

# MONETARY POLICY & THE ECONOMY

Quarterly Review of Economic Policy



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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# Analyses

# Financial Crisis and Spike in Commodity Prices Dampen Growth and Fuel Inflation

Economic Outlook for Austria from 2008 to 2010  
(June 2008)

Gerhard Fenz,  
Martin Schneider<sup>1</sup>

## 1 Summary: Clouds on the Economic Horizon – Inflation at a Record High Since 1993

According to the June 2008 economic outlook of the Oesterreichische Nationalbank (OeNB), economic growth in Austria is projected to weaken compared with the economic boom years of 2006 and 2007 owing to the international financial crisis and the spike in commodity prices. Real GDP growth is projected to come to 2.2% in 2008 and then dip to a low of 1.7% in 2009 before climbing back to 2.4% in 2010. Compared with the OeNB December 2007 economic outlook, growth expectations for 2008 and 2009 were downgraded by 0.3 and 0.6 percentage points respectively. At 3.1%, inflation in 2008 is at a record high since 1993 but is projected to fall to 2.4% in 2009

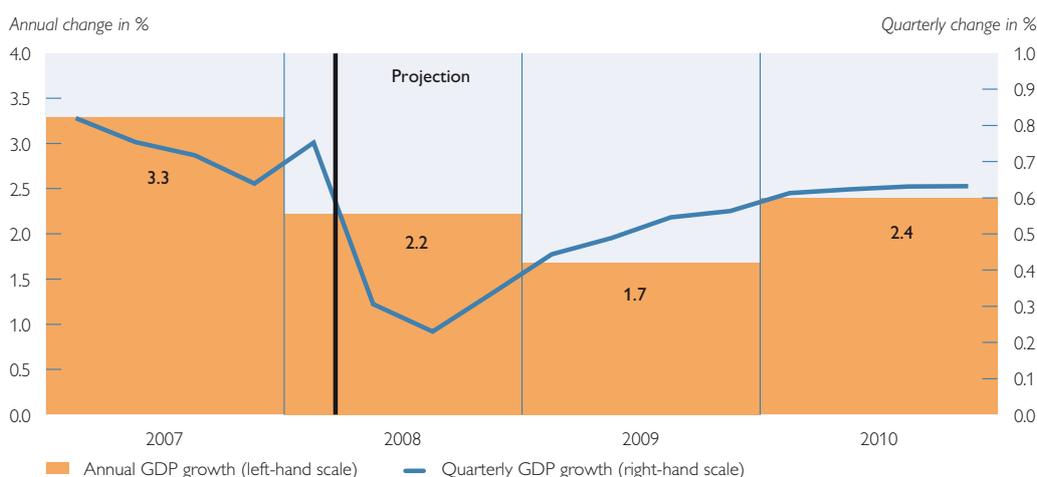
and to 1.9% in 2010. Employment growth remains robust, with a further drop in unemployment to 4.2% anticipated for 2008.

The international financial crisis, the downturn in the U.S. economy and the spike in commodity prices are currently determining the global economic conditions. As for the euro area economy, it performed very well in the first quarter of 2008 owing to extremely strong growth in Germany. However, the slowdown in global economic growth will not leave the euro area unscathed and will induce a significant deceleration in economic momentum.

Austrian exports, which have been the engine of the country's GDP growth in recent years, will lose some steam owing to lower market growth and the higher external value of the euro. How-

Chart 1

### Real GDP Growth (Seasonally and Working-Day Adjusted)



Source: Eurostat, OeNB.

JEL classification:  
C5, E17  
Keywords:  
forecast, Austria

<sup>1</sup> Gerhard Fenz ([gerhard.fenz@oebn.at](mailto:gerhard.fenz@oebn.at)), Martin Schneider ([martin.schneider@oebn.at](mailto:martin.schneider@oebn.at)). With the collaboration of Leopold Diebalek, Ernest Gnan, Walpurga Köhler-Töglhofer, Peter Mooslechner, Doris Prammer, Christian Ragacs, Fabio Rumler, Alfred Stiglbauer and Walter Waschiczek.

Table 1

**OeNB June 2008 Outlook for Austria – Key Results<sup>1</sup>**

|                                                            | 2007 | 2008 | 2009 | 2010 |
|------------------------------------------------------------|------|------|------|------|
| <b>Economic activity</b>                                   |      |      |      |      |
| <i>Annual change in % (real)</i>                           |      |      |      |      |
| Gross domestic product                                     | +3.3 | +2.2 | +1.7 | +2.4 |
| Private consumption                                        | +1.5 | +1.0 | +1.5 | +1.9 |
| Government consumption                                     | +2.6 | +3.0 | +1.4 | +1.5 |
| Gross fixed capital formation                              | +4.0 | +1.5 | +1.4 | +2.6 |
| Exports of goods and services                              | +8.6 | +6.4 | +4.3 | +6.2 |
| Imports of goods and services                              | +6.2 | +5.2 | +4.4 | +6.1 |
| <b>Contribution to real GDP growth</b>                     |      |      |      |      |
| <i>Percentage points of GDP</i>                            |      |      |      |      |
| Private consumption                                        | +0.8 | +0.6 | +0.8 | +1.0 |
| Government consumption                                     | +0.5 | +0.5 | +0.2 | +0.3 |
| Gross fixed capital formation                              | +0.8 | +0.3 | +0.3 | +0.5 |
| Domestic demand (excluding changes in inventories)         | +2.1 | +1.4 | +1.4 | +1.8 |
| Net exports                                                | +1.8 | +1.1 | +0.3 | +0.6 |
| Changes in inventories (including statistical discrepancy) | -0.6 | -0.3 | +0.0 | +0.0 |
| <b>Prices</b>                                              |      |      |      |      |
| <i>Annual change in %</i>                                  |      |      |      |      |
| Harmonized Index of Consumer Prices (HICP)                 | +2.2 | +3.1 | +2.4 | +1.9 |
| Private consumption expenditure (PCE) deflator             | +2.1 | +3.0 | +2.3 | +1.9 |
| GDP deflator                                               | +2.3 | +2.8 | +2.3 | +2.1 |
| Unit labor costs in the total economy                      | +1.2 | +2.2 | +1.9 | +1.0 |
| Compensation per employee (at current prices)              | +2.6 | +3.0 | +3.0 | +2.6 |
| Productivity (whole economy)                               | +1.4 | +0.8 | +1.0 | +1.6 |
| Compensation per employee (real)                           | +0.5 | +0.0 | +0.7 | +0.7 |
| Import prices                                              | +1.5 | +2.9 | +2.1 | +1.8 |
| Export prices                                              | +1.6 | +1.7 | +2.0 | +1.8 |
| Terms of trade                                             | +0.1 | -1.2 | +0.0 | -0.1 |
| <b>Income and savings</b>                                  |      |      |      |      |
| <i>Real disposable household income</i>                    |      |      |      |      |
|                                                            | +3.2 | +1.4 | +1.7 | +2.1 |
| <i>% of nominal disposable household income</i>            |      |      |      |      |
| Saving ratio                                               | 11.3 | 11.5 | 11.6 | 11.8 |
| <b>Labor market</b>                                        |      |      |      |      |
| <i>Annual change in %</i>                                  |      |      |      |      |
| Payroll employment                                         | +2.1 | +1.7 | +0.8 | +0.9 |
| <i>% of labor supply</i>                                   |      |      |      |      |
| Unemployment rate (Eurostat definition)                    | 4.4  | 4.2  | 4.4  | 4.4  |
| <b>Budget</b>                                              |      |      |      |      |
| <i>% of nominal GDP</i>                                    |      |      |      |      |
| Budget balance (Maastricht definition)                     | -0.5 | -0.6 | -0.5 | -0.5 |
| Government debt                                            | 59.1 | 57.5 | 56.5 | 55.6 |

Source: 2007: Eurostat, Statistics Austria; 2008 to 2010: OeNB June 2008 outlook.

<sup>1</sup> The outlook was drawn up on the basis of seasonally adjusted and working-day adjusted national accounts data. Therefore, the historical values for 2007 may deviate from the nonadjusted data released by Statistics Austria.

ever, this decline will be modest given Austrian exporters' focus on Eastern Europe, the economy's diversified sectoral structure and the favorable trend in unit labor costs.

Domestic demand is currently marked by sluggish consumption growth and a flat investment cycle. Un-

expectedly high inflation is triggering a slight decline in real wages in 2008. Slowing employment momentum is also dampening household income growth. Consumption growth will weaken to 1.0% in 2008 and is not expected to accelerate significantly in 2009 and 2010. Investment momentum

will slow considerably on the back of the cooling of the world economy. However, as the current investment cycle is very smooth compared with previous periods of economic expansion, investment is expected to continue to increase even during the downturn.

Inflation – fueled by the spike in commodity prices – has risen unexpectedly strongly. HICP inflation came to 3.4% in April 2008 and will fall only gradually. An inflation rate of 3.1% is projected for 2008 as a whole. At 2.4%, inflation is forecast to remain above the 2% mark in 2009 before dropping to 1.9% in 2010.

The Austrian labor market still looked to be in excellent health in the first half of 2008. Robust employment growth in 2008 is inducing a further drop in unemployment by 0.2 percentage points to 4.2%. In 2009 and 2010, unemployment is expected to rise slightly to 4.4%.

In 2008, the budget balance (Maastricht definition) will deteriorate slightly to –0.6% of GDP, to be followed by a modest improvement to –0.5% in 2009 and 2010.<sup>2</sup>

## 2 Technical Assumptions

This forecast is the OeNB's contribution to the Eurosystem's June 2008 staff projections. The forecast horizon ranges from the second quarter of 2008 to the fourth quarter of 2010. May 14, 2008, was the cutoff date for the assumptions on global growth as well as interest rates, exchange rates and crude oil prices. The OeNB used its macro-economic quarterly model to prepare the projections for Austria.

The key data source comprised seasonally and working day-adjusted national accounts data computed by the Austrian Institute for Economic Research (WIFO) which were fully available to the fourth quarter of 2007. The GDP flash estimate is available for the first quarter of 2008 but covers only part of the national accounts aggregates.

The underlying short-term interest rate is based on market expectations for the three-month EURIBOR. It is set at 4.9% (2008), 4.3% (2009) and 4.2% (2010) respectively. Long-term interest rates reflect market expectations for ten-year government bonds and are set at 4.4% (2008), 4.7% (2009) and 4.8% (2010) respectively. Corporate loan spreads widened by 60 basis points with the outbreak of the financial crisis owing to considerable uncertainty and mutual mistrust in the banking sector.<sup>3</sup> The current outlook is based on the assumption that this spread will remain over the forecast horizon as a whole. The USD/EUR exchange rate is assumed to remain at 1.54 USD/EUR. The projected trend in crude oil prices is based on futures prices. For 2008 to 2010, this outlook assumes oil prices of USD 113.3, USD 117.7 and USD 115.6 per barrel (Brent) in each successive year. This signifies a revision of USD +24.6 (2008) and USD +34.1 (2009), compared with the OeNB December 2007 economic outlook. The prices of commodities excluding energy are also based on futures prices over the forecast horizon. Market players assume that commodity prices will stabilize at their currently high level and do not

<sup>2</sup> The budget forecast includes only those measures that had been agreed and suitably specified at the time that the current OeNB outlook was prepared. A possible tax reform in 2010 is therefore not included in this outlook.

<sup>3</sup> The spread for corporate loans is defined as the difference between the average interest rate on corporate loans and the interest rate on ten-year government bonds.

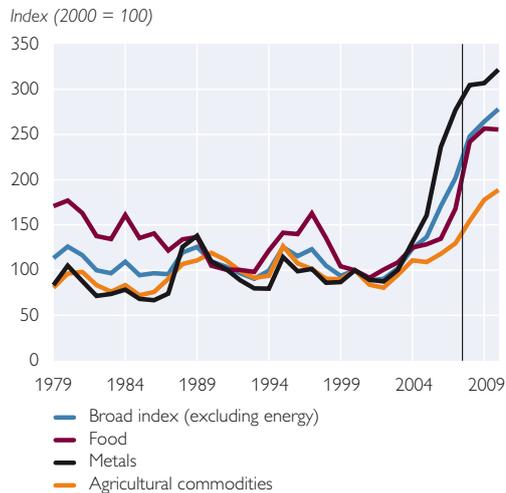
Chart 2

## Oil and Commodity Price Developments

### Price of oil in U.S. dollar and euro



### Commodity prices (excluding energy)



Source: HWWA, IMF, OeNB.

expect any further sharp price increases (chart 2). The budget forecast includes only those measures that had been agreed and suitably specified at the time that the current OeNB outlook was prepared. A possible tax reform in 2010 is therefore not included in this outlook.

### 3 Financial Crisis, Weak U.S. Economy and Spike in Commodity Prices Overshadow the World Economy

The global economy is currently determined by three critical factors: The international financial crisis, the U.S. slowdown and the spike in commodity prices are seriously hampering global growth. Since the second half of 2007, the global economy has been in the throes of a financial crisis. What initially appeared as a problem limited to the U.S. real estate sector, gradually spilled over and adversely affected financial markets worldwide. Financial institutions had to write down U.S. asset-backed securities substantially. In

addition to U.S. financial institutions, European banks were particularly hit. The financial crisis has significantly increased the risk of a U.S. recession.

Strong demand from emerging economies and the long neglected development of production capacities triggered a steep rise in oil prices, which were then further boosted by speculation. At the same time, the prices of many other commodities also rose sharply. In particular, the dramatic jump in many food prices – exacerbated by crop failures and the production of agricultural fuels – poses a grave threat to the quality of life in many (primarily, poorer) countries.

#### 3.1 Asian Emerging Economies Remain the Engine of Global Economic Growth

The *U.S. economy* stood on the brink of recession in early 2008. Problems in the U.S. real estate sector adversely affected both the financial sector (slump in the value of mortgages) and the real economy (asset losses and a decline in

residential construction investment). A loss in banking confidence resulted in refinancing problems, which the Federal Reserve System (Fed) countered with generous injections of liquidity and sharp cuts in interest rates. The weak labor market, the low saving ratio and rising energy prices are additional factors dampening private consumption. U.S. GDP growth fell sharply in the fourth quarter of 2007 and reached just 0.9% in the first quarter of 2008 (on the previous quarter, on an annualized basis). The recession in residential construction investment continued. Indeed, the decline gathered pace on the previous quarter. Although private consumption in nominal terms grew as strongly as in the fourth quarter of 2007, rising prices dampened real growth. The first quarter of 2008 saw a

slight drop in investment in plant and equipment. Net exports and changes in inventories had a positive impact on growth, however.

*Non-Japan Asia (NJA)* remains the driving force of the global economy. Compared with 2007, growth in NJA should weaken only slightly. China and India's booming economies are the specific engines of growth in this region. *Japan* posted an unexpectedly positive performance with growth of 0.8% in the first quarter of 2008, benefiting from its exports to Asia's fast expanding regions. Private consumption was fueled by the sustained fall in the price level. Although growth will slacken somewhat in the next few quarters, it will remain robust. Surveys do not indicate a credit crisis in Japan where lending conditions are seen as loose.

Table 2

### Underlying Global Economic Conditions<sup>1</sup>

|                                                    | 2007   | 2008         | 2009         | 2010   |
|----------------------------------------------------|--------|--------------|--------------|--------|
| <b>Gross domestic product</b>                      |        |              |              |        |
| Annual change in % (real)                          |        |              |              |        |
| World excluding the euro area                      | +5.1   | +4.0         | +4.0         | +4.5   |
| U.S.A.                                             | +2.2   | +1.0         | +1.2         | +2.6   |
| Japan                                              | +2.0   | +1.3         | +1.6         | +1.7   |
| Asia excluding Japan                               | +9.0   | +7.7         | +7.5         | +7.9   |
| Latin America                                      | +5.3   | +4.3         | +3.7         | +4.0   |
| United Kingdom                                     | +3.0   | +1.8         | +1.7         | +2.8   |
| New EU Member States                               | +6.1   | +5.0         | +4.8         | +4.4   |
| Switzerland                                        | +3.1   | +1.8         | +1.7         | +2.2   |
| Euro area <sup>2</sup>                             | +2.7   | +1.5 to +2.1 | +1.0 to +2.0 | x      |
| <b>World trade (imports of goods and services)</b> |        |              |              |        |
| World economy                                      | +6.4   | +5.3         | +5.7         | +7.0   |
| Non-euro area countries                            | +7.1   | +5.9         | +6.2         | +7.7   |
| Real growth of euro area export markets            | +6.8   | +5.6         | +5.8         | +7.2   |
| Real growth of Austrian export markets             | +5.7   | +5.2         | +5.2         | +6.3   |
| <b>Prices</b>                                      |        |              |              |        |
| Oil price in USD/barrel (Brent)                    | 72.7   | 113.3        | 117.7        | 115.6  |
| Three-month interest rate in %                     | 4.3    | 4.9          | 4.3          | 4.2    |
| Long-term interest rate in %                       | 4.3    | 4.4          | 4.7          | 4.8    |
| USD/EUR exchange rate                              | 1.37   | 1.54         | 1.54         | 1.54   |
| Nominal effective exchange rate (euro area index)  | 107.69 | 114.57       | 115.08       | 115.08 |

Source: Eurosystem.

<sup>1</sup> Global economic growth in 2007 was revised down by 1 percentage points against the OeNB December 2007 outlook. However, 0.6 percentage points of this revision are attributable to new purchasing power parity weights.

<sup>2</sup> Results of the Eurosystem's June 2008 projections. The ECB presents the result in ranges based upon average differences between actual outcomes and previous projections.

The economic prospects for the *United Kingdom* are determined primarily by the real estate and financial markets. Private consumption, which together with investment was the driving force of the UK's economy in 2007, will weaken owing to tighter lending conditions and to the downward correction of real estate prices. Exports are currently being fueled by the sharp devaluation of the pound sterling, which, however, represents a risk for price stability. GDP growth, which fell to 0.4% in the first quarter of 2008, is likely to further decline in the second quarter of 2008. This means growth in 2008 and 2009 will be significantly more sluggish than in 2007.

### **3.2 Euro Area Gets off to Good Start in 2008**

Despite the factors curbing growth worldwide and the high external value of the euro, the euro area's economy got off to a good start in 2008, posting growth of 0.7% on a quarterly basis. Growth was driven primarily by *Germany*, which registered growth of 1.5% (also on a quarterly basis). However, this is likely to have been owing to – at least, in part – weather-induced temporary effects, which means that a counter-trend can be expected in the second quarter of 2008. In 2007, the German economy registered very vigorous growth of 2.6%, stoked by exports and, in particular, investment. In 2007, investment was fueled in connection with the corporate tax reform which came into force in early 2008 (discontinuation of accelerated depreciation). Private consumption, by contrast, declined owing to falling real wages. The VAT increase in early 2007 also weakened private consumption. The further development of private consumption very much depends on

the future trend in inflation. Overall, German GDP growth in 2008 and 2009 is likely to slow appreciably, with exports cooling and investment advancing at a slower pace.

In *France*, the economy was driven by robust domestic demand in 2007 as in previous years while exports grew at a moderate rate. The tax reform which took effect in 2007 led to an easing of households' tax burden, thereby strengthening their purchasing power. Exports are currently suffering from the appreciation of the euro and an unfavorable development in unit labor costs. Real estate prices, which had been sliding since early 2006, stabilized at the end of 2007, so that a soft landing for the real estate market can be anticipated.

In *Italy*, Austria's southern neighbor, the economy is not doing very well at all. In 2007, growth of 1.3% was fueled by both private consumption and investment while dampened by net exports. In the fourth quarter of 2007, the economy suffered a drop in output. Although this loss of performance was recouped in the first quarter of 2008, the prospects for 2008 do not look favorable on the whole, as growth is expected to decline to some 0.5%. Italy's growth gap with the rest of Europe will thus continue to widen over the next few years.

In *Ireland* and *Spain* the cyclical downturn – as in the UK and the Baltic countries – is being exacerbated by the end of the boom in the real estate market. In Ireland, construction investment is expected to plummet.

The Eurosystem anticipates a slowdown in GDP growth to 1.5% to 2.1% in 2008 and to 1.0% to 2.0% in 2009. This deceleration against 2007 is attributable to, above all, weaker export growth.

#### 4 Weaker World Economy and Appreciation of the Euro Dampen Austrian Exports

Austrian exporters can look back to an extremely successful 2007. Despite deteriorating external economic conditions, exports of both goods and services were boosted by slightly more than 10% in nominal terms. Export momentum was still undiminished in the first quarter of 2008 and was fueled by temporary factors such as good snow conditions, which resulted in another record winter season for the Austrian tourism industry. The direct effects of the U.S. real estate crisis on Austrian exports are limited. Exports to the U.S.A. – Austria's third most important export market after Germany and Italy – are growing at a slower pace. Since they account for only 5% of Austrian exports as a whole, their impact on total exports is modest. In addition, indirect effects via Austria's close external trade relations with Germany are not clearly evident – at least for the time being. On the contrary, Germany's demand for imports was unexpectedly buoyant in early 2008.

The global economic headwind will not however spare Austrian exports in the next few months. Owing to the U.S. real estate crisis, global economic growth slowed significantly, as did demand in Austria's export markets. A further factor is the appreciation of the euro, which is currently adversely affecting the price competitiveness of Austrian exporters. As a result, exports will lose considerable steam in 2008. After reaching 8.6% in 2007, growth in real exports (national accounts definition) is expected to weaken to 6.4% in 2008 and to 4.3% in 2009. Real export growth is not expected to recover until 2010. Despite the decline, exports remain a key pillar of the economy over the forecast horizon as a whole.

Several factors are helping to prevent exports from slowing more rapidly. Exchange rate fluctuations no longer play a role within the euro area, and Austrian exporters are able to win market share thanks to the favorable development of unit labor costs. Outside the euro area, the loss of price competitiveness is currently resulting in Austrian exporters losing market share. How-

Table 3

#### Growth and Price Developments in Austria's External Trade

|                                                          | 2007 | 2008 | 2009 | 2010 |
|----------------------------------------------------------|------|------|------|------|
| <i>Annual change in %</i>                                |      |      |      |      |
| <b>Exports</b>                                           |      |      |      |      |
| Competitor prices in Austria's export markets            | +0.8 | +0.7 | +1.8 | +1.3 |
| Export deflator                                          | +1.6 | +1.7 | +2.0 | +1.8 |
| Changes in price competitiveness                         | -0.8 | -1.0 | -0.3 | -0.4 |
| Demand on Austria's export markets (real)                | +5.7 | +5.2 | +5.2 | +6.3 |
| Austrian exports of goods and services (real)            | +8.6 | +6.4 | +4.3 | +6.2 |
| Market share                                             | +2.9 | +1.2 | -0.9 | -0.1 |
| <b>Imports</b>                                           |      |      |      |      |
| International competitors' prices in the Austrian market | +1.0 | +1.3 | +1.8 | +1.4 |
| Import deflator                                          | +1.5 | +2.9 | +2.1 | +1.8 |
| Austrian imports of goods and services (real)            | +6.2 | +5.2 | +4.4 | +6.1 |
| <b>Terms of trade</b>                                    | +0.1 | -1.2 | +0.0 | -0.1 |
| <i>Percentage points of real GDP</i>                     |      |      |      |      |
| <b>Contribution of net exports to GDP growth</b>         | +1.8 | +1.1 | +0.3 | +0.6 |

Source: 2007: Eurostat; 2008 to 2010: OeNB June 2008 outlook, Eurosystem.

Table 4

**Austria's Current Account**

|                                     | 2007                    | 2008 | 2009 | 2010 |
|-------------------------------------|-------------------------|------|------|------|
|                                     | <i>% of nominal GDP</i> |      |      |      |
| <b>Balance of trade</b>             | 5.0                     | 5.2  | 5.4  | 5.7  |
| Goods                               | 0.5                     | 0.5  | 0.4  | 0.7  |
| Services                            | 4.5                     | 4.7  | 4.9  | 5.0  |
| Euro area                           | 0.0                     | -0.4 | -0.2 | -0.3 |
| Non-euro area countries             | 5.0                     | 5.5  | 5.6  | 6.0  |
| <b>Balance on income</b>            | -1.4                    | -1.2 | -1.1 | -1.0 |
| <b>Balance on current transfers</b> | -0.4                    | -0.4 | -0.3 | -0.3 |
| <b>Current account</b>              | 3.2                     | 3.6  | 4.0  | 4.5  |

Source: 2007: OeNB; 2008 to 2010: OeNB June 2008 outlook.

ever, they are benefiting from sustained strong demand in Central and South-eastern European countries, oil-exporting countries such as Russia and emerging economies, all of which will expand much more rapidly than the global economy over the forecast horizon as a whole. Shifts in Austrian exports' sectoral structure to high technology are making domestic exporters less susceptible to exchange rate fluctuations. Last but not least, the average size of Austrian enterprises, which is small compared with their international counterparts, permits a high degree of strategic flexibility.

Vigorous export growth was primarily responsible for the sharp rise in the current account surplus in 2007, which is expected to further improve over the forecast horizon. Given the slower momentum of world economic growth, the goods balance will however remain almost unchanged in 2008 and 2009 and is expected to improve substantially only in 2010. The services balance – fueled by travel and business-related services – will increase somewhat more vigorously. The negative balance on income will shrink slightly over the forecast horizon whereas the balance on transfers will remain almost unchanged. Overall, the current account

will improve from 3.2% of GDP in 2007 to 4.5% in 2010.

## 5 Food and Energy Prices Fuel Inflation

In Austria, HICP inflation rose markedly during the second half of 2007 (August: 1.7%; December: 3.5%). In early 2008, inflation fell somewhat (to 3.1% in January and February respectively) before climbing back up in March and April (to 3.5% and 3.4% respectively). Similarly high inflation rates were last seen in the early 1990s. Both food and energy saw huge price increases, fueled by rocketing commodity prices. In 2007, milk and wheat prices rose by more than 50% and crude oil prices reached new historical record highs. By contrast, the recent contributions to inflation by the services sector were below average. The OeNB projects currently high price growth to fall only gradually over the forecast horizon. Inflation will not drop below the 2% mark until 2010. Inflation of 3.1% – the highest level since 1993 – is anticipated for 2008 as a whole and is projected to decline to 2.4% in 2009 and to 1.9% in 2010.

The current inflation outlook is based on the assumption that commodity prices will track market expecta-

Table 5

**Selected Price Indicators for Austria**

|                                                | 2007                      | 2008  | 2009 | 2010 |
|------------------------------------------------|---------------------------|-------|------|------|
|                                                | <i>Annual change in %</i> |       |      |      |
| Harmonized Index of Consumer Prices (HICP)     | +2.2                      | +3.1  | +2.4 | +1.9 |
| HICP energy                                    | +4.0                      | +12.6 | +5.5 | +1.0 |
| HICP excluding energy                          | +2.0                      | +2.2  | +2.1 | +2.0 |
| Private consumption expenditure (PCE) deflator | +2.1                      | +3.0  | +2.3 | +1.9 |
| Investment deflator                            | +1.7                      | +2.3  | +2.2 | +2.0 |
| Import deflator                                | +1.5                      | +2.9  | +2.1 | +1.8 |
| Export deflator                                | +1.6                      | +1.7  | +2.0 | +1.8 |
| Terms of trade                                 | +0.1                      | -1.2  | +0.0 | -0.1 |
| GDP deflator at factor cost                    | +2.2                      | +2.9  | +2.3 | +2.1 |
| Unit labor costs                               | +1.2                      | +2.2  | +1.9 | +1.0 |
| Compensation per employee                      | +2.6                      | +3.0  | +3.0 | +2.6 |
| Labor productivity                             | +1.4                      | +0.8  | +1.0 | +1.6 |
| Collectively agreed wage settlements           | +2.5                      | +3.1  | +3.0 | +2.6 |
| Profit margins <sup>1</sup>                    | +1.0                      | +0.7  | +0.4 | +1.1 |

Source: 2007: Eurostat, Statistics Austria; 2008 to 2010: OeNB June 2008 outlook.

<sup>1</sup> GDP deflator divided by unit labor costs.

tions. Market participants expect crude oil prices to stabilize at their currently high level in line with current futures prices but do not anticipate further price increases. Although significant second-round effects generated by the spike in commodity prices are not assumed, the food and energy sectors will remain the key drivers of inflation in 2008 as a whole even if their contributions to inflation decrease over the course of the year. A reverse development is expected for the services sub-component. Not least owing to higher wage settlements, this sector is likely to see an acceleration in inflation, which will counter a sharper drop in aggregate HICP inflation in the second half of 2008 and in 2009. The European football championship may generate a temporary rise in hotel and restaurant prices. On the basis of other countries' experience, however, this effect should amount to no more than 0.4 percentage points of the broad HICP index and be limited to June 2008 only.

Higher prices in international commodity markets suggest a significant deterioration in the terms of trade despite the euro's increased external value in 2008. As the spike in commodity prices eases, the next two years should not see any major change in the terms of trade.

The most important wage negotiations for 2008 were concluded before the current rise in inflation. Negotiated wages will climb by slightly more than 3%. This means that wage negotiations in 2009 will be subject to the impact of unexpectedly high inflation and recent healthy corporate profits, on the one hand, and a weak productivity performance (owing to robust employment growth) and the cloudier economic outlook, on the other. This forecast is based on the assumption that the path of wage moderation will be pursued. Wage settlements in 2009 are therefore expected to be slightly lower than those agreed in 2008. Lower productivity growth and higher wage settlements will make unit labor costs in 2008 and

2009 rise more sharply than they have recently. Accordingly, although profit margin growth will underperform in 2008 and 2009, it will nevertheless still be positive and result in a further moderate drop in the wage share of GDP.

## 6 Flat Investment Cycle and Sluggish Consumption

### 6.1 Stagnating Net Real Income Curbs Consumption

From the perspective of Austrian households, 2007 was marked by dynamic growth in disposable household income in both nominal and real terms. At +4.8%, the nominal compensation of employees (gross) generated the strongest growth since 1992, which was fueled by very healthy employment growth, in particular. Nominal gross wage and salary payments per full-time equivalent payroll employee increased by 2.7%. Real net wage and salary pay-

ments (less wage tax and social security contributions) rose by 0.3%. Since 2000, real net wage and salary payments per full-time equivalent payroll employee have increased by a total of 2.2%.

