing, gap between perceived and actual inflation, gives rise to the question as to what degree of public confidence the statistically measured inflation rate enjoys.

For the purpose of answering this question, the survey conducted in the summer of 2004 (FESSEL-GfK, 2004)

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[24] *In terms of average monthly differences during one calendar year.*

determined which price measures are known in Austria and whether – in the public's opinion – these can adequately depict price developments (table 4).[25] Virtually all respondents were familiar with the terms "inflation rate" and "consumer price index." A somewhat lower, though still high, percentage is aware of the "basket of goods and services." The Harmonised Index of Consumer Prices (HICP) and mini baskets are far less well-known. The low public awareness of the HICP may be attributable to the publication policy of Statistics Austria, which still strongly focuses on the CPI; this index is published in detail on a monthly basis, whereas the HICP is mentioned only as an aggregate measure. Mini baskets, on the other hand, were not created until 2004.

Table 4

Selected Price Measures – Public Awareness and Confidence

	Awareness (% of respondents)	Credibility (mean of grades)
Inflation rate	95	2.69
Consumer price index	88	2.66
Basket of goods and services	65	2.91
Harmonised Index of Consumer Prices	22	2.93
Mini baskets	13	2.98

Source: OeNB: Survey of Summer 2004.
Note: Credibility is expressed as the mean of responses, which ranged from grade 1 (high credibility) to grade 5 (no credibility).

4.2.2 Austrians Think Price Measures Have Mediocre Credibility, But are Fairly Well-Informed on the Current Inflation Rate

The Austrian general public thinks that the ability of official price measures to adequately represent price movements is mediocre; assessed by means of a grading system (1 = very credible, 5 = not credible), the CPI received the best grade (2.66), followed by the inflation rate (2.69). The basket of goods and services, the HICP and the mini baskets achieved fairly poor values just below 3.

Due to the lack of previous reference values, it is difficult to judge how good or bad these grades are. The fact that the survey took place at a time when the statistically measured inflation rate did obviously not correspond to publicly perceived inflation may have prompted respondents to voice stronger skepticism toward official measures than they might have at a different time.

Be that as it may, the question remains whether there is a link between the perceived rate of inflation and the perceived credibility of price measures.

To shed light on this matter, those respondents who were familiar with the term inflation rate were asked to state the current inflation rate. It can be seen from table 5 that the average estimated inflation rate was 5%, which means inflation was clearly overestimated – CPI inflation was 2.2% in July 2004 and 2.3% in August 2004. A more detailed analysis, however, reveals that answers were distorted by significant outliers (some people said the inflation

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[25] The questions were formulated as follows: "In order for price changes to be observed, various measures may be used. Which of the following criteria or indices have you heard of at least once?" and "Do you think that these measures can depict price developments correctly? In other words, what credibility do they have in your opinion? (Assessment based on a grading system, where 1 means very credible and 5 stands for not credible)."

rate was 75%). Thus, the median has to be regarded as the more stable measure in this case. The relevant result was 2.0%, that is, 50% of respondents estimated an inflation rate below and 50% above this value, indicating that "on average" Austrians are relatively well-informed about the inflation rate.

As an alternative to calculating the median, implausible answers can also be ignored. For instance, in the second row of table 5 all responses indicating an estimated inflation rate above 20% have been disregarded, which applies to about 5% of respondents.[26] Based

on this limited sample, the mean value of the estimated inflation rates is 2.3%, which is close to the statistically measured inflation rate.

In a further step, we have broken answers down by the degree of credibility attached to the inflation rate. This shows that inflation estimates are the higher, the lower the credibility of the inflation rate becomes (and vice versa); the difference in mean estimated inflation between those respondents deeming the CPI very credible and those who think it is not credible is 1.3 percentage points.[27]

Table 5

Rates of Inflation Estimated by the Austrian General Public in Summer 2004					
	Mean	Median	Minimum	Maximum	Observations
Total	5.0	2.0	0.0	75	1,381
Estimates below 20%	2.3	2.0	0.0	20	1,315
Assessment of CPI credibility					
1 = very credible	1.9	2.0	0.0	5	189
2	2.2	2.0	0.0	15	377
3	2.6	2.0	0.0	15	485
4	2.7	2.0	0.1	12	145
5 = not credible at all	3.2	2.0	0.0	12	86

Source: OeNB: Survey of Summer 2004.
Note: The table contains descriptive statistics on the inflation rate estimated by respondents. Only those respondents who had stated they were familiar with the inflation rate as a price measure were asked to quote the current inflation rate. The second row only refers to those respondents whose estimations were below 20%. In the lower part of the table, results are broken down by degree of assessed credibility.

5 Summary and Conclusions

Though perceived inflation in Austria had time and again deviated from the statistically measured inflation rate before the euro cash changeover, this phenomenon was particularly pronounced after the introduction of euro cash. Estimates based on survey data suggest that, between 2002 and mid-2005, the average annual inflation rate perceived by the general public was between 0.7 and 1.3 percentage points

higher than HICP inflation. This was probably accompanied by a distortion in inflation expectations. In early 2005, the gap between perceived and actual inflation narrowed again to about 0.3 percentage point, which is a normal value, when judged against pre-changeover levels. This entire development is not a phenomenon specific to Austria – significant subjective price increases were perceived in virtually all euro area countries after the cash changeover.

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[26] Surprisingly, knowledge about the rate of inflation was particularly poor among respondents below the age of 20. On average, members of this group estimated inflation at 15% (!), with a median of 5%. It is quite conceivable that some respondents did not want to admit that they do not know the current inflation rate and therefore made an arbitrary estimate. Thus, it seems perfectly justified to disregard the 5% of observations with implausible estimates.

[27] A variance analysis has proven that the results are both economically and statistically different.

How is it possible for inflation data collected by official statistics and the perception of prices to diverge so strongly? Are statistical measures incorrect or are people mistaken in their perception of inflation? By means of an objective and methodologically well-founded procedure, official statistics measure price changes in goods and services that are consumed by an average household; goods and services that are purchased or paid for less frequently (e.g. rents) are included as well. By contrast, the perception of inflation is fundamentally *subjective* and based on *individual* consumer behavior. The theory of perceived inflation discussed in this study (Brachinger, 2005a) assumes that the perception of prices is influenced by various factors, all of which have a significant effect on the degree of perceived inflation. Accordingly, (1) changes in the prices of frequently purchased goods are more likely to be perceived than with those purchased less frequently, and (2) price rises are more strongly perceived than price reductions. The present study has shown that, after the euro cash changeover, the prices of frequently bought goods in Austria did rise more sharply than the prices of less frequently purchased goods, and that a higher (unweighted) share of goods became more expensive. This probably led the Austrian population to perceive more price rises, thus, in part, accounting for the gap between actual and perceived inflation.

In the case of the euro cash changeover, there were additional factors which most likely further fueled perceived inflation. The present study has, for instance, provided empirical evidence for the fact that (3) outdated reference prices in schilling, which are still quite often used, increase perceived inflation (schilling prices are now almost four years old!), and that (4) expectations distort the perception of prices (if consumers expect price rises, they will be more likely to perceive them). Moreover, (5) the initial lack of a good feel for the euro's value, which may in part have been attributable to a lack of psychological prices, seems to have raised the degree of perceived inflation.

In summary, the following conclusions may be drawn from this study:

— The difference between the statistically measured inflation rate and perceived inflation can be explained by the fact that official statistics measure price changes differently from consumers, who base their assessment of price changes on their subjective and selective perception.

— Based on the experience gained over the past years and on the limited public confidence the different price measures enjoy, it seems advisable to more actively inform people about the different price indices provided by official statistics and about perceived inflation values as derived from survey results. The index of perceived inflation that was developed and empirically calculated for Germany by Brachinger could prove useful in this context.

— Perceived inflation reflects *subjective* perceptions of inflation. Since monetary policy, however, aims at macroeconomic price stability, it is crucial to base monetary policy decisions on a measure of inflation that is *objective*, methodologically well-founded, internationally harmonized, comparable over time and which represents the *average* consumer behavior – in short: the HICP inflation rate.

— Perceived inflation is important for monetary policy in that it may influence inflation expectations. It is essential to prevent subjective perceptions of price rises from inducing higher actual inflation via increased inflation expectations.

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Annex

Chart 8

Changes in the Prices of Goods Purchased on a Weekly Basis (Mini Basket)

between 2001 and 2004

Average change in % between 2001 and 2004
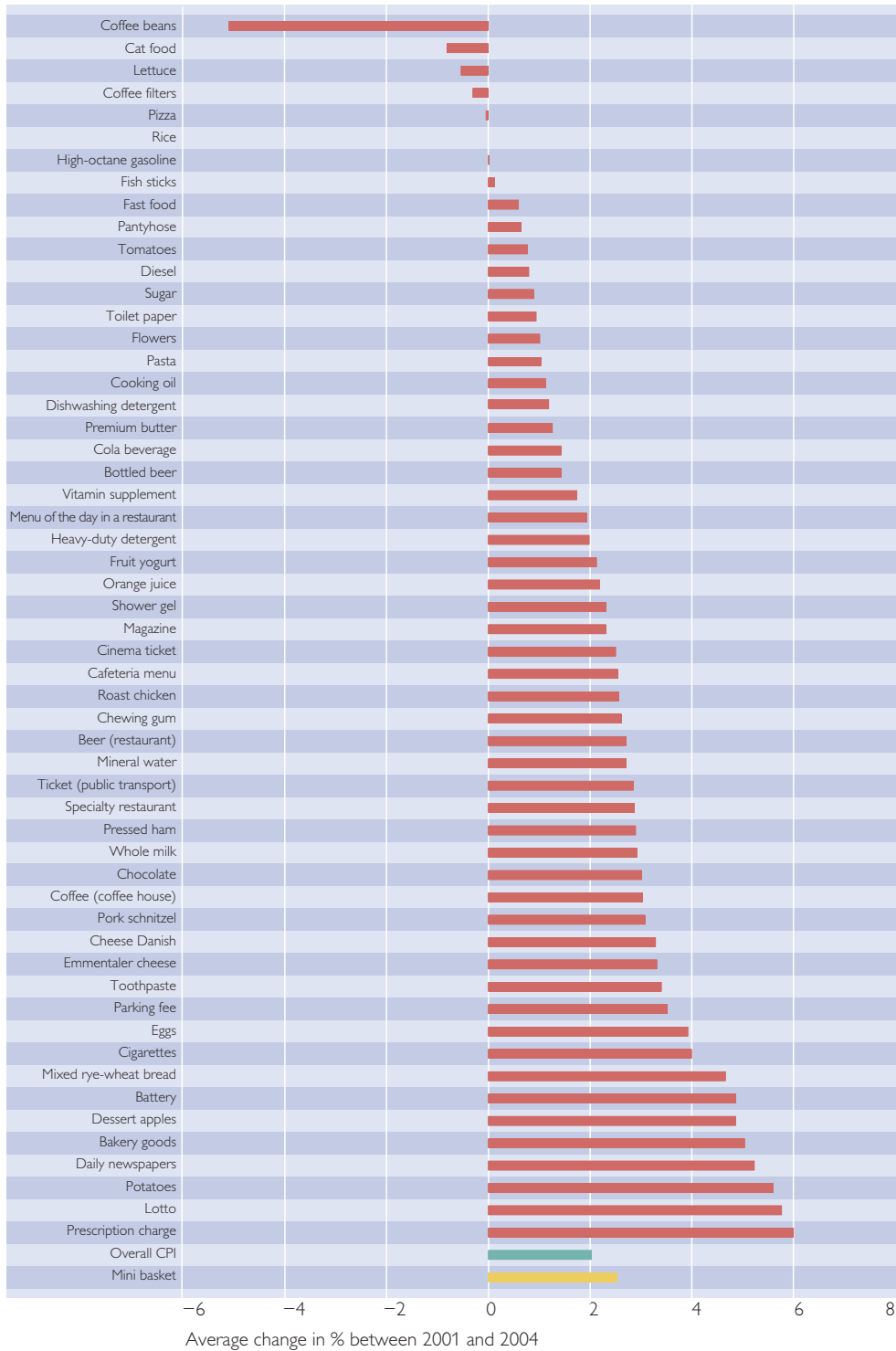
Source: OeNB, Statistics Austria.

The Determinants of Consumption Growth in Austria –
Results of a Representative Survey

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In the period from 2001 to 2004, Austrian households' consumption expenditure increased by 0.9% per annum in real terms, thus growing 1.6 percentage points more slowly on average than in the period from 1989 to 2000. Subdued consumption growth is attributable not only to economic stagnation, but also to a higher saving rate than is usual at the current stage of the economic cycle.

To explain this unusual consumer behavior, numerous hypotheses have been formulated that go beyond the conventional determinants of consumption. In this study, the hypotheses were tested against the results of a representative survey carried out among Austrian households in August 2004. 36% of respondents said they had cut consumption expenditures in the previous 12 months, while 52% claimed to have kept consumption stable and roughly 12% of those surveyed said they had increased consumption expenditures.

Among the motives for lower consumption, respondents most frequently cited perceived price increases, the income situation, a pessimistic income outlook and a trend toward smart shopping, while they considered anticipated cuts in pensions or other public benefits, waiting for prices to drop (withholding consumption) and too cautious economic reforms less relevant and geopolitical uncertainties, mounting public debt and liquidity constraints irrelevant.

JEL classification: E21
Keyword: consumption, Austria.

1 Introduction

During the period of economic weakness between 2001 and 2004, euro area households – more specifically Austrian households – did not cut their saving rate to keep their consumption level stable (consumption smoothing) to the same extent as in past downturns. While numerous economic studies attempted to find consistent theoretical explanations for households' low consumption expenditures, we chose a new approach in this study by conducting a representative survey among Austrian households to explore the motives of their consumption decisions.

This paper starts with a presentation of several facts on Austrian households' consumption and saving patterns, focusing, in particular, on the differences between households' behavior today and their behavior in other business cycles, especially in the recession of 1993 and the subsequent upswing. Section 2 summarizes the motives presented most frequently in the economic literature to explain consumption decisions. The actual relevance of these explanatory approaches for Austrian consumers was tested in a survey with 2,000 respondents. Section 3 outlines the survey results, and section 4 compares the respondents' views of the economic situation with available economic data. Section 5 summarizes and concludes the study.

1.1 Trends in Austrian Households' Consumption and Saving Patterns

In the years of weak economic growth between 2001 and 2004, Austrian households' consumption expenditures increased by around 0.9% in real terms, thus growing 1.6 percentage points more slowly than in the period from 1989 and 2000 (2.5% per annum on average). This is attributable not only to sluggish economic growth in the period from 2001 to 2003, but also to an unusual development of the saving rate. In the past, households had reacted to economic downturns by temporarily saving less to keep their consumption level stable (e.g. in 1993). Chart 1 compares nominal GDP growth (right-hand scale) with the de-

[1] *The authors would like to thank Martin Schneider and Helmut Stix for their valuable comments.*

Chart 1

Comparison of Nominal GDP Growth and the Saving Rate

% of disposable income

%

Saving rate (left-hand scale)

GDP growth (right-hand scale)
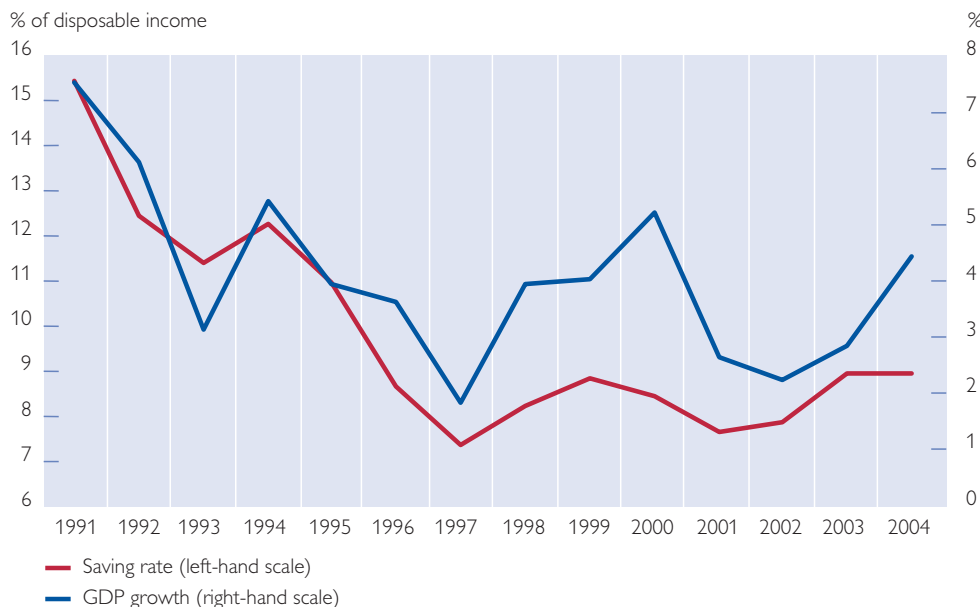
Source: Statistics Austria.

velopment of the household saving rate (left-hand scale). During the downturn of 1993, the saving rate declined and increased again as the economy recovered. In 2001, the saving rate went down, too, but then increased again even though GDP growth stagnated at a low level.