In 2007, mixed income and operating surpluses likewise grew unusually vigorously and at 10.3% posted the strongest growth since statistics (non-financial sector accounts) were introduced in 1995. Property income, however, grew more sluggishly than in previous years owing to equity market losses, which commenced as early as 2007. Total disposable household income (net, including received transfers) advanced by 5.4% – a record high since 2000.

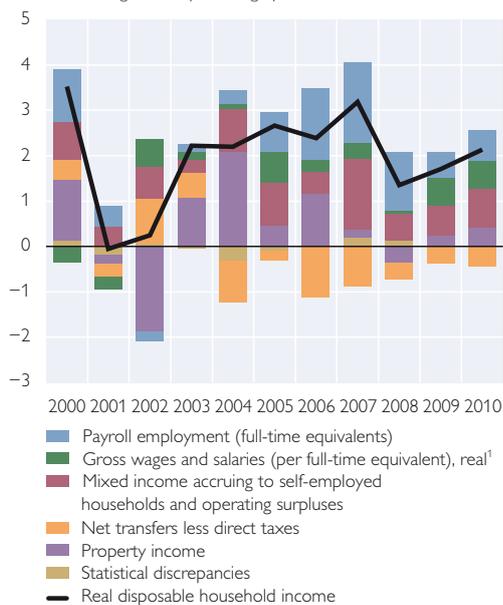
Despite excellent income growth, private real consumption developed at a very modest pace in 2007 (+1.5%), however. This is attributable to two

Chart 3

## Weaker Economy and Unexpectedly High Inflation Dampen Real Income Growth in 2008

### Growth in real disposable household income

Contribution to growth in percentage points



Source: Statistics Austria, OeNB.

<sup>1</sup> Inclusive employers' social security contributions.

### Wages and salaries per full-time equivalent

Index (2000 = 100)

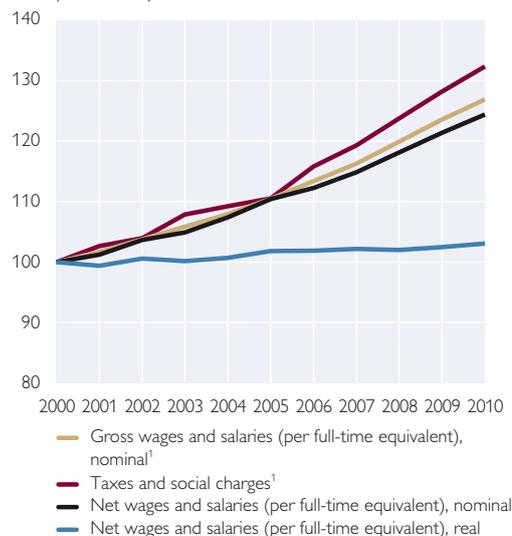


Table 6

**Determinants of Nominal Household Income in Austria**

|                                                                                 | 2007  | 2008 | 2009 | 2010 |
|---------------------------------------------------------------------------------|-------|------|------|------|
| <i>Annual change in %</i>                                                       |       |      |      |      |
| Payroll employees                                                               | +2.1  | +1.7 | +0.8 | +0.9 |
| Wages per employee                                                              | +2.6  | +3.0 | +3.0 | +2.6 |
| Compensation of employees                                                       | +4.8  | +4.8 | +3.8 | +3.6 |
| Investment income                                                               | +3.3  | +0.4 | +4.0 | +5.0 |
| Mixed income accruing to self-employed households and operating surpluses (net) | +10.3 | +6.0 | +5.5 | +6.0 |
| <i>Contribution to disposable household income in percentage points</i>         |       |      |      |      |
| Compensation of employees                                                       | +3.8  | +3.8 | +3.0 | +2.8 |
| Investment income                                                               | +0.5  | +0.1 | +0.6 | +0.7 |
| Mixed income accruing to self-employed households and operating surpluses (net) | +2.0  | +1.2 | +1.2 | +1.3 |
| Net transfers less direct taxes <sup>1</sup>                                    | -1.2  | -0.8 | -0.7 | -0.7 |
| Disposable household income (nominal)                                           | +5.4  | +4.4 | +4.0 | +4.1 |

Source: 2007: Eurostat; 2008 to 2010: OeNB June 2008 outlook.

<sup>1</sup> Negative values indicate an increase in (negative) net transfers minus direct taxes, positive values indicate a decrease.

Table 7

**Private Consumption in Austria**

|                                                 | 2007 | 2008 | 2009 | 2010 |
|-------------------------------------------------|------|------|------|------|
| <i>Annual change in %</i>                       |      |      |      |      |
| Disposable household income (nominal)           | +5.4 | +4.4 | +4.0 | +4.1 |
| Private consumption expenditure (PCE) deflator  | +2.1 | +3.0 | +2.3 | +1.9 |
| Disposable household income (real)              | +3.2 | +1.4 | +1.7 | +2.1 |
| Private consumption (real)                      | +1.5 | +1.0 | +1.5 | +1.9 |
| <i>% of nominal disposable household income</i> |      |      |      |      |
| Saving ratio                                    | 11.3 | 11.5 | 11.6 | 11.8 |

Source: 2007: Eurostat; 2008 to 2010: OeNB June 2008 outlook.

factors: near-stagnant levels of real wages – an income component with a strong propensity for consumption – and a change in the savings attitude arising from the pension reforms, which saw the saving ratio increase from 9.7% in 2006 to 11.3% in 2007. Such a steep increase in the saving ratio within the space of a mere year is unprecedented.

At +0.2% quarter on quarter, consumption growth continued to slow in the first quarter of 2008. The consumption forecast for the period from

2008 to 2010 is marked by decelerating employment momentum and thus considerably weaker growth in compensation of employees. Owing to the fall in stock prices, property income is not expected to make a notable contribution to growth in nominal household income in 2008.

At the same time, currently high inflation is dampening real disposable income. According to this forecast, consumption growth is expected to flag to 1.0% in 2008. In 2009 and 2010, real disposable household income

will grow more robustly as inflation eases. As a result, private consumption growth is projected to accelerate gradually to 1.5% (2009) and 1.9% (2010).

## 6.2 Current Investment Cycle – Unusually Smooth

In 2007, enterprises broadened their investments by 4.0% on a seasonally-adjusted basis (nonseasonally-adjusted: 5.2%). According to enterprises, investment was driven to an average extent by rationalization measures and replacement investment. The most important motive for most investment decisions was robust demand while expected or past profits, as well as technical factors, are likely to have played only a secondary role.

Compared with the previous two boom periods (1989 to 1991 and 1997 to 2000), the current investment cycle is unusually smooth. This phenomenon is primarily attributable to investment in plant and equipment, which accounts for only 40% of total investment, but – being the most cyclically-sensitive investment component – is usually critical to the investment cycle. Construction investment, the other key investment component accounting for a share of some 55%, is even more significant in quantitative terms although its cycle followed economic developments to a very limited extent in the past. In the two aforementioned periods, real investment in plant and equipment on an aggregated basis rose by 16% and 23% respectively. As a result, the share of investment in plant and equipment (as a percentage of GDP) also rose sharply in both these periods. In each case, the end of the boom was followed by a massive slump in investment activity. Three years after the end of each economic boom, corporate investment in plant and equipment remained 5% and 2.5%

respectively, below the levels attained during each boom. A comparable development was not evident during the upturn of the last three years (2005 to 2007). At 9.8%, the cumulated increase in investment in plant and equipment was much smaller, with the share of investment in plant and equipment (as a percentage of GDP) up only slightly. From this perspective, a sharp downturn in investment activity cannot therefore be projected over the three years of the forecast horizon.

In addition, the leading indicators available are not currently signaling an imminent slump in investment activity, at least not in the first half of 2008. Although capacity utilization has been on the decline for several months, it is still well above the long-term average. The order intake of enterprises from Austria and abroad are above-average although momentum has slowed compared with mid-2007. The internal financing power of enterprises remains excellent. In addition, special factors have played a role: the mild winter, for instance, particularly fueled construction investment in the first quarter of 2008. The dissipation of this temporary effect will however purely mechanically result in a slowdown in investment growth in the next quarter.

The projected cooling of investment activity in 2008 is being determined by external factors to a great extent. The current international financial market turmoil is a key factor, which, inter alia, is making Austrian exports lose steam. Although the latter historically remains at still fairly high levels, it is visibly slowing compared with previous years. Another factor is the loss in price competitiveness, from which Austrian companies are currently suffering owing to the appreciation of the euro. Furthermore, recent months have seen a marked increase in corporate financing

Chart 4

### Investment in Plant and Equipment over the Past Three Business Cycles



Source: Eurostat, OeNB.

costs. Owing to the considerable uncertainty induced by the financial turmoil, corporate loan spreads have widened by 60 basis points since the outbreak of the crisis in mid-2007.<sup>4</sup> The current OeNB outlook is based on the assumption that this spread will be sustained over the entire forecast horizon. Corporate investment will therefore be dampened by an additional 0.5 percentage points in both 2008 and 2009. The hardest hit investment component will be investment in plant and equipment.

An important domestic factor dampening corporate investment activ-

ity is unit labor costs, which will rise faster over the forecast horizon than they have recently. This increase in unit labor costs is attributable in equal measure to two factors: first, high employment growth, which is curbing productivity growth and, second, higher wage settlements.

As for construction investment, which is less cyclically sensitive, the healthy order book indicates stable growth over the forecast period. Planned infrastructure measures should provide additional impetus in the next few years.

<sup>4</sup> The spread for corporate loans is defined as the difference between the average interest rate on corporate loans and the interest rate on ten-year government bonds.

Table 8

**Investment Activity in Austria**

|                                                              | 2007                                                                                   | 2008 | 2009 | 2010 |
|--------------------------------------------------------------|----------------------------------------------------------------------------------------|------|------|------|
|                                                              | <i>Annual change in %</i>                                                              |      |      |      |
| Total gross fixed capital formation (real)                   | +4.0                                                                                   | +1.5 | +1.4 | +2.6 |
| of which: Investment in plant and equipment (real)           | +4.6                                                                                   | +1.5 | +1.6 | +3.0 |
| Residential construction investment (real)                   | +1.4                                                                                   | +0.6 | +1.2 | +2.0 |
| Non-residential construction investment and other investment | +5.4                                                                                   | +1.8 | +1.4 | +2.5 |
| Government investment (real)                                 | +3.4                                                                                   | +2.3 | +1.3 | +2.3 |
| Private investment (real)                                    | +4.0                                                                                   | +1.5 | +1.4 | +2.6 |
|                                                              | <i>Contribution to total gross fixed capital formation growth in percentage points</i> |      |      |      |
| Investment in plant and equipment (real)                     | +1.8                                                                                   | +0.6 | +0.6 | +1.2 |
| Residential construction investment (real)                   | +0.3                                                                                   | +0.1 | +0.3 | +0.4 |
| Non-residential construction investment and other investment | +2.1                                                                                   | +0.7 | +0.5 | +1.0 |
| Government investment (real)                                 | +0.2                                                                                   | +0.1 | +0.1 | +0.1 |
| Private investment (real)                                    | +3.8                                                                                   | +1.4 | +1.3 | +2.5 |
|                                                              | <i>Contribution to real GDP growth in percentage points</i>                            |      |      |      |
| Changes in inventories (real)                                | -0.3                                                                                   | -0.2 | -0.1 | +0.0 |

Source: 2007: Eurostat; 2008 to 2010: OeNB June 2008 outlook.

Box 1

**No Signs of a Credit Crunch in Austria<sup>1</sup>**

The financial crisis in the U.S.A. has impaired the conditions for banks to raise funds in the international money and capital markets. Owing to a sharp deterioration in the risk rating of banks, interbank lending was either curtailed or loans were issued at higher interest rates only. The U.S. Fed, the ECB and other central banks have ensured liquidity via liquidity injections. The IMF nevertheless currently sees a high risk of the emergence of a global credit crunch.<sup>2</sup> A **credit crunch** occurs when banks severely tighten lending because of liquidity constraints and increase the cost of credit sharply, unleashing massive negative effects on the real economy as a rule.

So far no signs of a credit crunch have been visible in Austria. Monetary statistics for the first quarter of 2008 show that corporate lending growth continues strong and above-average by long-term standards. In corporate banking, however, the more unfavorable refinancing conditions of banks in the money and capital markets are reflected in higher lending rates and a slight tightening of credit standards (increase in credit margins). A comparison with corresponding corporate lending growth rates in the euro area reveals a qualitatively similar development in this region.

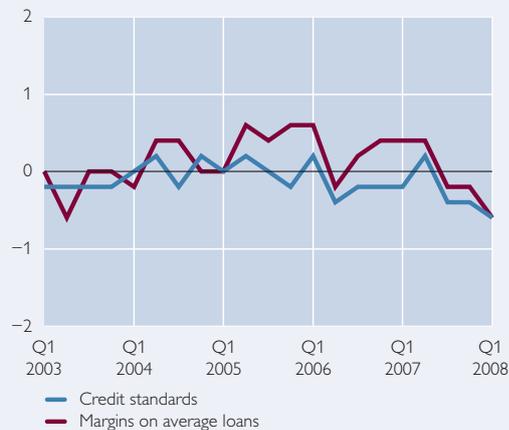
<sup>1</sup> Authored by Christian Ragacs ([christian.ragacs@oebn.at](mailto:christian.ragacs@oebn.at)) and Walter Waschiczek ([walter.waschiczek@oebn.at](mailto:walter.waschiczek@oebn.at)).

<sup>2</sup> International Monetary Fund (2008). *Global Financial Stability Report – Containing Systemic Risks and Restoring Financial Soundness*. Washington D.C. April. 126.

### Brisk Growth in Corporate Loans despite Slight Tightening of Credit Standards

#### Results of the Bank Lending Survey in Austria

Change on the previous quarter



Source: OeNB, ECB.

Note: 2 = eased considerably, 1 = eased slightly, -1 = tightened slightly, -2 = tightened considerably

#### Growth in Corporate Loans

Change on the previous quarter in %



Fears that special factors may have distorted the latest credit growth statistics upward cannot, it seems, be confirmed in Austria's case. The consolidated balance sheets of Austrian banks (which also include external business) show even stronger growth in corporate lending owing to their successful activities in Central and Eastern Europe. In addition, there are no signs that borrowing is currently being frontloaded because of an anticipated credit squeeze in the future.

Moreover, it is not possible to identify any capital constraints on banks that may lead to severe future lending restrictions. On the contrary, banking performance is very healthy (profitability stood at +14% towards end-2007, i.e. when the financial crisis was already in full swing, and the cost/income ratio was at a record high of 62%).

Last but by no means least, even the risk rating of borrowers saw an improvement. In 2007, the number of insolvencies fell by 6.1% year on year. Allowance for loan losses was at its lowest level since 1997.

### 6.3 Jobless Rate at a Record Low in 2008

The boom years of 2006 and 2007 brought about a significant improvement in the Austrian labor market situation. Robust growth in payroll employment by a total of 126,000 in these two years led to a drop in the unemployment rate (Eurostat definition) from 5.2% in 2005 to 4.4% in 2007. This means that both 2006 and 2007 were marked by significantly more robust employment growth than was the previous period of expansion from 1998 to 2000 when average annual em-

ployment growth amounted to 42,000. In the first quarter of 2008, labor demand driven by the construction and tourism industries again soared on a year-on-year basis. This is remarkable insofar as employment growth was already robust in the first quarter of 2007 owing to the mild winter.

The gradually cooling economy will filter through to the employment situation with a time lag. Although the record levels of payroll employment seen in 2007 will not be attained in 2008, payroll employment numbers will nevertheless rise steeply this year (+1.7%).

Table 9

**Labor Market Developments in Austria**

|                                                | 2007  | 2008 | 2009 | 2010 |
|------------------------------------------------|-------|------|------|------|
| <i>Annual change in %</i>                      |       |      |      |      |
| <b>Total employment</b>                        | +1.8  | +1.5 | +0.7 | +0.8 |
| of which: Payroll employment                   | +2.1  | +1.7 | +0.8 | +0.9 |
| Self-employment                                | +0.7  | +0.3 | +0.2 | +0.1 |
| Public sector employment                       | +0.3  | +0.0 | +0.1 | +0.0 |
| Registered unemployment                        | -20.9 | -4.0 | +5.2 | +2.3 |
| Labor supply                                   | +1.5  | +1.2 | +0.8 | +0.8 |
| <i>% of labor supply</i>                       |       |      |      |      |
| <b>Unemployment rate (Eurostat definition)</b> | 4.4   | 4.2  | 4.4  | 4.4  |

Source: 2007: Eurostat; 2008 to 2010: OeNB June 2008 outlook.

In 2009 and 2010, payroll employment is expected to grow by a much more sluggish 0.8% and 0.9% respectively. The number of self-employed will grow only modestly over the forecast period owing to their steady decline in agriculture, which accounted for 57% of the total self-employed in 2007.

In addition to demographic factors, labor supply growth is being determined by the increase in foreign labor and by the effects of the pension reform enacted in 2003. The current OeNB outlook assumes that Austria's labor market will be fully opened to Central and Eastern European citizens as late as May 2011. Until then, only a gradual liberalization for shortage occupations can be expected. The pension reform of 2003 resulted in a sharp increase in the share of 55- to 64-year-old employees, which rose from 28.8% (2004) to 38.7% (2007). This effect will be sustained over the forecast period and boost labor supply by some 60,000 persons. The reform of child-care benefit (giving parents the opportunity to receive higher monthly benefits for a shorter period of time) will have a comparatively small impact on labor supply (a total of 12,500 persons) in the forecast period. Overall, labor supply is projected to grow by 132,000 persons

(+2.9%) in the period from 2008 to 2010, according to the current OeNB economic outlook.

The jobless rate (Eurostat definition) will fall by 0.2 percentage points to 4.2% in 2008. In 2009 and 2010, it is projected to edge up to 4.4%.

## 7 Upside Risks Predominate in the Inflation Outlook

The current OeNB outlook is subject to a large number of risks. Of the external assumptions, on which this outlook is based, the price of oil is subject to the greatest uncertainties. Although futures indicate by and large constant oil prices, they have always underestimated actual oil price developments in recent years. This is why there is a risk of higher oil prices in the forecast period. The euro exchange rate (both the bilateral rate relative to the U.S. dollar and the nominal effective rate) is assumed to remain constant over the forecast period. In the short term, the expected turn in interest rate policy poses an upside risk to the U.S. dollar. In the medium term, however, continued macroeconomic imbalances will represent an additional downside risk to the U.S. dollar.

The Austrian economy's buoyant growth in the first quarter of 2008 is

believed to be largely temporary. The outlook for the second quarter of 2008 is accordingly conservative (+0.3%). If the second quarter proves to be stronger, this will represent an upside risk to growth this year. The greatest domestic risk to the growth outlook is the tax reform planned for 2010, which is not included in this outlook. If the tax reform gives rise to tax relief to the tune of a currently rumored EUR 3 billion, the latter will pose an upside risk in 2010.

Whereas the risks to this growth outlook do not clearly point solely in one direction, most of the inflation risks are to the upside. The price of oil is by far the greatest risk factor. If, for instance, oil prices were permanently USD 33 higher in the long term (this would signify an oil price of USD 150 per barrel Brent in the second quarter of 2008), growth in 2008 (2009) would slow by 0.22 (0.14) percentage points.

In 2008 (2009), inflation would be 0.59 (0.16) percentage points higher than projected in this outlook. Furthermore, higher wage settlements cannot be ruled out as an inflation risk.

## 8 Downgrade in Growth Outlook against December 2007 and Upgrade in Inflation Outlook

External macroeconomic conditions have deteriorated sharply since the previous OeNB economic outlook (December 2007). The assumptions for the future development of oil prices were sharply corrected upward: by USD 25 for 2008 and by USD 34 for 2009. The euro has firmed not only against the U.S. dollar but also in nominal effective terms. Austrian export growth has clearly run out of steam. This more pessimistic assessment of the global economy was prompted primarily by the perception of weaker growth in the U.S.A. The financial crisis has

Table 10

### Change in the Underlying External Economic Conditions since the OeNB December 2007 Outlook

|                                               | June 2008 |       |       | December 2007 |      | Difference |       |
|-----------------------------------------------|-----------|-------|-------|---------------|------|------------|-------|
|                                               | 2008      | 2009  | 2010  | 2008          | 2009 | 2008       | 2009  |
| <i>Annual change in %</i>                     |           |       |       |               |      |            |       |
| Growth of Austria's export markets            | +5.2      | +5.2  | +6.3  | +6.3          | +6.6 | -1.1       | -1.4  |
| Competitor prices in Austria's export markets | +0.7      | +1.8  | +1.3  | +0.9          | +1.4 | -0.2       | +0.4  |
| Competitor prices in Austria's import markets | +1.3      | +1.8  | +1.4  | +0.9          | +1.4 | +0.4       | +0.4  |
| <i>USD</i>                                    |           |       |       |               |      |            |       |
| Oil price per barrel (Brent)                  | 113.3     | 117.7 | 115.6 | 88.6          | 83.7 | +24.7      | +34.0 |
| <i>Annual change in %</i>                     |           |       |       |               |      |            |       |
| Nominal effective exchange rate (exports)     | -1.0      | -0.1  | +0.0  | -0.4          | +0.0 | -0.6       | -0.1  |
| Nominal effective exchange rate (imports)     | -0.3      | +0.0  | +0.0  | -0.2          | +0.0 | -0.1       | +0.0  |
| <i>%</i>                                      |           |       |       |               |      |            |       |
| Three-month interest rate                     | 4.9       | 4.3   | 4.2   | 4.5           | 4.3  | +0.4       | +0.0  |
| Long-term interest rate                       | 4.4       | 4.7   | 4.8   | 4.2           | 4.2  | +0.2       | +0.5  |
| <i>Annual change in %</i>                     |           |       |       |               |      |            |       |
| Real GDP, U.S.A.                              | +1.0      | +1.2  | +2.6  | +2.3          | +2.6 | -1.3       | -1.4  |
| <i>USD/EUR</i>                                |           |       |       |               |      |            |       |
| USD/EUR exchange rate                         | 1.54      | 1.54  | 1.54  | 1.46          | 1.46 | +0.08      | +0.08 |

Source: Eurosystem.

triggered both higher short-term and long-term interest rates. Retail bank interest rates also include a spread of some 50 to 60 basis points.

The effects of these new external assumptions were simulated using the OeNB's macroeconomic model. For both 2008 and 2009, there are strongly negative effects on GDP growth of  $-0.5$  and  $-0.7$  percentage points respectively. The assumption of lower Austrian export growth has the most dampening effect. Table 11 lists the reasons for revising this outlook in detail. In addition to the effects of these new external assumptions, this revision is explained by the effects of new data and by the item "Other". The influence of new data includes the effects of the revisions of both the historical data already available at the time of the previous OeNB economic outlook (i.e. data up to the third quarter of 2007) and the projection errors of the previous outlook for the periods now published for the first time (i.e. data for the fourth quarter of 2007 and for the first quarter of 2008). The item "Other" includes new expert assessments regarding the development of domestic variables such as government consumption or wage settlements, as well as any changes in the model.

The  $-0.3$  percentage point revision of the outlook for 2008 is attributable to the far less benign international environment on the one hand and the fact that growth in early 2008 was much

stronger than projected on the other. The revision for 2009 was largely prompted by the international environment. The item "Other" of 0.2 percentage points is explained by a new assessment of domestic demand. Although domestic demand was revised down in view of the conservative assessment of domestic demand as early as December 2007, the downgrade is relatively modest in the current outlook.

The revision of the inflation forecast for 2008 was mainly due to inflation having accelerated to 3.5% in December 2007 and having remained at an average 3.2% in the first quarter of 2008, levels that had not been anticipated in the December 2007 outlook.

The revision for 2009 is explained almost exclusively by the less benign external assumptions.

A comparison of the latest forecasts for Austria (table 18) reveals an unexpectedly narrow distribution of forecast values given the currently high levels of uncertainty. Except for the IMF, every institution projects GDP growth in 2008 within a range of 2.1% to 2.3%. For 2009, the forecast values range between 1.7% and 2.2%. As for the inflation outlook, systematic differences between the current forecasts are not identifiable. The OeNB outlook differs from other forecasts primarily in terms of the composition of growth. In this respect, the OeNB expects net exports to make a larger contribution to growth than domestic demand.

Table 11

**Breakdown of Forecast Revisions**

|                                                          | GDP                       |      | HICP |      |
|----------------------------------------------------------|---------------------------|------|------|------|
|                                                          | 2008                      | 2009 | 2008 | 2009 |
|                                                          | <i>Annual change in %</i> |      |      |      |
| <b>June 2008 outlook</b>                                 | +2.2                      | +1.7 | +3.1 | +2.4 |
| <b>December 2007 outlook</b>                             | +2.5                      | +2.3 | +2.4 | +1.8 |
| <b>Difference</b>                                        | -0.3                      | -0.6 | +0.7 | +0.6 |
|                                                          | <i>Percentage points</i>  |      |      |      |
| <b>Due to:</b>                                           |                           |      |      |      |
| External assumptions                                     | -0.5                      | -0.7 | +0.3 | +0.5 |
| New data                                                 | +0.2                      | +0.0 | +0.6 | +0.1 |
| of which: <i>Revision of historical data up to Q3 07</i> | +0.0                      | x    | +0.0 | x    |
| <i>Projection errors for Q4 07 and Q1 08</i>             | +0.2                      | +0.0 | +0.6 | +0.1 |
| Other <sup>1</sup>                                       | -0.1                      | +0.2 | -0.2 | +0.0 |

Source: OeNB June 2008 and December 2007 outlooks.

<sup>1</sup> Different assumptions about developments in domestic variables such as wages, government consumption, effects of tax measures, other changes in assessment or in the model.

### Outlook for Central and Eastern European (CEE) Countries:<sup>1, 2</sup> Robust Economic Performance Expected to Continue but Growth Peak Has Passed Already

Economic growth in CEE countries will stay robust in the years to come; so far, the region has been relatively resilient to headwinds from financial market turbulences. Yet some economic slowdown is expected in the region (e.g. in the Czech Republic and Poland), but largely on the back of country-specific internal factors. Hungary's economic performance – which was exceptionally weak in 2007 compared with other countries of the region – is likely to remain anemic, but real GDP growth will at least gain some momentum after the strongest effects of the far-reaching fiscal stabilization program have phased out.

#### Real GDP Growth in the Three CEE EU Member States

|                    |                                  | Latest forecast |      |         |         | Previous forecast                    |         |     |
|--------------------|----------------------------------|-----------------|------|---------|---------|--------------------------------------|---------|-----|
|                    |                                  | 2006            | 2007 | 2008    | 2009    | 2008                                 | 2009    |     |
| Annual change in % |                                  |                 |      |         |         |                                      |         |     |
| Czech Republic     | OeNB (March 2008)                | 6.4             | 6.5  | 5.2     | 5.4     | OeNB (September 2007)                | 5.1     | 4.8 |
|                    | European Commission (April 2008) |                 |      | 4.7     | 5.0     | European Commission (November 2007)  | 5.0     | 4.9 |
|                    | IMF (April 2008)                 |                 |      | 4.2     | 4.6     | IMF (October 2007)                   | 4.6     | x   |
|                    | wiiw (March 2008)                |                 |      | 4.5     | 5.0     | wiiw (July 2007)                     | 5.2     | x   |
|                    | Consensus Forecasts (April 2008) |                 |      | 3.8–5.5 | 3.2–6.0 | Consensus Forecasts (September 2007) | 4.1–5.5 | x   |
| Hungary            | OeNB (March 2008)                | 3.9             | 1.3  | 1.8     | 2.8     | OeNB (September 2007)                | 2.5     | 3.3 |
|                    | European Commission (April 2008) |                 |      | 1.9     | 3.2     | European Commission (November 2007)  | 2.6     | 3.4 |
|                    | IMF (April 2008)                 |                 |      | 1.8     | 2.5     | IMF (October 2007)                   | 2.7     | x   |
|                    | wiiw (March 2008)                |                 |      | 2.5     | 4.1     | wiiw (July 2007)                     | 3.1     | x   |
|                    | Consensus Forecasts (April 2008) |                 |      | 1.5–2.7 | 2.5–3.6 | Consensus Forecasts (September 2007) | 2.5–3.5 | x   |
| Poland             | OeNB (March 2008)                | 6.2             | 6.5  | 5.6     | 4.9     | OeNB (September 2007)                | 5.7     | 5.0 |
|                    | European Commission (April 2008) |                 |      | 5.3     | 5.0     | European Commission (November 2007)  | 5.6     | 5.2 |
|                    | IMF (April 2008)                 |                 |      | 4.9     | 4.5     | IMF (October 2007)                   | 5.3     | x   |
|                    | wiiw (March 2008)                |                 |      | 5.5     | 5.3     | wiiw (July 2007)                     | 5.5     | x   |
|                    | Consensus Forecasts (April 2008) |                 |      | 4.7–5.8 | 4.1–5.5 | Consensus Forecasts (September 2007) | 4.8–5.8 | x   |

Source: European Commission, Consensus Forecasts, IMF, OeNB, wiiw.

<sup>1</sup> Compiled by Antje Hildebrandt (antje.hildebrandt@oenb.at).

<sup>2</sup> The OeNB compiles semiannual forecasts of economic developments in the Czech Republic, Hungary, Poland, and Russia. In the case of Russia, the forecast is established in collaboration with Suomen Pankki, Finland's central bank. The forecasts are based on preliminary global growth projections and technical assumptions about euro area import growth, oil prices and USD/EUR exchange rates, which are prepared by the ECB for the Eurosystem in the context of broad macroeconomic projection exercises. Compared with 2007, import growth of the euro area is expected to moderate in 2008 but to accelerate thereafter. The price of oil will pick up in 2008 and is expected to stay at elevated levels in 2009. The EUR/USD exchange rate is assumed to remain unchanged at the average level recorded in the two-week period ending in mid-February 2008 over the entire projection horizon.

The OeNB's projections are well in line with those of the other economic and financial institutions. Compared with the September 2007 projections, real GDP growth forecasts were slightly revised downward for Hungary and Poland, and upward for the Czech Republic, in line with the 2007 outcome and the less favorable euro area growth projections.

According to the ECB's projections of March 2008, economic growth in the euro area is expected to slow to 1.3% to 2.1% in 2008 and to accelerate only marginally in 2009, after real GDP growth of 2.6% year on year in 2007. The ECB's growth projections for the euro area were revised downward from December 2007, reflecting, among other things, the dampening impact of the financial market turmoil. Economic forecasts for the U.S.A. and for emerging economies other than the four countries under review in this contribution follow the same line: Compared with previous forecasts, real GDP growth projections were revised more or less strongly downward for 2008 and 2009, largely on the back of ongoing global financial turbulence.

Overall, the three CEE countries have been relatively resilient to the financial market turmoil, but are likely to be affected negatively by worsening financing conditions and monetary tightening in the medium term. Furthermore, the region will be impacted by the economic slowdown in industrialized countries because of declining exports of goods and services. The extent to which the CEE EU Member States depend on exports to the U.S. economy, however, is very small: Exports to the U.S.A. account for around 4% of total exports, whereas those to the euro area account for more than 50%. However, even before the beginning of the financial turbulence on world markets, most CEE countries already showed some signs of growth fatigue in 2007 partly on the back of country-specific internal factors.

For the **Czech Republic**, we expect real GDP growth to moderate in 2008 and 2009 compared with 2007. Private consumption growth will lose steam in both years due to the reform package that will likely entail an increase in VAT and excise taxes as well as lower social transfers. Furthermore, rising inflation and monetary tightening are anticipated to have a dampening effect on private consumption. On the external side, we expect export growth to slow down somewhat owing to weaker demand in the euro area in 2008, but to revive somewhat in 2009, largely in connection with the opening of the Hyundai plant and of economic growth picking up in the euro area. Import growth will moderate as well, as soon as Hyundai's investment has been completed. Net exports will contribute positively to real GDP growth in 2008 (0.5 percentage points) and in 2009 (1.1 percentage points). Compared with the September 2007 forecast, the projection was revised slightly upward, in particular in light of a higher-than-expected positive impact of employment growth and the release of a new car model by Škoda, which pushed up expectations on export growth. These positive effects even offset the slight downward revision of gross fixed capital formation (GFCF) growth that reflects a deterioration of confidence in industry, trade and construction, and weaker import demand of the country's main trading partners.

Following a slump in **Hungary's** growth performance in 2007, there seems to be room for real GDP growth to accelerate somewhat in 2008 and particularly in 2009. Private consumption growth will still be restrained in 2008 owing to ongoing labor market adjustment and inflation-induced moderation of real wage developments, but will pick up in 2009 backed by stronger growth in real income (lower tax burden) and some strengthening of employment. In 2009, the public sector can be expected to stimulate private consumption growth, e.g. in the form of higher public sector wages or an increase in selected transfers, given the upcoming elections to the European Parliament in 2009 and the Hungarian parliament in 2010. For 2008 and 2009, the OeNB's outlook for GFCF growth is fairly positive, supported by high capacity utilization levels in industry and, more recently, some strengthening of corporate credit activity. Furthermore, in 2009, the planned tax reform is likely to reduce the tax burden on companies. In light of the unfavorable economic outlook for Hungary's major export markets, export growth will slow down in 2008, as will import growth (export-import link), resulting in a slightly positive contribution of net exports to GDP growth. For 2009, we expect export growth to accelerate again and import growth to pick up even more owing to higher domestic demand, so that the contribution of external trade to GDP growth will be almost nil. The

OeNB's latest growth projections were adjusted downward compared with September 2007, mainly due to worse economic prospects in the country's major trading partners. This assessment is supported by signs of lowering employment levels, accelerating inflation and deteriorating consumer and industry sentiment.

According to our projections, **Poland** will see further years of robust economic growth despite slowing down somewhat compared with 2007. Private consumption growth stands on a sound footing, supported by high employment growth and increasing disposable income (high nominal wage and credit growth, rising salaries for healthcare workers, changes in the tax benefit system) as well as by the envisaged tax reform scheduled to enter into force in 2009. However, higher inflation will prevent private consumption growth from accelerating strongly. After reaching a growth rate of around 20% year on year in 2007, GFCF growth will decline in 2008 and 2009, largely owing to lower profitability (reflecting rising unit labor costs – ULC) and some tightening of monetary policy. However, GFCF growth will continue to expand dynamically, given sustained private consumption growth and increasing labor-substituting investments. On the back of lower import growth of the euro area, export growth is expected to slow down in 2008 but to regain some speed in 2009. The acceleration, however, will not be substantial as ULC will rise in the tradable sector. Overall, the contribution of net exports to GDP growth will be negative in 2008 and 2009 at around 2 percentage points. Compared with the previous forecast, the deceleration of export growth is expected to be more pronounced, given the current strong level of the currency and the expected slowdown of euro area import growth. At the same time, import growth is anticipated to turn out weaker (also reflecting a strong currency) compared with the previous forecast.

The main **risks to the projections** refer to deviations from the underlying assumptions for external factors, in particular import growth rates of the main trading partners as well as the actual impact of the financial market turmoil on the region. Another source of risks is country-specific factors. In Hungary, the government's defeat in the March 2008 referendum on selected structural reforms (doctor's fee, hospital fee, tuition fee) implies some risk regarding the implementation of fiscal reforms ahead of the elections in 2009 and 2010. In the Czech Republic and Poland, some uncertainty remains about bottlenecks on the labor market that might be even greater than assumed in the forecast, which could lead to higher wages and inflation. In Poland, some uncertainty remains about the implementation of fiscal reforms (e.g. the tax reform envisaged to enter into force in 2009).

In **Russia**, the economic situation and prospects for 2008 and 2009 remain quite favorable, despite the impact of the recent turbulences on financial markets, which have affected the country by constraining domestic banks' and enterprises' access to refinancing on international markets and thus tightening liquidity. The good prospects are mainly based on the high oil price. Annual real growth of private consumption has remained high in recent years and is forecast to continue at a slightly weaker but still robust rate, due to decelerating wage growth and a somewhat more modest expansion of lending. The pressure to boost federal spending has grown in tandem with sizeable and increasing fiscal oil revenues. According to Russian budgetary plans, fiscal policy is set to loosen somewhat in the coming years, which will translate into more robust government consumption up to 2009. GFCF is predicted to continue growing at a brisk pace in the coming years; investment will flow to various sectors, but is primarily driven by large energy projects and increased public infrastructure investments. Rapidly expanding domestic demand and a further real appreciation of the Russian ruble will sustain high import growth, which is, however, expected to moderate over the forecast period, as the rise of both income and the real external value of the ruble will decelerate. These developments are expected to set in once the strong increase in oil prices experienced in recent years has leveled off. Moderation notwithstanding, Russia's imports are predicted to continue expanding faster than exports, with the result that the still sizeable current account surplus will shrink swiftly.

### Real GDP Growth in Russia

|        |                                  | Latest forecast    |      |         |         | Previous forecast                    |         |     |
|--------|----------------------------------|--------------------|------|---------|---------|--------------------------------------|---------|-----|
|        |                                  | 2006               | 2007 | 2008    | 2009    | 2008                                 | 2009    |     |
|        |                                  | Annual change in % |      |         |         |                                      |         |     |
| Russia | OeNB (March 2008)                | 7.3                | 8.1  | 7.6     | 6.8     | OeNB (September 2007)                | 6.2     | 5.6 |
|        | European Commission (April 2008) |                    |      | 7.7     | 7.3     | European Commission (November 2007)  | 7.0     | 6.9 |
|        | IMF (April 2008)                 |                    |      | 6.8     | 6.3     | IMF (October 2007)                   | 6.5     | x   |
|        | wiiw (March 2008)                |                    |      | 6.4     | 6.0     | wiiw (July 2007)                     | 5.2     | x   |
|        | Consensus Forecasts (April 2008) |                    |      | 6.5–7.8 | 6.0–7.6 | Consensus Forecasts (September 2007) | 6.1–8.0 | x   |

Source: European Commission, Consensus Forecasts, IMF, OeNB, wiiw.

*Oil price developments remain not only a major driving force, but also a **key risk to the projection** for Russian growth. If the oil price were to drop sharply, Russia's current account balance might run into the red already in 2009 and economic expansion could suffer. A deepening of the international financial crisis could also weaken the financial standing of some Russian banks, curb the current credit boom and dampen internal demand. Yet the authorities do have some generous fiscal buffers (Reserve Fund and National Wealth Fund) and monetary buffers (the third-largest international reserves of the world) at their disposal, which could cushion economic decline. Moreover, if inflows of energy proceeds and/or capital were to accelerate substantially, this would involve the risk of an excessively quick appreciation of the real exchange rate.*

## Annex: Detailed Result Tables

Table 12

## Demand Components (Real Prices)

Chained volume data (reference year = 2000)

|                                                            | 2007           | 2008           | 2009           | 2010           | 2007               | 2008        | 2009        | 2010        |
|------------------------------------------------------------|----------------|----------------|----------------|----------------|--------------------|-------------|-------------|-------------|
|                                                            | EUR million    |                |                |                | Annual change in % |             |             |             |
| Private consumption                                        | 131,629        | 133,005        | 135,064        | 137,677        | +1.5               | +1.0        | +1.5        | +1.9        |
| Government consumption                                     | 42,602         | 43,880         | 44,490         | 45,140         | +2.6               | +3.0        | +1.4        | +1.5        |
| Gross fixed capital formation                              | 51,221         | 52,005         | 52,738         | 54,109         | +4.0               | +1.5        | +1.4        | +2.6        |
| of which: Investment in plant and equipment                | 20,540         | 20,858         | 21,191         | 21,819         | +4.6               | +1.5        | +1.6        | +3.0        |
| Residential construction investment                        | 10,454         | 10,512         | 10,643         | 10,859         | +1.4               | +0.6        | +1.2        | +2.0        |
| Non-residential construction and other investment          | 20,279         | 20,641         | 20,927         | 21,459         | +5.4               | +1.8        | +1.4        | +2.5        |
| Changes in inventories (including statistical discrepancy) | -2,318         | -3,155         | -3,202         | -3,232         | x                  | x           | x           | x           |
| Domestic demand                                            | 223,134        | 225,735        | 229,090        | 233,693        | +1.6               | +1.2        | +1.5        | +2.0        |
| Exports of goods and services                              | 147,515        | 157,000        | 163,773        | 173,883        | +8.6               | +6.4        | +4.3        | +6.2        |
| Imports of goods and services                              | 129,598        | 136,331        | 142,326        | 151,046        | +6.2               | +5.2        | +4.4        | +6.1        |
| Net exports                                                | 17,917         | 20,669         | 21,448         | 22,837         | x                  | x           | x           | x           |
| <b>Gross domestic product</b>                              | <b>241,051</b> | <b>246,404</b> | <b>250,538</b> | <b>256,530</b> | <b>+3.3</b>        | <b>+2.2</b> | <b>+1.7</b> | <b>+2.4</b> |

Source: 2007: Eurostat; 2008 to 2010: OeNB June 2008 outlook.

Table 13

## Demand Components (Current Prices)

|                                                            | 2007           | 2008           | 2009           | 2010           | 2007               | 2008        | 2009        | 2010        |
|------------------------------------------------------------|----------------|----------------|----------------|----------------|--------------------|-------------|-------------|-------------|
|                                                            | EUR million    |                |                |                | Annual change in % |             |             |             |
| Private consumption                                        | 147,966        | 154,027        | 159,946        | 166,159        | +3.6               | +4.1        | +3.8        | +3.9        |
| Government consumption                                     | 48,280         | 50,501         | 52,223         | 54,203         | +4.1               | +4.6        | +3.4        | +3.8        |
| Gross fixed capital formation                              | 56,340         | 58,496         | 60,634         | 63,461         | +5.8               | +3.8        | +3.7        | +4.7        |
| Changes in inventories (including statistical discrepancy) | 261            | 2,186          | 2,667          | 3,402          | x                  | x           | x           | x           |
| Domestic demand                                            | 252,847        | 265,210        | 275,471        | 287,225        | +4.0               | +4.9        | +3.9        | +4.3        |
| Exports of goods and services                              | 160,629        | 173,920        | 185,128        | 200,057        | +10.4              | +8.3        | +6.4        | +8.1        |
| Imports of goods and services                              | 140,640        | 152,305        | 162,263        | 175,372        | +7.8               | +8.3        | +6.5        | +8.1        |
| Net exports                                                | 19,990         | 21,615         | 22,865         | 24,686         | x                  | x           | x           | x           |
| <b>Gross domestic product</b>                              | <b>272,837</b> | <b>286,825</b> | <b>298,336</b> | <b>311,911</b> | <b>+5.7</b>        | <b>+5.1</b> | <b>+4.0</b> | <b>+4.6</b> |

Source: 2007: Eurostat; 2008 to 2010: OeNB June 2008 outlook.

Table 14

**Deflators of Demand Components**

|                                                    | 2007         | 2008         | 2009         | 2010         | 2007               | 2008        | 2009        | 2010        |
|----------------------------------------------------|--------------|--------------|--------------|--------------|--------------------|-------------|-------------|-------------|
|                                                    | 2000 = 100   |              |              |              | Annual change in % |             |             |             |
| Private consumption                                | 112.4        | 115.8        | 118.4        | 120.7        | +2.1               | +3.0        | +2.3        | +1.9        |
| Government consumption                             | 113.3        | 115.1        | 117.4        | 120.1        | +1.4               | +1.6        | +2.0        | +2.3        |
| Gross fixed capital formation                      | 110.0        | 112.5        | 115.0        | 117.3        | +1.7               | +2.3        | +2.2        | +2.0        |
| Domestic demand (excluding changes in inventories) | 112.0        | 114.9        | 117.4        | 119.8        | +1.9               | +2.6        | +2.2        | +2.0        |
| Exports of goods and services                      | 108.9        | 110.8        | 113.0        | 115.0        | +1.6               | +1.7        | +2.0        | +1.8        |
| Imports of goods and services                      | 108.5        | 111.7        | 114.0        | 116.1        | +1.5               | +2.9        | +2.1        | +1.8        |
| Terms of trade                                     | 100.3        | 99.2         | 99.2         | 99.1         | +0.1               | -1.2        | -0.0        | -0.1        |
| <b>Gross domestic product</b>                      | <b>113.2</b> | <b>116.4</b> | <b>119.1</b> | <b>121.6</b> | <b>+2.3</b>        | <b>+2.8</b> | <b>+2.3</b> | <b>+2.1</b> |

Source: 2007: Eurostat; 2008 to 2010: OeNB June 2008 outlook.

Table 15

**Labor Market**

|                                                   | 2007                            | 2008    | 2009    | 2010    | 2007               | 2008 | 2009 | 2010 |
|---------------------------------------------------|---------------------------------|---------|---------|---------|--------------------|------|------|------|
|                                                   | Thousands                       |         |         |         | Annual change in % |      |      |      |
| Total employment                                  | 4,320.9                         | 4,383.8 | 4,413.0 | 4,446.7 | +1.8               | +1.5 | +0.7 | +0.8 |
| Payroll employment (national accounts definition) | 3,834.3                         | 3,897.3 | 3,926.1 | 3,959.8 | +2.0               | +1.6 | +0.7 | +0.9 |
|                                                   | 3,483.5                         | 3,543.6 | 3,571.1 | 3,604.2 | +2.1               | +1.7 | +0.8 | +0.9 |
|                                                   | %                               |         |         |         |                    |      |      |      |
| Unemployment rate (Eurostat definition)           | 4.4                             | 4.2     | 4.4     | 4.4     | x                  | x    | x    | x    |
|                                                   | EUR per real output unit x 100  |         |         |         |                    |      |      |      |
| Unit labor costs (whole economy) <sup>1</sup>     | 67.5                            | 69.0    | 70.3    | 71.0    | +1.2               | +2.2 | +1.9 | +1.0 |
|                                                   | EUR thousand per employee       |         |         |         |                    |      |      |      |
| Labor productivity (whole economy) <sup>2</sup>   | 55.8                            | 56.2    | 56.8    | 57.7    | +1.4               | +0.8 | +1.0 | +1.6 |
|                                                   | EUR thousand                    |         |         |         |                    |      |      |      |
| Real compensation per employee <sup>3</sup>       | 33.5                            | 33.5    | 33.7    | 34.0    | +0.5               | +0.0 | +0.7 | +0.7 |
|                                                   | At current prices, EUR thousand |         |         |         |                    |      |      |      |
| Gross compensation per employee                   | 37.6                            | 38.8    | 39.9    | 41.0    | +2.6               | +3.0 | +3.0 | +2.6 |
|                                                   | At current prices, EUR million  |         |         |         |                    |      |      |      |
| Total gross compensation of employees             | 131,153                         | 137,423 | 142,605 | 147,719 | +4.8               | +4.8 | +3.8 | +3.6 |

Source: 2007: Eurostat; 2008 to 2010: OeNB June 2008 outlook.

<sup>1</sup> Gross wages divided by real GDP x 100.

<sup>2</sup> Real GDP divided by total employment.

<sup>3</sup> Gross wages per employee divided by the private consumption expenditure (PCE) deflator.

Table 16

**Current Account**

|                             | 2007               | 2008     | 2009     | 2010     | 2007                    | 2008 | 2009 | 2010 |
|-----------------------------|--------------------|----------|----------|----------|-------------------------|------|------|------|
|                             | <i>EUR million</i> |          |          |          | <i>% of nominal GDP</i> |      |      |      |
| <b>Balance of trade</b>     | 13,597.8           | 14,838.4 | 16,007.4 | 17,808.5 | 5.0                     | 5.2  | 5.4  | 5.7  |
| Balance on goods            | 1,324.1            | 1,498.5  | 1,334.7  | 2,332.9  | 0.5                     | 0.5  | 0.4  | 0.7  |
| Balance on services         | 12,273.8           | 13,339.9 | 14,672.8 | 15,475.6 | 4.5                     | 4.7  | 4.9  | 5.0  |
| Euro area                   | -112.4             | -1,023.1 | -669.5   | -845.1   | 0.0                     | -0.4 | -0.2 | -0.3 |
| Non-euro area countries     | 13,710.2           | 15,861.6 | 16,676.9 | 18,653.7 | 5.0                     | 5.5  | 5.6  | 6.0  |
| <b>Balance on income</b>    | -3,790.0           | -3,378.4 | -3,282.3 | -2,972.6 | -1.4                    | -1.2 | -1.1 | -1.0 |
| <b>Balance on transfers</b> | -1,044.7           | -1,276.9 | -826.2   | -783.6   | -0.4                    | -0.4 | -0.3 | -0.3 |
| <b>Current account</b>      | 8,763.1            | 10,183.1 | 11,899.0 | 14,052.3 | 3.2                     | 3.6  | 4.0  | 4.5  |

Source: 2007: OeNB; 2008 to 2010: OeNB June 2008 outlook.

Table 17

## Quarterly Outlook Results

|                                                  | 2008                                                                                       | 2009 | 2010 | 2008 |      |      |      | 2009 |      |      |      | 2010 |      |      |      |
|--------------------------------------------------|--------------------------------------------------------------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|                                                  |                                                                                            |      |      | Q1   | Q2   | Q3   | Q4   | Q1   | Q2   | Q3   | Q4   | Q1   | Q2   | Q3   | Q4   |
| <b>Prices, wages and costs</b>                   | <i>Annual change in %</i>                                                                  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| HICP                                             | +3.1                                                                                       | +2.4 | +1.9 | +3.2 | +3.4 | +3.0 | +2.7 | +2.6 | +2.4 | +2.4 | +2.4 | +2.0 | +1.9 | +1.8 | +1.8 |
| HICP (excluding energy)                          | +2.2                                                                                       | +2.1 | +2.0 | +2.3 | +2.4 | +2.0 | +1.8 | +1.9 | +2.0 | +2.1 | +2.3 | +2.1 | +2.0 | +2.0 | +1.9 |
| Private consumption expenditure (PCE) deflator   | +3.0                                                                                       | +2.3 | +1.9 | +2.9 | +3.2 | +3.3 | +2.6 | +2.6 | +2.3 | +2.2 | +2.0 | +2.0 | +2.0 | +2.0 | +1.7 |
| Gross fixed capital formation deflator           | +2.3                                                                                       | +2.2 | +2.0 | +1.7 | +2.1 | +2.5 | +2.7 | +2.7 | +2.4 | +2.0 | +1.8 | +1.8 | +1.9 | +2.1 | +2.2 |
| GDP deflator                                     | +2.8                                                                                       | +2.3 | +2.1 | +2.9 | +2.9 | +2.9 | +2.7 | +2.5 | +2.3 | +2.2 | +2.2 | +2.1 | +2.1 | +2.1 | +2.1 |
| Unit labor costs                                 | +2.2                                                                                       | +1.9 | +1.0 | +1.4 | +2.2 | +2.6 | +2.8 | +2.6 | +2.1 | +1.7 | +1.4 | +1.2 | +1.1 | +0.9 | +0.8 |
| Nominal wages per employee                       | +3.0                                                                                       | +3.0 | +2.6 | +2.5 | +3.0 | +3.2 | +3.3 | +3.4 | +3.0 | +2.8 | +2.8 | +2.8 | +2.7 | +2.6 | +2.5 |
| Productivity                                     | +0.8                                                                                       | +1.0 | +1.6 | +1.1 | +0.8 | +0.6 | +0.5 | +0.8 | +0.9 | +1.1 | +1.3 | +1.5 | +1.6 | +1.6 | +1.7 |
| Real wages per employee                          | +0.0                                                                                       | +0.7 | +0.7 | -0.4 | -0.2 | -0.1 | +0.6 | +0.8 | +0.6 | +0.6 | +0.7 | +0.7 | +0.7 | +0.6 | +0.8 |
| Import deflator                                  | +2.9                                                                                       | +2.1 | +1.8 | +3.1 | +3.2 | +3.1 | +2.5 | +1.9 | +2.0 | +2.1 | +2.2 | +2.1 | +1.9 | +1.7 | +1.6 |
| Export deflator                                  | +1.7                                                                                       | +2.0 | +1.8 | +1.2 | +1.5 | +2.0 | +2.2 | +2.3 | +2.1 | +1.9 | +1.8 | +1.8 | +1.8 | +1.8 | +1.8 |
| Terms of trade                                   | -1.2                                                                                       | +0.0 | -0.1 | -1.8 | -1.6 | -1.1 | -0.2 | +0.4 | +0.1 | -0.2 | -0.4 | -0.3 | -0.1 | +0.0 | +0.2 |
| <b>Economic activity</b>                         | <i>Annual and/or quarterly changes in % (real)</i>                                         |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| GDP                                              | +2.2                                                                                       | +1.7 | +2.4 | +0.8 | +0.3 | +0.2 | +0.3 | +0.4 | +0.5 | +0.5 | +0.6 | +0.6 | +0.6 | +0.6 | +0.6 |
| Private consumption                              | +1.0                                                                                       | +1.5 | +1.9 | +0.2 | +0.3 | +0.3 | +0.3 | +0.4 | +0.4 | +0.5 | +0.5 | +0.4 | +0.5 | +0.6 | +0.6 |
| Government consumption                           | +3.0                                                                                       | +1.4 | +1.5 | -1.7 | +2.3 | +1.5 | +1.0 | -0.5 | -0.3 | +0.0 | +0.3 | +0.7 | +0.4 | +0.3 | +0.2 |
| Gross fixed capital formation                    | +1.5                                                                                       | +1.4 | +2.6 | +0.3 | +0.2 | +0.2 | +0.2 | +0.4 | +0.4 | +0.5 | +0.6 | +0.7 | +0.7 | +0.7 | +0.7 |
| of which: Investment in plant and equipment      | +1.5                                                                                       | +1.6 | +3.0 | +0.2 | +0.3 | +0.2 | +0.2 | +0.5 | +0.5 | +0.5 | +0.7 | +0.8 | +0.8 | +0.8 | +0.9 |
| Residential construction investment <sup>1</sup> | +0.6                                                                                       | +1.2 | +2.0 | +0.2 | +0.3 | +0.2 | +0.1 | +0.3 | +0.4 | +0.5 | +0.5 | +0.5 | +0.5 | +0.5 | +0.5 |
| Exports                                          | +6.4                                                                                       | +4.3 | +6.2 | +2.0 | +1.4 | +0.4 | +0.5 | +1.2 | +1.4 | +1.5 | +1.5 | +1.5 | +1.5 | +1.6 | +1.6 |
| Imports                                          | +5.2                                                                                       | +4.4 | +6.1 | +0.4 | +2.5 | +1.2 | +1.0 | +0.7 | +1.0 | +1.2 | +1.4 | +1.6 | +1.6 | +1.7 | +1.7 |
|                                                  | <i>Contribution to real GDP growth in percentage points</i>                                |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Domestic demand                                  | +1.4                                                                                       | +1.4 | +1.8 | -0.2 | +0.6 | +0.5 | +0.4 | +0.2 | +0.3 | +0.3 | +0.4 | +0.5 | +0.5 | +0.5 | +0.5 |
| Net exports                                      | +1.1                                                                                       | +0.3 | +0.6 | +1.1 | -0.5 | -0.4 | -0.2 | +0.3 | +0.3 | +0.3 | +0.2 | +0.1 | +0.1 | +0.1 | +0.1 |
| Changes in inventories                           | -0.3                                                                                       | +0.0 | +0.0 | -0.2 | +0.2 | +0.2 | +0.1 | -0.1 | -0.1 | -0.1 | -0.1 | +0.0 | +0.0 | +0.0 | +0.0 |
| <b>Labor market</b>                              | <i>% of labor supply</i>                                                                   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Unemployment rate (Eurostat definition)          | 4.2                                                                                        | 4.4  | 4.4  | 4.1  | 4.2  | 4.2  | 4.2  | 4.3  | 4.4  | 4.4  | 4.4  | 4.3  | 4.4  | 4.4  | 4.5  |
|                                                  | <i>Annual and/or quarterly changes in %</i>                                                |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Total employment                                 | +1.5                                                                                       | +0.7 | +0.8 | +0.8 | +0.1 | +0.1 | +0.2 | +0.2 | +0.2 | +0.2 | +0.2 | +0.2 | +0.2 | +0.2 | +0.2 |
| of which: Private sector employment              | +1.6                                                                                       | +0.7 | +0.9 | +0.9 | +0.1 | +0.1 | +0.2 | +0.2 | +0.2 | +0.2 | +0.2 | +0.2 | +0.2 | +0.3 | +0.2 |
| Payroll employment                               | +1.7                                                                                       | +0.8 | +0.9 | +0.9 | +0.0 | +0.1 | +0.2 | +0.3 | +0.2 | +0.2 | +0.2 | +0.2 | +0.2 | +0.3 | +0.2 |
| <b>Additional variables</b>                      | <i>Annual and/or quarterly changes in % (real)</i>                                         |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Disposable household income                      | +1.4                                                                                       | +1.7 | +2.1 | +1.2 | +0.1 | +0.1 | -0.2 | +0.7 | +1.0 | +0.7 | +0.3 | +0.5 | +0.8 | +0.3 | +0.2 |
|                                                  | <i>% of real disposable household income (saving ratio) and % of real GDP (output gap)</i> |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Household saving ratio                           | 11.5                                                                                       | 11.6 | 11.8 | 11.8 | 11.7 | 11.5 | 11.0 | 11.2 | 11.7 | 11.9 | 11.7 | 11.8 | 12.0 | 11.8 | 11.5 |
| Output gap                                       | 0.0                                                                                        | -0.6 | -0.5 | 0.4  | 0.1  | -0.2 | -0.4 | -0.5 | -0.6 | -0.6 | -0.6 | -0.6 | -0.5 | -0.4 | -0.4 |

Source: OeNB June 2008 outlook. Quarterly values are seasonally adjusted.

<sup>1</sup> Excluding non-residential construction and other investment.