While this study analyzes the short-term development of households' consumption and saving patterns between 2001 and 2004, Dirschmid and Glatzer (2004) focus on the long-term decline in the saving rate in the 1990s. The saving rate forecast by Dirschmid and Glatzer for 2003 and 2004 was lower

Chart 2

Comparison of Actual and Forecast Saving Rates

% of disposable income

Actual values

Forecast values
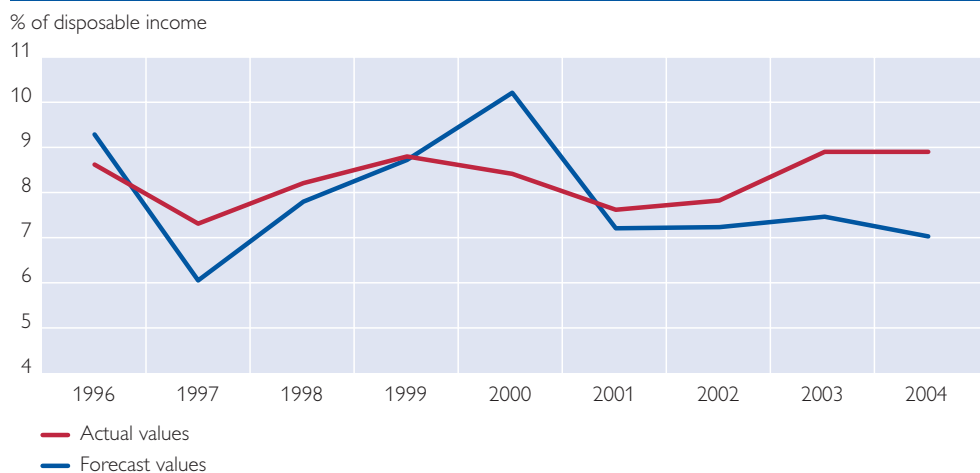
Source: OeNB.
This chart represents the result of a new estimation with revised data until 2004 provided by Statistics Austria using the model published by Dirschmid and Glatzer in 2004. Only two factors changed compared with the original version: the inflation rate coefficient decreased but remained significant, whereas the budget balance, which had already been very close to the significance level of 5% in the 2004 calculation, became insignificant and was therefore not included in the estimation equation.

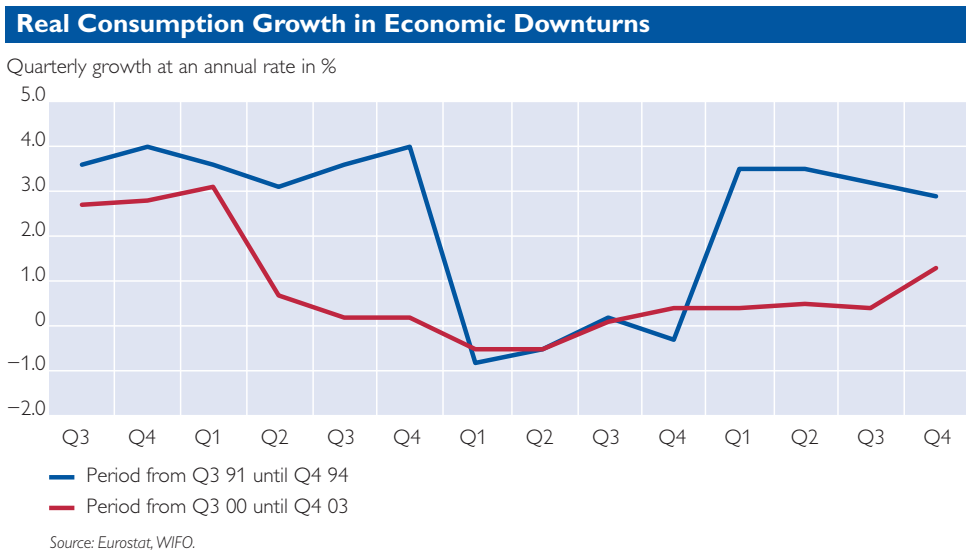than the actual rate (see chart 2) – the variables that determine the saving rate in the long run would have suggested a lower rate. This confirms the extraordinary nature of the development depicted in chart 1.

When comparing the two economic downturns, we find that the most recent decline in private consumption spans a longer period than the downturn in the early 1990s (see chart 3). After bottoming out in the first half of 1993, private consumption growth accelerated to 3.5% by end-1994, thus climbing to a level above the average of the 1989 – 2000 period. By contrast, private consumption growth recovered only slightly after its low in the first half of 2002 and

has remained below the long-term average since. It is important to bear in mind, however, that this slowdown in growth has lasted much longer than the one in 1993.

While the European Commission's econometric estimations (2004b) were relatively accurate in tracking the development of consumption expenditures in the EU in the 1990s, their explanatory power diminished for the years 2001 to 2003, which is generally regarded as an indicator of extraordinary factors. Consumption growth for this period was also overestimated in the OeNB's short-run and long-run consumption equations (OeNB, Fenz and Spitzer, 2005).

Chart 3

Real Consumption Growth in Economic Downturns

Quarterly growth at an annual rate in %

Period from Q3 91 until Q4 94
Period from Q3 00 until Q4 03

Source: Eurostat, WIFO.

2 Determinants of Consumption Growth

2.1 Permanent-Income Hypothesis and Life-Cycle Hypothesis

In economic theory,[2] the permanent-income hypothesis (Friedman, 1957) is generally accepted as an explanation of consumer behavior. Under this ap-

proach, households' consumption decisions are regarded as intertemporal optimization problems, i.e. households decide on how to divide their current disposable income between consumption and saving and thus determine their future consumption level. The permanent-income hypothesis postu-

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[2]   See Attanasio (1999) or Deaton (1992) for more information on consumption theory.

lates that these decisions are based not only on the level of currently disposable income, but also on (rational) expectations of lifetime income and wealth. This presupposes that households assess the present value of assets available for consumption in the future and distribute it evenly into an income stream (permanent income) so that they can afford constant consumption levels.

The life-cycle hypothesis was proposed by Modigliani and Brumberg (1954) and Ando and Modigliani (1963 and 1964). Like the permanent-income hypothesis, it is based on the concept of a constant consumption level over life, but it places special emphasis on a person's position in the life cycle. It postulates that people need to take out loans to reach this consumption level while they are young and have a low income, whereas they can afford to save for retirement when their income peaks several years later.

Both theories assume that a household's consumption path is determined by expectations xof its future income stream and wealth as well as real interest rates (which determine the present value of these assets).[3] The permanent-income hypothesis postulates that households will adjust the consumption level only when they consider changes in disposable income to be of a permanent nature and thus sufficiently large to necessitate a revaluation of permanent income. The impact of temporary changes in disposable income on the consumption level will therefore be rather small. Both theories underpin

the empirical observation that temporary income shocks, which occur in periods of economic fluctuation, hardly impact on the ratio of consumption expenditures to disposable income (Hall, 1978). Accordingly, households tend to cut the saving rate during economic downturns to keep consumption constant despite a temporary income loss; this phenomenon was observed in Austria in 1993 (see section 1.1).

By contrast, when households' future income expectations change to such an extent that they impact on expectations of the lifetime income stream (e.g. owing to pension reforms), this translates into instantaneous and permanent changes of the consumption path. The same holds true for expectations of asset price developments (e.g. real estate or stock prices), which can also change households' consumption patterns.

Another reason put forward in the economic literature to explain households' increased saving rate is the lack of budgetary discipline, or more specifically, the associated increase in public debt. In times of rising public debt, people assume that they will have to pay higher taxes in the future and therefore cut spending already in the present (non-Keynesian effect of government consumption).[4]

The revaluation of future income may also be attributable to bequest motives – the wish to leave more to heirs may in part explain the high saving rate.

Since all these considerations are based on what consumers can actually get for their money, (permanent)

[3] Other factors that impact on intertemporal consumption decisions are the duration of a household's planning horizon and its time preference rate. Real interest rates influence the consumption path in a number of ways, not only via assets' present value (Hall, 1988). For the sake of clarity, we refrained from including an in-depth analysis of these factors in this study. See e.g. Bayar and Mc Morrow (1999) for a more detailed discussion.

[4] In its 2004 Autumn Economic Forecast (p. 78), the European Commission stated the following: "Moreover, private confidence may be undermined by the fact that the tax cuts are leading to a wider government deficit than originally announced." The OECD makes similar statements (OECD, 2004, p. 29).

changes in price expectations may also impact on the consumption path.

2.2 Determinants in Empirical Consumption Estimation Equations

Empirical consumption estimation equations mirror economic theory findings. Over time, consumption is positively correlated with lifetime income and wealth – in the long run, their values (i.e. that of consumption on the one hand, and that of lifetime income and wealth on the other) grow approximately at a one to one ratio (Friedman, 1957). Accordingly, the OeNB bases its estimates of household consumption levels – e.g. in the long-run consumption equation (Fenz and Spitzer, 2005) – on real disposable income, liquid assets and long-term real interest rates. However, actual consumption patterns deviate from the consumption behavior assumed by the above-mentioned hypotheses, and consumption is not completely smoothed over the life cycle for a number of reasons. Empirical evidence shows that the correlation of current incomes and consumption levels in the short run is stronger than suggested by the hypotheses. Therefore, the OeNB includes only real disposable income growth and lagged consumption growth rates in its short-run estimation equation for consumption growth. How can we explain short-term deviations of consumption growth from long-term patterns? What are the reasons for the stronger-than-expected correlation of current income levels and current consumption levels?

2.3 Liquidity Constraints on Households

Liquidity constraints on households are among the reasons cited most frequently to explain deviations from the permanent-income hypothesis.

When a household expects its income to increase, it will not necessarily find lenders enabling it to step up consumption in the present, e.g. owing to information asymmetries between the household and the lender regarding the household's future solvency. If this is the case, the respective household consumes less than its permanent income would allow, and it is limited more to disposable income. The expectation of possible future liquidity constraints may also impact directly on consumption, as households spend more on precautionary saving to protect themselves against future income fluctuations (Zeldes, 1989). In addition, if a household is planning to make a large purchase, it has to save the required sum first. Campbell and Mankiw (1989) estimate that about half of all U.S. households are subject to liquidity constraints, which means that their consumption levels are mostly determined by disposable income, while the consumption path of the other households is determined by permanent income and wealth as suggested by the permanent-income hypothesis.

2.4 Uncertainty and Precautionary Saving

Uncertainty is another possible reason why consumption is not smoothed completely over a life cycle. In terms of its effects, this motive is quite similar to that of liquidity constraints, but the underlying reasons are different. As a rule, consumers have no way of knowing exactly how much income they will earn in their lives or how much wealth they will accumulate. The buffer-stock theory of saving (Carroll, 1992 and 1997) e.g. postulates that people accumulate precautionary savings to prevent unexpected income shocks from impacting on their consumption level. When a household's assessment of un-

certainty changes, it will adapt the volume of precautionary savings and its consumption path accordingly.

This seems to have been the case in the first half of 2003, when the European Commission's seasonally adjusted consumer confidence indicator for Austria (provided by the market research institute FESSEL-GfK) declined massively; it has not fully recovered since. In the international debate on the reasons for this growing uncertainty, the following are cited most frequently: changed labor market conditions, the geopolitical situation and population aging in the context of debates on its impact on pension systems as well as the fear that the effective implementation of structural reforms might dampen income expectations and the propensity to consume.[5]

In the following, we tested the relevance of the different explanatory approaches (permanent-income and lifecycle hypotheses, i.e. income and wealth developments in real terms, as well as liquidity constraints and the various reasons for uncertainty) for Austria by comparing them with the survey results.

3 Survey Results
3.1 Methodology

In this representative survey, a sample of 2,000 Austrians was randomly chosen; in August 2004, the respondents were questioned about their consumption behavior over the past 12 months in a personal interview.[6] To make the results more representative, we applied a post-stratification technique to align the sample structure with the population structure as surveyed in the latest population census: the data was grouped into clusters based on age, gender and place of residence in one of the nine Austrian provinces. The resulting strata were weighted so that their weight in the survey corresponds to the population structure in Austria.

In essence, the available response options were based on the above-mentioned motives, i.e. those listed in the theoretical and empirical literature to explain reduced or expanded consumption expenditures. In addition, motives that have been increasingly put forward in economic analyses in recent months to explain sluggish consumption (e.g. European Commission, 2004a or OECD, 2004) were included.

3.2 Survey Results

Around 36% of respondents said they had cut consumption expenditures during the past 12 months, while 52% claimed to have maintained a stable consumption level and roughly 12% of respondents said their consumption expenditures had increased. All in all, this result is in line with the weak consumption data. However, respondents were only asked whether they had cut, maintained or expanded consumption. The extent of these changes was not explored in this survey, as the reliability of quantitative statements on past consumer behavior tends to be low. Only few respondents can be expected to have kept records of their consumption expenditures over the past 12 months; in most cases, responses to such questions would thus

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[5] See e.g. European Commission (2004c, p. 20): "The slow speed of recovery of some household confidence indicators . . . probably reflects concerns related to . . . the uncertainty generated by the very slow progress with structural reforms."

[6] In the survey, we refrained from distinguishing between durable and nondurable consumer goods, since both are fully included in the domestic demand component "household consumption," and we explore potential reasons for this component's slow development in recent years.

involve a high level of uncertainty. In light of these facts, the expansion of consumption expenditures (12% of those surveyed) could basically have more than compensated the reduction in consumption expenditures (36% of respondents). Furthermore, this survey does not distinguish between real and nominal consumption for two reasons: First, its main focus was on finding explanations for slow consumption growth, and second, we assumed that respondents would find it difficult to make this distinction. Therefore, the survey results presented in section 3 are concerned with consumption in general, and especially with consumption decisions.

Respondents were presented with a list of possible explanations for why they had reduced (or expanded) consumption expenditures over the past 12 months and were asked to indicate the degree to which each statement applied to them. Response options were: the given statement is completely applicable (1), applicable (2), not very applicable (3) or completely inapplicable (4). Answers (1) and (2) were considered as agreement with the respective statement, while (3) and (4) were considered as disagreement. The charts below compare the percentage shares of the two groups.[7]

Table 1

Changes in Consumer Demand Over the Past 12 Months		
	Number of respondents	%
much less	237	12
somewhat less	474	24
no changes	1,041	52
somewhat more	194	10
much more	54	3
Total	2,000	100

Source: IFES, OeNB.

3.3 Reasons for Reducing Consumption

Chart 4 shows the degree of respondents' approval of the 16 explanations presented to them as possible reasons for why they had cut spending. The explanations listed above the first broken line gained more than 50% approval, while those above the second broken line received more than 30% approval. This means that the number of respondents who supported the first four explanations was larger than that of respondents who rejected them. The perceived rise in inflation was met with the largest share of approval, followed

closely by the current income situation. Negative income expectations and smart shopping (e.g. Internet or wholesale shopping) were also motives with which respondents clearly agreed more often than they disagreed.

All other explanations may have been important reasons for some individuals to cut spending, but overall, these options were more often rejected than supported. About one-third of those respondents who said they had reduced consumption expenditures (i.e. around 10% of the Austrian population) claimed that they had done so owing to the fear of pension reforms

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[7]   In these charts, the values in the left-hand bar and in the right-hand bar add up to 100%.

Chart 4

Reasons for Reducing Consumption Expenditures

Share in %

Perceived inflation	
Income situation	
Pessimistic income outlook (fear of job loss)	
Smart shopping	
Fear of cuts in public benefits	
Waiting for prices to drop	
Anticipated pension cuts	
Too cautious economic reforms	
Scheduled big-ticket purchase	
Not familiar with euro prices	
Geopolitical uncertainty	
Bequest motive	
Rising public debt/ anticipated tax increases	
High debts/loans	
Lower wealth	
Higher costs of foreign currency loan	

−100 −80 −60 −40 −20 0 20 40 60 80 100

■ applicable
■ inapplicable

Source: IFES, OeNB.

and cutbacks in other public benefits (e.g. in the field of education and health care). A similarly large share of those surveyed approved of the statements that they preferred to wait for prices to drop and that too cautious economic reforms in Austria were the reason for their pessimistic outlook.

We used association tests to assess the relative importance of given explanations for different consumer groups[8] and arrived at the following

conclusions: Perceived inflation and the income situation (i.e. the two arguments with the highest share of approval) as well as smart shopping (which ranked fourth) were chosen most often by respondents with a low household income. The motive of a pessimistic income outlook was especially relevant for persons aged 60+, while expected cutbacks of public benefits (e.g. in the field of health care and education) was the reason supported most

[8] The chi-square test of independence examines whether two nominally scaled (qualitative) variables are independent of each other or not. All listed relations are significant at the 5% level. When a significant linear relation is found for two variables, the direction of the correlation can be determined with a rank correlation coefficient.

strongly by people aged 45 to 60. The expectation of having a low income under state pension arrangements in old age motivated especially persons with a high income to cut spending and increase private pension provisions. This may have had disproportionate effects on consumption expenditures. However, the last two correlations should be interpreted with caution, as the respective cell values are relatively small.

In general, it seems that households' real income is – either actually or in line with subjective perception – stagnating (e.g. owing to high unemployment, subdued wage growth, lower profits or perceived higher inflation). The prolonged duration of the current economic downturn compared with previous periods of economic weakness seems to be responsible for respondents' uncertainty in the assessment of their lifetime income, thus dampening consumption growth and leading to increased precautionary saving.

The rise in perceived inflation seems to be another reason for reduced consumption levels, especially for persons in the lower income segment; this also confirms the view that households assume their lifetime incomes to have dropped (i.e. consumers believe they can actually afford less now). The trend toward smart shopping, which is relatively new in Austria and cuts expenses without restricting utility of consumption, might have evolved in direct response to the perceived price increases, stagnating income levels and economic uncertainty. However, it might also reflect technological change (price comparison websites, e-commerce) or altered retail trade structures (increasing number of discount

shops, positioning strategies via aggressive or, in certain business sectors, predatory pricing).

Finally, the debate over cutbacks in public benefits seems to have led to a higher saving rate; the discussion about the future of the Austrian pension system and the implemented reforms have prompted especially persons with a high income to spend less and save more. About one-third of respondents who cut spending because of a decline in expected pension benefits chose to invest a larger share of their income in private pension schemes. This behavior is in line with the theory of consumption smoothing, which postulates – just like the permanent-income hypothesis – that changes in the long-term income outlook impact on consumer behavior.[9]

Waiting until prices dropped before making purchases was considered less relevant, which may be attributable to market-related factors (slump in electronics prices, i.e. sectoral deflation) or may be weak evidence of withheld consumption.

What is remarkable about the current phase of weak consumption and rising saving rates is that *different sections of the population* seem to have had *different reasons* for reducing consumption expenditures and/or increasing saving rates. This means that weak consumption is attributable to several concomitant developments which impact negatively on households' consumption expenditures.