Table 18

**Comparison of Current Economic Forecasts for Austria**

| Indicator                                         | OeNB                      |              |       | WIFO       |      | IHS        |      | OECD      |       | IMF        |      | European Commission |       |
|---------------------------------------------------|---------------------------|--------------|-------|------------|------|------------|------|-----------|-------|------------|------|---------------------|-------|
|                                                   | June 2008                 |              |       | March 2008 |      | March 2008 |      | June 2008 |       | April 2008 |      | April 2008          |       |
|                                                   | 2008                      | 2009         | 2010  | 2008       | 2009 | 2008       | 2009 | 2008      | 2009  | 2008       | 2009 | 2008                | 2009  |
| <b>Key results</b>                                | <i>Annual change in %</i> |              |       |            |      |            |      |           |       |            |      |                     |       |
| GDP (real)                                        | +2.2                      | +1.7         | +2.4  | +2.1       | +1.7 | +2.1       | +2.2 | +2.3      | +1.7  | +1.9       | +1.7 | +2.2                | +1.8  |
| Private consumption (real)                        | +1.0                      | +1.5         | +1.9  | +1.6       | +1.6 | +1.6       | +1.8 | +1.1      | +1.5  | x          | x    | +1.4                | +1.5  |
| Government consumption (real)                     | +3.0                      | +1.4         | +1.5  | +2.5       | +1.0 | +3.0       | -0.5 | +2.6      | +2.9  | x          | x    | +3.3                | +0.4  |
| Gross fixed capital formation (real) <sup>1</sup> | +1.5                      | +1.4         | +2.6  | +2.2       | +1.8 | +2.7       | +2.6 | +2.0      | +1.8  | x          | x    | +2.4                | +2.1  |
| Exports (real)                                    | +6.4                      | +4.3         | +6.2  | +5.2       | +5.0 | +5.7       | +6.5 | +6.5      | +6.2  | x          | x    | +6.0                | +5.7  |
| Imports (real)                                    | +5.2                      | +4.4         | +6.1  | +5.3       | +5.2 | +6.1       | +5.9 | +4.8      | +7.1  | x          | x    | +5.9                | +5.5  |
| GDP per employee                                  | +0.8                      | +1.0         | +1.6  | +1.0       | +1.2 | +0.9       | +1.4 | x         | x     | x          | x    | +1.9                | +1.5  |
| GDP deflator                                      | +2.8                      | +2.3         | +2.1  | +2.6       | +2.1 | +2.2       | +1.9 | +2.4      | +1.7  | x          | x    | +2.8                | +1.8  |
| CPI                                               | x                         | x            | x     | +2.9       | +2.3 | +2.6       | +1.9 | x         | x     | +2.8       | +1.9 | x                   | x     |
| HICP                                              | +3.1                      | +2.4         | +1.9  | +2.9       | +2.3 | x          | x    | +3.1      | +2.2  | x          | x    | +3.0                | +1.9  |
| Unit labor costs                                  | +2.2                      | +1.9         | +1.0  | +2.5       | +1.8 | x          | x    | x         | x     | x          | x    | -0.9                | -0.3  |
| Total employment                                  | +1.5                      | +0.7         | +0.8  | +1.8       | +0.7 | +1.2       | +0.8 | x         | x     | x          | x    | +0.9                | +0.5  |
|                                                   | <i>%</i>                  |              |       |            |      |            |      |           |       |            |      |                     |       |
| Unemployment rate <sup>2</sup>                    | 4.2                       | 4.4          | 4.4   | 4.2        | 4.3  | 4.3        | 4.4  | 4.8       | 4.8   | 4.4        | 4.5  | 4.2                 | 4.3   |
|                                                   | <i>% of nominal GDP</i>   |              |       |            |      |            |      |           |       |            |      |                     |       |
| Current account                                   | 3.6                       | 4.0          | 4.5   | 3.0        | 2.9  | x          | x    | 3.5       | 3.2   | 2.9        | 2.9  | 5.0                 | 5.2   |
| Government surplus/deficit                        | -0.6                      | -0.5         | -0.5  | -0.7       | -0.7 | -0.7       | -0.2 | -0.7      | -0.8  | x          | x    | -0.7                | -0.6  |
| <b>External assumptions</b>                       |                           |              |       |            |      |            |      |           |       |            |      |                     |       |
| Oil price in USD/barrel (Brent)                   | 113.3                     | 117.7        | 115.6 | 95.0       | 97.0 | 96.0       | 96.0 | 120.0     | 120.0 | 95.5       | 94.5 | 101.2               | 100.0 |
| Short-term interest rate in %                     | 4.9                       | 4.3          | 4.2   | 4.2        | 3.9  | 4.2        | 3.9  | 4.5       | 4.1   | 4.0        | 3.6  | 4.3                 | 3.8   |
| USD/EUR exchange rate                             | 1.54                      | 1.54         | 1.54  | 1.60       | 1.60 | 1.48       | 1.43 | 1.56      | 1.56  | 1.47       | 1.48 | 1.55                | 1.57  |
|                                                   | <i>Annual change in %</i> |              |       |            |      |            |      |           |       |            |      |                     |       |
| Euro area GDP (real)                              | +1.5 to +2.1              | +1.0 to +2.0 | x     | +1.6       | +1.3 | +1.8       | +2.0 | +1.7      | +1.4  | +1.4       | +1.2 | +1.7                | +1.5  |
| U.S. GDP (real)                                   | +1.0                      | +1.2         | +2.6  | +1.0       | +1.4 | +1.8       | +2.3 | +1.2      | +1.1  | +0.5       | +0.6 | +0.9                | +0.7  |
| World GDP (real)                                  | +3.6                      | +3.6         | +4.1  | +3.9       | +3.6 | x          | x    | x         | x     | +3.7       | +3.8 | +3.8                | +3.6  |
| World trade                                       | +5.3                      | +5.7         | +7.0  | +5.3       | +5.0 | +6.0       | +7.0 | +6.3      | +6.6  | +5.6       | +5.8 | +6.0                | +5.6  |

Source: OeNB, WIFO, IHS, OECD, IMF, European Commission.

<sup>1</sup> For IHS: Gross investment.<sup>2</sup> Eurostat definition; for OECD: OECD definition.

# Supply-Side Triggers for Inflation in Austria

Jürgen Janger<sup>1</sup>

*The supply-side analysis of sectors that have determined price developments in Austria since fall 2007 strongly suggests a lack of competition in the following industries in the medium term: processing and wholesaling of dairy products, pasta production, electricity and gas supply, cement production, and pharmaceutical retailing. Signs of weak competition are less clear but apparent in the following industries: production of fats and oils, clothes retailing, production and wholesaling of pharmaceuticals, car parts trade, sewage disposal and garbage collection. There are few or no indications of a lack of competition in: baked goods production, grain wholesaling, food retailing, home centers, production and wholesaling of construction materials, gas stations and footwear retailing. In food retailing, legitimate business strategies may have contributed to price developments. Moreover, price increases may to some extent have been caused by data limitations (use of shelf inventory data rather than scanner data) and by second-round effects on the part of firms, which find it easier to raise prices in an environment of generally rising prices. Additional in-depth analyses are necessary for a wide range of industries. Economic policymakers may intensify competition in pharmaceutical retailing (by enforcing prescriptions of generic rather than brand-name drugs) and the garbage collection industry (by changing the fee system). Restricting the concentration of regional or local sales units and establishing an integrated European energy market would unlock a (limited) potential for reducing inflation in foods and energy. Policymakers should envisage implementing changes above all in the service sector, which determines inflationary trends in Austria in the medium term. Measures needed to enhance competition include improving data sources, monitoring competition based on economic data, strengthening the competition authority, reforming regulations to ease market entry and to strengthen competition, and increasing price transparency.*

JEL classification: E31, L11

Keywords: competition, inflation

## 1 Introduction

This study, along with Fritzer et al. (2008) and Rumler and Valderrama (2008), was drawn up as part of a broad-based analysis of inflation in Austria by OeNB staff experts; it examines the aspect of supply-push inflation. Principally, developments on the production side of an economy may trigger short- and medium-term price bursts as a result of cost-push effects or as a result of suppliers exercising market power. Cost-push inflation occurs when rising costs of production factors such as work or commodities are passed on to consumers. Market power inflation occurs when enterprises exploit monopoly positions or a lack of market competition or when they collude with

competitors to improve profit margins by raising prices (profit-push inflation). When compounded with cost-push effects, profit-push effects will precipitate wage-price spiral inflation. The probability of a reciprocal escalation of prices and wages was examined in Fritzer et al. (2008) under the heading of second-round effects.

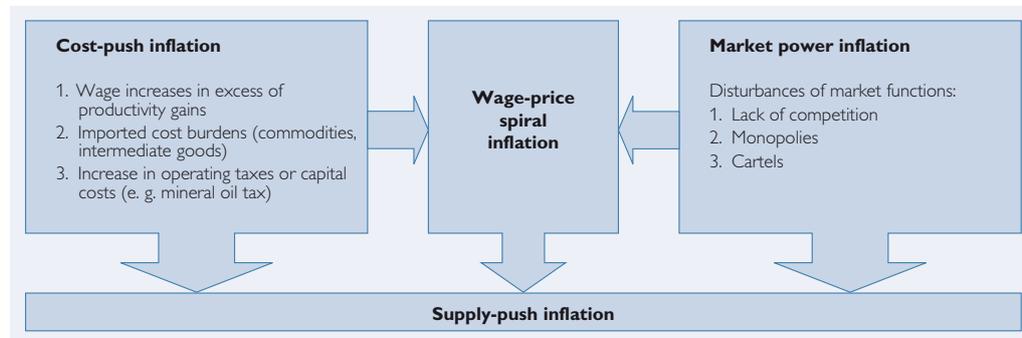
This study focuses on how much market power inflation or competition intensity may have contributed to the current inflationary peak. Data limitations restrict this exercise to an examination of market functions and an identification of areas of weak competition; identifying cartels or price collusion requires intense on-site research at enterprises, which is in fact the respon-

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Chart 1

## Sources of Supply-Push Inflation



Source: Adapted from Pätzold (1998).

sibility of the Federal Competition Authority. This study is structured as follows: The link between competition and price developments is illustrated in section 2, and some indicators suited to determining competition flaws are presented in section 3. In section 4, these indicators are applied to the sectors identified as mainly responsible for the most recent price peaks in the recent literature (Fritzer et al., 2008; Salzburger Nachrichten, 2008). The indicators are complemented by a context analysis. Section 5 points out possible approaches to improving market function in the sectors identified.

## 2 How Does Stepped-Up Competition Affect Price Developments?

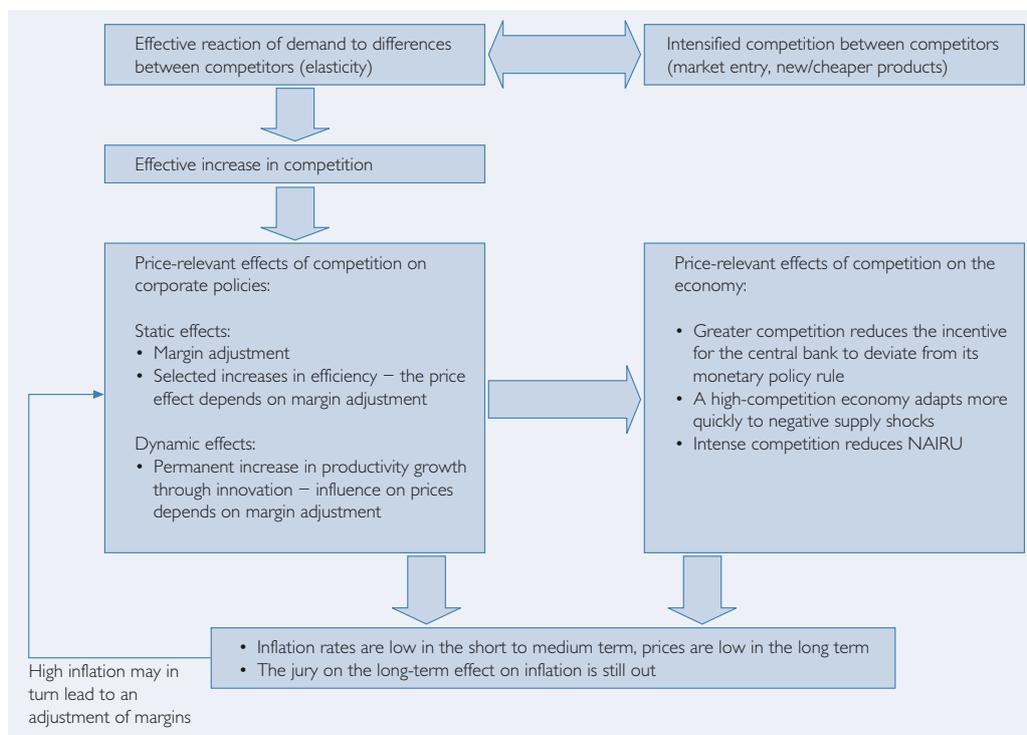
### 2.1 The Mechanism behind Greater Competition

More intense competition principally results in better price-quality combinations. Existing companies can supply their products to consumers at more favorable terms, they can improve quality without raising prices, or they can refrain from passing on the full extent of price rises; at the same time, the

range of supply may be broadened by new enterprises and foreign competitors joining the market. For the new price-quality combinations to actually have an effect on producers' decisions, consumers must effectively switch from existing to new goods or services. The degree to which consumers shift their demand is known as price or quality elasticity of demand and is a key prerequisite for a new good or service to actually intensify competition.

Two important determinants of demand elasticity are the cost of searching for a product and the cost of switching suppliers. The costs of switching suppliers comprise not just a monetary component, but also psychological phenomena such as brand loyalty, trust and the like. If search or switching costs are high, elasticity remains low and the level of competition is unchanged. However, if both costs are low, more intense competition will in itself increase demand elasticity. Empirically, higher demand elasticity is found in large markets (Sbordone, 2007), the reason being the greater choice and greater options for switching in these markets.

### The Competition – Inflation Link



Source: OeNB.

## 2.2 Price Effects of Competition on Corporate Policies

In the textbook model of perfect competition, all companies are price takers – the product price equals marginal cost, meaning that the markup is zero. In reality, most companies are also price setters and maintain positive markups. Intensified competition can therefore influence the setting of product or service prices through several channels.

First, if consumers switch producers, the producer who loses out may react by reducing markups and thus forgo economic rents by cutting prices. Sec-

ond, if costs rise, a company's markup depends on that company's sensitivity to competitors' price-setting behavior. If rival firms adjust their prices less to higher costs, resulting in stepped-up competition, the price increases will be lower.<sup>2</sup> Enterprises can prevent these effects by colluding on prices or on market shares. Third, if margin adjustments are insufficient for a company to hold its own in competition, it will try to improve production efficiency. Rationalization, outsourcing and other measures may cut production costs and as a result product prices. The degree of price reduction depends on whether

<sup>2</sup> This applies to the practice in which prices are as a rule higher than marginal cost, thus allowing markups to be decreased in order to offset higher costs. In the theoretical model of perfect competition, the price is equal to marginal costs, which is why the complete pass-through of cost increases to the consumer is in theory an indicator of strong competition. A relevant case in practice is that of food discounters, whose margins are, however, so low that price increases as a rule fully reflect cost increases.

companies keep profit margins stable or decrease them as well.

These effects are static one-off effects. As reflected by measured inflation, such steps have a temporary impact on prices that tapers off during an adjustment period. An example will help indicate the relative importance of such effects in practice: Auer and Fischer (2008) estimate that a 1% market share gain of low-wage countries on the U.S. market triggers a 5% decline in producer prices. Half of this effect is caused by diminishing markups, the other half by productivity increases.

Fourth, stepped-up competition may also have dynamic effects if it creates incentives for the companies concerned to intensify their innovation efforts sustainably to raise product quality or even develop completely new products rather than merely cutting costs. In this environment, the productivity growth rate may be raised sustainably (Aghion et al., 2005).<sup>3</sup> The impact on price developments may be permanent subject to the adjustment of profit margins and the development of other costs.

### 2.3 Price Effects of Competition on the Economy

The empirical literature consistently confirms that higher competition dampens measured inflation (Cavelaars, 2003) or lowers the price level (Przybyla and Roma, 2005) on a temporary basis. A lack of competition may thus be absolutely compatible with price stability, but at a higher price level. Some studies conclude that competition may impact on inflation also in the medium and long run. Various transmission channels are assumed: First, in an economy with imperfect

competition, economic performance falls short of the socially optimal level. This could be an incentive for the central bank to temporarily boost economic performance. A rise in competition would thus take the pressure off the central bank to permit inflation to be too high (Cavelaars, 2003; Rogoff, 2003).

Second, a more competitive – and hence more flexible – economy is able to absorb supply shocks faster and at lower inflationary costs (Eurosystem, 2006). Third, increased competition may reduce the unemployment rate compatible with price stability, the NAIRU (nonaccelerating inflation rate of unemployment). Stepped-up competition is considered to have an inflation-reducing effect in the medium term (Duca and VanHoose, 2001), in particular during long upswing periods such as that in the U.S.A. in the 1990s. However, the debate is still ongoing: the long-term link between competition and inflation grows weaker in a low-inflation environment (Cavelaars, 2003; Przybyla and Roma, 2005).

The causality may also be reversed: inflation influences markups in line with search costs. High search costs diminish demand elasticity and hamper competition. Therefore, the respective companies find it easier to raise their markups in an environment of higher inflation, which promotes second-round effects on the part of entrepreneurs (some companies' price increases trigger price increases by other firms). Conversely, if search and switching costs are low and demand elasticity is consequently high, stepped-up inflation entails reduced markups as a consequence of more intense competition (Gwin and Taylor, 2004).

<sup>3</sup> Aghion et al. (2005) describe the link between competition and innovation as nonlinear and corresponding to an inverse U shape: In the case of low competition, additional competition also raises the innovation rate; in the case of high competition, additional competition lowers the innovation rate.

### 3 How Can Competition Problems and Suboptimal Market Functions Be Determined Empirically?

Competition arises whenever two or more parties strive for something that all cannot obtain (Stigler, 2008). Using economic analysis tools, the intensity or intensification of this rivalry among firms cannot be directly measured, but it may be assessed indirectly by approximation. If the suspicion arises that companies violate the competition law, they are obligated to provide information; their premises may also be searched. But even such information does not always provide conclusive evidence of competition intensity. The table below provides an overview of proxies, which are then discussed.

The proxies are structured by four main categories: market structure, market conduct, market performance and economic policy influence.<sup>4</sup>

#### 3.1 Market Structure Variables

##### 3.1.1 Concentration of Market Shares

The market share concentration of a given industry's firm population is frequently used for economic analyses of sectors. It is measured with the concentration ratio, i.e. the market share total of the largest firms on the market (e.g. the sector's top three = CR3, or the top five = CR5); and the Herfindahl-Hirschman Index (HHI), which measures the sum of the squares of market shares of all companies in a market.<sup>5</sup> Empirically, the link to higher markups is rarely unambiguous: A priori, concentration of course makes it easier for companies to collude on price setting, and thus enables them to have higher

markups. Concentration and thus larger company sizes also facilitate economies of scale and of scope as well as R&D activities – and in their wake lower costs and innovation. Moreover, concentration may be the result of innovation efforts of companies which deploy innovation to distinguish themselves from other companies (section 3.2.2). The effect of concentration efforts is tied to demand elasticity: if market demand is elastic, increases in concentration have very little impact on price-setting and markups. If demand is inelastic, though, stronger concentration may cause prices to rise sharply.

##### 3.1.2 Integration and Market Size

Empirically, demand elasticity is found to be higher in larger markets. Many European industries still have a high potential to increase market integration by linking supply and demand across borders. Indicators of the degree of market integration include market depth, meaning the measured share of trade flows in total potential trade flows between two EU Member States; a given industry's import penetration, meaning the share of imported products in total product sales; and the coefficients of price variation between countries, which are particularly important for some service industries in view of the lack of relevant external data.

##### 3.1.3 Market Entries and Exits

Empirically, a link between low entry rates and a lack of competition is assumed. Participants established in markets will protect these markets by stra-

<sup>4</sup> A causal link between these variables known as the structure-conduct-performance paradigm was assumed to exist at one time.

<sup>5</sup> Typical marginal values e.g. in Austrian or European antitrust or merger control are a concentration ratio of the top four companies of 80%, an HHI of 2,000 or an HHI change of more than 250 after a merger.

Table 1

**Proxies to Assess a Sector's Competition Intensity**

| Variable                         | Definition                                                                                                     | Empirical Indicator                                                                                                                                             | Source                                      | Explanatory Power <sup>1</sup> |
|----------------------------------|----------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|--------------------------------|
| <b>Market structure</b>          |                                                                                                                |                                                                                                                                                                 |                                             |                                |
| Concentration                    | Concentration of market share in the relevant market                                                           | CR <sub>x</sub> (concentration ratio – sum of the market shares of the x largest firms), HHI (Herfindahl-Hirschman index – sum of the squares of market shares) | Regulators, industry studies, etc.          | Low                            |
| Integration                      | Market depth, import penetration                                                                               | Market size, potential versus actual trade flow, market share of EU competitors                                                                                 | External statistics, company data bases     | Moderate                       |
| Company demography               | (Potential) number of firms entering or leaving an industry; ratio of growth of new entrants to existing firms | Share of firms entering and leaving an industry in the total firm population; ratio of new entrants' sales to existing companies' sales.                        | n.a.                                        | Low                            |
| <b>Market conduct</b>            |                                                                                                                |                                                                                                                                                                 |                                             |                                |
| Price increases, price level     | International development of sectoral inflation rates and levels                                               | HICP, price variation coefficients, product prices                                                                                                              | Eurostat, Nielsen                           | Moderate to high               |
| Markups                          | Difference between marginal prices at the product and sector level, Lerner Index                               | Ratio of value added to total wages; Roeger (1995); markup development at different stages of the value-added chain                                             | Statistics Austria, STAN, EU Klems          | High                           |
| Consumer behavior                | Extent and determinants of switching behavior                                                                  | Rate of switching, search costs, switching costs                                                                                                                | Regulators, surveys, sectoral studies, etc. | High                           |
| <b>Market performance</b>        |                                                                                                                |                                                                                                                                                                 |                                             |                                |
| Productivity                     | Development of labor productivity, total factor productivity                                                   | Value added per hour worked, total factor productivity                                                                                                          | EU KLEMS                                    | Moderate                       |
| Innovation and human capital     | Innovation and human capital intensity                                                                         | R&D expenditure, patents, employment structure                                                                                                                  | Statistics Austria                          | Moderate                       |
| Profit margins                   | Development of profit margins at the enterprise and sector level                                               | EBIT (earnings before interest and taxes), share of gross operating surplus in value added                                                                      | Statistics Austria, company data bases      | High                           |
| <b>Economic policy influence</b> |                                                                                                                |                                                                                                                                                                 |                                             |                                |
| Competition policy               | Effectiveness of competition policy                                                                            | Surveys, indicator sets                                                                                                                                         | OECD, Global Competition Review (GCR)       | Moderate                       |
| Product market regulation        | Extent of entry and conduct regulation                                                                         | International indicator sets, legal research                                                                                                                    | OECD, Doing Business                        | Moderate                       |

Sources: OeNB, Przybyla and Roma (2005), ECB (2004), European Commission (2007).

<sup>1</sup> Explanatory power is measured in terms of data availability, international comparability and unambiguity of the link to competition intensity.

tegic conduct, e.g. by ensuring high sunk costs, or they will undermine new entrants' efforts to gain a foothold in markets by aggressively slashing prices. Such conduct is difficult to prove because establishment or market entry

rates vary enormously among sectors, depending, e.g., on the size of fixed costs for market entry, and there is no reliable uniform basis for international comparisons. Moreover, noticeable competition effects are not felt until the

entrant has secured a relevant market share rather than immediately on market entry. Therefore the growth of new entrants is more important an indicator than the number of new entrants. Sometimes, the contestability of a market is sufficient to incite established firms to act competitively (Baumol et al., 1982).

### 3.2 Market Conduct Variables

#### 3.2.1 Rates of Price Increase versus Price Levels

Drawing conclusions about competition problems on the basis of industry-specific inflation rates is generally inadmissible: inflation rate analyses do not provide conclusive evidence for distinguishing between industries with perfect competition and those with competition problems or even price collusion. Note that the final outcome of perfect competition – and of price cartels alike – is a uniform price. The analysis of internationally comparable price levels provides a far better point of departure to identify competition problems. However, price level data provided e.g. by Eurostat suffer from a lack of comparability because the degree of disaggregation is insufficient, national consumption preferences differ and because problems arise in calculating purchasing power parities broken down by industries or even smaller units.<sup>6</sup>

#### 3.2.2 Markups

A markup is defined as the difference between the marginal cost of an item and its selling price. Under perfect competition, the price should be iden-

tical with marginal cost and thus produce a ratio of 1. In practice, though, the price is substantially higher than marginal cost. The extent of the difference between the selling price and marginal cost is an indicator of the divergence between reality and perfect competition, or of the extent of market power.<sup>7</sup> In empirical research, markups have proven to be the best instrument with which to identify competition problems (e.g. Badinger, 2007; Badinger and Breuss, 2005; Cavelaars, 2003; Przybyla and Roma, 2005). Markups must be approximated on account of the lack of information about marginal cost; at the sectoral level, e.g. the ratio of gross value added to personnel expenditure is a suitable proxy. This method is very simple and has many restrictions (Przybyla and Roma, 2005).<sup>8</sup>

Markup developments must be interpreted with caution: They may rise even if competition surges, for example because costs drop more quickly than prices on account of productivity gains. Thus, a rise in markups need not necessarily be a sign of a dysfunctional market. If companies secure a temporary monopoly by launching new products, higher markups must also be seen as compensation for innovation and investment efforts. Finally, a low markup may also be attributable to the negotiation power of trade unions. If they succeed in securing a large portion of the economic rents, markups are low even if under weak competition.

Markups may be analyzed along the entire value added chain to examine competition intensity on the basis of

<sup>6</sup> Price level comparisons in food retailing are possible at the product level using data provided by AC Nielsen. Here, too, internationally comparable products would have to be identified. Additionally, products cannot be classified by retail chains or brands on account of the confidentiality rules Nielsen has concluded with the sector.

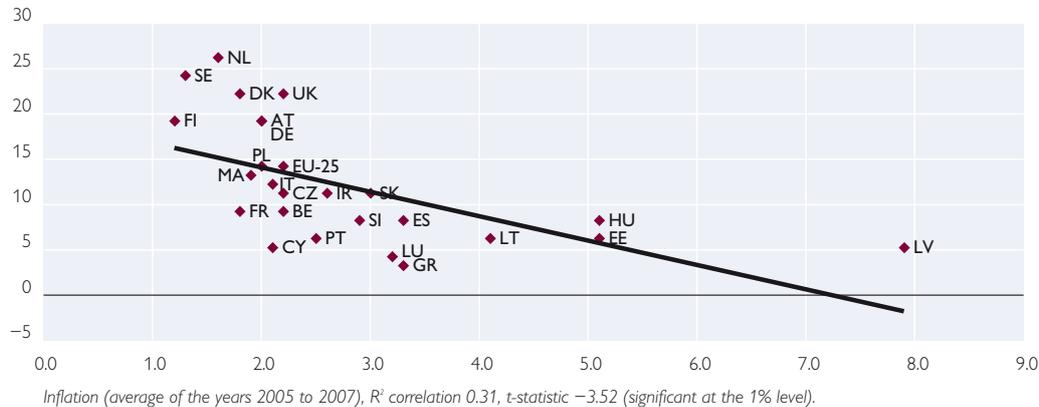
<sup>7</sup> Markups are the basis of the frequently cited Lerner index ( $L = (\text{price} - \text{marginal cost})/\text{price}$ ).

<sup>8</sup> This study could not take into account the method proposed by Roeger (1995) because there was too little time to do so.

Chart 3

### Inflation versus Consumer Complaints

Share of consumers who directed an official complaint to a firm in 2006



Source: OeNB, Eurostat, European Commission.

cost pass-through.<sup>9</sup> However, such analyses require sufficient available data about prices at every level from international commodity markets to producer and wholesaler prices to consumer prices. Data are usually fully available only for products with a short value-added chain, i.e. products with fairly little processing or product change. Food production and retailing is such an example.

#### 3.2.3 Consumer or Demand Elasticity

The switching rate denotes the share of consumers which change suppliers within an industry within a year. More data tend to be available for regulated sectors, such as network industries. Moreover, there are some studies on search costs (Gwin and Taylor, 2004)<sup>10</sup> and survey results (e.g. European Commission, 2006).

The European Commission is devising a consumer barometer (European Commission, 2008a, 2008b) that collects data systematically and allows for comparisons between EU Member States. The first version has already produced interesting comparable data. Chart 3 shows a simple regression between the share of consumer complaints per country and average inflation over the past three years. The significantly negative link results partly from the omitted variable bias, but it does show the importance of consumer behavior for market function: Forbes (2008) for example establishes a link between the number of complaints and expected quality. Hence, country variations in quality expectations can influence market performance. The share of people who complain about a product or service they have purchased could also be a proxy for deeper structural differences between countries.

<sup>9</sup> If markups are low, higher intermediate product prices will necessarily have an effect. Consequently rises in consumer prices will be most pronounced for cheap discount products; this phenomenon was in fact observed in Austria (Chamber of Labour, 2008).

<sup>10</sup> However, the data are for wholesalers, not consumers.

### 3.3 Market Success Variables

#### 3.3.1 Productivity

The productivity performance of countries, industries or enterprises is not directly linked to price developments, as markup developments must also be considered (section 3.2.2). It does, however, serve as an aid for interpretation: industries with strong productivity growth and rising markups are not likely to suffer from a lack of competition.

#### 3.3.2 Innovation and Human Capital

Innovation and human capital indicators are productivity determinants at the preproduction stage; they provide additional insights into sectoral structures. Typical indicators for the manufacturing industries are the R&D intensity – R&D expenditures as a share of gross value added – or the number of patents. For the service industries, only the sectoral employment structure by education levels is generally available as an indicator.

#### 3.3.3 Profit Margins at the Enterprise and Sector Level

Firm-specific profit margins may be calculated as sales profitability e.g. earnings before interest and taxes as a percentage of turnover (EBIT-margin) or as return on investment (ROI). Industry-specific margins can be represented as the share of gross operating surplus in gross value added. Profit margins are a further element suited to assessing the market – after all, rising markups may result either from falling costs or from increasing profit margins. As a rule, efficient firms are also profitable. Therefore, high profit margins do not signal weak competition in themselves. Studies show that profit margins in manufacturing are lower than those in services and exhibit a greater country dispersion (ECB, 2004). Their in-

ternational comparability is limited and partly suffers from the lack of enforcement of financial disclosure rules, especially in Austria.

### 3.4 Economic Policy Influence Variables

#### 3.4.1 Competition Policy

Some empirical studies of markups use the effectiveness of competition policy and competition legislation as indicators of the size of markups. McCloughan et al. (2007) find a significant link between the effectiveness of competition policy and markups. The OECD draws up assessments of competition policy based on competition laws (Høj, 2007). Areas within the purview of competition policy, e.g. merger and acquisition control, are also linked to prices – a weak M&A policy entails higher prices (Ashenfelter and Hosken, 2008).

#### 3.4.2 Product Market Regulation

Generally, there are regulations for product market entry and conduct. Regulation of market entry may refer to the regulation of new establishments, which have to fulfill legal requirements such as regulatory capital requirements or which must provide proof of qualification, or to the market entry of companies established abroad. The latter type of entry should be subject to freedom of establishment in EU Member States, but national provisions continue to determine the market entry of foreign firms, e.g. by requiring specific qualifications. The regulation of conduct creates a framework for established companies' conduct. Among other things, in retailing, for instance, special rules apply to stores of a particular size, or opening hours are subject to regulation. Empirical studies show product market regulation to be significant for productivity developments (Nicoletti and Scarpetta, 2003); its im-

Table 2

**Competition Indicators to Identify Industries with a Low Competition Intensity**

|                                           | Criterion                                                      | Weighting number |
|-------------------------------------------|----------------------------------------------------------------|------------------|
| Public regulation                         | Is competition restricted through regulation; yes = 1, no = 0  | 3                |
| Concentration                             | Sales share of the four biggest companies (CR4) > 80%          | 2                |
| Concentration taking imports into account | CR4 share including imports >50%                               | 1                |
| Startup rate                              | Annual startup rate < 3% in manufacturing and < 8% in services | 2                |
| Market share variation                    | Less than 10% a year                                           | 2                |
| Productivity fluctuation margin           | Productivity fluctuation margin of 25% over national average   | 2                |
| Wage level                                | Wage level 15% over that of the Danish furniture industry      | 1                |
| Rate of return                            | Return is 50% over national average                            | 2                |
| Price level                               | Price index is 3 percentage points above the EU-9 average      | 3                |
| Assessment by the competition authority   | Specific assessment                                            | –                |

Source: Janger (2006).

pact on price developments is indirect and is given through its influence on markups (Cavelaars, 2003).

Internationally comparable indicators are collected by the OECD. The 2006 data on product market regulation will not be updated before fall 2008; until then, only the 2003 data will be available (Conway et al., 2005). What is more, the indicators are usually only available for broadly aggregated sectors. Therefore, to analyze disaggregated sectors in detail, the economic assessment of national regulations is often the only option.

### 3.5 Summary

It is important for empirical studies to use not just one indicator, but to construct a broad overview that describes market structure, conduct and success. Markups, profit margins and productivity should be analyzed together. In any event, industries with a high price level, a high degree of concentration, high markups, high profit margins and low productivity growth deserve a

closer look. The need for data-based analysis is reduced in industries in which no competition is possible for legal reasons. The Danish competition authority with its proactive and investigative competition policy is a good example of an integrated sectoral approach. It uses the set of indicators outlined in table 2 to classify an industry.

The analysis below concentrates on those industries in which recent inflation statistics measured price peaks in Austria (Fritzer et al., 2008; Salzburger Nachrichten, 2008). In these industries, inflation has a specific, national component that is higher than the euro area average. This study does not seek to explain the price peaks since October 2007 (the competition authority and the Austrian Institute of Economic Research are researching this topic). Much rather, it takes a medium-term structural perspective that aims at pointing out optimization opportunities independently of the current price peaks. This approach is squarely in line with the Eurosystem's medium-term

inflation target and with the principle of identifying underlying structural causes of short-term developments that are difficult to control with economic policy measures.

#### 4 Did National Structural Problems Contribute to Price Dynamics in Austria?

No doubt the international negative supply shocks to food commodities and to energy together with the long-term rise in demand in emerging economies are the key underlying factors of the current peaks in inflation in Austria. Looking into potential national causes that may have fueled inflation beyond international developments, recent surveys (Fritzer et al., 2008; Salzburger Nachrichten, 2008) have identified a number of high inflation industries (see table 3). The weight of these industries in the HICP comes to 40.8% according to the broad definition and to 21.8% in the narrow definition. Given those weights, price developments in those industries can significantly influence overall price developments. The statistical analysis covers not just retail industries but also manufacturing industries, which is useful for following effects across parts of the value added chain.<sup>11</sup> Public fees were added to the extent that they are charged for a value-added service such as garbage disposal, but pure administrative costs such as the motor vehicle tax were not included. In the energy sector, the data for mineral oil processing are confidential because there are only four companies in the field.

The factors influencing competition across sectors will be presented below.

The respective competition links were described in sector 3.2. Subsequently, the individual sectors will be briefly examined.

#### 4.1 Cross-Sectoral Competition Factors

##### 4.1.1 Promoting Competition through Competition Policy Measures

The OECD's competition law and policy indicator used to assess the degree of competition policy (Høj, 2007) ranks Austrian competition law and policy fourth-last among the countries examined in terms of favorability to competition (chart 4).<sup>12</sup> Austria's ranking reflects a legal framework considered to be relatively weak, the assumption of fairly far-reaching exceptions to competition law and above all a glaring lack of enforcement of competition policy: Austria scores especially badly on the resources available to the competition authority. The OECD survey data are from 2003, before Austria introduced its leniency program (in 2006);<sup>13</sup> moreover, resources have been increased somewhat since then. Austria's position has improved since that assessment. Nevertheless, the resources available to the Federal Competition Authority remain small compared to those in other countries such as Denmark (the Austrian authority has only a quarter of the personnel of the Danish authority and only a third as much as the Finnish authority). The time-consuming nature of competition examinations – the preparation, conduct and completion of one on-site inspection requires one person-year – hampers the enforcement of competition law.

<sup>11</sup> Does not include manufacturing of clothing, shoes and gas, as these sectors are very small in Austria; automotive trade is not covered either.

<sup>12</sup> As the Austrian manufacturing sector is subject to a high degree of competition, this is likely to play an especially big role in service sectors with limited competition from abroad.

<sup>13</sup> The design of the current leniency program, however, is still criticized (Öhlberger, 2006).

Table 3

## Industries Reviewed

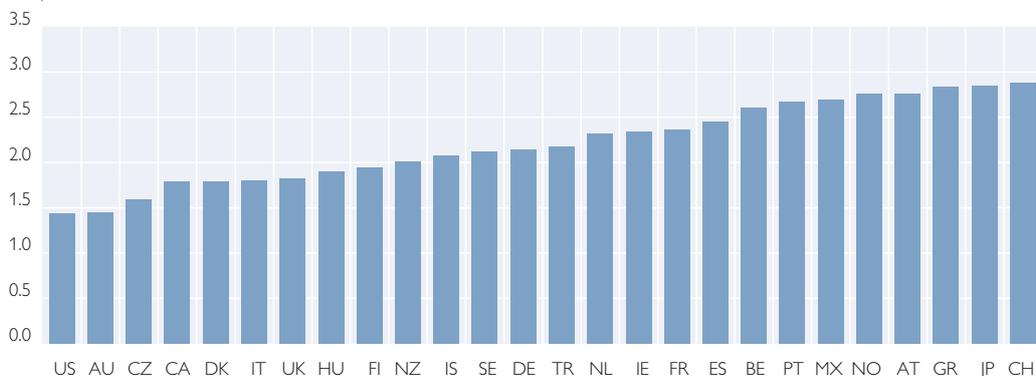
| Industry or Product<br>(HICP Weights in Parentheses)                                                | Equivalent Statistical Sector (NACE Codes)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Large Firms (Incomplete List) <sup>1</sup>                                                                                                                                                                                                                                                             |
|-----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Food (11.5%) – milk, cheese and eggs (2.1%), oils and fats (0.4%); bread and cereal products (2.3%) | <ul style="list-style-type: none"> <li>Economic Accounts for Agriculture</li> <li>Production: 15.4 production of animal and vegetable oils and fats; 15.5 milk processing; 15.81 production of baked goods, 15.82 production of dry baked goods, 15.85 production of pasta</li> <li>Trade: 51.21 wholesaling of cereals; 51.3 food wholesaling, 51.33 wholesaling of milk, eggs, cooking oils; 51.39 wholesaling of general foods; 52.11 retailing mainly of foods; 52.2 specialty foods retailing, 52.24 baked goods retailing</li> </ul> | <ul style="list-style-type: none"> <li>Production: 15.51 Berglandmilch, Nöm, Rupp 15.81 Anker, 15.85 Recheis</li> <li>Trade: 51.21 Raiffeisen cooperatives, 51.33 Tirolmilch, Kärntnermilch, Tonis Freilandeier, Danone, 51.39 Spar, 52.11 Billa, Merkur, Interspar, Hofer, Spar franchises</li> </ul> |
| Energy and transportation – electricity (1.8%) and gas (0.7%); crude oil and fuels (4.5%)           | <ul style="list-style-type: none"> <li>Production: 40.11 production of electricity, 40.12 transmission of electricity</li> <li>Trade: 40.13 distribution of and trade with electricity; 40.22 distribution of and trade with gas; 50.5 gas stations</li> </ul>                                                                                                                                                                                                                                                                             | <ul style="list-style-type: none"> <li>Production: 40.11 EVN, TIWAG, KELAG, Verbund, 40.12 BELAG</li> <li>Trade: 40.13 Salzburg Energie, producers' network companies (e.g. Wien Energie electricity grid); 50.5 OMV Refining&amp;Marketing, AGIP</li> </ul>                                           |
| Clothing (4.4%) and shoes (1.1%)                                                                    | 52.42 retailing of clothes, 53.43 retailing of shoes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 52.42 H&M, Kleiderbauer, Zara, Schöps<br>53.43 Stiefelkönig, Deichmann, Reno, Vögele                                                                                                                                                                                                                   |
| Goods for housing maintenance and repair, such as building materials (1.4%)                         | <ul style="list-style-type: none"> <li>Production: 25.23 production of construction materials made of plastic, 26.51 production of cement, 26.6 production of goods made of concrete, cement or plaster, 26.61 production of construction materials made of concrete</li> <li>Trade: 51.53 wholesaling of wood and construction materials; 51.54 wholesaling of construction elements made of metal and of plumbing materials; 52.46 retailing of metal goods and coating materials</li> </ul>                                             | <ul style="list-style-type: none"> <li>Production: 25.23 Internorm, 26.51 Lafarge Perlmooser, Wietersdorfer&amp;Peggauer</li> <li>Trade: 51.53 some Raiffeisen warehouses, 52.46 Baumax, Obi, Hagebau/Öbau, RWA Raiffeisen Ware</li> </ul>                                                             |
| Pharmaceutical products (1%)                                                                        | <ul style="list-style-type: none"> <li>Production: 24.4 production of pharmaceuticals</li> <li>Trade: 51.46 wholesaling of pharmaceutical products; 52.31 pharmacies</li> </ul>                                                                                                                                                                                                                                                                                                                                                            | <ul style="list-style-type: none"> <li>Production: 24.4 Nycomed, Roche, Baxter, Lannacher</li> <li>Trade: 51.46 Boehringer-Ingelheim, Novartis, Sanofi-Aventis; 52.31 individual pharmacies</li> </ul>                                                                                                 |
| Automotive parts and equipment (1.5%)                                                               | Trade: 50 automotive trade, repairs; 50.3 automotive parts and equipment trade                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 50.3 Iveco, Euromaster, BMW, Bosch, General Motors                                                                                                                                                                                                                                                     |
| Public fees and administered prices (12.9% total; selection 0.6%)                                   | 90.01 sewage and waste water treatment, 90.02-01 garbage disposal                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 90.01 Energie AG Oberösterreich Wasser, Abwasserverband Grazerfeld; Hydro Ingenieure Umwelttechnik, 90.02 Umweltdienst Burgenland, Saubermacher, Öko Box Sammelgesellschaft, ASA                                                                                                                       |

Source: OeNB.

<sup>1</sup> Bureau van Dijk Electronic Publishing Amadeus database 2008.

### OECD Competition Law and Policy Assessment 2003

Composite Indicator, 0 to 6



Source: OECD.

#### 4.1.2 Regulation of Startups and Enterprise Growth

The regulation of the establishment of companies was simplified for partnerships (Personengesellschaft; nonincorporated firm); the administrative burden and the regulatory capital requirement remain high for limited liability corporations (Gesellschaft mit beschränkter Haftung). In the International Financial Corporations 2007 Doing Business Report (IFC, 2007), Austria was 21<sup>st</sup> among 24 OECD countries. Costs in Austria are high above all for certifications by notary publics, a procedure not required in other countries. The great number of administrative steps is explained by the many registrations that are required – with eight contact points (not even including the bank): the economic chamber, the notary public, the commercial court, the district administrative authority, the tax authority, the health insurance administration body as well as the municipal authority of the region in which the company is established. Denmark, by contrast, operates a one-stop shop scheme. The main obstacle for startups, though, is likely to

be the high minimum capital requirement of EUR 35.000. In particular in the service sector, in which the establishment frequency is generally higher and a company often only needs computers, the high regulatory capital requirements may cause company founders to opt for partnerships as a legal form, a choice that may limit the company's growth prospects (Czarnitzki and Kraft, 2003). According to press reports, the Federal Ministry of Justice is working on a proposal to reduce minimum capital stock to EUR 10.000.

Further institutional market entry barriers in Austria are sector specific and take effect e.g. via qualification requirements for various professions (Trade Code) or indirectly via pension arrangements (e.g. for free professions).

Enterprise growth can be more important than market entry, as described in section 3.2. Austria currently has no adequate legal structures governing the activities of venture capital funds – hence Austria ranks among the EU-15 countries with the lowest venture capital intensity.

#### 4.2 Data Analysis of Sectors with Components Specific to Price Increases in Austria

Table 4 and charts 5 and 6 compare industries according to the competition indicators described above.<sup>14</sup> The reviewed manufacturing industries (table 3) were compared with total manufacturing, the reviewed service sectors with total trade. The reference industries “total,” manufacturing and trade are shaded dark blue. Values indicating competitive market structures are shaded medium blue; values indicating problems are shaded light blue.

The data must be interpreted with caution. In particular markups were rudimentarily approximated, as described earlier.<sup>15</sup> To sum it up, fairly clear signs of below-average competitive market structures were found in dairy processing and wholesaling, in

the production of pasta, in electricity and gas supply, in cement production and in the production of pharmaceuticals. The lack of competition is less clear in the following sectors: production of fats and oils, clothes retailing, production and wholesaling of pharmaceuticals, car parts trade, sewage disposal and garbage collection. The last two sectors were classified as unclear mainly because of the lack of data: Statistics Austria does not compile structural statistics for NACE sectors broken down further than the two-digit level after 74. But the profit measures are a cogent indicator. There are none to only few signs in baked goods production, grain wholesaling, food retailing, home centers, gas stations and footwear retailing as well as the production and wholesaling of construction materials (cement being the exception).

<sup>14</sup> Full-time equivalents were not used to calculate labor productivity; this puts sectors with a high share of part-time labor (e.g. trade) at a disadvantage.

<sup>15</sup> For the profit margins, the gross operating surplus unadjusted for income by self-employed was used as in Przybyla and Roma (2005).

## Sector Analysis by Key Indicators

|                                                                                                             | Labor productivity, CAGR 1995–2005 | Labor productivity, CAGR 2003–2005 | Concentration | Definition of concentration | Markup 2005 | Markup, average 2003–2005 | EBIT-margin 2006/07, median | EBIT-margin 2006/07, upper quartile | Profit margin, 2005 |
|-------------------------------------------------------------------------------------------------------------|------------------------------------|------------------------------------|---------------|-----------------------------|-------------|---------------------------|-----------------------------|-------------------------------------|---------------------|
|                                                                                                             | %                                  | %                                  | %             |                             | Index       | Index                     | %                           | %                                   | %                   |
| <b>Total (NACE 10–74)</b>                                                                                   | 3.3                                | 3.0                                |               |                             | 168         | 165.7                     |                             |                                     | 40.5                |
| <b>D manufacturing</b>                                                                                      | 4.6                                | 5.2                                |               |                             | 163         | 158.4                     | 1.1                         | 9.6                                 | 38.5                |
| <b>G wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods</b> | 2.2                                | 3.1                                |               |                             | 151         | 149.6                     | 0.6                         | 6.9                                 | 34.0                |
| 51 Wholesale trade and commission trade, except of motor vehicles and motorcycles                           | 4.1                                | 4.0                                |               |                             | 167         | 163.9                     | 1.5                         | 8.4                                 | 40.1                |
| 52 Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods           | 1.0                                | 2.0                                |               |                             | 138         | 136.6                     | 0.0                         | 6.4                                 | 27.6                |
| <b>Food</b>                                                                                                 |                                    |                                    |               |                             |             |                           |                             |                                     |                     |
| Agriculture                                                                                                 |                                    |                                    |               |                             |             |                           |                             |                                     | 81.0                |
| 154 manufacture of vegetable and animal oils and fats                                                       | -2.3                               | 10.2                               |               |                             | 183         | 158.2                     |                             |                                     | 45.4                |
| 155 manufacture of dairy products                                                                           | 9.8                                | 2.1                                | 34.0          | CR4                         | 179         | 176.3                     | 0.0                         | 7.0                                 | 44.2                |
| 1581 manufacture of bread; manufacture of fresh pastry goods and cakes                                      | 1.6                                | -0.3                               | low           | expert                      | 136         | 137.8                     | -2.0                        | 3.7                                 | 26.5                |
| 1582 manufacture of rusks and biscuits; manufacture of preserved pastry goods and cakes                     | 0.5                                | 4.1                                |               |                             | 146         | 139.7                     |                             |                                     | 31.3                |
| 1585 manufacture of macaroni, noodles, couscous and similar farinaceous products                            | -1.0                               | -4.1                               |               |                             | 175         | 187.4                     |                             |                                     | 42.9                |
| 5121 wholesale of grain, seeds and animal feeds                                                             | -1.2                               | -3.5                               |               |                             | 121         | 126.1                     | 0.3                         | 2.4                                 | 17.6                |
| 513 wholesale of food, beverages and tobacco                                                                | 8.0                                | 1.3                                |               |                             | 196         | 193.3                     | 0.8                         | 5.6                                 | 48.9                |
| 5133 wholesale of dairy produce, eggs and edible oils and fats                                              | 12.9                               | -8.9                               | 34.0          | CR4                         | 189         | 204.2                     | 0.5                         | 3.9                                 | 47.2                |
| 5139 nonspecialized wholesale of food, beverages and tobacco                                                | 4.6                                | -5.4                               |               |                             | 143         | 146.2                     |                             |                                     | 30.2                |
| 5211 retail sale in nonspecialized stores with food, beverages or tobacco predominating                     | 0.7                                | -1.1                               | 77.0          | CR3                         | 127         | 131.1                     | -1.3                        | 2.6                                 | 21.1                |
| 522 retail sale of food, beverages and tobacco in specialized stores                                        | -0.2                               | -2.7                               |               |                             | 166         | 156.5                     | 0.1                         | 4.8                                 | 39.6                |
| 5224 retail sale of bread, cakes, flour confectionery and sugar confectionery                               | 3.2                                | 5.8                                |               |                             | 119         | 112.6                     | -0.2                        | 5.6                                 | 15.9                |
| <b>Energy, Transport</b>                                                                                    |                                    |                                    |               |                             |             |                           |                             |                                     |                     |
| E Electricity, gas and water supply                                                                         | 3.3                                | 0.8                                |               |                             | 225         | 242.2                     | -2.8                        | 15.9                                | 55.6                |
| 401 Production and distribution of electricity                                                              | 2.8                                | 2.1                                |               |                             | 204         | 221.8                     | -0.3                        | 15.0                                | 51.0                |
| 4011 production of electricity                                                                              |                                    | 21.9                               | >70.0         | CR3                         | 250         | 238.9                     | -4.5                        | 17.7                                | 60.1                |
| 4012 transmission of electricity                                                                            |                                    | -26.2                              |               |                             | 120         | 235.2                     |                             |                                     | 17.0                |
| 4013 distribution and trade of electricity                                                                  |                                    | 6.8                                | 65.0          | CR3                         | 198         | 201.2                     | 0.5                         | 12.9                                | 49.4                |
| 4022 distribution and trade of gaseous fuels through mains                                                  |                                    | -3.9                               | 94.0          | CR3                         | 357         | 367.4                     |                             |                                     | 72.0                |
| 505 retail sale of automotive fuel                                                                          | -1.6                               | -1.8                               |               |                             | 120         | 120.3                     | 0.0                         | 4.2                                 | 16.5                |
| <b>Clothing and footwear</b>                                                                                |                                    |                                    |               |                             |             |                           |                             |                                     |                     |
| 5242 Retail sale of clothing                                                                                | 3.5                                | 5.1                                | 44.0          | CR6                         | 165         | 156.8                     | -2.0                        | 5.5                                 | 39.4                |
| 5243 retail sale of footwear and leather goods                                                              | 3.5                                | 14.7                               | 37.0          | CR2                         | 153         | 133.8                     | -4.1                        | 4.6                                 | 34.4                |
| <b>Manufacture of materials for housing maintenance and repair, construction materials</b>                  |                                    |                                    |               |                             |             |                           |                             |                                     |                     |
| 2523 manufacture of builders' ware of plastics                                                              | 1.8                                | -1.3                               |               |                             | 136         | 139.5                     | 1.2                         | 8.6                                 | 26.4                |
| 2651 manufacture of cement                                                                                  | 4.9                                | -5.5                               | 77.0          | CR4                         | 185         | 200.3                     |                             |                                     | 45.9                |
| 266 manufacture of articles of concrete, plaster and cement                                                 | 0.8                                | 3.7                                |               |                             | 155         | 151.8                     | 0.8                         | 8.9                                 | 35.5                |
| 2661 manufacture of concrete products for construction purposes                                             | -1.1                               | 2.2                                |               |                             | 133         | 133.0                     | -0.5                        | 10.7                                | 25.0                |
| 5153 wholesale of wood, flat glass, construction materials and varnishes and sanitary equipment             | 1.8                                | 7.8                                |               |                             | 150         | 144.9                     | 1.1                         | 5.3                                 | 33.5                |
| 5154 wholesale of hardware, plumbing and heating equipment and supplies                                     | 2.0                                | 3.3                                |               |                             | 139         | 139.1                     |                             |                                     | 28.2                |
| 5246 retail sale of hardware, glass, paints and varnishes                                                   | -2.0                               | 9.0                                |               |                             | 120         | 114.7                     | 0.9                         | 5.9                                 | 16.4                |
| <b>Pharmaceuticals</b>                                                                                      |                                    |                                    |               |                             |             |                           |                             |                                     |                     |
| 244 manufacture of pharmaceuticals, medicinal chemicals and botanical products                              | 5.5                                | 5.9                                |               |                             | 232         | 209.0                     | 3.5                         | 19.1                                | 57.0                |
| 5146 wholesale of pharmaceutical goods, orthopaedic appliances and medical and surgical equipment           | 7.3                                | 5.9                                |               |                             | 150         | 146.6                     | 3.0                         | 8.4                                 | 33.5                |
| 5231 dispensing chemists                                                                                    | 2.3                                | -1.5                               | low           | expert                      | 182         | 183.9                     | 2.5                         | 8.8                                 | 45.0                |
| <b>Parts and automotive equipment</b>                                                                       |                                    |                                    |               |                             |             |                           |                             |                                     |                     |
| 50 sale, maintenance and repair of motor vehicles and motorcycles; retail sale of automotive fuel           | 1.3                                | 2.2                                |               |                             | 139         | 139.5                     | 0.1                         | 3.9                                 | 27.9                |
| 503 sale of motor vehicle parts and accessories                                                             | 1.5                                | 3.2                                |               |                             | 162         | 157.1                     | 0.5                         | 6.2                                 | 38.1                |
| <b>Public fees</b>                                                                                          |                                    |                                    |               |                             |             |                           |                             |                                     |                     |
| 90 sewage and refuse disposal, sanitation and similar activities                                            |                                    |                                    |               |                             |             | 2.9                       | 14.2                        |                                     |                     |
| 9001 collection and treatment of sewage                                                                     |                                    |                                    |               |                             |             | 4.1                       | 18.0                        |                                     |                     |
| 90.02-01 Collection and treatment of other waste                                                            |                                    |                                    |               |                             |             | 3.3                       | 9.5                         |                                     |                     |

AMADEUS, Statistics Austria, Nielsen, SynGroup, Internet-research, E-Control

|                    |                    |                    |                    |                       |                       |                    |
|--------------------|--------------------|--------------------|--------------------|-----------------------|-----------------------|--------------------|
| Statistics Austria | Statistics Austria | Statistics Austria | Statistics Austria | KMU Forschung Austria | KMU Forschung Austria | Statistics Austria |
|--------------------|--------------------|--------------------|--------------------|-----------------------|-----------------------|--------------------|

Source:

Table 4 – Continued

## Sector Analysis by Key Indicators

|                                                                                                             | Profit margin, average 2003–2005 | ROI, 2005, median     | ROI, 2005, upper quartile | Gross value added, CAGR 2003–2005 | R&D intensity, 2004 | Gross value added 2005 | Overlap real sector – statistics | Sign of a problem? |
|-------------------------------------------------------------------------------------------------------------|----------------------------------|-----------------------|---------------------------|-----------------------------------|---------------------|------------------------|----------------------------------|--------------------|
|                                                                                                             | %                                | %                     | %                         | %                                 | %                   | %                      |                                  |                    |
| <b>Total (NACE 10–74)</b>                                                                                   | 39.6                             |                       |                           | 4.0                               | 2.61                | 100.0                  |                                  |                    |
| <b>D manufacturing</b>                                                                                      | 36.8                             | 4.7                   | 19.9                      | 4.8                               | 6.48                | 28.9                   |                                  |                    |
| <b>G wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods</b> | 33.1                             | 4.3                   | 20.4                      | 4.0                               | 0.34                | 17.9                   |                                  |                    |
| 51 Wholesale trade and commission trade, except of motor vehicles and motorcycles                           | 39.0                             | 6.4                   | 22.9                      | 5.0                               |                     | 8.91                   |                                  | yes                |
| 52 Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods           | 26.8                             | 2.8                   | 20.7                      | 2.4                               |                     | 6.42                   |                                  | no                 |
| <b>Food</b>                                                                                                 |                                  |                       |                           |                                   |                     |                        |                                  |                    |
| Agriculture                                                                                                 | 81.0                             |                       |                           | 9.7                               |                     |                        |                                  |                    |
| 154 manufacture of vegetable and animal oils and fats                                                       | 36.0                             |                       |                           | 12.8                              |                     | 0.02                   | high                             | unclear            |
| 155 manufacture of dairy products                                                                           | 43.3                             | 3.0                   | 16.1                      | 2.6                               | 1.09                | 0.24                   | high                             | yes                |
| 1581 manufacture of bread; manufacture of fresh pastry goods and cakes                                      | 27.4                             | 0.8                   | 14.0                      | –1.4                              | 0.50                | 0.66                   | high                             | no                 |
| 1582 manufacture of rusks and biscuits; manufacture of preserved pastry goods and cakes                     | 28.3                             |                       |                           | 9.0                               |                     | 0.06                   | high                             | no                 |
| 1585 manufacture of macaroni, noodles, couscous and similar farinaceous products                            | 46.4                             |                       |                           | 1.9                               |                     | 0.02                   | high                             | yes                |
| 5121 wholesale of grain, seeds and animal feeds                                                             | 20.5                             | 4.1                   | 13.5                      | –1.8                              | 0.49                | 0.37                   | moderate                         | no                 |
| 513 wholesale of food, beverages and tobacco                                                                | 48.1                             | 4.9                   | 16.4                      | 2.2                               | 0.11                | 1.31                   | moderate                         | yes                |
| 5133 wholesale of dairy produce, eggs and edible oils and fats                                              | 50.9                             | 3.9                   | 11.6                      | –5.8                              |                     | 0.04                   | moderate                         | yes                |
| 5139 nonspecialized wholesale of food, beverages and tobacco                                                | 31.6                             | 4.1                   | 15.9                      | –7.5                              |                     | 0.35                   | moderate                         | no                 |
| 5211 retail sale in nonspecialized stores with food, beverages or tobacco predominating                     | 23.7                             | –0.8                  | 14.8                      | 1.7                               |                     | 1.65                   | high                             | no                 |
| 522 retail sale of food, beverages and tobacco in specialized stores                                        | 35.9                             | 4.0                   | 32.3                      | –5.0                              |                     | 0.46                   | moderate                         | yes                |
| 5224 retail sale of bread, cakes, flour confectionery and sugar confectionery                               | 11.0                             | 2.4                   | 18.5                      | 20.9                              |                     | 0.05                   | high                             | no                 |
| <b>Energy, Transport</b>                                                                                    |                                  |                       |                           |                                   |                     |                        |                                  |                    |
| E Electricity, gas and water supply                                                                         | 58.6                             | 3.3                   | 13.7                      | 0.3                               | 0.15                | 3.70                   | high                             | yes                |
| 401 Production and distribution of electricity                                                              | 54.8                             | 3.8                   | 13.7                      | 0.8                               |                     | 2.82                   | high                             | yes                |
| 4011 production of electricity                                                                              | 58.0                             | 3.8                   | 12.7                      | 15.1                              |                     | 0.92                   | high                             | yes                |
| 4012 transmission of electricity                                                                            | 49.1                             |                       |                           | –55.1                             |                     | 0.53                   | high                             | unclear            |
| 4013 distribution and trade of electricity                                                                  | 50.3                             | 2.6                   | 14.2                      | 39.1                              |                     | 1.37                   | high                             | yes                |
| 4022 distribution and trade of gaseous fuels through mains                                                  | 72.6                             |                       |                           | –0.5                              |                     | 0.41                   | high                             | yes                |
| 505 retail sale of automotive fuel                                                                          | 16.8                             | 4.2                   | 20.7                      | 0.7                               |                     | 0.16                   | high                             | no                 |
| <b>Clothing and footwear</b>                                                                                |                                  |                       |                           |                                   |                     |                        |                                  |                    |
| 5242 Retail sale of clothing                                                                                | 36.2                             | 0.9                   | 17.9                      | 4.2                               |                     | 0.78                   | high                             | unclear            |
| 5243 retail sale of footwear and leather goods                                                              | 24.5                             | 0.7                   | 19.1                      | 11.0                              |                     | 0.17                   | high                             | no                 |
| <b>Manufacture of materials for housing maintenance and repair, construction materials</b>                  |                                  |                       |                           |                                   |                     |                        |                                  |                    |
| 2523 manufacture of builders' ware of plastics                                                              | 28.3                             | 6.5                   | 17.7                      | 0.3                               | 4.73                | 0.18                   | high                             | no                 |
| 2651 manufacture of cement                                                                                  | 49.9                             |                       |                           | –4.4                              |                     | 0.12                   | high                             | yes                |
| 266 manufacture of articles of concrete, plaster and cement                                                 | 34.1                             | 5.0                   | 19.8                      | 2.5                               | 0.90                | 0.58                   | moderate                         | no                 |
| 2661 manufacture of concrete products for construction purposes                                             | 24.8                             | 4.1                   | 18.5                      | –0.4                              |                     | 0.22                   | high                             | no                 |
| 5153 wholesale of wood, flat glass, construction materials and varnishes and sanitary equipment             | 30.9                             | 5.2                   | 18.2                      | 8.9                               |                     | 0.56                   | moderate                         | no                 |
| 5154 wholesale of hardware, plumbing and heating equipment and supplies                                     | 28.1                             | 9.5                   | 25.4                      | 7.8                               |                     | 0.51                   | moderate                         | no                 |
| 5246 retail sale of hardware, glass, paints and varnishes                                                   | 12.4                             | 4.3                   | 20.4                      | 8.8                               | 0.02                | 0.44                   | high                             | no                 |
| <b>Pharmaceuticals</b>                                                                                      |                                  |                       |                           |                                   |                     |                        |                                  |                    |
| 244 manufacture of pharmaceuticals, medicinal chemicals and botanical products                              | 51.6                             | 10.9                  | 25.5                      | 6.3                               | 17.72               | 0.68                   | high                             | unclear            |
| 5146 wholesale of pharmaceutical goods, orthopaedic appliances and medical and surgical equipment           | 31.8                             | 8.3                   | 27.4                      | 8.6                               | 1.19                | 0.82                   | low                              | unclear            |
| 5231 dispensing chemists                                                                                    | 45.6                             | 11.7                  | 31.7                      | 1.5                               |                     | 0.44                   | high                             | yes                |
| <b>Parts and automotive equipment</b>                                                                       |                                  |                       |                           |                                   |                     |                        |                                  |                    |
| 50 sale, maintenance and repair of motor vehicles and motorcycles; retail sale of automotive fuel           | 28.3                             | 3.6                   | 15.9                      | 4.3                               |                     | 2.56                   | low                              | no                 |
| 503 sale of motor vehicle parts and accessories                                                             | 36.3                             | 4.9                   | 20.3                      | 7.6                               |                     | 0.38                   | low                              | unclear            |
| <b>Public fees</b>                                                                                          |                                  |                       |                           |                                   |                     |                        |                                  |                    |
| 90 sewage and refuse disposal, sanitation and similar activities                                            |                                  |                       | 7.5                       | 19.2                              |                     |                        |                                  |                    |
| 9001 collection and treatment of sewage                                                                     |                                  |                       | 9.4                       | 30.0                              |                     |                        | moderate                         | unclear            |
| 90.02-01 Collection and treatment of other waste                                                            |                                  |                       | 7.3                       | 17.5                              |                     |                        | moderate                         | unclear            |
|                                                                                                             | Statistics Austria               | KMU Forschung Austria | KMU Forschung Austria     | Statistics Austria                | Statistics Austria  | Statistics Austria     |                                  |                    |