Global political uncertainty (e.g. resulting from terrorist attacks or war) as well as the rise in public debt and the associated expectations of a higher tax burden in the future seem to have had no negative impact on con-

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[9] *According to OeNB calculations, roughly one-third of the rise in the saving rate between 2000 and 2003 is attributable to increased investment in private pension schemes.*

Chart 5

Reasons for Increasing Consumption Expenditures

Share in %

Source: IFES, OeNB.
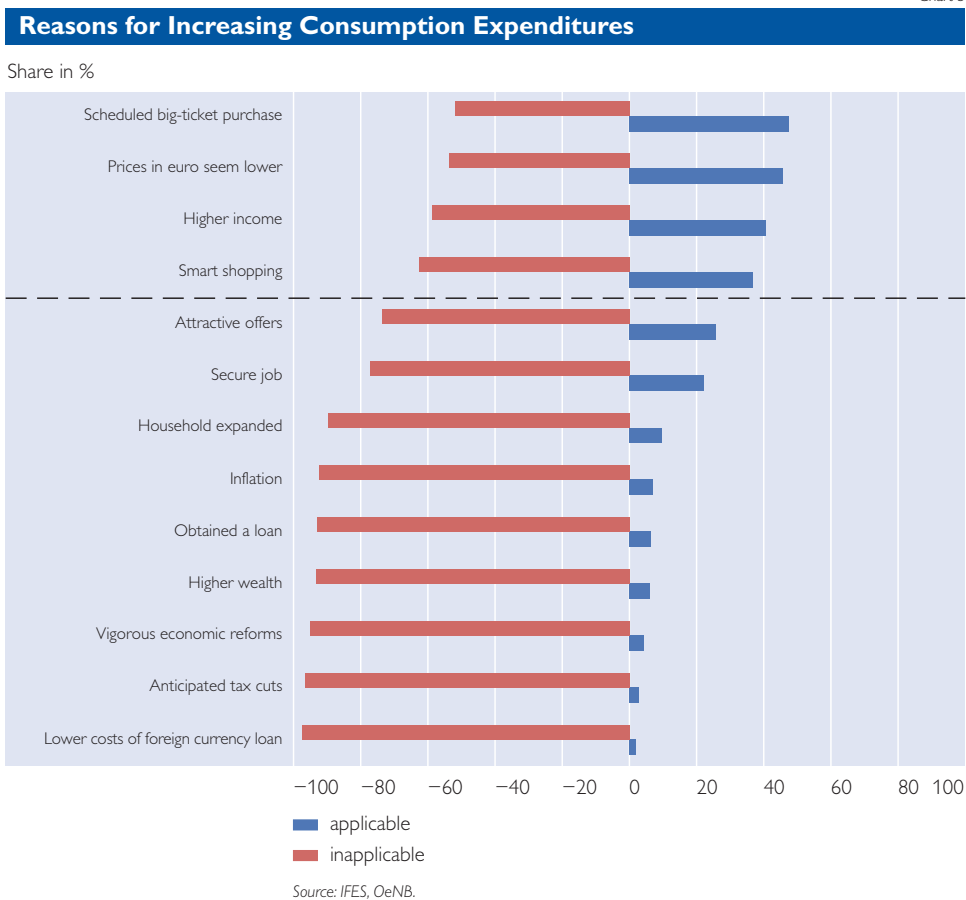
sumption in Austria.[10] Wealth effects (high debts, lower assets, foreign currency loans) and liquidity constraints seem to have been equally insignificant for weak consumption growth.

3.4 Reasons for Increasing Consumption

We also explored the reasons why respondents increased consumption expenditures, even though this effect played only a minor role in the aggregate data, as only 12% of respondents stepped up consumption over the past 12 months. The related survey results are presented in chart 5. Respondents generally approved less of the 14 motives to explain the rise in consumption expenditures than of the motives for reducing them – every single argument for increased consumption was more often rejected than supported. This may be attributable to the absence of relevant explanations in the questionnaire on the one hand, or to respondents' assessment that the increase in consumption expenditures was less significant on the other.

The arguments considered relevant by at least one-third of respondents who said they had increased consumption are listed above the broken line in chart 5. The motive of a scheduled big-ticket purchase received the largest share of approval. In addition, the fact that prices are quoted in euro (which

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[10] This result is in line with Dirschmid and Glatzer's estimation on the basis of long-term developments (2004); see note in chart 2.

are lower than schilling prices in nominal terms) seems to have tempted respondents to spend more. 40% of respondents with higher consumption expenditures were able to expand consumption because their income had risen in the past 12 months. Finally, the trend toward smart shopping seems to have been relevant also for those who increased consumption expenditures. The most notable characteristics of consumers who spent more (as compared with those who cut spending) are their higher levels of income and education.

4 Comparing Respondents' Replies With Economic Data

Before we drew conclusions about the current economic situation from the survey results, we had to check the results against actual current economic data. This "reality check" produced the following results:

4.1 Measured and Perceived Inflation Have Developed Differently

In the period under investigation (September 2003 to August 2004), consumer price inflation was very low at 1.6%, as compared with both short-term and long-term data (1999 to 2003: 1.7%, 1955 to 2003: 3.5%). Thus, the view that consumers reduced consumption expenditures because of higher prices, which was supported by many respondents, is not substantiated by inflation data as measured by the Harmonized Index of Consumer Prices (HICP). However, according to the OeNB's indicator of perceived inflation, which is estimated on the basis of a consumer survey conducted by the European Commission, perceived inflation has been much higher in recent years than actual inflation as measured by the HICP. Today, perceived in-

flation is also much higher than in the 1990s. In their contribution to this issue, Fluch and Stix (2005) show that increases in perceived inflation are correlated with price increases of frequently bought goods, as consumers take note of such changes more easily. For the most part, these goods are food or sanitary products, i.e. necessary goods; contrary to luxury goods, their proportion decreases with rising incomes. This might explain why especially persons with a low income, whose consumption expenditures are primarily used for necessary goods, cite higher prices as the reason why they had to reduce consumption. Furthermore, low incomes have been sinking in the period under review: In 2003, nominal net incomes in the lowest wage quartile declined by 1.2% year on year according to Statistics Austria (2005). Thus, for consumers in the lowest wage quartile, the decline in nominal net income and perceived inflation in excess of HICP inflation (1.3%) added up to a loss in perceived income of more than 2.5% in real terms in this period. In 2002, nominal net incomes in the low-income segment slightly declined again (–0.3%), and perceived inflation was higher than actual inflation according to OeNB calculations. In 2001, nominal net incomes in the lowest wage quartile also decreased by –0.5%, whereas perceived inflation was lower than actual inflation. The difference between the two inflation figures may even have compensated the loss in nominal income.

4.2 Slower Income Growth and Higher Unemployment

Real disposable income stagnated at the outset of the economic slowdown in 2001 and 2002 and grew by 1.7% in 2003 and 2004, respectively. The average growth rate between 2001

Chart 6

HICP Inflation and Perceived Price Changes

%

(Chart showing HICP Inflation and Perceived Price Changes, Oct. 1995 to Apr. 2004, with y-axis from -0.5 to 4.0)

- Perceived inflation
- Actual inflation
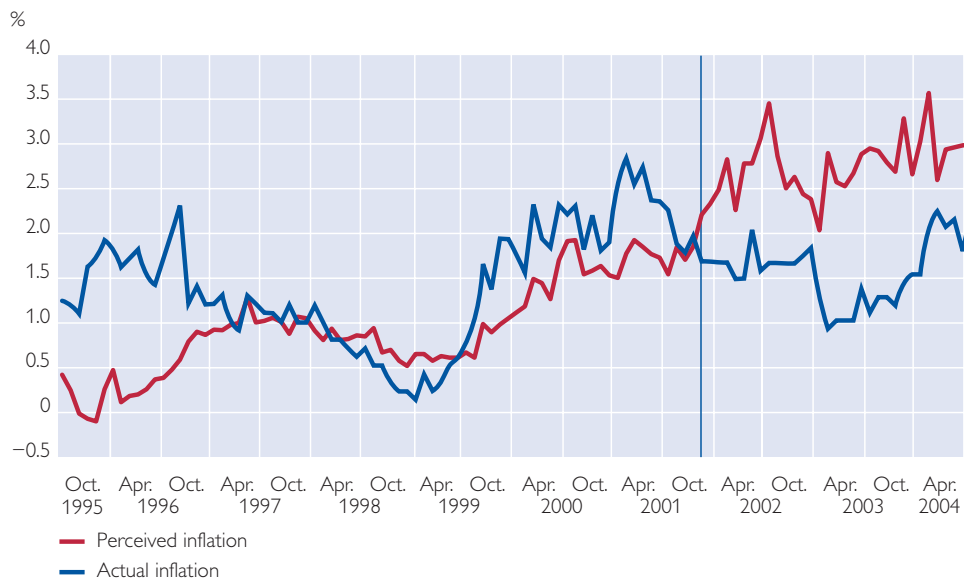
Source: Statistics Austria, OeNB.

and 2004 was significantly lower at 0.9% than in the period from 1986 to 2004 (2.1%). What is remarkable about this stagnation compared with other periods of economic weakness is its long duration: While the sharp decline in disposable income in 1993 (–0.7%) was followed by a notable increase in 1994 (3%), disposable incomes have not returned to the long-term average growth levels since 2001.

Between its most recent low in April 2001 and August 2004, the unemployment rate (EU definition) climbed from 3.4% to 4.5%. This increase by around 1 percentage point is comparable to that between 1990 and 1993 (+0.9 percentage point). However, the level observed in August 2004 is quite high by historical standards in Austria and 0.5 percentage point higher than that observed in 1993. Austrians'

Chart 7

Growth of Real Disposable Income

%

(Chart showing Growth of Real Disposable Income, 1986 to 2004, with y-axis from -2.0 to 6.0)
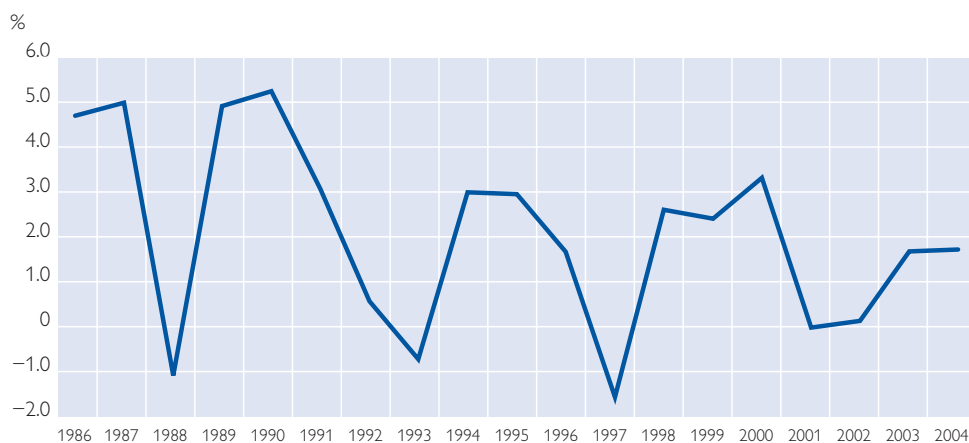
Source: Statistics Austria, OeNB (2004: forecast).

expectations about the development of their incomes and financial status over the next 12 months (based on the European Commission's consumer confidence indicator) have been low since 2003, but not as low as at times. In terms of being pessimistic about their economic outlook, Austrians ranked eighth of 38 in a global survey by AC Nielsen (2005a). 11% of Austrians claimed to be pessimistic about their chances in the labor market.

The trend toward increased price awareness manifests itself in various ways. According to an e-commerce survey (Statistics Austria, 2004), only 9% of Austrian enterprises in the surveyed business sectors sold goods and services via the Internet, with the respective transactions coming to 0.9% of total annual sales, and merely 36% of their customers were private con-

sumers. However, these figures do not include successful online sellers (such as Amazon and e-Bay) or online shopping price comparison services (e.g. the geizhals.at website registers almost 100,000 hits per day).

The (constantly growing) market share of discounters in food retailing is estimated at just under 30% in Austria, which is significantly higher than the European average of 16% (AC Nielsen, 2005b). Brand products are increasingly being replaced by private label and store brands in conventional supermarkets, too. Other sales channels, e.g. factory outlet stores, are also gaining in importance. The number of *smart shoppers,* i.e. customers who buy low-priced quality products without brand loyalty, is increasing (KMPG and EHI, 2004).

Chart 8

Expectations about Households' Financial Situation over the Next 12 Months

— Moving average
— Balance of affirmative and negative responses

Source: European Commission.
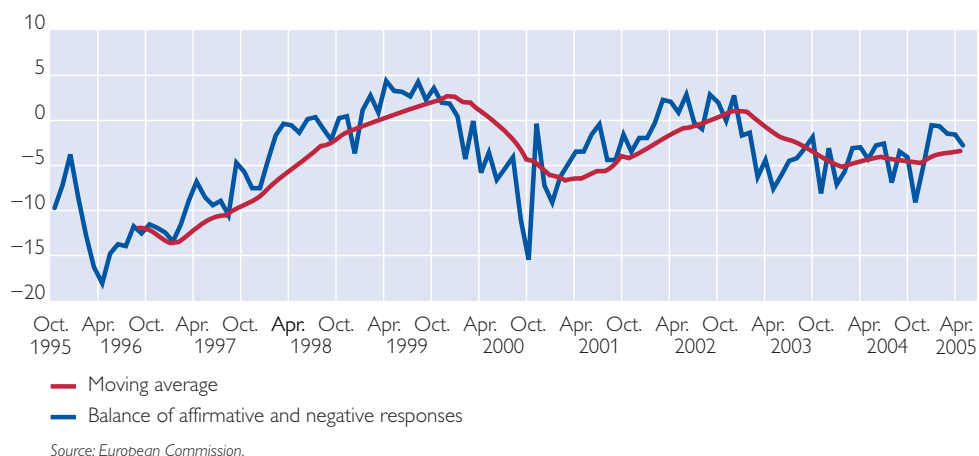
In a nutshell, disposable income growth has in fact slowed down, households' pessimistic income expectations are in line with other data (e.g. the rising unemployment rate), and the trend toward smart shopping is supported by altered retail trade structures. While

these facts are not unexpected in the current economic downturn, the growing propensity to save even though income growth has decelerated comes as somewhat of a surprise. In addition, there is a considerable gap between actual and perceived inflation.

5 Conclusions

5.1 Lower Lifetime Income and Increased Uncertainty

In conclusion, consumer restraint is attributable to the following main reasons: perceived inflation, weak income growth, more pessimistic income expectations and a trend toward smart shopping. These factors are primarily indicative of households' lower income expectations and uncertainty. Households' assessment of their real income and wealth is dampened by the high level of perceived inflation. People increase precautionary saving in response to pessimistic income expectations and to the fear of losing their job in this prolonged period of sluggish economic growth. Thus, households have changed the way in which they divide income between consumption and saving; this change may be a temporary reaction to uncertainty or indicate a permanent change of income expectations.

The discussion on cutbacks in public benefits, too cautious economic reforms, anticipated pension cuts and waiting for prices to drop seem to have played a minor role in shaping respondents' consumption decisions, even though these factors have been influential for certain population groups.

5.2 Different Factors Impact on Different Population Groups at the Same Time

Weak consumption growth is also attributable to the fact that certain population groups are affected by several negative developments at the same time. The consumption decisions of low-income households were primarily based on current incomes and price developments, while consumer restraint among persons aged 60+ resulted from pessimistic income expectations. The reason given most frequently by persons with a higher income for having lowered consumption expenditures was a planned investment in private pension schemes; this could also be interpreted as meaning that persons with a lower income do not have the funds to make private pension provisions. Consumer spending was temporarily weakened further by the fact that the pension reform was implemented during an economic downturn.

Around 20% of those surveyed chose two explanations for why they had reduced consumption expenditures: possible future reforms which might lead to cutbacks of public benefits and at the same time too cautious reforms. Two factors may be responsible for this seeming inconsistency: first, respondents may have addressed different reforms (e.g. pension reform vs. research reform), as the reform itself was not specified in the questionnaire, and second, respondents' assessment of a reform project may depend on whether they themselves are affected by it or not.

5.3 Geopolitical Uncertainty and Non-Keynesian Effects of Fiscal Policy Considered Hardly Relevant, Low Impact of Wealth

There is little evidence of non-Keynesian effects of fiscal policy in the current situation in Austria, as 91% of those surveyed said the increase in public debt had not been relevant for their consumption decisions. Respondents also claimed that geopolitical developments (e.g. terrorist attacks or wars) had hardly impacted on their consumption decisions. The situation in Austria is different from that in other EU countries, e.g. the Netherlands or the United Kingdom, in that wealth plays only a subordinate role in this context.

The survey results suggest that consumer behavior will return to normal

in particular in response to a slowdown in perceived inflation and the prospect of a sustainable business cycle upturn. Accordingly, it might be sensible to place more emphasis on the correlation of macroeconomic development and structural reforms in the preparation of the national reform programs to implement the Lisbon strategy in order to avoid implementing several measures with a dampening effect on consumption at the same time. The measures should be designed, sequenced and communicated in such a manner that they instill confidence in Austria as a business location and reinforce a dynamic and sustainable development of employment and income.