Source:

A review of competition using sectoral data can provide evidence especially in sectors where the correlation between the NACE classification and real market participants is high. Correlation was examined in a rudimentary fashion using the AMADEUS database in which firms are classified at the NACE four-digit level. The correlation is low where companies with very disparate production and trade activities nevertheless have to be classified under one of two sectors for statistical purposes (NACE classification according to the predominant source of revenues from sales). Frequently, this is the case in wholesaling. The sectors 50.3 and 51.46 include the production divisions of BMW, General Motors, Boehringer Ingelheim etc. In manufacturing, margins and markups tend to be higher in manufacturing than in pure service sectors because temporary monopoly rents are easier to achieve through innovation.<sup>16</sup> The high R&D intensity of manu-

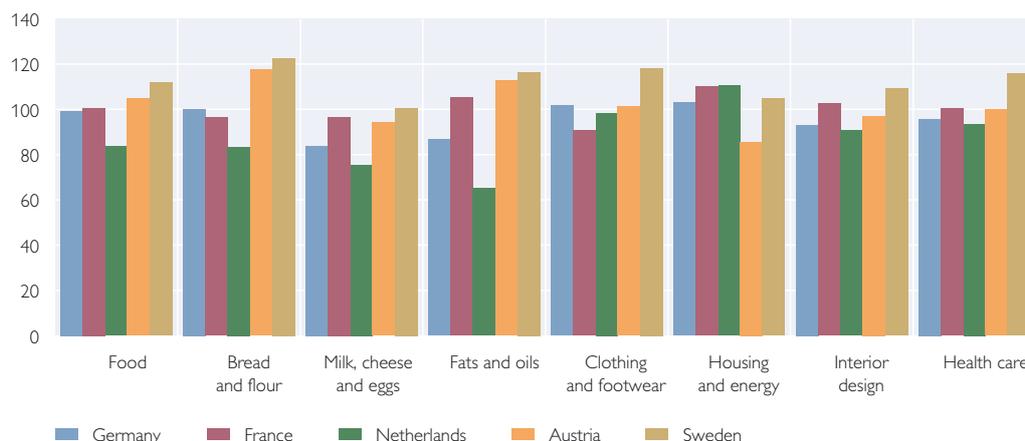
facturing sectors corroborates the above argument. In some sectors, the correlation is good enough to allow some economic assessments to be made. Cement production is a typical case. The formation of cartels in this sector was frequently discussed; from 1975 to 1993 a cartel was even officially permitted. The most recently available performance and structure statistics of Statistics Austria is dated 2005.<sup>17</sup>

Hence, no statements can be made e.g. on suspicions of price collusion on account of an unusual rise in profit margins. Only rough estimates of some sectors were made for the concentration statistics, as the required data are not available in most cases: not publishing financial and income statements is not a crime in Austria, unlike in other EU Member States. Nevertheless, an attempt to draw up concentration ratios was made by consulting the AMADEUS database to identify the largest firms and to calculate the sales share of

Chart 5

### Comparison of 2006 Price Level Indexes

EU-15 = 100



Source: Eurostat.

<sup>16</sup> The pure service sector “car parts wholesaling,” the six-digit NACE sector 50.30-01, was not taken into account for reasons of space, but its profit performance is above average. This is likely to be the sector that benefits from the protection of parts from original manufacturers and is a sector that the EU will open up by ending its design protection regime.

<sup>17</sup> The data for 2007 were published on June 30, 2008.

Table 5

### Development of Purchasing Power Relative to an Industrial Worker's Average Wage

|                                                         | 1980                   | 2006                 | 2007                  |
|---------------------------------------------------------|------------------------|----------------------|-----------------------|
| 1 machine-produced roll                                 | 1.2 minutes            | 1.3 minutes          | 1.4 minutes           |
| 1 liter whole milk                                      | 8.8 minutes            | 3.8 minutes          | 4.1 minutes           |
| 1 kilogram mixed-grain bread                            | 9.8 minutes            | 11.2 minutes         | 11.4 minutes          |
| 1 kilogram extra fine granulated sugar                  | 10.8 minutes           | 5.1 minutes          | 5 minutes             |
| 250 grams unsalted butter                               | 17 minutes             | 6.3 minutes          | 6.8 minutes           |
| 250 grams coffee beans                                  | 31.1 minutes           | 8.6 minutes          | 8 minutes             |
| 2 liters white wine                                     | 33.4 minutes           | 12.3 minutes         | 12.1 minutes          |
| 1 kilogram pork                                         | 1 hour 32.7 minutes    | 41.1 minutes         | 40.3 minutes          |
| 1 kilogram beef                                         | 1 hour 48.9 minutes    | 1 hour 21.2 minutes  | 1 hour 22.1 minutes   |
| 1 liter regular gas                                     | 7.5 minutes            | 5.1 minutes          | 5.1 minutes           |
| 100 kilometers train fare, 2 <sup>nd</sup> class ticket | 1 hour 14.9 minutes    | 1 hour 14.3 minutes  | 1 hour 14.7 minutes   |
| 1 hour's worth of wages for a plumber                   | 6 hours 35.7 minutes   | 8 hours 26.9 minutes | 8 hours 34.9 minutes  |
| 1 color TV                                              | 228 hours 55.4 minutes | 48 hours 45 minutes  | 60 hours 23.3 minutes |

Source: WIFO.

a sector in Statistics Austria's performance and structure statistics. Moreover, expert opinions were cited. The production sector data do not include imports; therefore, the concentration statistics would have to be adjusted for data from import penetration statistics.

To complete the picture, chart 5 shows an international comparison of price level indexes. For the sectors milk, cheese and eggs, housing and energy, and interior design, Austrian prices are below the EU-15 average, whereas they are perceptibly higher for bread and flour as well as fats and oils. However, the conclusiveness of this comparison is limited, as the comparison is not between identical products but rather between baskets of goods. Thus, national preferences strongly influence the result. For instance, specialty bread has the highest share (14%) in the Austrian basket. According to Statistics Austria, specialty breads such as pumpkin seed bread, whole grain bread and the like are far less important in other countries, such as France. Overall, the very low price level in the

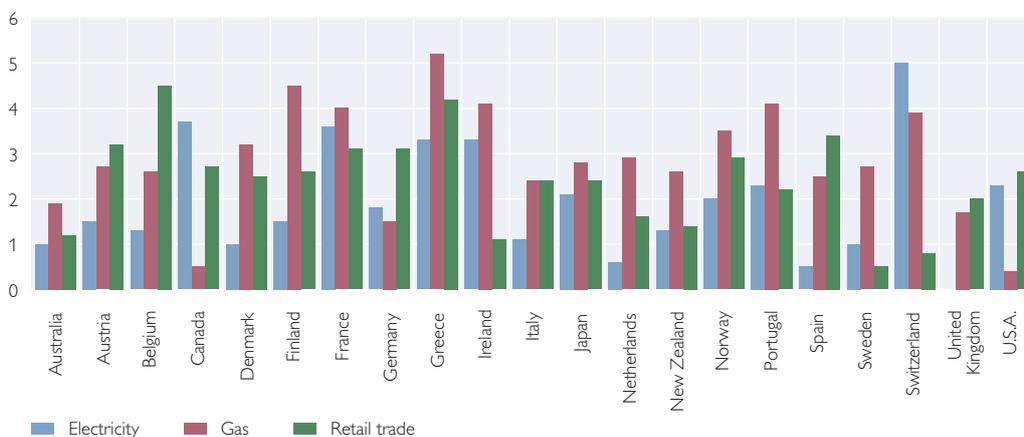
Netherlands, where inflation is currently very low, is striking.

Moreover, the development of purchasing power parities based on the price of some standard goods relative to an industry worker's average wage is noteworthy. Most of the sectors reviewed display strong price reductions. These are traceable to the high productivity rises in industry, which allow for higher wages, but also to the higher productivity in the manufacturing of the reviewed goods. Goods that have become more expensive indicate underlying problems. Bread falls into this category, whereas the price of milk has dropped sharply. Compared to the rise in industrial wages, the cost of plumbing services has increased sharply.

Finally, chart 6 provides an overview of the OECD's relevant sectoral regulation indicators. However, the data are fairly old; they will probably be updated in fall 2008. Moreover, the indicators are very broad-brush – for example, the OECD gives a bad value when shops above 800m<sup>2</sup> are regulated, without taking into account what kind of regulation is in fact involved. De

### Product Market Regulation by Sectors, 2003

Composite indicator



Source: OECD.

facto, the competitive situation in Austria is the opposite of that described by the OECD's regulation indicators – retailing is competition intensive whereas competition clearly does not work in the electricity and gas sector.

We will present short descriptions of selected sectors – not all sectors – below to provide more detailed information about the competitive situation. The focus will be on food retailing.

#### 4.3 Detailed Analysis of Selected Sectors

##### 4.3.1 Processed Food

Three recent developments may have been implicated in weakening competition somewhat in food retailing. First, the two key food retail chains in Austria, Billa (REWE) and Spar, fought for

market share by aggressively slashing prices in 2004 and 2005 (–50%, –51%). This affected not just the retailers' profitability, but also that of their suppliers. Chart 7 presents an international comparison of EBIT margins<sup>18</sup> that shows the Austrian retailers Spar, Interspar and ADEG to be in the lowest third.<sup>19</sup>

In 2005, a repositioning of the market leader Billa (REWE group) was initiated. The strong purchase-driven-department focus on prices was expanded to optimize the range of products. The breadth, quality and customer preferences in the respective product line were taken into account more.<sup>20</sup> Spar also welcomed the shift away from an aggressive pricing policy.<sup>21</sup>

<sup>18</sup> The choice of firms is based on the reports *Food Retailing in Western Europe (ODS, 2005)*. In most cases, the respective market leaders were chosen. By comparison, the cement producer Lafarge Perlmöser attains an EBIT margin of 22%, in Austria; this margin cannot be explained by a high R&D intensity.

<sup>19</sup> Billa publishes only very little information about its group. While data are available from *Kreditschutzverband von 1870*, they are classified.

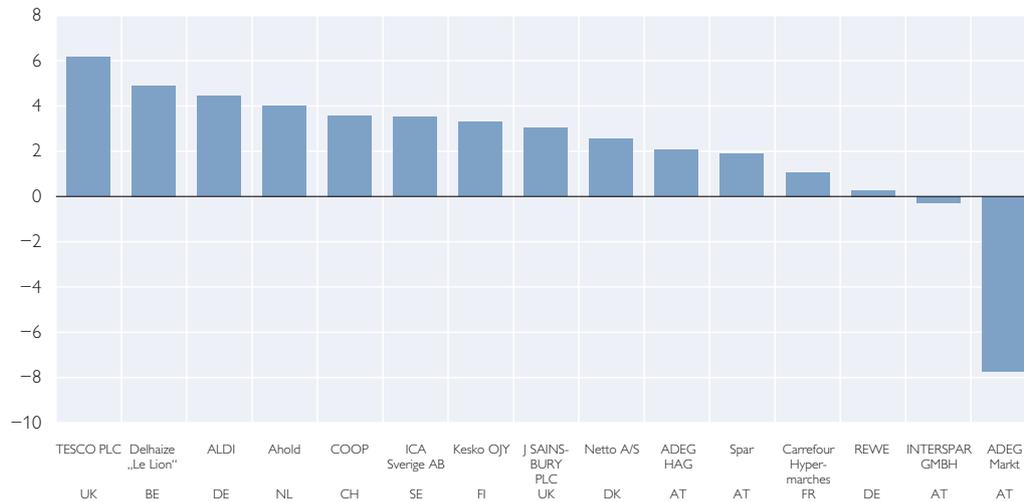
<sup>20</sup> "Gaining a market position on the basis of prices alone cannot be the only way for the sector to succeed ... Efforts must center on promoting product quality, a broad product range and a pleasant shopping experience." (Martin Lenz, head of REWE group in *Cash*, 2005b, p. 8); "The repositioning decidedly represents a lasting shift away from aggressive pricing." (Frank Hensel, head of REWE group in *Cash*, 2007a, p. 16).

<sup>21</sup> Gerhard Drexel, head of Spar: "... it is absolutely clear that we will always be competitors. But there are price wars that never did and never will make any sense for the respective company and sector. ... We want to use the changes at REWE group as an opportunity to initiate a more reasonable approach in the sector, and we will set a good example." (*Cash*, 2006, p. 24).

Chart 7

**EBIT Margins in an International Comparison, Last Available Years, 2004–2006**

EBIT margin in % of sales



Source: Bureau van Dijk Electronic Publishing, Amadeus database 2008.

In terms of the price development measured, this meant that food inflation rates in Austria were below the European average prior to 2007,<sup>22</sup> and when commodity prices rose in 2007, there was little room to offset higher costs by reducing margins. On the contrary, efforts to boost profitability once again and to attract customers with benefits other than low prices (non-price competition), incidentally by no means illegal,<sup>23</sup> could explain why prices rose faster than commodity costs.<sup>24</sup>

The second development implicated in weakening competition is that food

retailers are no longer in a position to or no longer want to use their own buyer power to pressure producers: The strong demand power of the highly concentrated food retailing business has led food producers to keep very tight margins and to boost productivity. Under the high competition intensity described above, food retailers did not increase margins either and kept consumer prices low. Given their concentration of buyer power, retailers have a very important role as a competition multiplier. But their substantial buyer power has evoked allegations of having abused their market-dominating

<sup>22</sup> From 2000 to 2006, the contribution of food inflation to total inflation came to 17.2%, which is the third-lowest euro area result following those of the Netherlands and Finland. The contribution rose to 26.7% in 2007, bringing Austria above the euro area average and into eighth place.

<sup>23</sup> In fact, such strategies appear to reflect customer preferences very well: According to a survey by Nielsen (Nielsen Shopper Trends 2006) about the factors that draw customers to a specific store, customers rank a good price-to-performance ratio 10<sup>th</sup> from among a list of various factors; low prices for most products is even rated a low 19<sup>th</sup> on the list. The list is topped by “finding products is quick and easy,” “one-stop shop,” and “has good-quality fresh produce.”

<sup>24</sup> In industrial economics, (illegal) cooperation in an oligopoly is facilitated enormously by external shocks that hits all parties equally. An argument against this hypothesis, though, is the time at which the strategy was changed – namely before food prices rose. Moreover, in 2008, for example, some retailers cut prices again (Hofer slashed milk prices, for instance); this fact contradicts the theory of successful cooperation as a result of shocks affecting all oligopolists equally.

position. Consequently, the competition authority (BWB, 2007) initiated a review that is said to have reduced the pressure on producers.<sup>25</sup>

Moreover, in recent years, export promotion for food producers has been increased massively; in fact, it represents the key component of the Go International campaign. As a consequence, market shares abroad augmented sharply (Janger, 2007),<sup>26</sup> reducing the dependence of producers on retailers and at the same time increasing their awareness of international market developments and opportunities: Producers now frequently explain price increases with international developments. These price increases are likely to be a mixture of producers simply passing on cost increases<sup>27</sup> and of their efforts to increase profitability after several lean years: In an environment of generally rising prices, producers find it easier to justify price hikes to retailers.<sup>28</sup> Yet second-round effects – a higher incidence of price rises appearing justified against the background of generally rising prices – are dangerous, as rising prices are put forth as an argument for higher wages and for higher producer prices alike.

To sum it up, strangely enough, the actions of the competition authority, export promotion and in its wake the link to the international environment

of rising prices may have helped producers gain some scope to raise profit margins.

The third development is that while producers are becoming more internationally oriented, Austrian retailers are pursuing a regionalization strategy that is characterized by giving preference to Austrian products to set themselves apart from German discount chains and to meet consumer demand for higher quality, i.e. organic and local produce (that has shorter transport routes and is therefore fresher and less harmful to the environment).<sup>29</sup> As a result, retail prices are linked more tightly to Austrian production structures, preventing imports from stimulating competition. The highly segmented structures of dairy production and the like are fairly competitive (Sinabell and Schmid, 2008), but at the same time rather sensitive to increases in energy prices given cumbersome milk collection procedures, etc.<sup>30</sup> In recent years, Austrian milk prices have followed a somewhat different development than the EU average (Sinabell and Schmid, 2008).

Agriculture is likely to benefit most from the rise in commodity prices. Agricultural production values rose by 11.8% in 2007, partly because grain prices surged (as did the corresponding production volumes), and only marginally because of higher milk prices, as a

<sup>25</sup> According to the former head of the competition authority, Walter Barfuß, “There are clear signals ... that the food retailing business with its high buyer power is exercising more restraint and that its actions have become more moderate.” (Cash, 2005c, p. 6).

<sup>26</sup> Austria’s market share in the OECD 24 countries’ food exports expanded from 1% in 1996 to nearly 2.2% in 2005, surpassing the average share of Austrian goods exports.

<sup>27</sup> As bakery head Worenz says, “We have absorbed rising commodity costs for years, but now we will pass on higher costs directly.” (Cash, 2007b, p. 24).

<sup>28</sup> Spar management board head Drexel mentions that some industrial companies wish to simply palm price increases off to Spar (Cash, 2008a, p. 62).

<sup>29</sup> Frank Hensel, head of REWE group, says: “We at REWE group Austria [prefer] domestic suppliers and wherever possible avoid [buying] products from abroad, ... even though we could sometimes get them cheaper there. In this way, we [support] the Austrian agricultural microstructures.” (Cash, 2008b, p. 16).

<sup>30</sup> In Austria, nearly two-thirds of the milk delivered to dairies is produced in mountainous terrain, compared with only one-third in Switzerland (Sinabell and Schmid, 2008).

quota system substantially limits volume increases (Statistics Austria, 2008, Economic Accounts for Agriculture). The net entrepreneurial income in the agricultural sector augmented by 11.8% in 2007 despite a decline in subsidies. The income level is still below the 1995 level, though. Guaranteeing domestic production is a declared goal of policy initiatives (rural development program) and of trade strategies seeking to preserve high-quality local supply.<sup>31</sup>

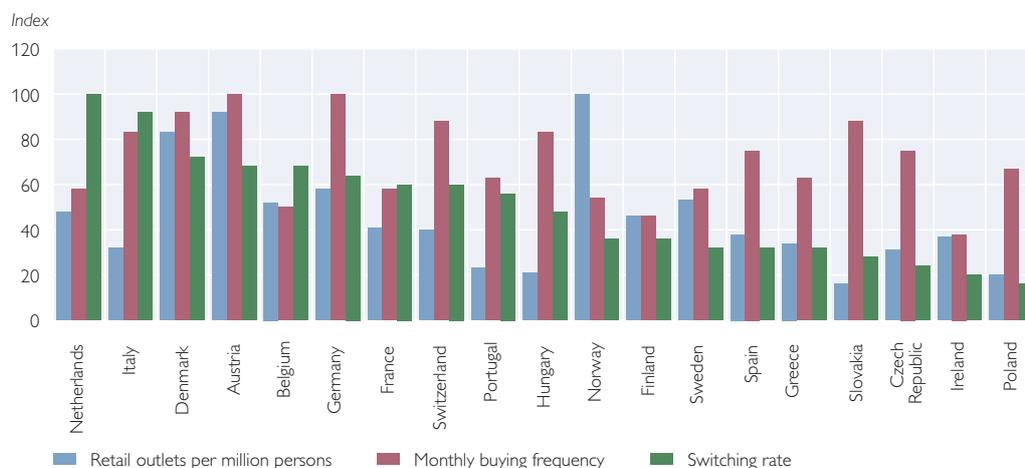
Consumers' search costs and switching options are largely determined by the retail store density within a reasonable shopping catchment area, as mail-order food shipments and complete price transparency on the Internet (an up-to-date price list for all products) are not (fully) available yet. After Norway, Austria boasts the highest supermarket density in Europe. Austrian consumers have the highest monthly buying frequency. On average, consumers go to the food store 18 times a month, so that there is ample potential for them to switch. 17% of all Aus-

trians in fact switch to another store if that store proves more convenient (providing a better choice, product range, bargains etc.). In the frequency of switching stores, Austria ranks fourth among European countries. Chart 8 shows the data normalized on an index base 100 for the country with the respectively highest value and sorted by the rate of switching. Consequently, the consumer side does not provide any indication of a possible restriction on competition in food retailing.

Overall, food price developments are not dramatically different from price developments in the EU (in its calculations, the European Commission concludes that commodity price hikes of 5% do not suffice to fully explain consumer price increases of 7%). In Austria, production structures and above all recent entrepreneurial decisions are likely to have limited the scope for offsetting high commodity prices by lowering margins but also led to the deliberate change in strategy to improve profitability, secure supplier loy-

Chart 8

### Consumer Indicators in Food Retailing, 2006



Source: Nielsen.

<sup>31</sup> As ham producer Rudolf Berger puts it, "Farmers finally need to be paid more." (Cash 2008a, p. 25); REWE group has a special program designed to guarantee that income generated from price increases is passed on to farmers.

ality and give preference to local produce. None of these activities violate the Competition Act. The fastest way to determine whether illegal pricing is involved is to use the same approach as the French competition authority (DGCCRF, 2008): The officials visited the largest food retail chains and asked to see the companies' calculations, that is, the calculation of the profit margins on various products. These examinations showed that French retailers "re-distribute" increases in buying costs: They reduced margins on products showing high price increases and offset this by raising margins on other products. Such a "mixed" calculation can be expected in Austria as well.<sup>32</sup>

#### 4.3.2 Electricity and Gas; Fuels

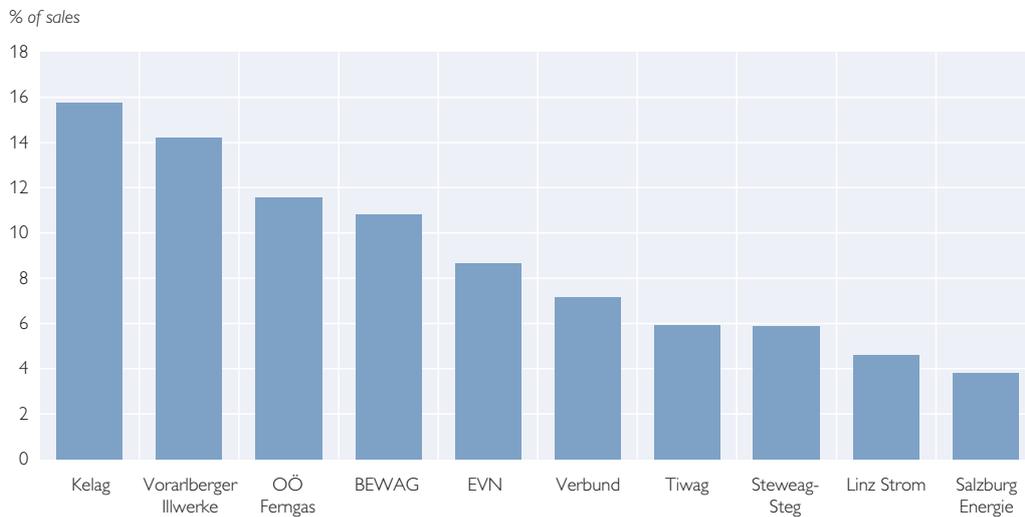
Unlike structural problems in food retailing, the Austrian and European electricity and gas markets' problems are relatively well documented (Böheim et al., 2006; E-Control, 2007; IEA, 2008). Although progress has been made, market integration remains incomplete between price regions (the Iberian, Northern European, Southern European and Continental European electricity exchanges) and within regions. In very simple terms, the basic problem is contradictory incentives in electricity transmission and in electricity production and sales. Most enterprises are vertically integrated and have little incentive to invest in an enlargement of their transmission capacities, as the consequence could be that purchases of cheaper electricity from other suppliers hurts own electricity sales.

One solution would be to follow the European Commission's proposal of unbundling ownership rights in the production, sales and network areas. However, many countries have put up resistance, as most energy suppliers are state owned and energy safety is seen as a task that is better tackled at the national level. Moreover, unbundling would require abandoning the policy of favoring "national champions."

Resistance against unbundling is also widespread in the Austrian domestic market. As a result, "conflicts of interest arise on account of the multiple role of the federal and regional governments as owners of energy suppliers, as legislators and as the bodies supervising the unbundling" (Böheim et al., 2006, p. 56). Gas and electricity are highly concentrated on account of the merged Energieallianz Austria (comprising five regional electricity suppliers for Vienna, Lower Austria, Upper Austria and Burgenland) and links between Energieallianz and OMV via the gas marketing company Econgaz. These mergers may be seen as the outcome of political efforts to establish national champions (Böheim et al, 2006). Such a strategy is risky as long as the European energy market has not yet been fully integrated. Once the market has been fully integrated and foreign competitors try to gain a foothold on the Austrian market, the problem of the high degree of concentration in Austria will diminish. The high level of EBIT margins also reflects insufficient competition (chart 9).

<sup>32</sup> Industry insiders speak of retailers partly absorbing higher costs by adjusting margins for highly competitive products or key psychological prices (during the Austrian schilling era, one such price was ATS 10 for a 100 gram bar of chocolate); retailers offset these margin adjustments by increasing the prices of other goods (Cash, 2008a).

Chart 9

**EBIT Margins of Selected Energy Suppliers, Last Available Years, 2004–2006**

Source: Bureau van Dijk Electronic Publishing, AMADEUS database 2008.

While the potential for competition is limited, customers have so far not even used the existing opportunities (E-Control, 2007): In 2006, only 0.9% of household customers chose another supplier, and only 5% have switched since the liberalization of the energy market in 2002. There are several reasons for this behavior: PR campaigns are typically geared at improving the image of suppliers rather than motivating consumers to switch; consumers expect to receive complex bills but to have little savings, they fear high switching costs, and they are afraid that the new supplier will be less reliable.<sup>33</sup>

For the fuels sector, Arpa et al. (2006) showed that no economically significant asymmetries in the adjustment of prices at gas pumps to higher commodity prices can be found. Moreover, the study by WIFO (Salzburger Nachrichten, 2008) does not identify an above-average national contribution to inflation of fuels in Austria.

### 4.3.3 Other Sectors

Home center store density, like food retail store density, is among the highest worldwide in Austria. This has an impact on customer's options to switch and on competition intensity. The stepped-up market entry particularly of large German home center chains triggered cutthroat competition. In this sector, too, competition intensity has been flagging ever since the German store Praktiker, a subsidiary of Metro cash & carry wholesaler, withdrew from the Austrian market.

In terms of total sales, clothing and footwear retailing is far more fragmented than food retailing. In this sector, location is the most important factor in attracting walk-in customers. Anecdotal evidence gathered at Austrian shopping malls and districts indicate that the retailing mix is more or less the same all over. For example, in Vienna's Mariahilferstraße district shoppers will find as many as three sales

<sup>33</sup> These fears are unfounded: the network operator remains the same, and switching suppliers involves only few formalities – the new supplier handles nearly all formalities. Customers can expect potential savings of up to EUR 70 a year (E-Control, 2007).

outlets each of a large clothing store and of two shoe chains.

Consequently, it would be interesting to analyze the concentration of stores in top locations. The concentration of ownership of business rental space and the awarding of related rental contracts should be examined at the same time to determine whether competition is hampered by the lack of availability of suitable sales premises or the abuse of a market monopoly.