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Annex

Questionnaire

1. Shopping and consumption: In this questionnaire, consumption *includes* expenses for shopping, housing, health, transportation, education, etc., and *excludes* expenses for building loan contracts, securities and other investment vehicles.
   Has your consumption level changed over the past 12 months?
   Have you substantially reduced consumption
   (cut spending significantly) 1
   somewhat reduced consumption (cut spending to a certain extent) 2
   somewhat expanded consumption (increased expenses to a certain
   extent) 3
   significantly expanded consumption
   (increased expenses substantially) 4
   not changed your consumption level at all 5

2. To what extent do the following statements apply to your (or your household's) situation over the past 12 months?

		comple-tely appli-cable	appli-cable	not very appli-cable	comple-tely inappli-cable	don't know
A	My (household) income situation has not improved or it has even deteriorated, so I have had to economize more and spend less.	1	2	3	4	5
B	I fear that my future (household) income situation will only improve marginally, remain constant or even deteriorate (e.g. owing to retirement or possible job loss). This is why I spent less.	1	2	3	4	5
C	My debts are high and/or I didn't obtain a loan, so I spent less.	1	2	3	4	5
D	The geopolitical situation has become more uncertain in recent years (e.g. owing to terrorist attacks or war), so I have made provisions for the future by saving money.	1	2	3	4	5
E	My expenses will be higher in the future (e.g. for a child) or I intend to purchase a big-ticket item (e.g. apartment, car). This is why I have saved more.	1	2	3	4	5
F	I wish to leave more to my children and/or provide for their future, so I have saved (more) money.	1	2	3	4	5
G	My (households) wealth situation has deteriorated owing to sinking security prices. This is why I have had to economize on consumption.	1	2	3	4	5
H	Repaying my foreign-currency loan has become more expensive, so I have had to economize on consumption.	1	2	3	4	5
I	I have spent less because I have been waiting for prices to drop (e.g. for a digital camera, computer).	1	2	3	4	5
J	Prices have gone up, so I have been able to afford less than in the past.	1	2	3	4	5
K	Since the introduction of the euro, I have bought less because I am still not entirely familiar with the new prices.	1	2	3	4	5
L	I fear that my pension will be lower than I had expected and have therefore started to save more for retirement.	1	2	3	4	5
M	I am saving more because I am afraid that reforms will lead to cutbacks in public benefits (for instance education and health care benefits) and that I will need to pay for such services myself.	1	2	3	4	5
N	I am saving more because I expect taxes to go up owing to the rising level of public debt.	1	2	3	4	5
O	I have spent less owing to the rather pessimistic outlook that I have because economic reforms in Austria are too cautious.	1	2	3	4	5

3. To what extent do the following statements apply to your (or your household's) situation over the past 12 months?

		completely applicable	applicable	not very applicable	completely inapplicable	don't know
A	My (household) income has increased, so I have been able to spend more.	1	2	3	4	5
B	My (household) income has become more secure (e.g. owing to a secure job or better chances in the labor market) or it will increase, so I have spent more.	1	2	3	4	5
C	I spent more because I took out a loan.	1	2	3	4	5
D	I made a large purchase I had been planning for a while.	1	2	3	4	5
E	My household has expanded (e.g. children), so I have spent more.	1	2	3	4	5
F	My (household) wealth has improved e.g. owing to an inheritance or a lucrative investment, so I have been able to spend more.	1	2	3	4	5
G	Repaying my foreign-currency loan has become cheaper, so I have been able to spend more.	1	2	3	4	5
H	To me, this year's products (e.g. technological innovations or fashions) were so attractive that I spent more.	1	2	3	4	5
I	I prefer buying now to buying later when prices may have increased.	1	2	3	4	5
J	As euro prices look lower than schilling prices, I have been tempted to spend more.	1	2	3	4	5
K	I spent more because the government is planning to cut taxes next year.	1	2	3	4	5
L	I have spent more owing to the rather optimistic outlook that I have because economic reforms in Austria are being tackled with determination.	1	2	3	4	5

4. Over the past 12 months, public debt has continued to rise in Austria. Are your consumption decisions in any way influenced by the issue of public debt?

very much so   1
to a certain extent   2
not very much so   3
not at all   4

5. Have your shopping patterns recently changed (e.g. shopping via Internet or wholesale shopping) so that you are able to satisfy your wishes without spending more? Are you in a position to save more now even though your standard of living is still as high as it used to be?

completely applicable   1
applicable   2
not very applicable   3
completely inapplicable 4

An Overview of European Economic Indicators: Great Variety of Data on the Euro Area, Need for More Extensive Coverage of the New EU Member States[1,2]

Maria Antoinette
Silgoner[3]

This contribution provides an overview of the most common short-term indicators of economic development in the euro area. These indicators are useful when official data are released with long time lags or if they are subject to major revisions. Indicators based on surveys among businesses, households, financial market analysts or forecasters have the advantage of providing detailed and timely information on individual sectors on a monthly basis and largely without later revision. As an additional instrument, composite indicators, which are calculated by combining a variety of measures into a single indicator with the help of regression and factor analysis, offer an attractive tool for drawing conclusions from different, often divergent signals. Even the most reliable economic indicators, however, can only be interpreted as constituent elements of comprehensive economic analysis. With regard to the new EU Member States, coverage is found to be limited as yet. This study also shows that the forecasting quality of the European Commission's business and consumer surveys for the new Member States is not as high as for the other EU Member States. As the reliability of economic indicators increases as forecasting institutions and respondents gain more experience, coverage of established indicators should be extended early on to this group of countries, in particular as some of the new Member States may soon join the euro area.

1 Short-Term Economic Indicators – Integral Components of Economic Analysis

New data on short-term economic indicators regularly make headlines. The release of new Ifo index data for Germany, for instance, can even top the latest GDP growth figures in terms of media presence. This is because prudent economic and monetary policies are geared toward future economic development and reflect all available data that help gauge current and future economic trends. To direct economic policy according to past data alone would be like steering a car while looking only in the rear-view mirror.

For the very same reason, economic indicators are an important tool for Eurosystem central banks. To fulfill its mandate, the Eurosystem pursues a future-oriented strategy, which is geared toward economic development in the medium term. Monetary policy is unable to respond to short-term fluctuations owing to the lags in the transmission process and owing to the degree of uncertainty that surrounds the effects of monetary policy because of the complexity of the transmission process. With a medium-term monetary policy strategy, excessive activism and the introduction of unnecessary volatility into the economy can be avoided (ECB, 2004b).

The Eurosystem central banks base their economic analysis – one of the two pillars of monetary strategy – on not only the latest economic data available but also on short-term economic indicators and forecasts that are, in turn, based on such data and indicators. Forecasting models are most reliable when the economy is on a stable growth track. By contrast, they are far less reliable in signaling turning points. Economic indicators help to reduce this uncertainty and are therefore an integral component of economic analysis in the Eurosystem's monetary strategy.

Furthermore, economic indicators enjoy great popularity because official data on real GDP growth – a key reference measure for indicators – are not

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adequate for short-term economic analysis owing to a number of problems. First, real GDP figures are published only on a quarterly basis, and related monthly series for the most part refer to the manufacturing industry, with the service sector being covered unsatisfactorily. Second, they are released with long time lags and frequently subject to major revisions. Lastly, the series are subject to measurement errors and problems in both data gathering and processing, and they are not comparable internationally due to methodological differences.

Of these aforementioned problems, the release lags are most critical in the analysis of economic performance. As a case in point, the first release of quarterly real GDP growth figures for the euro area does not become available until about two months after the end of a given quarter, and even a flash estimate based on the data of some Member States is released with a time lag of one and half months. By contrast, data on consumer and industrial confidence calculated by the European Commission are available on the last day of the quarter for all three months of the quarter. The European Commission's Euro Area GDP Indicator, a range estimate of quarterly growth, is released even five months before the confidence indicators and subsequently updated monthly in the light of new information.

A large number of economic data commonly come under the umbrella of short-term economic indicators for the euro area. These can be broken down into the following categories:

— *Measurable economic data* can help to assess the performance of GDP growth in a timely manner. First, these can be data on GDP subcomponents (individual countries or individual sectors) that are released

earlier on. For instance, growth in industrial production is often used as an indicator for GDP growth. Second, data reflecting the early stages of the production cycle may be very useful. These can be data from sectors or countries specialized in intermediate goods but also data on inventories, building permits and overtime hours.

— *Surveys* are a common method of obtaining data from economic actors (consumers, company executives, financial analysts, forecasters) on their assessment of the current or future economic situation. Individual reponses are aggregated to derive sentiment indicators.

— *Composite indicators*, finally, are a product of statistical methods that extract a single indicator from a large number of data that, in addition to aforementioned variables, also include key determining factors of future economic development, e.g. oil prices and interest rates.

This study focuses on sentiment indicators based on surveys (section 2) and composite indicators (section 3) that are particularly closely watched by the media and by economic experts in the euro area. Section 4 presents a few rather peculiar indicators that are also repeatedly mentioned in the media. All in all, the indicators presented here do not necessarily reflect all existing types of indicators, but they represent the key methods and problem areas. Although the focus is on indicators for the euro area as a whole, national indicators are also presented if they are followed in the euro area.

The overview of indicators in each section starts with a technical description of survey methods, sampling properties and availability of data and also

addresses critical aspects of the calculation method of which one should be aware for interpretation purposes. The indicators are assessed according to various quality criteria provided they are directly comparable. To illustrate the uncertainty that may surround indicators, the post-9/11 period is taken as a specific example of the most recent past when, after an initial mood of crisis, it was impossible to say which way the economy was going. In early 2002, several sentiment indicators issued mistakenly strong signals of an upturn that never materialized. In the final quarter of 2002, GDP growth came to a mere 1.1% year on year. Even if this period cannot be described as anything but exceptional, it is nevertheless worth looking at the experience with individual indicators, as it highlights the problem that respondents often do not see the situation any clearer themselves in times of great uncertainty.

Section 5, finally, examines the extent to which comparable indicators for the ten new EU Member States (NMS) are already available and whether they qualitatively differ from indicators for countries that have published such measures for decades. Given that some of the new EU members could join the euro area shortly, the availability of such indicators for the NMS may soon be of relevance for the euro area, on which this contribution – and most economic analysis – focuses primarily. Although the economic importance of most of these countries is limited, they currently constitute the most dynamic region in Europe to which greater attention will be paid in future. Above all, the still inadequate quality of official economic data in many cases will stimulate interest in reliable short-term economic indicators.

2 Sentiment Surveys: Indicators of Long-Standing Tradition

Many of the most common economic indicators are determined in the form of surveys among businesses, households, financial analysts or forecasting institutions. Although the surveys for the most part ask qualitative questions, quantitative indications may be required too. Whereas the results of surveys are primarily used to anticipate the performance of key economic variables, they can also throw light on underlying factors or help assess the consequences of extraordinary events early on.

In a summary article, the European Central Bank (ECB, 2004a) cites a number of advantages sentiment indicators have over officially published data. First, they are released far earlier on than the latter. Second, data are released on a monthly basis whereas their reference series are frequently available only as quarterly data. Third, surveys can provide data that cannot be directly gathered (e.g. capacity utilization in manufacturing industry). Fourth, survey data tend to be less volatile, as they are not (or less) influenced by one-off events (storms, strikes) and should therefore identify turning points sooner. Lastly, survey data are rarely revised.

All these advantages are also accompanied by certain drawbacks. For instance, surveys provide primarily qualitative data that are not easy to convert into quantitative assessments. Furthermore, survey data on different sectors may not necessarily be comparable. Finally, the quality of the results depends to a great extent on how strong the motivation of respondents is to answer questions carefully. The quality of the survey is itself difficult to monitor, as series cannot be subject

to quality checks on an ongoing basis. Despite these drawbacks, long experience with some of these sentiment indicators puts them among the most popular short-term economic indicators.

A common methodological approach, which was developed by the U.S. National Bureau of Economic Research (NBER) for a U.S. indicator, consists in providing respondents with set responses for their assessment of the current or future economic situation. These can be broken down into the following categories: positive (e.g. "the situation will improve considerably (PP)" or "the situation will improve slightly" (P)), neutral ("the situation will remain unchanged"), negative ("the situation will deteriorate slightly" (N), "the situation will deteriorate considerably" (NN)) and the nil response ("No idea"). If p, pp, n and nn represent the respective share of respondents in the corresponding reponse category, then the index value is given by the difference between the positive and negative reponses according to the formula

$$I = (pp + \alpha p) - (\alpha n + nn),$$

where α is the weight (generally ½ or 1) with which slight movements are downgraded relative to strong ones. If respondents are given only one negative and one positive response among which to chose, the formula is $I = p - n$.

Sections 2.1 and 2.2 present several indicators from consumer, business and financial market surveys which are calculated either directly for the euro area or are related to individual euro area countries that are considered to be important for the region as a whole. The box "Internet References" provides the web link for the relevant indicators. Table 1 presents a comparison of key features of indicators.

Whereas all these indicators are published monthly, they do differ in terms of release dates in relation to the first release of GDP growth figures, historical availability, statistical correlation with the reference series and their representativeness for the economy as a whole.

To analyze the statistical relation between indicators and economic development, this paper uses growth in the euro area's seasonally adjusted industrial production rather than GDP growth as a reference series. Although industrial production accounts for only some 25% of GDP in the euro area, it is published on a monthly basis and is, moreover, responsible for more than half of the fluctuations in GDP. In addition, many services (transportation, supplies, repairs) are directly related to industrial production.

Table 1 shows the maximum correlation coefficient between a given indicator and growth in industrial production that can be reached by adjusting the time lag between the two series. The series are standardized in a way such that they have mean 0 and standard deviation 1. The relative lag is shown in parentheses, with a negative figure indicating an actual lead of the indicator, a positive figure representing a lag and 0 signifying that the correlation is highest when both series are coincident. If, for example, the correlation coefficient is highest when the indicator series is lagged by two months (−2) relative to industrial production, then the January indicator will offer the best insights into the growth of industrial production in March. If, however, the indicator data are lagging, say, by one month (+1) with respect to industrial production, then only an earlier indicator release date could offer added value. In other words, a coincident or slightly lagging indicator can

act as a leading indicator in practice if it is published sufficiently early.

Furthermore, a Granger causality test is used to test the statistical relation between the indicator and reference series. Under ideal circumstances, the indicator (I) is Granger causal for growth in industrial production (IP) but not vice versa (this is denoted in table 1 as I→IP). Mutual (I↔IP) causality can be established only in two instances. A final test lastly checks how many months earlier (negative value) or later (positive value) an indicator reaches a turning point than industrial production figures. Table 1 shows the average lead or lag across the entire sample as well as the maximum and minimum time lead or lag in parentheses.[4] This is intended to illustrate the great uncertainty that surrounds the actual timing of an economic turning point signaled by the latest indicator values.

A further statistical test is to check how well reference series can be predicted using short-term indicators. One possibility is to use the historical relation between the reference series and indicator data (estimated on the basis of the full range of data) to predict economic performance at individual reference dates and then check the forecasts against actual outcome (in-sample approach). The other possibil-

ity is to rerun estimates for each refernce date using only the data available prior to the given forecasting period (out-of-sample approach).[5] Examples of such forecasting excerises are Dreger and Schumacher (2005) or Hüfner and Schröder (2002) for various German indicators. This study systematically analyzes the forecasting quality only for the individual components of the European Commission's ESI (section 5).

2.1 Sentiment Indicators in the Euro Area

The *Economic Sentiment Indicator (ESI)*, the origins of which go back to the 1960s and which has been published by the European Commission (2004a) on a monthly basis since 1985, follows the methodological approach of constructing a balance of positive and negative reponses from sentiment surveys as described above. While initially only five countries took part in the project, today data are collected with a standardized questionnaire for all EU Member States (with the exception of Malta) as well as for Bulgaria and Romania, which are scheduled to accede in 2007 or 2008. EU and euro area aggregates are also published. Some of the surveys are conducted by public institutions and some by private national institutions.[6] The indicator, which is pub-

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[4] *Turning points were calculated as extreme values of the three-month moving averages of both indicator series and growth in industrial production. Since the early 1990s, growth in industrial production has accordingly posted five peaks and troughs. Since the fourth peak and fifth trough represent only a slight economic improvement in the quarters post 9/11, followed by a further dent in growth (and not an upturn and a downturn in the current meaning of a business cycle), neither of these turning points was taken into account here. For most indicators, the lead or lag properties also have a historically atypical pattern in this period. If the same test is repeated with all ten turning points, the average lead or lag of the indicators differs from the value recorded in table 1, but the pecking order of the individual indicators will remain essentially unchanged.*

[5] *Inoue and Kilian (2004) show that in-sample tests more frequently indicate good forecasting properties than out-of-sample tests. For instance, a model based on past data may have fairly good predictive powers whereas a structural break in the respective forecast horizon gives rise to forecasting errors.*

[6] *Examples of the wide range of forecasting institutions are the Nationale Bank van België/Banque Nationale de Belgique (NBB/BNB), Germany's Ifo Institute for Economic Research, the Austrian Institute of Economic Research (WIFO), Hungary's GKI Economic Research Institute, the Czech Statistical Office and the U.K.'s Confederation of British Industry (CBI).*

Table 1

Comparison of Sentiment Indicators:
Indicator Quality for Growth in Industrial Production in the Euro Area

	Publishing institution	Published since	Currently released for the following EU countries	Lead on GDP publication[1]	Sample size in 1,000	Sectors covered	Number of subindices[2]	Maximum correlation coefficient[3]	Granger causality[4]	Lead/lag of turning points[5]
ESI	European Commission	1985	EU, euro area, 24 countries	62	141	Consumer, industry, construction, retail, services	15+27	0.85 (+1)	I→IP	+1.9 (−1; +5)
Industry confidence indicator	European Commission	1985	as above	62	36	Industry	3+11	0.89 (+1)	I→IP	+1.5 (−1; +4)
Service sector confidence indicator	European Commission	1996	as above	62	28	Services	3+2	0.69 (+1)	I→IP	+2.7 (−1; +5)
Consumer confidence indicator	European Commission	1985	as above	62	33	Consumer	4+10	0.71 (+3)	I→IP	+4.0 (0; +11)
Construction confidence indicator	European Commission	1985	as above	62	21	Construction	3+2	0.39 (+5)	I→IP	×
Retail trade confidence index	European Commission	1985	as above	62	23	Retail trade	2+2	0.47 (+3)	×	×
Production expectations component	European Commission	1985	as above	62	36	Production expectations	1	0.90 (−1)	I↔IP	−0.3 (−3; +5)
PMI (Manufacturing)	NTC	1997	EU Euro area, 11 countries	60	5	Manufacturing	8	0.87 (−1)	I→IP	−0.2 (−3; +2)
Ifo business climate-index	Ifo	1984	Germany	66	7	Manufacturing, construction, trade	8	0.64 (0)	I→IP	−1.6 (−5; 0)
Ifo business situation component	Ifo	1984	Germany	66	7	Manufacturing, construction, trade	4	0.58 (+3)	I↔IP	+2.4 (+1; +7)
Ifo business expectations component	Ifo	1984	Germany	66	7	Manufacturing, construction, trade	4	0.69 (−2)	I→IP	−2.9 (−6; −1)
ZEW indicator	ZEW	1991	Germany	73	0.35	Financial market	1	0.80 (−5)	I→IP	−4.6 (−9; −3)
Belgian Business Survey	NBB/BNB	1954	Belgium	69	6	Manufacturing, construction, trade	3+1	0.79 (−1)	I→IP	−1.0 (−3; +1)

[1]) Interval between the publication of the indicator value of the last month of every quarter and the first release of GDP growth of the corresponding quarter, measured in days, average of the first three quarters of 2005.

[2]) For the indicators published by the European Commission and the Belgian central bank, the first figure indicates the number of subindices included in the calculation of the relevant indicator. The second figure refers to the additional indicators released for each field.

[3]) Maximum correlation coefficient between indicator and growth in industrial production in the euro area. The degree of the lead/lag (in months) between the series, for which the maximum correlation is reached, is indicated in brackets; a negative value implies a time lead of the indicator.

[4]) Test at the 5% level. For the European Commission's retail index, the null hypothesis (no Granger causality) cannot be rejected in either direction.

[5]) Average interval (in months) between the turning points of the indicator and those of growth in industrial production. Maximum and minimum interval in brackets. Turning points are calculated using the relevant three-month moving average. A negative value implies a time lead of the indicator. The exercise was carried out only for indicators showing all tested peaks and troughs in industrial production.

lished on the last working day of each reference month, is seasonally adjusted and standardized in a way such that the long-term average has a value of 100.

The questionnaire and the sectors covered have steadily grown in size and number. Some questions relate to the economy as such (business situation, production expectations, order books, level of inventories); others re-

late to the inflation and the employment expectations of households and to their financial situation, saving rate and big-ticket purchases. The ESI composite indicator aggregates five confidence surveys for the following sectors: industry (weight: 40%), services (30%), consumers (20%), construction (5%) and retail trade (5%), with each of these components being drawn from

several individual questions.[7] This indicator is thus composed of 15 individual components in all. In addition, data derived from a further 27 questions, some of which are surveyed only on a quarterly basis, are also presented. Furthermore, an investment survey is conducted every six months in the industrial sector. Overall, 108,000 enterprises and 33,000 households throughout the EU take part in these monthly surveys.

ESI's great advantage is its long historical time series and large sample as well as the EU-wide standardization of its survey method. At the same time, a distorting effect may arise from the fact that the balance of opinion reflects a rather rough quantification of the expected degree of improvement and/or deterioration ("somewhat better" or "much better"). Moreover, it should be borne in mind that the ESI is a slightly lagging indicator relative to growth in industrial production, as the analysis of correlation and turning points demonstrates. In other words, the index value published in a given month is in fact an indicator for a past month of the reference series. In practice, the ESI serves as a leading indicator nonetheless as it is published around two months before the industrial production series. Indeed, all five main components are lagging indicators, with industrial and service sector confidence having the best indicator properties for industrial production (short lag and high correlation). A truly leading indicator is a subcomponent of industrial confidence (also shown in table 1), which asks explicit questions bearing on production expectations in

the three months ahead and of which particularly good leading properties relative to industrial production can therefore be expected. Section 5 examines the properties of the ESI in detail.

The Purchasing Managers Index (PMI) is modeled on its U.S. equivalent and has been calculated on a monthly basis for the euro area since 1997 by NTC Research on behalf of Reuters for the manufacturing and service sectors. All in all, more than 5,000 businesses from eight countries (Germany, France, Greece, Ireland, Italy, the Netherlands, Austria and Spain), accounting for a total of 92% of the euro area, are covered by the survey. The PMI is published on the first working day following the end of each reference month and is broken down by sector and country. The questionnaire for the the most frequently used Manufacturing PMI covers the reassessment of output, employment, new orders, suppliers' delivery times and inventories (eight subindices in all) compared with the previous month. The PMI is standardized in a way such that an index above 50 shows expansion while an index lower than 50 reflects contraction in the economic situation. However, the signaling function of this threshold value may be somewhat flawed at times, which is why fluctuations in value should always be interpreted in relation to the level as well. The PMI is popular also on account of its international comparability. After all, every G-8 country has been surveyed according to the same methodology since 2002. The PMI also enjoys great trust because its questionnaire is based

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[7] *The weights are determined from both the relevant component's importance for GDP and the level of correlation with the reference series. The service sector has been surveyed since 1996 and has been a component of ESI only since 2004 (European Commission, 2004b). The European Commission expects that the inclusion of the service sector survey will increase the correlation of the index with the reference series and shorten the length of the indicator's lag.*

on actual facts and not on expectations. Accordingly, table 1 shows the Manufacturing PMI to be a slightly leading indicator with a high correlation. NTC Research (2002) shows that the British PMI has in the past had a better handle on the definitive GDP growth figure than the first release of GDP figures.

As chart 1 illustrates, the ESI composite indicator has proved to be relatively accurate in the post-9/11 period. In early 2002 it trended up only slightly, reflecting the weak and temporary upturn in the economy relatively well. By contrast, the PMI rose steeply, overstating the ensuing economic trends.

Chart 1

Comparison of Business Climate Indicators from 1999 onward

Deviation from mean of indicator relative to standard deviation
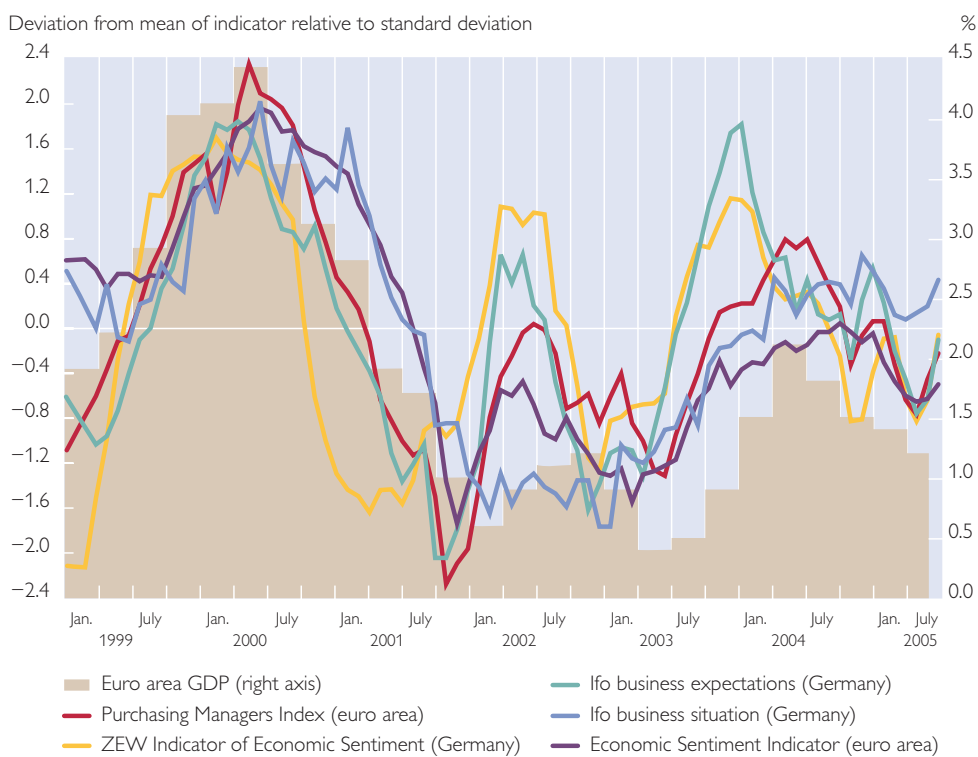
Source: European Commission, Ifo, ZEW, NTC Research, Eurostat, OeNB.

Legend:
- Euro area GDP (right axis)
- Purchasing Managers Index (euro area)
- ZEW Indicator of Economic Sentiment (Germany)
- Ifo business expectations (Germany)
- Ifo business situation (Germany)
- Economic Sentiment Indicator (euro area)

2.2 Germany and Belgium – Representatives for the Euro Area

In addition to these indicators that explicitly cover the euro area, national indicators are also often considered to be an important gauge of the euro area's economic health. Those hogging the spotlight are Germany's Ifo Business Climate Index, Germany's ZEW Indicator of Economic Sentiment and Belgium's Business Survey.

The *Ifo Business Climate Index* is published on the 25th of each reference month by Germany's Ifo Institute for Economic Research. Senior managers in more than 7,000 businesses in German trade and industry are asked to give their assessment of the current business situation and their business expectations for the six months ahead. The balance of responses is determined according to the aforementioned methodology. The geometric mean of both these indices is the most frequently used Ifo Business Climate Index, which is standardized at an interval of +/−100. The in-

dex is also broken down by subsector (manufacturing, construction, wholesale and retail trade). Separate indices used to be published for eastern and western Germany until 2004. Now this distinction is no longer applied, as the economic trends of both regions have sufficiently converged. The Ifo Business Climate Index is coincident or even slightly lagged relative to German GDP. That the index nonetheless has such a high profile in the media is also its association with a very memorable rule of thumb, according to which three rises or falls in the index in succession herald a turning point in GDP growth. This rule is frequently applied also to the euro area on account of Germany's high GDP weight.

This rule of thumb never failed in the first 40 years of the Ifo index's existence. However, in the aftermath of 9/11 the index slumped temporarily to then rise three times in a row without being followed by a turning point in GDP growth. This false signal for the very first time in its history prompted a debate about the indicator's reliability. Although the situation at the time should be seen as an exceptional event since an excessive downward correction was immediately followed by signs of equally unfounded euphoria, this case underlines that sometimes just when the degree of uncertainty about the future is at a peak, economic indicators are also subject to increased uncertainty. Ever since, the two subcomponents of the Ifo index have received greater attention, as the false signal in early 2002 emanated only from the business expectations component but not from its current business situation counterpart

(chart 1). Although the correlation analysis in table 1 shows that the current business situation indicator has a three-month lag,[8] while the expectations index has a two-month lead, leads should not overrule reliability in times of great uncertainty. Kunkel (2003) goes as far as concluding that the three successive signals issued by the Ifo business climate index only indicate a turning point reliably when they are subsequently confirmed by three successive signals from the business situation indicator.

The *ZEW Indicator of Economic Sentiment* is a perfect foil to the Ifo Index since it consults precisely those experts in Germany who are not included in the Ifo sample, i.e. financial analysts. The Centre for European Economic Research (ZEW) has been surveying 350 German financial experts from the banking, insurance and major industrial sectors on a monthly basis since 1991. The ZEW indicator asks these experts for their opinion on the six-month prospects of the German economy. It also asks them for their assessment of key financial indicators such as interest rates, equity prices, oil prices and inflation, as well as for their views on economic trends in the euro area, Japan, the U.K. and the U.S.A.

As table 1 shows, the ZEW indicator has a lead of some five months on industrial production in the euro area, thereby enjoying a significant lead relative to the Ifo business expectations. It is also published a week or so before the Ifo index. Hüfner and Schröder (2002) show that the ZEW index is more suitable for medium-term forecasts of the German economy than

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[8] *The significant lag of the business situation index conforms to mutual Granger causality (I↔R). The type of questions bearing on the current business situation make past industrial production trends a key determining factor for the indicator.*

the Ifo index of business expectations. The ZEW indicator is, however, generally more volatile than the Ifo index for the following reasons: its more limited sample size, its smaller questionnaire and the fact that its respondents react more strongly to general market sentiment and political or economic news and are not themselves involved in business life. Hüfner and Schröder (2002) show that the Ifo index of business expectations is more reliable for short-term forecasts (up to three months). Like the Ifo index, the ZEW indicator also falsely suggested an upturn in the aftermath of 9/11 (chart 1).

Whereas the high profile of both these indicators can be easily explained in view of Germany's size, the significance attached to the Belgian Business Survey – conducted on a monthly basis since 1954 by the Nationale Bank van België/the Banque Nationale de Belgique (NBB/BNB) among 6,000 senior managers of Belgian industry (manufacturing, construction, trade, corporate services) – requires a few words of explanation. Belgium is a small, open economy, with the euro area as its main trading partner. It specializes in intermediate goods and has a high share of small and medium-sized businesses. This is why economic changes in Belgium can be ascertained earlier on than for its trading partners in the euro area. As a result, turning points in the Belgian business cycle have a significant lead on those in the euro area. Accordingly, the Belgian business climate index also has a lead relative to GDP growth in the euro area (table 1; Vanhaelen et al., 2000). Furthermore, the popularity of the Belgian economic survey is based on the long historical time series and the internationally comparable methodology used for the European Commission's ESI.

To sum up, the great advantage of these sentiment indicators is that they have been in use for many years, their calculation method is simple, they are published early on and they are by and large not revised retrospectively. Past experience has shown that sometimes a longer lead comes at the expense of reliability in periods of great uncertainty owing to a future-oriented perspective. In practice, this means that economic signals issued by leading indicators should be substantiated by signals from indicators that are more closely related to the present.

2.3 Surveys of Forecasters

The last two indicators in this section focus on a completely different group of respondents. Unlike the previous indicators, for which consumers, businesses and financial analysts are interviewed, these indicators reflect the opinion of professional forecasters. The idea, which is also substantiated by the relevant literature (Batchelor, 2001; Blix et al., 2001; Zarnowitz, 1984), is that although individual forecasters may outperform the average of a group of forecasters in certain cases, an individual forecaster rarely outperforms *systematically*. A consensus forecast should thus minimize the risk associated with forecasts and provide a more reliable indicator.

Since 1989 *Consensus Economics*, a private British survey firm, has been conducting a monthly survey of 400 economists worldwide for their forecasts of GDP growth, inflation, the current account balance and interest rates in more than 70 countries. The forecasts are classified by individual country and regional group and released in four volumes (industrialized countries, Asia-Pacific, Latin America and Eastern Europe). Twice a year, Consensus Economics also undertakes

Chart 2

Results of the Survey of Professional Forecasters in Q3/2005

Probability distribution of forecasts for 2006, share of respondents
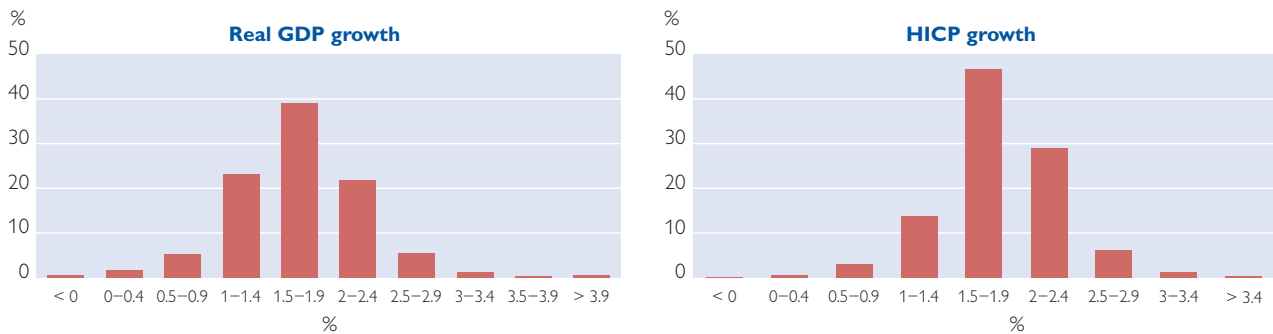
Source: ECB.

special surveys on long-term forecasts. In April 2005, for instance, long-term inflation expectations in the euro area (reference year: 2010) stood at 2.0%, as did potential growth in the euro area.

Since early 1999 the ECB has been conducting the *Survey of Professional Forecasters (SPF)*, which asks a panel of nearly 90 EU-based participants (financial institutions, research institutes, as well as employers' associations and trade unions) in quarterly intervals for their predictions for the euro area (Garcia, 2003). SPF forecasters are free to use a forecasting method of their choice (model forecasts, rule-of-thumb forecasts, subjective forecasts). Typically, about two-thirds of those polled will respond. The SPF questionnaire asks for expected GDP growth, inflation and employment. A distinctive feature of the SPF is that, unlike Consensus Economics, it does not only ask for point estimates but also for complete probability distributions. Accordingly, forecasters are to allocate subjective probabilities to intervals (i.e. a range of possible outcomes) with a width of 0.5 percentage point. This throws light on the risk spread around the most probable forecast value and highlights the uncertainty surrounding the forecast. The main results are published in the ECB's monthly bulletin.

Once a year, long-term forecasts (five years ahead) are also collected. In the third quarter of 2005, for instance, long-term inflation expectations stood at 1.9%, potential growth at 2.1% and structural unemployment at 7.6% (reference year: 2010).

A basic problem with surveys of forecasters is that the expense and time involved to make the forecasts cannot be verified in practice. Although a certain continuity of participants is expected, model forecasts are likely to be made only at large intervals of time whereas a purely subjective update can be issued in between these periods. By way of surveys of interest rate forecasters, Bewley and Fiebig (2002) show that the latter tend to indicate values in the safe consensus range so as not to stick their neck out with forecasts that dramatically deviate from the mean. This would lead to a bias in the distribution toward the mean, resulting in an unsatisfactory picture of the risk profile. In this sense, it is good that SPF participants remain anonymous and that the survey is conducted only on a quarterly basis. This ensures that forecasters do not come under excessive pressure to participate in surveys every time – even if a current forecast update is not available.

Internet References

Economic Sentiment Indicator (ESI): *europa.eu.int/comm/economy_finance/indicators_en.htm*
Purchasing Managers Index (PMI): *www.ntc-research.com*
Ifo Business Climate Index: *www.ifo.de*
ZEW Indicator of Economic Sentiment: *www.zew.de*
Belgian Economic Survey: *www.nbb.be*
Consensus Forecasts: *www.consensuseconomics.com*
Survey of Professional Forecasters: *www.ecb.int/stats/prices/indic/forecast*

3 Composite Indicators

With the emergence of suitable statistical methods of calculation and correspondingly powerful computers, composite indicators, which sometimes reflect hundreds of data series, have experienced a boom in recent years. The basic approach is to obtain information from data that are considered to be leading indicators signaling economic trends, that respond quickly to economic fluctuations (e.g. overtime hours) or are themselves the cause of economic fluctuations (e.g. oil prices, interest rates and exchange rates). The aim is to extract the "essence" from all these data series and to filter out disruptive factors such as contradictory signals issued by individual indicators, measurement errors and calendar or base effects. This would make the movements of composite indicators more straightforward and easier to interpret. Likewise, economic fluctuations can have various causes and characteristics and be reflected in a variety of indicators.