The higher charges for prescription medications play an instrumental role in the rise in the price of pharmaceuticals. Of course, the problems with the structure and regulation of the pharmacy sector in Austria are well known. In other countries, e.g. drugstores are licensed to offer for sale a larger range of medications over the counter than in Austria. Such stores promote generic drugs much more than Austrian pharmacies do. For example, pharmacies generally sell generic acetylsalicylic acid (ASS, the active ingredient in aspirin) only if customers explicitly request the generic drug rather than a brand-name drug. The price differences are large: generic aspirin costs EUR 1.25 for 20 tablets versus over EUR 5 for a brand-name drug.

In the case of sewage disposal and garbage collection, many sewage treatment plants and recycling facilities share the market with conventional utilities, so that the figures must be interpreted with caution. Nevertheless, the surge in prices for garbage collection (2007: garbage collection +6%, sewage fees +4.7%) is partly explained

by a clause in the 1993 Revenue Sharing Act, Article 5 paragraph (3) line 5,<sup>34</sup> which gives municipalities the right to levy a surcharge of up to 100% on the cost of municipal services. At the outset, these funds were used to offset cost coverage gaps. In the mid-1990s, however, efforts were made to reduce costs, e.g. by transferring public responsibilities for garbage collection and sewage disposal to supraregional associations. The cost advantages were not passed on, though; the surcharges are used to finance municipal needs. The average profit corresponds to an EBIT margin of 26% (KFP, 2007).

#### 4.4 Price and Quality Competition Is Not Sufficiently Captured in Statistics

Distortions in price measurement may also show up as price increases. Quality improvements are not automatically taken into account in price observations. In the case of outlet bias, the rise in market share of stores with lower prices for a specific product than others is not adequately weighted.

Hausman (2003, p. 25) criticizes the construction of cost of living indexes based on prices only.<sup>35</sup> Modern cash registers with scanners allow for recording of both the price and the amount of goods purchased. This would make it possible to determine when low-price stores expand their market share. In the food sector, a point is made of adequately representing the leading retail chains in price indices according to Statistics Austria. In clothing retailing, however, it may well be

<sup>34</sup> "Fees for the use of municipal facilities and plants operated as public services ... up to an amount at which the probable annual profit from fees is no more than double the annual amount required to maintain and operate the facility or plant as well as the interest and principal payments on the facility construction costs, taking into account the service life for that type of facility or plant."

<sup>35</sup> "Sending price surveyors out to stores, which is the original approach used in England in the nineteenth century and is the main approach currently used by the [Bureau of Labor Statistics] BLS, will not get the job done in the twenty-first century."

that textile discount stores like Kik – which has grown to become the fifth-largest clothes retailer in Austria – are underrepresented in terms of their weight. Another problem in capturing prices via observations of shelf prices has become quite large in recent years: the volume of discounts deducted at the cash register in connection with established customer loyalty programs – generally through payment-enabled customer loyalty cards or debit cards – has risen enormously.

Statistics Austria takes quality changes into account through price corrections. Organic foods, for example, are rated more highly than other foods. Hence, the risen share of organic foods is not likely to have caused the surge in food prices in Austria.

## 5 Economic Policy Consequences

The price increases in Austria in 2007 and 2008 above all reflect the confluence of steadily rising demand on the part of emerging countries with commodity supply shocks especially of foods (crop failures in Australia, Ukraine) and energy (various factors) – in other words, of cost-push inflation. Every country differs in its adjustment to these shocks and trends. For Austria, an analysis of the sectors hit by above-average inflation compared with the euro area identified a mix of underlying factors ranging from problematic market structures to the influence of past and present corporate strategies. The low profitability in several sectors is also liable to have motivated entrepreneurs to raise prices in an environment of generally rising prices, thus producing second-round effects; in a climate of general price increases firms typically find it easier to strengthen

profitability after a period in which profitability considerations took a second seat, or simply to pass on higher costs directly. Thus, inflation developments in Austria are likely to be linked to the unfortunate simultaneous occurrence of international developments and legitimate market strategies of Austrian companies, but also with dysfunctional market structures, be they caused by regulation or market conditions. The present analysis allows the following conclusions to be drawn:

### 5.1 Intersectoral Measures

#### 5.1.1 Better Data Sources for Competition Analyses

The following improvements are required to pave the way for more meaningful competition analyses:

- increased disclosure of corporate financial information; concentration statistics,
- structural data for ÖNACE sectors often the sector 74,
- full-time equivalents for the service sector,
- examination of a way to improve the statistical classification of goods-related and service-related activities at the sectoral level, and
- better use of scanner data<sup>36</sup> in retailing or market share-based representation of retail chains in store price indices.

#### 5.1.2 Entry Barriers for New Competitors

Many general measures have been called for a long time (Aiginger et al., 2006), including:

- reform of the establishment regulation (of limited liability companies – GmbH) with a low minimum capital requirement,

<sup>36</sup> When this study was completed, a leading food retailer was just launching a new discount chain. Scanner data could be used to calculate its impact on the HICP fairly quickly.

- reform of the growth finance framework (an adequate legal structure for venture capital funds, fund of funds initiatives, etc.) and
- a further reduction of regulation of professions or a less detailed regulation, both for craftspeople and for freelance professionals.

### 5.1.3 Competition between Established Companies

WIFO (Böheim et al., 2006) makes numerous proposals on how to intensify competition between established firms by reforming competition policy, in particular by elaborating an overall competitive strategy and by improving the effectiveness of competition law. The cornerstones of these proposals are:

- institutional reform of the competition institutions – antitrust lawyers, the competition commission and the Federal Competition Authority,
- improvement of resources,<sup>37</sup>
- proactive competition monitoring on the basis of quantitative economic data<sup>38</sup> much like that performed by the Danish (Janger, 2006) as well as the Belgian authority (economie, 2008).<sup>39</sup> The economic mandate to initiate a competition review should be clarified statutorily if necessary,
- strengthening of the independence of the head of the Federal Competi-

- tion Authority by reforming the appointment procedure,
- the burden of evidence in cases of abuse of market-dominant positions should be reversed and should be on the respective enterprise.

### 5.2 Sector-Specific Conclusions for Retailing

When companies follow market strategies which do not break competition rules, competition policy is principally limited. Whether the proposed price monitoring is effective in exerting pressure on market participants to alter their strategies exclusively toward price minimization has yet to prove its mettle. The wide variety of products and the mixed calculation methods of traders make it easier to pursue a product-dependent price policy that is intransparent but in line with competition rules. Moreover, surveys have shown that most consumers do not base their decisions on prices alone. However, price monitoring could contribute to more intense scrutiny of producers' price policies to determine whether higher prices indeed reflect commodity price increases or attempts to boost profitability. This could reduce the incidence of second-round effects (which may also be observed on the production side).<sup>40</sup> Moreover, in a collusion-based market structure, greater price transparency makes it easier to monitor ob-

<sup>37</sup> WIFO talks of a doubling, but three times the current resources would not be disproportionate considering the resources available to comparable countries.

<sup>38</sup> The Federal Competition Authority's approach is currently quite often a purely legal approach, meaning that the authority seeks out breaches of competition law, but does not look for suboptimal economic results.

<sup>39</sup> "A proactive attitude, based on in-depth knowledge of the functioning of the markets, is imperative to foster (i) an appropriate regulatory/competition framework and (ii) to promote market efficiency." Often market probes are made if a company lodges a complaint. But in many cartels, there are no complaints, which is why a proactive approach is needed.

<sup>40</sup> Heinrich Frey, head of the section Taxis and Rental Cars of the Vienna Economic Chamber, states in an interview with "Wien heute": "After waiting for half a year, we finally need to increase prices, too. Just think of the Vienna municipal price increases for parking, public transport and the like. The city of Vienna started to raise prices long ago, and we now want a piece of the pie as well." (<http://wien.orf.at/stories/264564/>)

servance of price collusion by one's closest competitors and thus facilitates enforcement of such collusive arrangements (Albaek et al., 1997). Consequently, the implementation of price monitoring should itself be closely monitored.

To rapidly establish whether the suspicion of price collusion is founded, the Federal Competition Authority should follow the French example and monitor the profit margin development of selected key staple products at various stages of the value-added chain. To this end, the competition authority should avail itself of its legal powers (requests for information or house searches).

In this study, most sectors were analyzed at the national level. However, the market shares of chain stores vary substantially among regions and at the local level. In food retailing, e.g., the Billa chain predominates Eastern Austria, Spar Western Austria. There is too little analytical material on top location market shares in clothing and footwear retailing. The impact of gas stations' location on competition has been researched time and again (e.g. Pennerstorfer, 2008). Consumers' search and switching costs may be high at the regional or local level and thus competition could be reduced. After completing a two-year survey of British food retailing, the British competition authority will introduce a new competition test that retail chains will have to pass before opening a new store: They may be denied a building permit if the new store is only ten minutes by car away from another outlet of the same chain or if the additional store would raise the market share of the chain to more than 60% in the regions concerned.

The economic policy options available to influence pharmaceutical retail-

ing are more obvious. Either the sales permit for specified pharmaceutical products is expanded to include e.g. drugstores, or in a first step prescriptions are written for particular active ingredients (*aut idem*), as envisaged in the current health reform scheme.

### 5.3 Sector-Specific Conclusions for Producers and Wholesalers

More detailed analyses are required to show options for action on the part of producers and wholesalers. Their influence on pricing is partly much larger than that of retailers: For example, all considerations regarding competition in Austrian food retailing will be but a drop in the bucket for milk price developments, given the planned reform of the EU dairy market and the possible termination of the quota system (Sinabell and Schmid, 2008). Sinabell und Schmid (2008) propose various strategies to enable Austrian dairy farming to cope with the upcoming challenges (cooperation at the farm level, improvement of operational procedures in milk production and processing, product and process innovation in processing, improved support for farms that discontinue milk production).

While (dairy) producers implement these changes, Austrian and European economic policymakers are well advised to take appropriate measures if conflicting goals arise (section 5.4). The general goals of EU Common Agriculture Policy include enabling producers to have an adequate income and to keep prices low for consumers. National goals include preserving mountain farming, strengthening family farming businesses, and providing for ecology-minded production in an open cultivated landscape (Sinabell und Schmid, 2008). Quite obviously, if all these goals are pursued at the same

time, inherent conflicts will arise between the goals.

Furthermore, careful analysis of the impact of increased use of biogenic sources of energy is needed.

In the area of municipal services, the Revenue Sharing Act should be amended to counteract incentives to raise fees that arise not from the rise in the price of services but from public budget constraints. To secure funding for municipalities strapped for finance, other, less economically distorting measures should be discussed.

#### 5.4 Electricity and Gas Sector

More competition in the electricity and gas sector would contribute to more efficient operation of power plants and to lower margins on prices for customers (E-Control, 2007). Measures to intensify competition are being emphatically called for (Böheim et al., 2006; IEA, 2008; Boltz, 2008). The two key components are a true commitment to establishing a uniform European energy market, also by Austria's EU representatives, and stepped-up competition in the Austrian market. The conflicts of interest which arise because the federal and provincial governments occupy the tripartite role of being the owner of public utilities, the legislative authority and the supervisory authority should be resolved. The unbundling of ownership rights should be considered. Some countries, such as Germany (Brunekreeft, 2008) have their doubts about the economic usefulness of ownership unbundling, whereas E-Control (2008) principally welcomes it, though it criticizes the proposal of network operator self-regulation: It would take too long for this method to produce success.

Moreover, the reduction of the weight of energy in the commodity basket could exert a dampening effect on

inflation, e.g. by reducing energy consumption as a consequence of the widespread thermal insulation installed during renovation of old buildings and bringing forward the requirement that new buildings conform to low energy standards.

#### 5.5 Outlook: Low Potential for Price Cuts in Food and Energy Retailing

Overall, the outlook for dampening price increases of the sectors exerting the greatest upward pressure on prices – food and energy – is to be viewed as subdued in the medium term, both on account of economic policy considerations and on account of prospective market developments:

Most food prices fell for decades. On the supply side, the advantages of a more market-based production – postulated for years, finally implemented step by step – will of course come with disadvantages, such as a stronger fluctuation of prices (Sinabell and Schmid, 2008). Crop failures are likely to become more common. On the demand side, demand by large emerging countries will increase further, especially for milk products and meat, and indirectly for more plant products (the production of 1 kg of beef requires 8 kg grain). Together with German consumers, Austrians report the lowest share of food expenditure in household budgets (European Commission, 2008c). Therefore, it is unlikely that a reduction in the weight of foods in the commodity baskets will dampen inflation.

In its World Energy Outlook 2008, the International Energy Agency (IEA) for the first time weighs the possibility of a supply crisis and escalating prices (Internationale Politik, 2008). Even if international prices stabilize, Austria would have to in fact raise its mineral oil tax to contain a run on Austrian gas

stations by German consumers, which enlarges Austria's carbon footprint. Prices for electricity and gas should not be too low, otherwise efforts to develop and use alternative energy sources might flag. Thus it is likely that any producer price reductions of these utilities will be offset by rising fees. This strategy would be consistent with the shift in the Austrian tax system called for: reducing the burden on labor income and increasing the burden on activities with negative externalities (Aiginger et al., 2006; OECD, 2007a).

### 5.6 Measures in Other Sectors to Offset Price Increases

As options to counteract price increases directly in the respective sector are limited, structural measures can be taken in sectors that contributed less to the current price rise but that had consistently contributed most to inflation for decades, and that certainly have scope to reduce prices: many services qualify here.<sup>41</sup> The trend contribution of the service sector to inflation is 2%, and it is likely to be unchanged in 2008. Even if the effect on inflation is temporary rather than permanent, structural measures in the service sector would limit inflation dynamics and would dampen the adjustment to higher price levels of foods and energy. It would also be important to stabilize inflation for several years to prevent undermining a key component of the economic success of the past 15 years, namely the manufacturing sector's competitiveness. The European Commission (2007b) and the OECD (2007a) regularly call for greater competition in the Austrian service sector. In the U.S.A., the service sector has become the driving force of

productivity (Jorgenson et al., 2005) whereas the manufacturing sector still plays this role in Austria; in the medium term, Austrian services exert upward pressure on inflation (Fritzer et al., 2008).

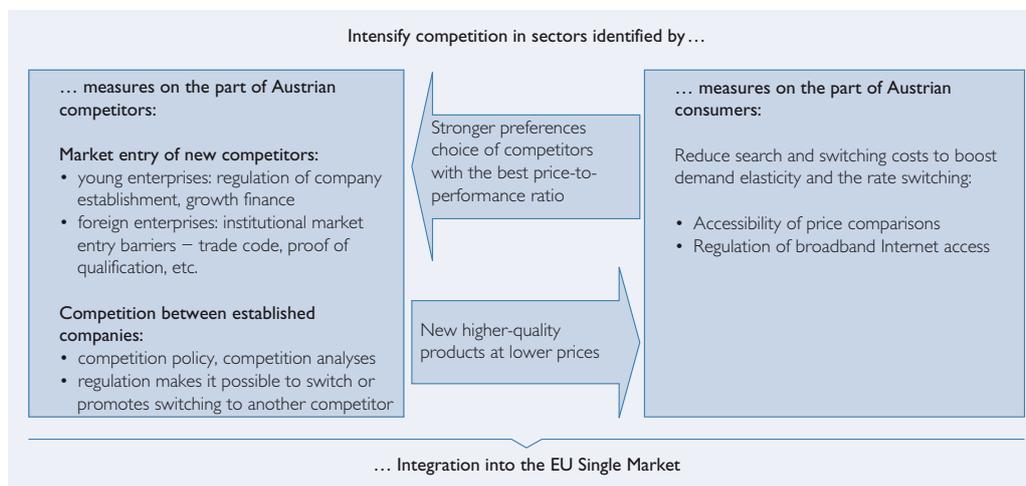
To identify the service sectors with a lack of competition, large sectoral reviews much like those being performed in other countries (Belgium, France, etc.) could be drawn up in cooperation with the European Commission, for example by the Federal Competition Authority and commissioned by the Federal Ministry of Economics and Labour.<sup>42</sup> Moreover, Austria could benefit from international experience by participating in the OECD's regulatory review, a step that the WIFO has called for (Böheim et al., 2006), or by the use of the OECD's Competition Assessment Toolkit (OECD, 2007b).

Competitors, consumers and the European dimension should be the respective focus of the studies. At the producer level, it would be interesting to find out whether switching providers is a) principally possible, and b) if so, whether switching is difficult owing to market entry barriers or a lack of competition between existing firms. For example, currently consumers who pay a real estate agent for his services cannot switch between agents. However, if landlords paid for agents' services, switching and price competition would be possible. Ways to reduce search and switching costs should be identified on the demand side to increase demand elasticity or the rate of change. The integration of the respective sectors into the European market could be analyzed. An important consideration for the elaboration of reform

<sup>41</sup> Trade, of course, is also to be ranked among services, but what we mean here is companies that sell services to consumers.

<sup>42</sup> The new strategy for completion of the Single Market focuses on economic monitoring (Dierx et al., 2007).

## Levers to Intensify Competition



Source: OeNB.

proposals is that frequently not large reforms in one sector but rather many small changes in many subsectors will produce overall success.

As price comparisons drawn up by the Chamber of Labour show, there would be much potential to intensify competition through switching to other providers, e.g. other insurance companies, banks (personal accounts, savings accounts, loans, investment products), energy providers, Internet providers and phone companies, rent (indirectly: operational costs). The same holds true for the costs of other services, such as the cost of the driver's license for automobiles or car repair costs. Many of these services are also included in the commodity basket – a price reduction would thus have a direct impact on the HICP. Table 6 shows price fluctuation margins for some goods and services. The extent of fluctuations for very similar services is a further indication of how much potential for improving

competitive intensity exists in those categories.

Consumers would take advantage of these fluctuations more if the search costs were lower, i.e. if price transparency were higher. The Chamber of Labour often publishes the above-mentioned prices online, which has the advantage that the prices can be updated quickly and that users can use templates to set up their own profiles. To improve access to such comparisons and to general price comparison services, further expanding broadband Internet access in Austria would be desirable,<sup>43</sup> as it is below the EU-15 average (20.8 connections per 100 inhabitants) at 18.4 connections per 100 inhabitants compared to 28 in Denmark and 37 in the Netherlands. The same two countries also used Internet search machines most often (79% to 84%), whereas the frequency of use is 61% in Austria (European Commission, 2008a). Cost is a factor. The cheapest Internet access in

<sup>43</sup> Theoretically, higher price transparency could facilitate price collusion. Given the strong price fluctuations shown in table 6, however, such a danger appears unlikely. Also, price monitoring would allow for quick determination of any uniform upward adjustment of prices.

Table 6

**Price Differences of Selected Services**

| Services <sup>1</sup>                                                 | Fluctuation margin | Maximum potential annual savings in euro | HICP weight |
|-----------------------------------------------------------------------|--------------------|------------------------------------------|-------------|
|                                                                       | EUR                | EUR                                      | %           |
| Personal account fee (per annum)                                      | 1.68 to 170        | 168.32                                   | 0.26        |
| Interest on overnight deposits                                        | 0.125% to 4.33%    | n.a.                                     | n.a.        |
| Interest burden for a five-year consumer credit of EUR 20,000         | 2,397 to 4,937     | 2,540                                    | n.a.        |
| Driver's license for automobiles at a driving school                  | 1,200 to 1,850     | 650                                      | 0.16        |
| Home insurance policy for 90m <sup>2</sup> floor space, no deductible | 145 to 239         | 94                                       | 0.13        |
| Legal protection insurance                                            | 82 to 294          | 212                                      | 0.16        |
| Car repairs                                                           |                    |                                          | 1.02        |
| Painting                                                              | 108 to 131         | 23                                       |             |
| Auto body repairs                                                     | 94 to 127          | 33                                       |             |
| Mechanic work                                                         | 71 to 181          | 110                                      |             |
| Annual auto inspection                                                | 29.90 to 78        | 48                                       | n.a.        |

Source: Chamber of Labour, as at end-April 2008.

<sup>1</sup> Applies to standardized services; see <http://wien.arbeiterkammer.at/www-513.html> ("Konsument").

France is available for EUR 14.85 a month for a transfer rate of 16.6 Mbyte – in Austria, the same rate applies to a transfer rate of only 1 Mbyte. This corresponds to a quality-adjusted sixteen-fold price difference.<sup>44</sup> The traditional media could also be used to compare service prices, though. Overall, the goal could be to make price comparisons between services an automatic part of every buying decision, much as is often already the case for goods (see e.g. comparisons on [www.geizhals.at](http://www.geizhals.at)). But further analysis of the determinants of consumer behavior is required. It would be important to find out e.g. whether the typical features of Dutch, Danish and Swedish consumers – frequent complaints (see above), high switching rates, frequent use of search machines and the like – are coincidental or whether there are in fact underlying reasons.

**5.6 A List of Conclusions**

1. Cross-sectoral measures to intensify competition
  - 1.1 Improvement of data sources (corporate and industry data, use of scanner data)
  - 1.2 Intensification of competition: strengthening of the Federal Competition Authority, reform of market entry regulations, facilitation of competition
2. Retail trade
  - 2.1 Price monitoring taking into account possible counterproductive effects (facilitation of price collusion)
  - 2.2 Monitoring of profit margin developments by the Federal Competition Authority (requests for information, housesearches)
  - 2.3 Analysis of the concentration of stores in top locations (clothing and shoe stores)

<sup>44</sup> Source: [www.ariase.com/fr](http://www.ariase.com/fr) and Austrian Chamber of Labour; data were current at end-April 2008.

- 2.4 Prevention of local and regional concentrations through application of a new competition test: new outlets will only receive a license if they do not give a chain a market-dominant position.
- 2.5 Prescriptions for particular active ingredients in pharmacies or expansion of prescription drug sales e.g. to drugstores
- 3. Manufacturers and wholesalers
  - 3.1 Further analysis required (e.g. in the cement manufacturing industry)
  - 3.2 Push for termination of the milk quota system at the EU level and at the same time support for strategies to enable dairy farmers to adjust
  - 3.3 Keep an eye on inherent conflicts between goals, analysis of the impact of the increased use of biogenic energy sources
  - 3.4 Amendment of the legal basis for the levying of fees on garbage collection and sewage disposal with an eye to determining alternative sources of finance for municipal needs
- 4. Electricity and gas sector
  - 4.1 Support for an integrated European energy market
  - 4.2 Resolution of the conflicts of interest resulting from the tripartite role of the federal and provincial governments as owners (receivers of dividends), legislative authorities and supervisory authorities; consideration of unbundling of ownership
  - 4.3 Stepped-up thermal insulation work on old buildings and bringing forward of the requirement that new buildings conform to low energy standards
- 5. Greater focus on the service sector
  - 5.1 Sector surveys (competition monitoring on the basis of economic data) to identify sectors with a lack of competition (in cooperation with the European Commission), elaboration of reform proposals
  - 5.2 Enhancement of price transparency of services (fostering access to comparisons available on the Internet by promoting broadband Internet access)

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# Do Aggregate Demand Factors Influence Current Inflation Developments?

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*The relationship between inflation developments and aggregate demand is usually modeled with a Phillips curve. This study estimates the Phillips curve for Austria and, for the sake of comparison, for the euro area as well as for four euro area member countries. In order to test the robustness of our results, we estimate both the traditional and the New Keynesian Phillips Curve (NKPC) for the period from 1970 to 2007. We also investigate whether the relationship between economic activity and inflation has changed over time.*

*The results show that there was indeed a significant relationship between inflation and the output gap in most countries; but its coefficient diminished over the years, and became insignificant in almost all countries toward the end of the estimation period. Exceptions are Austria and the Netherlands: For these countries the estimates are not significant, and for Austria we get contradictory results. We can conclude from this and from the observation that the output gap in the countries under review is now slightly negative, or at best closed, that the current rise in inflation is not the result of an overheating economy.*

*JEL classification: E31*

*Keywords: demand-driven inflation, traditional Phillips curve, New Keynesian Phillips Curve*

The inflation rate in Austria has exceeded 3% since November 2007 ranking among the highest levels recorded since the high inflation years 1992–1993. In a series of articles, the Oesterreichische Nationalbank (OeNB) is now examining possible causes for the rise in inflation. This article deals with aggregate demand factors. We ask how the business cycle influences inflation dynamics in Austria in comparison to other euro area countries and to what extent aggregate demand factors affect current inflation. This study is structured as follows: Section 1 explains the Phillips curve framework, section 2 estimates the influence of the output gap on inflation and section 3 gives a summary and conclusions.

## 1 The Phillips Curve as an Explanatory Model for Demand-Driven Inflation

Economic activity can influence inflation developments through several channels. Higher consumer demand, stronger investment and an increase in government spending can all exert upward pressure on prices. Export demand is another source of such upward pressure, key factors being the exchange rate and price competitiveness. The output gap serves as a measure for excess demand from all these sources.<sup>2</sup> The relation between inflation developments and the output gap is known as the Phillips curve. In its original form the Phillips curve, which traces back to the New Zealand-born economist

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<sup>2</sup> *In theory, the output gap is defined as the difference between output in an economy with nominal rigidities and the hypothetical output that would be produced if all prices and wages were flexible. For empirical purposes, it is usually calculated as the difference between actual and potential output, which is generally proxied by trend output.*

A. W. Phillips (1958), was formulated as the relation between wage inflation and unemployment. However, in empirical applications it usually relates to the goods market. Thus, the Phillips curve is used to analyze the relationship between inflation and the output gap.

In its simplest form, the Phillips curve shows that inflation is a function of lagged inflation  $\pi_{t-1}$  and the current output gap  $y_t^*$ :

$$\pi_t = \alpha + \beta\pi_{t-1} + \kappa y_t^* \quad (1)$$

where  $\alpha$  is a constant and both  $\beta$  and  $\kappa$  represent the coefficients in the estimation. Lagged inflation is included in the equation because inflation developments show a certain persistence and the inflation rate of the preceding period often has strong explanatory power for the current inflation rate. In empirical applications, this dependence on the past inflationary development is modeled by including several (up to  $k$ ) lags of the rate of inflation. Moreover, we include  $l$  additional variables that contribute to increasing the explanatory power of the equation (e.g. oil prices, import prices), represented here by  $x_i$ :

$$\pi_t = \alpha + \sum_{i=1}^k \beta_i \pi_{t-i} + \kappa y_t^* + \sum_{i=1}^l \gamma_i x_i \quad (2)$$

In this study we estimate the Phillips curve to determine whether excess demand (as measured by the output gap) can explain inflation developments in Austria. In order to put these results in perspective, we also estimate the Phillips curve for the euro area and for some members of the euro area such as Germany, Italy, France and the Netherlands. The selection of countries was made, on one hand, by the availability

of suitable data and, on the other, by the relevance of each country as trade partner for Austria. Moreover, the Netherlands represents another small open economy which yields an interesting comparison with Austria.

The relationship presented in equations (1) and (2) is denoted as the traditional Phillips curve. This representation has been often criticized over the past 15 years. On one hand, the model lacks theoretical foundations, and empirically the relationship has either weakened or even completely ceased to exist in many countries since the mid-1980s.

Contributors to New Keynesian theory subsequently formulated a relationship between inflation and the real economy that became known as the New Keynesian Phillips Curve (NKPC):

$$\pi_t = E_t \beta \pi_{t+1} + \lambda mc_t \quad (3)$$

where the inflation-driving variables are the real marginal cost of production  $mc_t$  and expected next-period – rather than lagged – inflation ( $E_t$  represents the expectations operator at time  $t$ ). This form of the NKPC was introduced by Galí und Gertler (1999). Under certain assumptions, the NKPC could be written in a form that includes the output gap instead of marginal cost:<sup>3</sup>

$$\pi_t = E_t \beta \pi_{t+1} + \kappa y_t^* \quad (4)$$

where  $\beta$  and  $\kappa$  are proportional. Hence, the only difference between the New Keynesian and the traditional Phillips curve in equation (1) is that the former relies on expected rather than lagged inflation, to determine current inflation. However, the concepts differ fun-

<sup>3</sup> For a more extensive discussion on the background and derivation of the New Keynesian Phillips Curve, see Ruml (2006).

damentally as, in contrast to the traditional Phillips curve, the NKPC is based on theoretical microfoundations.

Even though, from a theoretical perspective, the NKPC describes a supply-side relationship between prices and production costs (the real marginal cost are in turn determined by factor prices such as wages and input costs), the formulation in terms of output gap is often used in practice to relate inflation to developments of the real economy, see Galí und Gertler (2007).

Since we have two empirical models for explaining demand-induced inflation, each of which has a different conceptual background, this study estimates both the traditional Phillips curve and the NKPC for the countries mentioned above. This approach takes into account model uncertainty and enables us to compare the results and the explanatory power of the traditional and the New Keynesian Phillips Curves, and – ideally – to draw robust conclusions.<sup>4</sup>

## 2 Declining Influence of the Output Gap on Inflation

This section first describes the data used for the analysis, then presents the estimations of both the traditional Phillips curve and the NKPC, and concludes by comparing and interpreting the results of both estimations.

### 2.1 Data

The estimations of both Phillips curve models rely on quarterly data. The estimated period for Austria runs from the first quarter of 1980 to the fourth quarter of 2007 (since national accounts data start in 1980), and for the remaining countries and the euro area from the first quarter of 1970 to the fourth quarter of 2007. The data on inflation (national CPIs) and GDP used in constructing the output gap are from the OECD Economic Outlook Database. The output gap is calculated as the deviation from the trend of real GDP, as filtered by a Hodrick-Prescott filter (HP filter) ( $\lambda = 1600$ ).<sup>5</sup> The GDP (ESA 95) data for Austria are from the Austrian Institute of Economic Research (WIFO). The import and export prices that are used as control variables in the traditional Phillips curve and as instrumental variables in the estimation of the New Keynesian Phillips Curve are also from the Economic Outlook Database and the commodity prices from the Hamburg Institute of International Economics,<sup>6</sup> while oil prices and exchange rates are taken from Datastream. All national accounts data are seasonally adjusted.