A range of statistical methods is available to derive composite indicators from data series. These methods differ in terms of how the composite indicator's input series are selected, standardized (correction for different margins of fluctuation), synchronized (time lead or lag in the composite indicator's constituent series compared with the reference series), corrected for outliers/seasonal fluctuations and weighted, and also differ with regard

to how the indicator is extracted. Of the statistical methods available, regression analysis and factor analysis have prevailed in practice. These two methods are roughly outlined here. In addition, there are many other methods (e.g. Markov switching model, state space model etc.), of which an overview can be found in Marcellino (2006).

For both regression analysis and factor analysis, the data series suitable for further testing initially need to be selected from a large number of potential candidates. The selection criteria include statistical (long time series, few revisions, low volatility, timely release) and economic factors (stable empirical correlation with the reference series and economic plausibility). In regression analysis, the definitive selection of series, their time lead or lag and the calculation of their weights are carried out by using *regression equations*. These weights are then used to calculate the economic indicator or directly predict growth based on the latest economic data. The weights and the selection of series are usually kept constant over a certain period of time but are subject to regular reviews. This is necessary, as composite indicators are only ex post efficient since the correlations between input series and reference series are subject to changes over time (Emerson and Hendry, 1996).

A far more sophisticated approach is factor analysis, which became popular in the 1990s. The *Dynamic Factor*

Model (Sargent and Sims, 1977; Geweke, 1977) was developed in the 1970s on the basis of the *Static Factor Model* (Burns and Mitchell, 1946). The development of the *Generalized Dynamic Factor Model* by a research group at the Centre for Economic Policy Research (Forni et al., 2000; Forni and Lippi, 1999; Forni and Reichlin, 1998) made this method also applicable to large data sets at the end of the 1990s. The basic idea is to decompose each data series on different variables and countries in a large panel of time series into two unobservable components, of which one is strongly correlated with the other (common component) while the other one is not correlated at all or correlated only weakly (idiosyncratic component). The common component is driven by a small number of common "factors" or shocks, which can be interpreted as a synthetic indicator. The weights are therefore derived from the properties of individual time series, within the entire gamut of constituent data series.

In Europe, factor analysis is used for two purposes. First, it offers a means of estimating on a timely basis data series that are only released with a large time lag and are subject to frequent and major revisions. The OeNB's short-term economic indicator (weblink: *www.oenb.at/de/geldp_volksw/prognosen/prognosen.jsp*), which has been published on a quarterly basis since 2003, is based on this method (Fenz et al., 2005; Schneider and Spitzer, 2004). Second, factor analysis offers a novel approach of estimating nonobservable time series such as the core inflation rate.

Many institutions such as the OECD have been publishing composite indicators for decades in order to assess economic trends early on. In the last few years, however, a number of new composite indicators of this type have been established. It is extremely difficult to compare the various approaches in terms of their informative quality and reliability, as their specific methods are very different. For instance, they refer to different reference series (GDP growth, growth in industrial production, prediction of turning points) in various presentations (annual, quarterly or annualized growth rate), have different leading properties and are released as an index value or explicitly as a growth forecast (point estimator or range). The large number of data series that are embedded in composite indicators comprise:

— *Survey data:* Consumer or industrial confidence, construction industry surveys, purchasing managers' index, financial investor surveys;
— *Real economic data:* Industrial production, building permits, labor market indicators, car sales, U.S. and Asian economic data;
— *Price data:* Consumer and producer price data, core inflation rate, oil and other commodity prices;
— *Financial data:* Interest rates, interest rate spread, exchange rates, equity indices, international interest rate gap;
— *Monetary aggregates:* M1, M2, M3.

The variables are included in the indicator calculation with a time lag/lead of varying length. Furthermore, many composite indicators also include data on errors in previous publications, which makes them into "self-correcting" indicators. Table 2 systematically presents these methodological differences. The box "Examples of Composite Indicators" (see p. 79), provides additional information on sampling, the calculation method, the input series and the relevant web links.

Examples of Composite Indicators

The OECD has been publishing its Composite Leading Indicator (CLI), which is considered to be a good indicator for turning points since the 1980s (www.oecd.org/std/cli). It is now ascertained for 23 countries and 7 economic areas. The CLI for the euro area (weighted mean of individual countries' CLIs) has been published since 1999. The CLI's calculation includes 5 to 10 series per country. For the euro area, this involves 75 series in all. The weight of sentiment indicators is almost 50%. The CLI has a comparatively weak correlation with the industrial production reference series, but it has a relatively long lead of six months on average. However, the CLI is also only published six weeks after the end of each month.

Handelsblatt, Germany's financial daily, has been publishing an indicator for turning points in western Germany since 1992, for eastern Germany since 1995 and, finally, for the euro area since 1999 (www.handelsblatt.com). The Euro Area Economic Indicator is "self-correcting" and is improved regularly as a result, the lead could be extended from one quarter to up to three quarters, according to Handelsblatt sources. The reference parameter is seasonally adjusted, annualized growth of real GDP. The calculation includes five individual series, with the weight of sentiment indicators having been reduced from an initial 50% to a current 30%.

The Financial Times has been publishing the Euro Growth Indicator since 2000. This is calculated by the Euroframe group (nine research institutes from Germany, France, Italy, the United Kingdom, the Netherlands, Finland, Ireland and Austria), (www.euro-frame.org). The indicator aims to predict annual real GDP growth two quarters ahead of official statistics. The forecast considers eight data series in all, three of which are sentiment indicators surveyed by the European Commission. Factor analysis is used to extract the key factor from individual questions on industry, retail and construction. To arrive at a short-term forecast, these factors need to be predicted (Charpin et al., 2000).

The Centre for Economic Policy Research (CEPR) has been publishing the EuroCOIN Indicator for the euro area and for Germany, France, Italy, Spain, the Netherlands and Belgium since 2002 (www.cepr.org). Its reference parameter is seasonally adjusted, quarterly growth of real GDP. The EuroCOIN provides an estimate of the cyclical component of GDP, adjusted for measurement errors and idiosyncratic regional and sectoral shocks. The calculation, which is based on factor analysis, includes around 1,000 monthly series from the six largest countries in the euro area. These series are adjusted by filters for measurement errors and short-term fluctuations.

The European Commission has been publishing the Euro Area GDP Indicator for quarterly real GDP growth in the euro area since 2002. It is released for the two quarters ahead, for which neither preliminary GDP data nor flash estimates have been released, in the form of a range (95% confidence interval based on the standard error of the regression). The calculation includes four real variables and two financial data series (Grasman and Keereman, 2001). Furthermore, the European Commission has been publishing the Business Climate Indicator (BCI) for the euro area on a monthly basis since 2000. The common component and information specific to every individual question are extracted from five individual questions on industrial confidence (euro area aggregate) using factor analysis. Information on the driving forces behind the business cycle can be derived from the specific components. The weblink for the Euro Area GDP Indicator and the BCI is europa.eu.int/comm/economy_finance/indicators_en.htm.

Studies by the publishing institutions that compare composite indicators with the reference series often show an impressive correspondence with very high correlation coefficients. However, it should not be forgotten that, at the time a new index value is being established, some input series are yet to be released and will only be added with a time lag, or must even be forecast and will be substituted at a later date. Or the input series will be revised retrospectively, e.g. industrial production. Composite indices are therefore often themselves subject to major revisions (unlike sentiment indicators, see section 2). The correlation of the first release of an index value can sometimes be well below that which is calculated ex post on the basis of the definitive value, and it is precisely the latest indicator values that

are associated with greater uncertainty. This problem is illustrated in the box "Forecast Revisions Due to New or Revised Input Data of the Euro Area GDP Indicator" (see p. 81). Diebold and Rudebusch (1991) carried out a formal analysis of the forecasting quality of a well-known U.S. composite indicator (*Census Bureau's Index of Leading Economic Indicators*). Comparing the results of an *in-sample* forecast with those of the *out-of-sample* forecast for both final indicators and first releases shows that the inclusion of the composite index can reduce forecasting errors in the first two instances whereas this is only partly the case for the *out-of-sample* forecast based on the first releases. This proves that only the analysis of real-time data can throw light on the indicator quality of a composite index.

Many of the aforementioned indicators were created and flourished at the end of the last century. However, evidence after 9/11 has highlighted their limitations. At a time when opinions about the reactions of both markets and consumers to the attacks diverged, signals issued by composite indicators were paid particular attention. Many composite indicators issued false signals, just as the Ifo or ZEW confidence indicators did, primarily because of the high input weight attached to the confidence indicators. Since then, the composition of composite indicators has received greater attention

in interpreting signals issued. Institutions that publish composite indicators have also taken action and, in several cases, reduced the weight of the constituent sentiment indicators.

In a summary article on composite indicators the ECB (2001) concludes are useful as an additional tool but cannot replace extensive coverage in economic analysis. The relationship between indicators and the business cycle is frequently not stable. This is why especially the latest indicator values have a limited informative quality. Although turning points (at least based on definitive indicator values) were often indicated early on in the past, this does not permit conclusions to be drawn about the exact date or feature of future turning points especially since the lengths of leads fluctuate strongly and false signals are issued. The added value of composite indicators for short-term forecasting is considered to be very limited.

To sum up, composite indicators offer an attractive tool for drawing conclusions from different, often divergent signals. However, the informative quality of the latest relevant index values can be reduced by input series that are included with a time lag and subject to revisions. In any case, composite indicators cannot replace the analyses of individual data series, as only these permit conclusions to be drawn about the driving forces behind a trend.

Table 2

Comparison of Composite Indicators

	Publishig institution	Published since	Currently released for the following countries	Frequency of publica- tion	Number of input series	Revi- sions[1]	Reference series	Type of publication[2]
OECD-CLI	OECD	1980	23 OECD countries and 7 economic regions	monthly	75	J	Industrial production	I
Euro Area Economic Indicator	Handelsblatt	1992	Germany, euro area	monthly	5	J	Annualized annual GDP growth	P
Euro Growth Indicator	Euroframe	2000	Germany, euro area	monthly	8	J	Annual GDP growth	P
EuroCOIN	CEPR	2002	Euro area and 6 individual euro area countries	monthly	1,000	J	Quarterly GDP growth	Z
Euro Area GDP Indicator	European Commission	2002	Euro area	monthly	6	J	Quarterly GDP growth	B
BCI	European Commission	2000	Euro aera	monthly	5	N	Annual growth in industrial production	I

[1] Y = systematically retrospective revisions due to delayed publication or revisions of the input series, N = no retrospective revisions of the input series (the BCI's historical index values may, however, be revised whenever the factor analysis is carried out again using the latest industrial confidence values).

[2] I = publication as an index value, F = publication as a forecast for the following quarters, E = estimate of the cyclical component of GDP, R = publication as a range forecast for the following quarters.

Forecast Revisions Due to New or Revised Input Data

of the Euro Area GDP Indicator

The European Commission's Euro Area GDP Indicator is published for the two quarters ahead, for which GDP growth data have yet to be released. It is updated on a monthly basis with the latest data available. For every quarter, there are therefore six sequentially published range estimates for real GDP quarterly growth.

A systematic record of the experience of the 14 quarters since the launch of the GDP indicator in January 2002 allows the following conclusions to be reached: The current range is 0.4 percentage point (until mid-2003: 0.3 percentage point) and is therefore relatively wide. The range shifted by as much as 0.5 percentage point within the six publications for a specific quarter. Whereas the relevant last two publications of the range include subsequent actual GDP growth in 86% of cases, this was true for only 55% of cases on average for the first three publications and this despite the relatively broad range. All in all, the Euro Area GDP Indicator's accuracy should be seen as being only moderate – especially for the indicator's initial releases.

4 Peculiarities

This section presents a few somewhat peculiar indicators that are repeatedly referred to in the media as leading indicators. An example of this is the R-Word Indicator, which uses a U.S. model to measure the frequency with which the word "recession" appears in the financial media. According to a study by Bayerische Hypo-Vereinsbank AG based on articles in Handelsblatt and Frankfurter Allgemeine Zeitung, this measure is also a useful leading indicator for signaling an imminent downturn in Germany. The R-Word Indicator delivers a correct signal in two out of three cases. However, the Indicator's causality is not entirely clear, as writing about a recession can in itself push recessions.

Another indicator is based on the observation that growing consumption and investment are reflected early on in the freight costs incurred by the transportation of raw materials and intermediate goods. The Baltic Dry Index (BDI), an index of freight costs on the world's most important shipping routes, is considered to be a good leading indicator not only for global indus-

trial demand but also for German exports. The BDI already indicated sharp swings to an extent never seen before when the raw material-intensive economic boom in China and its repercussions for the global economy only just began to be discussed in the media. The BDI is calculated by the Baltic Exchange in London, a global freight market place. Similarly, indicators of flight prices could also be mentioned here.

A final example is the Luxury Goods Index, which is a leading indicator of the global economic cycle based on the equity prices of leading luxury goods manufacturers worldwide. The underlying idea is that the manufacture and sales of luxury goods are particularly sensitive to economic developments. However, a certain qualification needs to be made. This indicator cannot accurately predict the strength of an upturn, as equity prices can be influenced by many factors that are not necessarily cyclical. Hypo-Vereinsbank nonetheless uses such a luxury goods indicator for its economic forecasts for Germany. The indicator's lead is about six months, according to bank sources. Of particular interest is the fact that the Luxury Goods Index — unlike the Ifo or ZEW Index — did not issue a false signal in 2002, indicating an upturn.

5 Economic Indicators for the New EU Member States

The ten countries that joined the EU on May 1, 2004, were faced with new data provision requirements upon accession. In many cases, the preparatory groundwork had been carried out in the runup to EU accession. This led to the timely release of comparable data. In other cases, governments were granted a period of grace, so that satisfactory data series can only be ex-

pected in the years to come. This fragmentary availability of data and/or inavailability of qualitatively satisfactory data is tapping interest in alternative economic indicators. In countries where the economy is still undergoing a period of radical structural change, growth is also particularly difficult to forecast.

This section looks at the availability of short-term economic indicators for the new EU Member States. Although certain national indicators look back to a longer history, these are not examined here. Instead, an overview is presented on which of the established indicators for the EU cover the new EU Member States in conformity with a standardized methodology. After all, a few new EU Member States will soon join the euro area. However, only a handful of the established institutions that have long been determining leading indicators for European countries have so far focused on this region. Even the CLI calculated by the OECD, of which Hungary, Poland, the Czech Republic and the Slovak Republic are members, has yet to extend its scope to this group of countries. Similarly, the PMI has so far been surveying only Polish and Czech data using a comparable methodology.

Of the best-known indicators, only two can be accordingly cited as positive examples: the European Commission's confidence indicator and the Consensus forecast. Consensus Economics has been surveying more than 140 forecasters in Central and Eastern Europe every two months since May 1998 and deriving the mean values of 19 individual countries. Consensus Economics therefore surveys all the new EU Member States (except for Malta) and countries to be joining the EU shortly such as Bulgaria and Romania, as well as candidate countries such as

Croatia and Turkey, not to mention Russia and some of the former Soviet Federal Republics.

The European Commission's survey on economic confidence also provides full coverage of all EU Member States (except for Malta). The new EU Member States have been participating in these surveys not only since May 2004 – some of them have been doing so since the mid-1990s. Bulgaria and Romania have also been taking part in the survey for years. On the basis of these data gathered by the European Commission, the question is examined as to whether sentiment indicators in the new EU Member States have a similar reliability and forecasting quality as indicators published for countries that have been covered for a longer period of time. After all, a certain experience with this type of survey is required by both forecasting institutions and respondents. Likewise, the population and businesses could lack the experience of assessing the current and future development of their economy correctly. As regards the following analysis, however, it should be emphasized from the outset that, owing to the recent availability of data in the new EU Member States (data on growth in industrial production has generally been released only from 1999 onward), the results should be interpreted with caution.

The results presented in table 1 help select the ESI's subcomponents for the purposes of further analysis. Those ESI components that are the most heavily weighted in the ESI composite indicator are also found to have the highest correlation coefficients: industry, consumers and the service sector. With the exception of the consumer confidence indicator, these indicators also have a relatively small lag, which means that they can be expected

to provide added value. Production expectations in industry, a subcomponent of the industrial confidence indicator, are highly related and show a slight lead. The indicators in the construction and retail sectors, which each have a weight of only 5% in the ESI composite indicator, show both a very small correlation and long lags and do not signal some turning points in industrial production at all. The analysis below therefore includes the ESI, industrial confidence, consumer confidence and production expectations in industry. The service sector is not included, as survey data in the service sector have only been released for the new EU Member States since 2002 – a fact that does not ensure reliable analysis.

A panel data regression of growth in seasonally adjusted industrial production on sentiment indicators is now carried out, using these data for each of the nine new EU Member States (NMS) surveyed and for the remaining 15 long-standing EU Member States (EU-15). The model

$$(IP_{i,t} - IP_{i,t-1}/IP_{i,t-1} = \alpha_i + \beta I_{i,t+j} + \epsilon_{i,t},$$

is specifically estimated, where α_i is a country-specific constant and j a whole number at an interval of ± 12 that is calculated as the degree of lead or lag for which the fit of the model (expressed by the adjusted correlation coefficient R^2_{adj}) is maximized. In table 3, R^2_{adj} is marked for each indicator in the first line, as is the degree of lead or lag of the indicator series in brackets for which the fit of the model is maximized. In the second line, the estimated coefficient is indicated. For the EU-15, the table presents the results for both the entire sample and the sample restricted to the 1999 to 2005 period in order to take account of the fact that confidence indicators and indus-

trial production data have been released for most NMS only from this date onward.

Finally, the forecasting quality is evaluated for each indicator and for each of the samples, whereby it is specifically analyzed what added value sentiment indicators can offer for forecasts of growth in industrial production. The methodology used is the *out-of-sample* approach outlined in section 2. For a specific start month a few years following the start of the relevant sample (long sample: January 1995, short sample: January 2002), a panel model, which includes the previous values of both industrial production growth and the indicator with different lag structures, is estimated. The optimal model is the one for which the goodness of fit (R^2_{adj}) is maximized. This model is used to forecast growth in industrial production with a forecast horizon of one, three, six and twelve months. The sample is then extended by a month and the exercise recommences. This procedure is repeated until the full-sample estimate is reached. Whereas the long sample generates 123 forecasts (with a horizon of one, three, six and twelve months, respectively), the short sample generates only 39 forecasts.

By comparing these forecast values with the realized values, the root mean squared error (RMSE) can be separately calculated for each forecast horizon and each country, with lower RMSE values signifying better forecasting quality. For each forecast horizon, the average RMSE across each group of countries can be compared with the corresponding RMSE of a bench-

mark model. A simple panel autoregressive process, which forecasts growth in industrial production based exclusively on its own previous values, is used here as a benchmark. For each forecast horizon (denoted in this instance as $\gamma-1$, $\gamma-3$ etc.), the improvement in the RMSE between the indicator model and the benchmark model in percentage terms is thus a measure of the added value sentiment indicators offer for forecasting. This figure is comparable between groups of countries and individual indicators.[9]

Table 3 presents interesting information on indicator properties, their stability over time and a comparison of the groups of countries. The degree of lead or lag for which the goodness of fit is maximized confirms the conclusion drawn from table 1, according to which only the production expectations for the EU-15 are actually a leading indicator. However, even if the ESI and the industrial confidence indicator are coincident or lagging slightly, they can provide additional information on account of their date of publication, which is six weeks earlier. By contrast, the quality of the consumer confidence indicator is heavily dependent on the sample, which mostly has a strong lag. It is clear from the goodness of fit that the degree of fit is maximized for industrial confidence, followed by ESI and production expectations. However, which indicator is actually best suited to forecasting growth in industrial production can be assessed only on the basis of the aforementioned comparison of forecasting quality with that of its benchmark model. This study confirms across all the samples

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[9] *Diebold and Mariano (1995) propose a test to check whether RMSE values actually differ from each other significantly. However, the benefit of this test is doubtful since, in practice, one always falls back on the model with the lower RMSE — even for non-significant differences. See Kunst (2003) for a critical view of tests investigating relative forecasting quality.*

Table 3

Regression Comparison of EU-15 and New EU Member States (NMS)				
	Coefficient	EU-15 (1985)	EU-15 (1999)	NMS (1999)
ESI	R^2adj[1])	0.31 (+1)	0.27 (0)	0.26 (0)
	Coefficient[2])	0.55*	0.52*	0.52*
	γ-1/ γ-3/ γ-6/ γ-12[3])	12.5 / 12.8 / 14.0 / 14.7	3.4 / 10.0 / 11.2 / 5.0	−1.4 / 0.7 / 2.1 / 11.2
Manufacturing	R^2adj[1])	0.34 (+1)	0.31 (0)	0.30 (0)
	Coefficient[2])	0.58*	0.56*	0.55*
	γ-1/ γ-3/ γ-6/ γ-12[3])	15.3 / 16.3 / 17.4 / 18.4	10.2 / 11.1 / 11.8 / 10.1	2.5 / 5.5 / 5.2 / 10.9
Consumer	R^2adj[1])	0.12 (+3)	0.12 (−1)	0.08 (+7)
	Coefficient[2])	0.35*	0.36*	0.30*
	γ-1/ γ-3/ γ-6/ γ-12[3])	4.8 /−0.5 / 0.8 / 2.9	−5.3 /−1.6 / 0.6 /−6.1	−5.9 /−12.9 /−12.6 /−4.1
Production expectations	R^2adj[1])	0.30 (−1)	0.25 (−1)	0.10 (0)
	Coefficient[2])	0.56*	0.50*	0.34*
	γ-1/ γ-3/ γ-6/ γ-12[3])	9.6 / 11.0 / 12.1 / 13.5	0.4 / 7.0 / 7.9 / 6.0	−2.5 /−5.8 /−1.1 / 5.0

[1]) *Maximum coefficient of determination of the panel regression of growth in industrial production on the indicator. The degree of the time lead/lag (in months) of the indicator relative to the reference series, for which the maximum coefficient of determination is reached, is indicated in brackets. A negative value implies a time lead of the indicator. All series are standardized in a way such that they have mean 0 and standard deviation 1.*

[2]) ** represents significance at the 1% level.*

[3]) *Improvement of the RMSE of a forecast model including the relevant indicator compared with the RMSE of the panel autoregressive process, in percentage terms, for each forecast horizon of one, three, six and twelve months. A negative value stands for a forecast model that is outperformed by the panel autoregressive model. Start month for the forecast analysis is for the long sample January 1995 and for the short sample January 2002.*

that the forecasting quality of industrial confidence indicators for the forecast outstrips that of ESI production expectations rank in third place.[10] Forecasts based on consumer confidence perform worst and are frequently outperformed even by simple autoregressive forecasts.

The two samples for the EU-15 illustrate the extent to which indicator properties have changed over time. Table 3 shows that, for the first two indicators, the lag has disappeared in the shorter sample. Likewise, the consumer confidence indicator now has a slight lead. This could suggest an improvement in indicator properties. For the shorter sample, however, the coefficient of determination tends to be lower. This outcome is shown in chart 3, in which the coefficient of determination for the panel regression of growth in industrial production on the

coincident ESI value is shown in a moving five-year window. According to this, R^2_{adj} attained a trough in the five-year window from 1994 to 1998 and stagnated thereafter for two and half years at a low level before subsequently stabilizing again at a higher level. Table 3 also shows that the added forecasting value of the indicators is higher in the longer sample. This is likely to be connected with the fact that economic fluctuations in 2002 and 2003 were historically particularly poorly signaled by indicators in view of 9/11 and that this period is prominently represented in the short sample. The aforementioned pecking order of the indicators according to their forecasting quality remains stable over time.

The comparison of both groups of countries (EU-15 and NMS) with a comparable sample length shows that coefficients and coefficients of deter-

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[10] *Although these and the following statements apply to forecasts with a horizon of one, three and six months, they do not always hold for the twelve-month forecast. However, the forecasting errors for these long-term forecasts are very high. This could be connected with seasonal patterns that have not been entirely remedied or the fact that indicators only contain information for a shorter period ahead.*

Chart 3

Panel Regression in a Moving Five-Year Window for the EU-15

Adjusted coefficient of determination for the panel regression of industrial production growth on ESI

Coefficient of determination

End of the five-year window
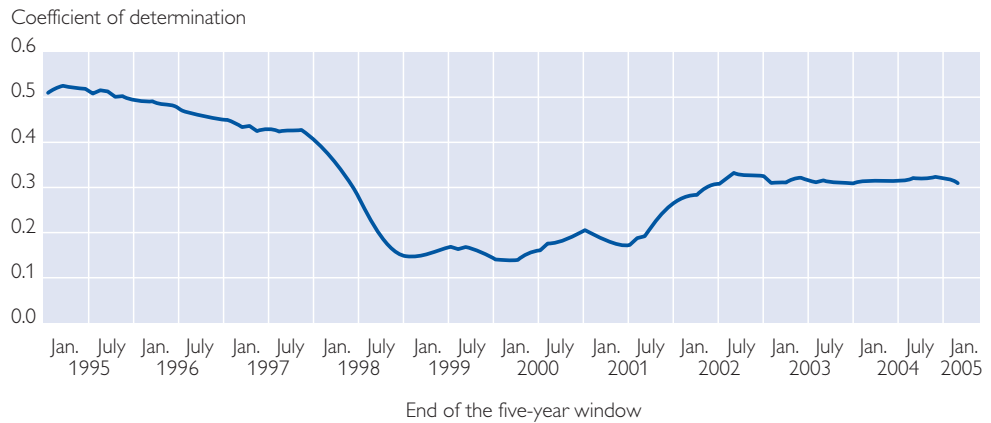
Source: European Commission, Eurostat, OeNB.

mination are for the most part not significantly different, but that the leading properties in the NMS are worse for production expectations and that the lag is longer for consumer confidence. In just the same way, the added value of the indicators is lower. Frequently, forecasts are even outperformed by the simple panel autoregressive model. However, the pecking order of the individual indicators is also maintained in the NMS.

An explanation for the lower added value of NMS indicators could be that both respondents and forecasting institutions in the NMS still partly lack experience with such surveys owing to the indicators' more recent history. This may reflect initial technical surveying and processing difficulties, as well as the fact that both people and businesses in the NMS still lack experience in assessing the current and future development of their economy owing to the radical transition in the past 15 years. In addition, many of the forecasting institutions emerged from former government institutions and, in many cases, are still not considered as fully independent of government influ-

ence. In contrast, the shorter lead of production expectations could be due to the fact that, in the NMS, businesses that are highly specialized in exporting intermediate products to their western European parent companies respond particularly quickly and flexibly to changes in demand conditions. As a result, the lead is shorter than is the case for traditional trade cooperations.

To sum up, the results indicate that the industrial confidence indicator throughout has the highest forecasting quality for growth in industrial production, followed by ESI. In both cases, the indicators are coincident or slightly lagged but do provide added value on account of their earlier date of release. The analysis of the regional comparison should be interpreted with caution in the NMS due to their relatively recent history of data gathering. Whereas statements on the pecking order of indicator properties also apply to this group of countries, the forecast analysis suggests that the added value of NMS indicator forecasting is not equal to that of countries that have been constructing sentiment indicators for many years.

6 Summary

This contribution provides an overview of the most common short-term indicators of economic development in the euro area. First, indicators are presented that are compiled from (international or national) surveys of businesses, households, financial analysts and forecasters. The advantages of indicators obtained from such surveys are their early date of release, their monthly basis of publication, the fact that they are largely not subject to revisions, and their provision of detailed information on each sector. Most survey indicators are well-established and are a popular component of economic analysis due to their simple structure. Second, a broad spectrum of composite indicators, which are calculated by combining a variety of measures into a single indicator with the help of regression and factor analysis, was presented. They offer an attractive tool for drawing conclusions from different, often divergent signals. However, their limitation lies in the substantial revisions to which they are sometimes subject due to input series being included with time lags. As a result, the informative value of the latest relevant signals is limited.

Even the most reliable economic indicators, however, can only be interpreted as constituent elements of comprehensive economic analyses. After all, post-9/11 experience has shown not least that economic indicators sometimes issue false signals at the very moment when uncertainty about future economic development is at a peak. Recently, the debate about whether the service sector, which is steadily growing in weight, is reducing the informative value of leading indicators, is becoming increasingly vehement. As a result, indicators, which are primarily based on manufacturing industry data, could lose their representativeness. The selection of leading indicators should take account of their lead quality, date of publication, the occurrence of retrospective revisions to which they are subject and the breadth of their economic basis.

Only a handful of these economic indicators also survey the countries that have become EU Member States since May 2004. Only Consensus Economics and the European Commission's Economic Sentiment Indicator offer full coverage. This is not least likely to be due to the fact that, in many of these countries, experienced forecasting institutions that could conduct these surveys are still scarce. This study also shows that the NMS survey results released by the European Commission are not fully comparable with those of the EU-15. For instance, the additional forecasting quality of sentiment indicators in the NMS is lower, and some of the lead properties differ between the NMS and the EU-15. This could have something to do with the NMS' relatively recent experience with business and consumer surveys. After all, forecasting institutions and respondents require experience in compiling reliable and stable indicators. This is what makes the appeal to established institutions to extend their surveys early on to cover the NMS – of which a few could soon be joining the euro area – all the more important.

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Highlights

Monetary Policy and Financial Stability – Summary of the 33rd Economics Conference of the Oesterreichische Nationalbank

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The 33rd Economics Conference of the Oesterreichische Nationalbank (OeNB)[1] on May 12 and 13, 2005, was motivated by the increasing globalization of the banking sector, which raises questions concerning the division of supervision-related costs and the potential burdens of financial crisis management. In order to fulfill their mandate to maintain price stability, central banks have to attach paramount importance to monitoring financial stability. Although the level of central bank involvement in banking supervision differs across the EU, central banks continue to play an important role in guaranteeing financial stability and carrying out banking supervision. Thus, it is vital to integrate financial stability analysis in the wider context of monetary and economic analysis. The OeNB promoted the exchange of views on these issues during its Economics Conference by inviting speakers, who addressed related questions from different points of view, presenting the perspectives of central bankers, supervisory authorities, academics and the financial industry.

As pointed out in the opening speech by Governor *Klaus Liebscher* (OeNB), monetary stability and financial stability are closely interrelated: The primary objective of monetary policy is to maintain price stability. Financial stability contributes to price stability. Deep, liquid and integrated money markets as well as smooth-functioning, efficient and reliable payment systems enhance the effectiveness of monetary policy implementation. In addition, financial stability contributes to the smooth conduct of monetary policy. Stable financial institutions and markets reduce uncertainty with respect to the impact of monetary pol-

icy on the real economy, as financial institutions and markets play a major role in monetary transmission, be it via the credit, investment or wealth channels. Questions of financial stability gained prominence when the Bretton Woods environment of regulated foreign exchange markets and strict capital account controls ceased to exist. Liebscher stated that he viewed the years from 1945 to 1970 as a period of exceptional financial stability. Though financial liberalization removed structural inefficiencies and provided opportunities for improved capital and risk allocation, a number of countries experienced severe financial instability and banking crises in the wake of financial deregulation and the liberalization of the capital account. Governor Liebscher concluded that financial and monetary stability should be analyzed and assessed together and underlined that macroprudential financial analysis was of paramount importance for central banks.

The first keynote address was delivered by Governor *Svein Gjedrem,* Norges Bank. He pointed out that more than ten banking crises had occurred in high-income countries in the period from 1977 to 1998. These crises had resulted in average cumulative output losses of about 20% of GDP. Gjedrem highlighted the importance of macroprudential supervision in assessing financial stability, before he went on to discuss one of the dominant topics of the conference: How should European supervisors react to the increasing internationalization of financial institutions? Recent examples of the growing internationalization in the banking sector are the Icelandic Kaupthing Group and the Swedish Nordea Group: The Kaupthing Group op-

[1] For more details see the proceedings of the 33rd Economics Conference (also available at www.oenb.at).

erates in ten countries and holds assets which are twice as high as its home country's GDP, while the Nordea Group controls large market shares in all Nordic host countries. Gjedrem advocated close cooperation and efficient information exchange among national supervisory authorities. Then, he turned to the second prominent topic of the conference, i.e. the question how financial stability considerations are incorporated in monetary policy decisions. He pointed out that, in many cases, financial and monetary stability objectives were complementary. Nevertheless, there were periods in which asset price surges were accompanied by monetary stability. According to Governor Gjedrem, proactive monetary policy responses to asset price bubbles are not feasible and not desirable, as the latter are difficult to identify and because the required interest rate increases might be very high. He explained that Norges Bank incorporated financial stability considerations, and thus asset price developments, into the monetary policy decision process for two reasons: to reflect the fact that financial imbalances are important for inflation and output, and to ensure that financial stability issues receive the attention the subject calls for.

The first session of the conference focused on "Macroeconomic Policies and Financial Stability." *Charles Goodhart,* London School of Economics and Political Science, argued that excessive fiscal deficits could pose a potential threat to financial stability. He stressed that financial markets were ineffective in monitoring EU governments with respect to the sustainability of national fiscal deficits, and that the Stability and Growth Pact had proved unenforceable. In addition, he pointed out that financial regulators had strong incentives to assign low risk weights to

public debt in capital adequacy regulation, regardless of the currency debt was denominated in. According to Goodhart, these incentives stem from the fact that regulators are often subordinate to the finance ministers of their respective countries. As a consequence, banks have high concentrations of national debt in their books, which could pose a threat to banking stability. Goodhart thus proposed establishing a panel of independent experts to assess the sustainability of national deficits. His discussant Thomas Wieser (Austrian Federal Ministry of Finance) questioned the effectiveness of such a panel, which, owing to a lack of democratic legitimacy, could not be equipped with the necessary enforcement powers. According to Wieser, the fact that yields on the government bonds of highly and increasingly indebted countries did not increase commensurately could also demonstrate that higher and increasing debt levels are still considered sustainable by the markets. Above all, he asserted that the probability of an EU Member State to default was effectively zero and that any related debate was merely of academic interest.

In the conference's second keynote address, *Takatoshi Kato,* Deputy Managing Director at the IMF, presented an overview of the Financial Sector Assessment Program (FSAP), which was introduced in 1999. The program covers a wide range of topics, including the main sources of macrofinancial risk and their potential impact, the main institutional and regulatory frameworks and the smooth functioning of financial markets' infrastructure (i.e. payment systems). Takatoshi Kato said that the FSAP would be fine-tuned in light of recent experience with the program. In particular cross-border and cross-sector linkages will receive more atten-

tion in future FSAPs. Kato also confirmed the positive conclusions of the FSAP for Austria, which was completed in July 2004. The assessment stated that the Austrian banking system was sound and resilient and that it enjoyed a high level of observance of international standards and codes. In line with the observations of the OeNB, the IMF also mentioned that the high level of foreign currency lending warranted attention by supervisors. In addition, the IMF pointed out that the exposure of Austrian banks to Central and Eastern European countries (CEECs) needed to be monitored closely. The FSAP exercises in CEECs found that recent reforms of institutional and regulatory frameworks had increased the soundness and resilience of the respective banking systems.

The second session addressed questions that feature prominently on the EU policy agenda, namely "Institutional and Regulatory Issues." *Karel Lannoo,* Centre for European Policy Studies, pointed out that the regulatory framework for banks focused solely on solvency, based on the assumption that liquidity problems are no issues once solvency problems have been addressed adequately. To clarify the discussion, he distinguished between microeconomic liquidity, i.e. the liquidity of a particular market or financial institution, and macroeconomic liquidity, i.e. the creation and mobilization of previously unexploited financial capital. While the first type of liquidity is widely considered to have predominantly positive effects, the impact of the second type is often considered to be potentially destabilizing (e.g. asset price bubbles). According to Lannoo the share of tradable assets on banks' balance sheets has risen in recent years, thus increasing their exposure to common macro-liquidity shocks. Setting

aside regulatory capital to address this kind of liquidity risk could prove problematic. In times of a macro-liquidity crisis, banks might face difficulties in liquidating their liquidity buffers. While EU financial market regulation remained largely silent on liquidity risk, the ECB framework for the implementation of monetary policy contributed to its reduction. Lannoo said that the harmonization of minimum reserve requirements and of acceptable collateral as well as the provision of standing facilities helped mitigate potential liquidity shortages for the participating institutions. He added that minimum reserves and collateral holdings could be employed to obtain intraday credit in the large value payment system TARGET and to increase banks' flexibility in handling potential liquidity shortages in the very short run. Given the current supervisory framework at the EU level, Lannoo concluded that there was no immediate need for further harmonizing liquidity requirements. Nevertheless, the Basel Committee's principles for liquidity management could provide the basis for a set of similar minimum guidelines within the EU.

In her remarks *Daniéle Nouy,* Secretary General of the Commission Bancaire, focused on the international dimension of financial supervision. She pointed out that increases in financial institutions' cross-border activities made it necessary for financial supervisors to improve international cooperation. She added that in the banking sector, the Committee of European Banking Supervisors (CEBS), which was established as a Level 3 committee within the Lamfalussy framework in 2004, addressed this requirement by acting as a formalized, decentralized banking supervisory framework. According to Nouy, CEBS promotes supervisory co-

operation and the exchange of information, and contributes to the consistent implementation of EU directives as well as the convergence of supervisory practices. Her discussant, *Jukka Vesala,* Deputy Director General of the Finnish Financial Supervision Authority, compared potential institutional models for prudential supervision in the EU. He rested his analysis on the incentive structures and externalities that emerge from different supervisory approaches, specifically from a lead supervision model and a model based on a network of competent supervisors in which the home country supervisor has a coordinating role. Under the lead supervision model, the home country supervisor is responsible for the prudential supervision of the whole group (including branches and subsidiaries). Vesala, however, identified a potential conflict of interests which may arise under this model: If the subsidiary or branch is systemically important in the host country's financial system and host country public money is at stake, the home country might lack sufficient incentives to ensure a solution that is efficient for both the home and the host country. A network of competent supervisors, on the other hand, preserves an active role for the host supervisor and ensures effective home-host cooperation. Hence, all potentially affected parties should have the appropriate incentives. Vesala argued that, in order to reduce the burden for banks and to avoid the duplication of efforts, the home country supervisor should be in charge of the overall coordination responsibility. He concluded that a framework for supervisory cooperation should ensure the consistency of supervisory and crisis management arrangements.

The third session centered on "Micro-Challenges for Financial Institu-

tions." The keynote speech was delivered by *Jaime Caruana,* Governor of the Banco de España and Chairman of the Basel Committee on Banking Supervision. Caruana stressed that the New Basel Capital Accord (Basel II) was going to enhance the efficiency of the monetary transmission mechanism by contributing to the stability of the banking sector. He also explained that Basel II would not increase the procyclicality of bank behavior. According to Caruana, lending behavior has traditionally been procyclical and the question to address is whether Basel II will increase or decrease the positive correlation of bank lending and GDP. He said that critics maintained that the New Basel Capital Accord would force banks which experience unexpected loan losses and deteriorating credit quality to replenish and increase regulatory capital. Consequently, they would have to decrease bank lending. Caruana, however, argued that the most effective measures against unexpected loan losses and credit quality deterioration were improved risk management and financial supervision. Both measures should reduce the trend and volatility of unexpected loan losses, and shocks to regulatory capital should become less likely. According to Caruana, Basel II furthermore encourages banks to take account of uncertainty over the full cycle in their rating processes. Thus, a smoother adjustment to new macroeconomic data can be expected. Currently banks tend to hold more capital than required. These capital buffers will further insulate regulatory capital requirements from negative shocks and reduce the probability that regulatory capital will be binding even in downturns. Caruana then turned to the role of asset price developments for financial stability and monetary policy. Despite the poten-

tially strong impact of financial imbalances on financial stability and on the monetary transmission mechanism, he argued that central banks should not directly target asset prices, as the remedy could be worse than the illness. Nevertheless, he stressed the importance of asset price developments in the risk management approach to monetary policy.

In the subsequent panel discussion the costs of financial regulation were debated vigorously. *Karl Sevelda*, Member of the Managing Board of Raiffeisen Zentralbank Österreich AG, estimated that the implementation of new regulations (in particular Basel II) would cost the Raiffeisen group around EUR 100 million. However, other participants disputed the validity of this estimate, as it includes investments in improving risk management, which would also have been necessary without Basel II.

In her presentation on financial stability and banking supervision *Eva Srejber,* First Deputy Governor of Sveriges Riksbank, concentrated on the future institutional structure of European banking supervision. While, according to Srejber, most determinants of systemic crisis are only present at the national level at the moment, certain manifestations of integration could pose systemic threats at the EU level in the future, e.g.: banks which are systemically important in more than one Member State; countries in which predominantly foreign banks are of systemic importance; banks that are of systemic importance in the home country but also keep a large share of their assets in the host country, where they are considered not systemically important; significant interbank credit exposure vis-á-vis banks in different euro area countries; integration of financial infrastructure. National super-

visory and regulatory authorities have incentives to focus on their respective national financial systems, which might prove suboptimal in the presence of negative externalities of financial instability. Macroprudential supervision is limited to national financial systems owing to the underlying information requirements. Srejber said that, as a consequence, she considered Memoranda of Understanding a very valuable tool for improving cooperation and information exchange in the near future. She also pointed out that the creation of a European financial supervisor was neither feasible nor desirable in the short to medium term; in the long run, however, the establishment of a European financial supervisor would be the logical solution. She outlined three potential institutional arrangements: lead supervisors with full responsibility for all EU operations, branches and subsidiaries; lead supervisors with an EU mandate from a decision-making agency of European financial supervisors; or a single European financial supervisor, which would only be responsible for large cross-border banks. According to Srejber, a lead supervisor with a full EU mandate would minimize the regulatory burden for cross-border banks, however without addressing the conflicts of interest between home and host supervisors. The introduction of a central decision-making body might tackle these problems. However, the coordination of 25 regulatory authorities by a central decision-making body could render the latter inflexible, inefficient and bureaucratic. Srejber argued that, in the long run, a single European financial supervisor was the best solution for overcoming conflicts of interest between national supervisory authorities. In order to ensure the proximity to the markets in which the supervised enti-

ties operate, this institution should have a decentralized organization. In addition, the authority would need to be backed by financial resources for effective crisis management. Srejber also called for the harmonization of the rules governing crisis management in the EU Member States.

Her discussant, *Isabel Schnabel*, Max Planck Institute for Research on Collective Goods (Bonn), explained that financial integration was very high in Europe before World War II. There was very little financial regulation and supervision and virtually no coordination of crisis management. Schnabel raised the question whether the financial crises which struck during the Great Depression, could have been prevented by the cooperation of national authorities. She explained that the systemic risk of cross-border banking had been considerable after World War II (e.g. Herstatt crisis). She moreover stated that she favored a centralized authority, which would ensure the convergence of regulation. On this basis, the centralization of supervision would lead to the internalization of externalities, would make it possible to exploit economies of scale, and would improve the framework for monitoring systemic stability. It should, however, not be forgotten that also centralized supervision would require informational input by national authorities. An appropriate institutional arrangement would have to address the related incentive problems.

To sum up, three issues featured prominently in virtually all presentations: the future institutional structure of financial supervision in Europe, the role of asset prices in monetary policy,

and the role of macroprudential supervision by central banks. There was broad agreement among conference participants that the establishment of a European financial supervisor would only be feasible in the long run – if at all – and that such an institution should have a decentralized structure. Its tasks should not be confined to large cross-border institutions as this could lead to competitive distortions. Furthermore, sufficient financial backing of such an institution would have to be ensured to enable it to deal with financial crises at the EU level. As far as the second core topic of the conference was concerned, participants agreed that asset price developments are relevant for the conduct of monetary policy and that liquidity conditions can be regarded as indicators of potential asset price bubbles. The Eurosystem takes liquidity conditions explicitly into account under its two-pillar strategy. Most participants, however, shared the opinion that fundamental practical problems hamper a more explicit targeting of asset prices in the conduct of monetary policy. The Eurosystem's credible commitment to a long-term strategy of price stability and its two-pillar approach were considered the most effective contributions to containing expected future inflation and, thus, asset price bubbles fueled by inflation expectations. Finally, the conference highlighted the paramount importance of macroprudential supervision by central banks in preventing financial instability. This prevention is essential for the effective conduct and implementation of monetary policy owing to the close interrelation between monetary and financial stability.

Notes

Abbreviations

ACH	automated clearing house
APSS	Austrian Payment System Services GmbH
ARTIS	Austrian Real Time Interbank Settlement (the Austrian RTGS system)
A-SIT	Secure Information Technology Center – Austria
ASVG	Allgemeines Sozialversicherungsgesetz – General Social Security Act
A-Trust	A-Trust Gesellschaft für Sicherheitssysteme im elektronischen Datenverkehr GmbH
ATM	automated teller machine
ATX	Austrian Traded Index
BCBS	Basel Committee on Banking Supervision (BIS)
BIC	Bank Identifier Code
BIS	Bank for International Settlements
BOP	balance of payments
BSC	Banking Supervision Committee (ESCB)
CACs	collective action clauses
CEBS	Committee of European Banking Supervisors (EU)
CEE	Central and Eastern Europe
CEECs	Central and Eastern European countries
CESR	Committee of European Securities Regulators
CIS	Commonwealth of Independent States
CPI	consumer price index
EBA	Euro Banking Association
EBRD	European Bank for Reconstruction and Development
EC	European Community
ECB	European Central Bank
Ecofin	Council of Economics and Finance Ministers (EU)
EEA	European Economic Area
EFC	Economic and Financial Committee (EU)
EIB	European Investment Bank
EMS	European Monetary System
EMU	Economic and Monetary Union
EONIA	Euro OverNight Index Average
ERM II	Exchange Rate Mechanism II (EU)
ERP	European Recovery Program
ESA	European System of Accounts
ESAF	Enhanced Structural Adjustment Facility (IMF)
ESCB	European System of Central Banks
ESRI	Economic and Social Research Institute
EU	European Union
EURIBOR	Euro Interbank Offered Rate
Eurostat	Statistical Office of the European Communities
FATF	Financial Action Task Force on Money Laundering
Fed	Federal Reserve System
FFF	Forschungsförderungsfonds für die Gewerbliche Wirtschaft – Austrian Industrial Research Promotion Fund
FMA	Financial Market Authority (for Austria)
FOMC	Federal Open Market Committee (U.S.A.)
FSAP	Financial Sector Assessment Program (IMF)
FWF	Fonds zur Förderung der wirtschaftlichen Forschung – Austrian Science Fund
GAB	General Arrangements to Borrow
GATS	General Agreement on Trade in Services
GDP	gross domestic product
GNP	gross national product
GSA	GELDSERVICE AUSTRIA Logistik für Wertgestionierung und Transportkoordination GmbH (Austrian cash services company)
HICP	Harmonized Index of Consumer Prices
IBAN	International Bank Account Number
IBRD	International Bank for Reconstruction and Development
IDB	Inter-American Development Bank
IFES	Institut für empirische Sozialforschung GesmbH (Institute for Empirical Social Research, Vienna)
ifo	ifo Institute for Economic Research, Munich
IGC	Intergovernmental Conference (EU)
IHS	Institut für Höhere Studien und Wissenschaftliche Forschung – Institute for Advanced Studies, Vienna
IIF	Institute of International Finance
IIP	international investment position
IMF	International Monetary Fund
IRB	internal ratings-based
ISO	International Organization for Standardization
IWI	Industriewissenschaftliches Institut – Austrian Institute for Industrial Research
IT	information technology
JVI	Joint Vienna Institute
LIBOR	London Interbank Offered Rate
M3	broad monetary aggregate M3
MFI	monetary financial institution
MRO	main refinancing operation
MÖAG	Münze Österreich AG – Austrian Mint
MoU	memorandum of understanding
NCB	national central bank
ÖBB	Österreichische Bundesbahnen – Austrian Federal Railways
OeBS	Oesterreichische Banknoten- und Sicherheitsdruck GmbH – Austrian Banknote and Security Printing Works
OECD	Organisation for Economic Co-operation and Development
OeKB	Oesterreichische Kontrollbank (Austria's main financial and information service provider for the export industry and the capital market)
OeNB	Oesterreichische Nationalbank (Austria's central bank)
OPEC	Organization of the Petroleum Exporting Countries
ORF	Österreichischer Rundfunk – Austrian Broadcasting Corporation
ÖBFA	Austrian Federal Financing Agency
ÖNACE	Austrian Statistical Classification of Economic Activities
PE-ACH	pan-European automated clearing house
PISA	Programme for International Student Assessment (OECD)
POS	point of sale
PRGF	Poverty Reduction and Growth Facility (IMF)
RTGS	Real-Time Gross Settlement
SDR	Special Drawing Right (IMF)
SDRM	Sovereign Debt Restructuring Mechanism (IMF)
SEPA	Single Euro Payments Area

SPF	Survey of Professional Forecasters	UNO	United Nations Organization
STEP2	Straight-Through Euro Processing system offered by the Euro Banking Association	VaR	Value at Risk
STP	straight-through processing	WBI	Wiener Börse Index
STUZZA	Studiengesellschaft für Zusammenarbeit im Zahlungsverkehr G.m.b.H. – Austrian Research Association for Payment Cooperation	WEF	World Economic Forum
		WIFO	Österreichisches Institut für Wirtschaftsforschung – Austrian Institute of Economic Research
S.W.I.F.T.	Society for Worldwide Interbank Financial Telecommunication	WIIW	Wiener Institut für internationale Wirtschaftsvergleiche – The Vienna Institute for International Economic Studies
TARGET	Trans-European Automated Real-time Gross settlement Express Transfer	WKO	Wirtschaftskammer Österreich – Austrian Federal Economic Chamber
Treaty	refers to the Treaty establishing the European Community	WTO	World Trade Organization
UNCTAD	United Nations Conference on Trade and Development		

Legend

x = No data can be indicated for technical reasons
. . = Data not available at the reporting date
0 = The numerical value is zero or smaller than half of the unit indicated

Discrepancies may arise from rounding.

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Statistiken – Daten & Analysen
quarterly

This publication contains reports and analyses focusing on Austrian financial institutions, cross-border transactions and positions as well as financial flows. The contributions are in German, with executive summaries of the analyses in English. The statistical part covers tables and explanatory notes on a wide range of macroeconomic, financial and monetary indicators. The tables including additional information and data are also available on the OeNB's website in both German and English. This series also includes special issues on selected statistics topics that will be published at irregular intervals.

Monetary Policy & the Economy
quarterly

This quarterly publication, issued both in German and English, offers analyses of cyclical developments, medium-term macroeconomic forecasts and studies on central banking and economic policy topics. This publication also summarizes the findings of macroeconomic workshops and conferences organized by the OeNB.

Financial Stability Report
semiannual

The *Financial Stability Report*, issued both in German and English, contains first, a regular analysis of Austrian and international developments with an impact on financial stability and second, studies designed to provide in-depth insights into specific topics related to financial market stability.

Focus on European Economic Integration
semiannual

Focus on European Economic Integration, the successor publication to *Focus on Transition* (published up to issue 2/2003), contains a wide range of material on Central and Eastern European countries (CEECs), beginning with a topical economic analysis of selected CEECs. The main part of the publication comprises studies, on occasion several studies focusing on a special topic. The final section provides information about the OeNB's CEEC-related activities and conferences as well as a statistical annex.

Annual Report
annual

The *Annual Report* of the OeNB provides a broad review of Austrian monetary policy, economic conditions, new developments on financial markets in general and financial market supervision in particular, as well as of the OeNB's changing responsibilities and its role as an international partner in cooperation and dialogue. It also contains the financial statements of the OeNB.

Economics Conference (Conference Proceedings)
annual

The *Economics Conference* hosted by the OeNB represents an important international platform for exchanging views on monetary and economic policy as well as financial market issues. It convenes central bank representatives, economic policy decision makers, financial market players, academics and researchers. The conference proceedings comprise all papers, most of them in English.

Proceedings of OeNB Workshops — recurrent

The proceedings of *OeNB Workshops* were introduced in 2004 and typically comprise papers presented at OeNB workshops at which national and international experts, including economists, researchers, politicians and journalists, discuss monetary and economic policy issues. Workshop proceedings are available in English only.

Working Papers — recurrent

The OeNB's *Working Paper* series is designed to disseminate, and provide a platform for discussing, findings of OeNB economists or outside contributors on topics which are of special interest to the OeNB. To ensure the high quality of their content, the contributions are subjected to an international refereeing process. The opinions are strictly those of the authors and in no way commit the OeNB.

Conference on European Economic Integration (Conference Proceedings) — annual

(formerly East-West Conference)

This series, published by a renowned international publishing house, reflects presentations made at the OeNB's annual central banking conference on Central, Eastern and Southeastern European issues and the ongoing EU enlargement process.

For further details see *ceec.oenb.at*

Newsletter of the Economic Analysis and Research Section — quarterly

The English-language *Newsletter of the Economic Analysis and Research Section* is only published on the Internet and informs an international readership about selected findings, research topics and activities of the Economic Analysis and Research Section of the OeNB. This publication addresses colleagues from other central banks or international institutions, economic policy researchers, decision makers and anyone with an interest in macroeconomics. Furthermore, this newsletter offers information on publications, studies or working papers as well as events (conferences, lectures and workshops).

For further details see *hvw-newsletter.oenb.at*

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