<sup>4</sup> A general objection to Phillips curve models frequently found in the literature is the possible endogeneity of the variables on the right-hand side of the equation; see e.g. Woodford (2003). The interaction of inflation and real economic activity has to be safely assumed in an interdependent economy, since monetary policy will ultimately respond to inflation developments. A way around this objection would be to estimate a multi-equation model in which the dependencies are explicitly modeled (e.g. in the form of a monetary rule). Since the estimation of such a multi-equation model would go beyond the scope of this study, the implicit assumption here – as in the whole Phillips curve literature – is that economic activity is exogenous for inflation.

<sup>5</sup> To avoid the well-known end-point problem of the HP filter, the calculation of the output gap includes forecasts up to the fourth quarter of 2009.

<sup>6</sup> Following the closure of the HWWA Institute at end-2006, the Hamburg Institute of International Economics continued the data series for various commodity prices. See: <http://hwwi-rohindex.org/>

## 2.2 Estimate of the Traditional Phillips Curve with Time-Varying Coefficients

This section examines whether and to what extent inflation in Austria, in the euro area as a whole and in four other members of the Economic and Monetary Union (EMU) is affected by their respective domestic output gap.

To test this hypothesis empirically, we use the Phillips curve described in section 1, which represents a reduced form model that sets inflation against a measure of excess demand and a measure of a foreign supply shock. The parameters of such a Phillips curve often show signs of instability (Lucas critique).<sup>7</sup> This study uses an estimation method for testing whether the relationship between the output gap and inflation changes over time. We are particularly interested in whether the latest increase in inflation has been caused by excess demand.

Chart 1 shows inflation and output gap developments in the past 37 years in the euro area and in the five member states in the sample. What stands out is that current inflation is still comparatively low in the context of this longer-term historical observation. The relationship between inflation and the output gap was relatively strong in some countries (euro area, the Netherlands, France and Italy) up to the mid-1980s, and in Germany and Austria up to the early 1990s, but weakened afterwards. The chart not only shows a decline in the inflation rate, which is, moreover, no longer in line with the evolution of the output gap, but also a decline in its volatility.

To test the hypothesis that this statistical relationship has changed over time, changes in the coefficients on the domestic output gap, on lagged inflation, and on imported inflation were included in the regression of inflation.

We used the following so-called state space model:

$$\pi_t = \beta_t^1 \pi_{t-1} + \beta_t^2 y_t^* + \beta_t^3 x_t + \varepsilon_t \quad (5)$$

where  $\beta_t^i = \beta_{t-1}^i + \mu_t^i; i = 1, 2, 3$

$\beta_t^i$  are the time-varying coefficients of lagged inflation, the domestic output gap and imported inflation, respectively. The latter is measured by the changes in oil prices; both inflation variables are the standardized fourth or first differences, depending on the country. The assumption underlying this model is that the time-varying coefficients  $\beta^i$  follow a random walk. The symbols  $\varepsilon_t$  and  $\mu_t^i$  represent the error terms, which are independent of each other.

In estimating the time-varying coefficients, we applied the Kalman filter, which estimates the coefficients  $\beta^i$  up to a certain point in time. After adding another observation, the coefficients are updated taking the new information into account. Chart 2 presents both the smoothed parameters and the associated confidence intervals; the parameters are optimized to incorporate the whole information available.<sup>8</sup>

The results confirm that the relationship between inflation and the domestic output gap in the euro area and in the five Member States has indeed changed over time. In view of the relatively long period of time and the many

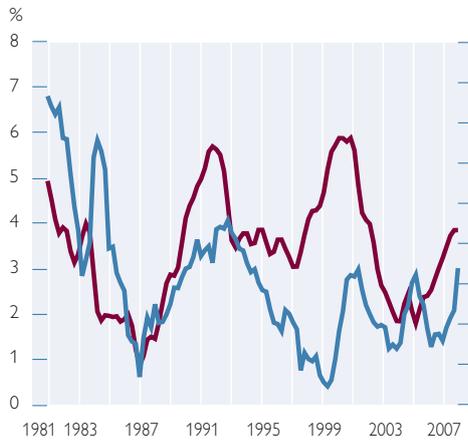
<sup>7</sup> The Lucas critique states that the structural relationships between the variables could have changed over time, see Turner (1997).

<sup>8</sup> See Zentrum für Europäische Wirtschaftsforschung (2001), among others, for a detailed explanation of the estimation method.

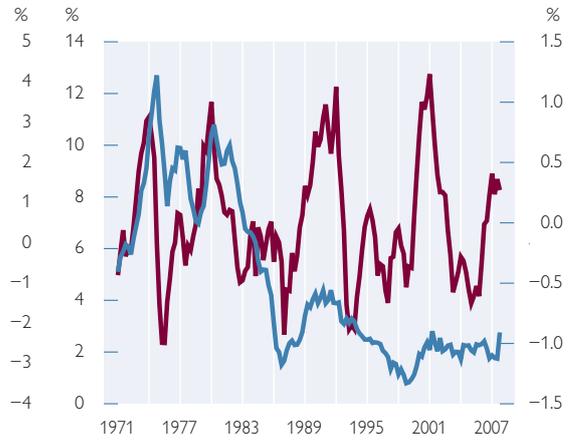
Chart 1

**Output Gap and Inflation**

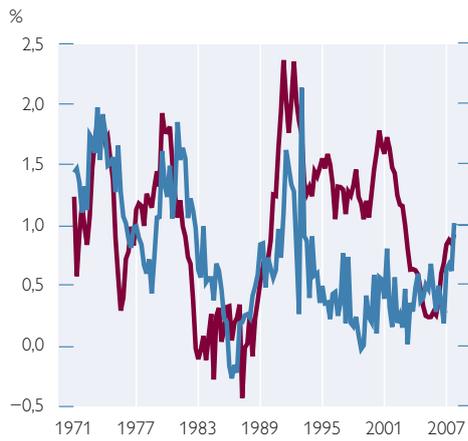
**Austria**



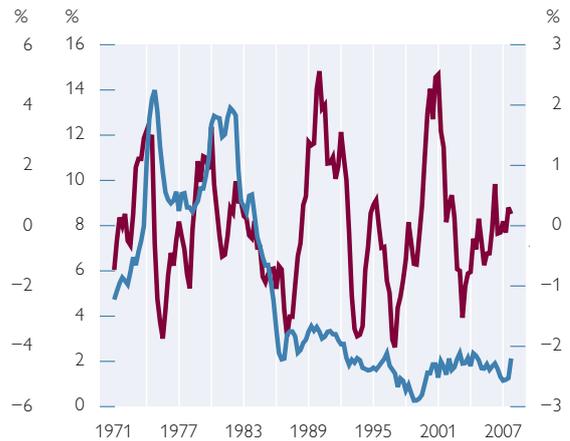
**Euro area**



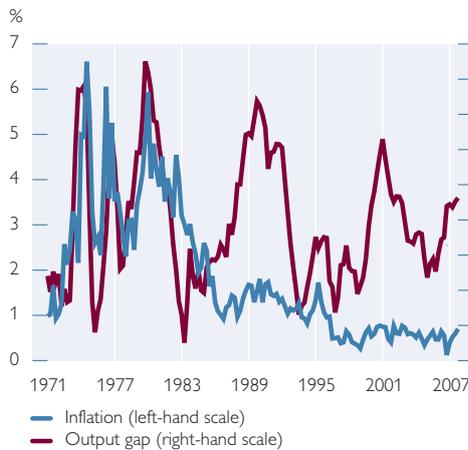
**Germany**



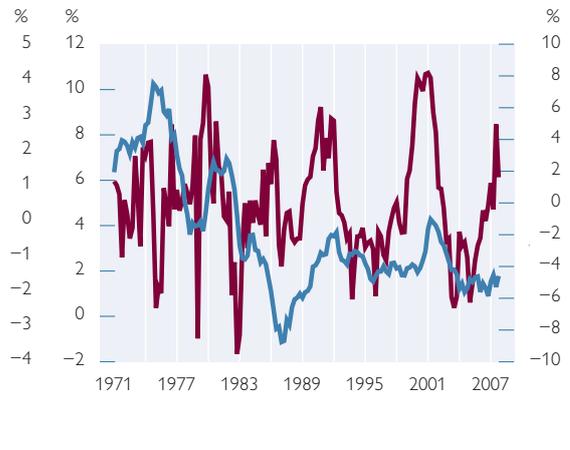
**France**



**Italy**



**Netherlands**



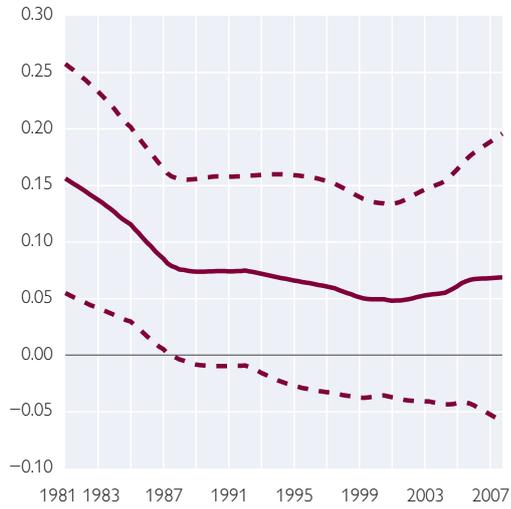
— Inflation (left-hand scale)  
— Output gap (right-hand scale)

Source: OECD, authors' calculations.

Chart 2

**Smoothed State Estimates for the Output Gap ( $\beta_2^2$ )**

**Austria**



**Euro area**



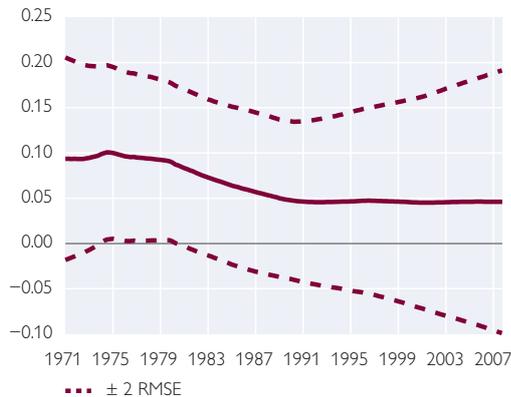
**Germany**



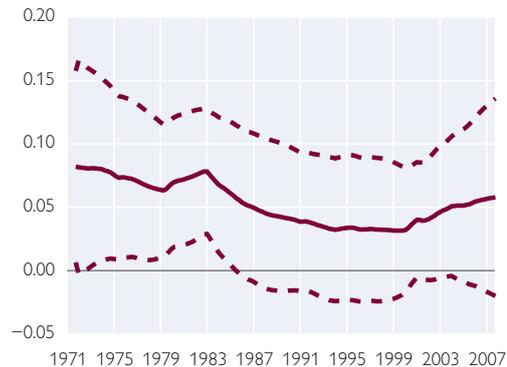
**France**



**Italy**



**Netherlands**



--- ± 2 RMSE

Source: OeNB, authors' calculations.

Note: RMSE stands for Root Mean Squared Error. The dashed lines represent the 95% confidence intervals of the estimated coefficients.

monetary policy regime changes in place in these countries during those years, such a result is not surprising.

While the output gap played a significant role in explaining inflation in all of the countries up to the early 1980s, its coefficient clearly fell in almost all countries and became completely insignificant toward the end of the period (except in the Netherlands). The most pronounced decline in the coefficient is seen in France and Germany, where this coefficient halved in the past 37 years.

In Austria the influence of the output gap on inflation fell sharply in the 1980s, with the coefficient almost halving over this decade. It continued to fall up to the beginning of 2000, but the trend reversed in 2004. The confidence intervals are, however, very wide so that, despite this small increase, the coefficient has been statistically insignificant since the early 1990s.

The development of the time-varying coefficients are very similar in almost all countries. Although the rise in the coefficients over the past five to seven years (in all countries besides Italy) is striking, they remained insignificant in all countries (with the exception of the Netherlands).

These results show that, toward the end of the reporting period, the domestic output gap does not seem to have a significant influence on inflation. The results are thus consistent with the analysis of chart 1, especially in the most recent period: Following a prolonged phase of lower growth rates, the output gap in the countries in the sample are closed, but only very recently. At the same time, however, in-

flation rates are at their highest since 1992. Thus, the hypothesis of a demand-driven inflation surge in the most recent past cannot be confirmed, neither on a descriptive level nor by the estimation results.

This result is also consistent with a series of studies that have found a worldwide change in the dynamics of inflation and real economic activity over time (Canova et al., 2006). This indicates that other factors (a change in the monetary policy regime, changes in inflation expectations or other variables that are not taken into account, such as the development of labor productivity, globalization etc.), have significantly stronger effects on inflation.<sup>9</sup>

### 2.3 Estimation of the New Keynesian Phillips Curve

The NKPC assumes that firms set prices in a forward-looking manner. They take into account future inflation and production costs in their decision. In empirical applications, future inflation is assumed to be based on rational expectations. This enables us to include the realized future inflation rate in the equation, which is then estimated with Generalized Method of Moments (GMM).<sup>10</sup>

The equation, which is estimated for the same data of the six economies and the same period as the traditional Phillips curve, is:

$$\pi_t = E_t \beta \pi_{t+1} + \kappa y_t^* + \varepsilon_t \quad (6)$$

We also estimate the equation for two subsamples, so that we can explore whether the relationship between inflation and the output gap in the individual countries varies over time.<sup>11</sup> A com-

<sup>9</sup> See both Gnan and Valderrama (2006) and Glatzer et al. (2006).

<sup>10</sup> For a detailed explanation of the GMM estimation method, see Verbeek (2000).

<sup>11</sup> An estimation with time-varying coefficients is very difficult to implement in the Generalized Method of Moments.

Table 1

**Estimation of the NKPC Coefficients for the Entire Estimation Period**

Dependent variable: quarter-on-quarter CPI inflation

|             | $\hat{\beta}$   | $\hat{\kappa}$ | J-Test      |
|-------------|-----------------|----------------|-------------|
| Austria     | 0.93*** (18.04) | 0.03 (1.38)    | 0.13 (0.42) |
| Euro area   | 0.98*** (77.40) | 0.01 (0.57)    | 0.12 (0.20) |
| Germany     | 0.99*** (39.39) | 0.05* (1.78)   | 0.09 (0.31) |
| France      | 0.99*** (51.02) | 0.13** (2.27)  | 0.10 (0.18) |
| Italy       | 0.99*** (52.60) | 0.11** (2.31)  | 0.08 (0.25) |
| Netherlands | 0.97*** (32.20) | 0.01 (0.44)    | 0.11 (0.15) |

Instrumental variables for Austria: Inflation rate lags 1–6, output gap lags 1–6, change in EUR/USD exchange rate lags 1–4

Instrumental variables for the euro area: Inflation rate lags 1–6, output gap lags 1–4, change in EUR/USD exchange rate lags 1–6

Instrumental variables for Germany: Inflation rate lags 1–6, output gap lags 1–4, change in commodity prices lags 1–4

Instrumental variables for France: Inflation rate lags 1–4, output gap lags 1–6, change in terms of trade lags 1–4

Instrumental variables for Italy: Inflation rate lags 1–4, output gap lags 1–4, change in terms of trade lags 1–4

Instrumental variables for the Netherlands: Inflation rate lags 1–6, output gap lags 1–4, change in EUR/USD exchange rate lags 1–4

Source: Authors' calculations.

Note: The estimation method is GMM. The t-values are shown in parentheses. The estimation period is Q1 1970 to Q4 2007, for Austria Q1 1980 to Q4 2007. \* indicates the significance of the coefficient at the 10% significance level, \*\* at the 5% significance level and \*\*\* at the 1% significance level.

parison of the results for both periods shows a possible variation in the relationship postulated by the NKPC. The breakpoint of the total period (in both subsamples) was determined by means of the structural changes in the individual countries visible in chart 2 as well as with the help of a structural break test. This evidence reveals that a structural break in the Phillips curve relationship occurred in most countries between 1987 and the early 1990s. We chose 1987 as the split points of the subsamples for all countries apart from Germany and Austria. Thus, in addition to the entire period, the equation is estimated separately for the first quarter of 1970 up to the fourth quarter of 1986 and for the first quarter of 1987 to the fourth quarter of 2007. For Germany, the breakpoint was selected to coincide with the German reunification in 1991. We selected that year as the breakpoint for Austria too, in view of the later start of data (1980) and Austria's close ties with Germany.

The results in table 1 show plausible  $\beta$ -values for all countries. In the theoretical model,  $\beta$  denotes the discount factor applied to future profits of firms. The value should accordingly be close to but below 1. When calibrating the (quarterly) model, a value of 0.99 is often assumed for the discount factor, since this corresponds to an equilibrium real interest rate of 4% per annum. For all countries but Austria, the results in this study are in line with this value, which is often used in the literature.

However, the estimated coefficient of excess demand,  $\kappa$ , has greater bearing on our research question. The output gap for Germany, France and Italy appears to be significant in explaining inflation developments, whereas those for Austria, the Netherlands and the euro area are not. With regard to scale, the estimated values for France and Italy are comparable to those of the traditional Phillips curve in section 2.2. But those for the other countries fall short of the results in the previous section, in some cases by a large margin.

The J test assesses the validity of the instrumental variables used. To be precise, the test checks whether the moment conditions of the GMM estimations are satisfied, i.e. whether the instruments are orthogonal to the residuals. The values listed in the last column are the values of the J test and, in brackets, the p-values under the null hypothesis that the moment conditions are satisfied. (A p-value below 0.1 would indicate that the applied instruments were inadmissible.) In all cases, the J test shows that the applied instrumental variables are indeed valid.

The result that the output gap is not significant in explaining inflation developments is not new in the literature. In many newer estimations of the NKPC, researchers hence use proxy variables other than the output gap for the real marginal costs (such variables can, however, no longer be interpreted

as demand variables). Galí and Gertler (1999) for instance use real unit labor cost instead of the output gap. In the literature on the traditional Phillips curve, this observation led to a discussion on the influence of global factors (globalization) on inflation developments<sup>12</sup>. Indeed, if we look at this sample excluding the euro area, the output gap does not help to explain inflation developments in Austria and the Netherlands, which as smaller and more open economies are most affected by globalization.<sup>13</sup>

The results presented in table 2 provide an approximate answer to the question whether the explanatory power of the output gap, and so the influence of excess demand on inflation in the context of the NKPC, has changed over time. The upper section sets out the results for the first subsample (1970–1986, for Austria and

Table 2

### Estimation of NKPC Coefficients for Different Subsamples

Dependent variable: quarter-on-quarter CPI inflation

|                                                                                                   | $\hat{\beta}$    | $\hat{\kappa}$ | J-Test <sup>1</sup> |
|---------------------------------------------------------------------------------------------------|------------------|----------------|---------------------|
| <b>Estimation period Q1 1970–Q4 1986, for Austria Q1 1980–Q4 1990 and Germany Q1 1970–Q4 1990</b> |                  |                |                     |
| Austria                                                                                           | 0.91*** (15.49)  | 0.06 (1.16)    | 0.23 (0.79)         |
| Euro area                                                                                         | 0.97*** (101.96) | 0.07*** (2.91) | 0.20 (0.52)         |
| Germany                                                                                           | 0.99*** (41.46)  | 0.06* (1.99)   | 0.10 (0.77)         |
| France                                                                                            | 0.99*** (59.59)  | 0.04* (1.66)   | 0.12 (0.67)         |
| Italy                                                                                             | 0.99*** (39.62)  | 0.10*** (3.10) | 0.11 (0.62)         |
| Netherlands                                                                                       | 0.99*** (40.96)  | 0.08 (0.74)    | 0.17 (0.51)         |
| <b>Estimation period Q1 1987–Q4 2007, for Austria and Germany Q1 1991–Q4 2007</b>                 |                  |                |                     |
| Austria                                                                                           | 0.96*** (27.30)  | 0.09*** (4.71) | 0.21 (0.39)         |
| Euro area                                                                                         | 0.99*** (41.83)  | 0.01 (0.56)    | 0.15 (0.50)         |
| Germany                                                                                           | 0.91*** (19.50)  | 0.02 (0.44)    | 0.19 (0.33)         |
| France                                                                                            | 0.94*** (25.77)  | 0.06*** (3.13) | 0.12 (0.62)         |
| Italy                                                                                             | 0.98*** (67.84)  | 0.05*** (3.04) | 0.12 (0.37)         |
| Netherlands                                                                                       | 0.95*** (27.39)  | 0.002 (0.19)   | 0.18 (0.18)         |

Instrumental variables: See table 1.

Source: Authors' calculations.

Note: The estimation method is GMM. \* indicates the significance of the coefficient at the 10% significance level, \*\* at the 5% significance level and \*\*\* at the 1% significance level.

<sup>1</sup> A p-value below 0.1 (in parentheses) would indicate that the used instruments are not valid.

<sup>12</sup> For an overview of the relevant literature and a corresponding estimation, see Gnan und Valderrama (2006).

<sup>13</sup> An estimation of the New Keynesian Phillips Curve with real unit labor cost as a proxy for marginal cost and for open economies would go beyond the scope of this study. See Ruml (2007) for both.

Germany up to 1990) and the lower section the second subsample.

For the euro area and for Germany, the results show that the explanatory power of the output gap has declined over the past 37 years: it was indeed significant in the first subsample but no longer in the second subsample. For France and Italy, the output gap remains significant in both subsamples while for the Netherlands it is insignificant in both subsamples. Austria is the only country to show the opposite: the output gap in the first subsample has no significant effect on inflation developments whereas it becomes significant in the second subsample. This suggests that excess demand is becoming more important for explaining inflation in Austria.

#### 2.4 Comparison and Interpretation of the Results of both Phillips Curves

While the results of the estimation of the traditional Phillips curve with time-varying coefficients reveal a more or less unified picture for all countries, in which the output gap loses significance in explaining inflation over time and has recently become insignificant, the results for the NKPC are diverging. Whereas the coefficient for Austria actually increases over time, it barely changes for France, and gradually decreases in the case of the other countries and the euro area and, contrary to the results of the traditional Phillips curve, remains significant for Italy. In establishing that the output gap becomes less significant in explaining inflation over time, the results of both estimation methods are thus at least qualitatively similar for all countries apart from Austria and France.

Although the different estimation methods preclude a direct comparison of the values, the results show similar values for the coefficients of the output gap (chart 3).

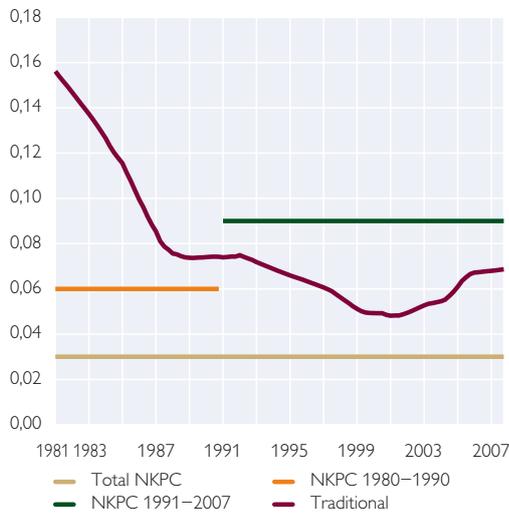
The results for Austria were in part contradictory. Whereas the result of the traditional Phillips curve (chart 2) suggests that the output gap has lost its explanatory power, the results of the NKPC show that the explanatory power of the output gap is extremely low if the time period is not split. However, if the estimation is divided into two periods, the results for the second subsample show that the output gap makes a stronger (coefficient of 0.09) and significant contribution to explaining Austrian inflation, which contrasts with the results of the traditional Phillips curve.<sup>14</sup>

Both estimation methods yield very similar results for the euro area. In the early 1970s the output gap played a major role in explaining inflation with a coefficient of 0.07 (for both estimation methods). This coefficient subsequently declined and is now insignificant, suggesting that the output gap is no longer relevant in explaining inflation. This also has implications for monetary policy. The recent empirical finding that the link between the domestic output gap and inflation has weakened suggests that cyclical fluctuations have less bearing than before on deviations of inflation from the price stability objective. This simultaneously erodes the influence of monetary policy on inflation through the traditional demand channel, making it more difficult to bring inflation back on target once it has deviated from the price stability objective. However, this is not to say that monetary policy has generally become

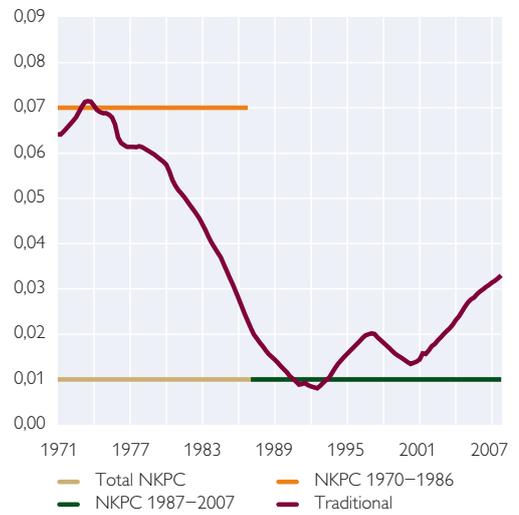
<sup>14</sup> It should be noted, however, that the relatively short estimation period for the first subsample for Austria (first quarter of 1980 to fourth quarter of 1990) may have a negative effect on the significance of the estimated coefficients.

**Comparison of the Estimated Coefficients of the Output Gap of the Traditional and the New Keynesian Phillips Curves**

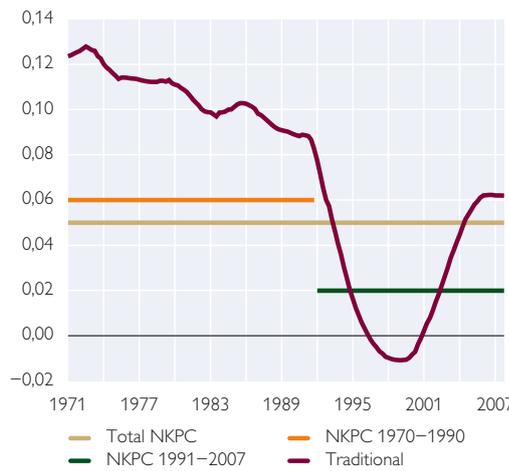
**Austria**



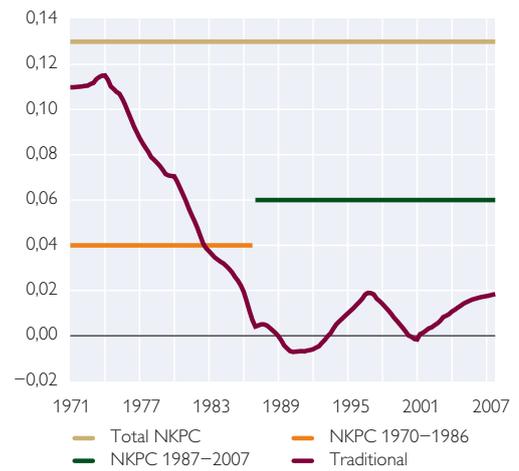
**Euro area**



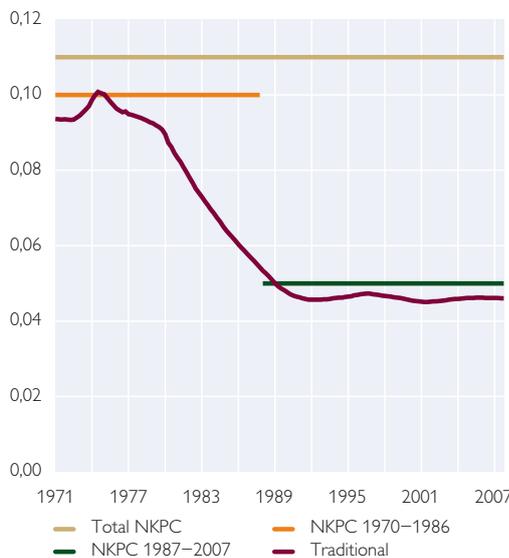
**Germany**



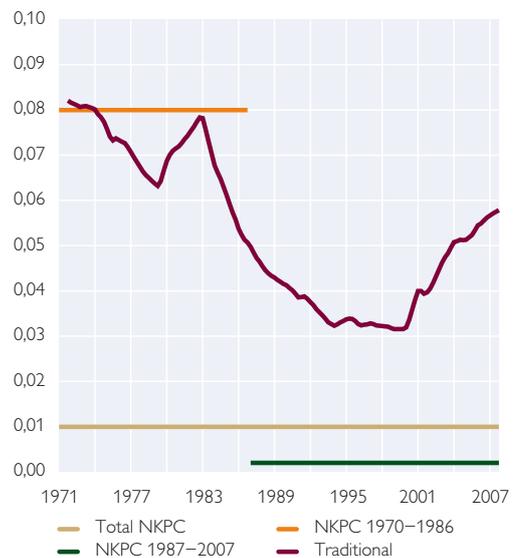
**France**



**Italy**



**Netherlands**



Source: OeNB, authors' calculations.

Note: NKPC= New Keynesian Phillips Curve.

less effective over time, but that the effectiveness of monetary policy now relies more heavily on channels other than the traditional interest rate channel, for example the credit or the expectation channels.

### 3 Summary

Inflation has often been in the headlines since its steep rise in Austria over recent months. As part of an OeNB series devoted to inflationary developments, this study explores the influence of aggregate demand on inflation in Austria, in the euro area and in four other EMU member states (Germany, France, Italy and the Netherlands).

At first sight, the evolution of the inflation rate and the output gap in the past 37 years shows that up to the mid-1980s for most countries in the sample, and up to the early 1990s for Austria and Germany a strong link between these measures existed. This link became weaker afterwards. In the current phase of the business cycle it is hence difficult to argue that the present rise in inflation is caused by an overheating economy. In Austria, too, an above-average rise in inflation cannot be attributed to above-average real economic activity.

In order to formally test this statement, we estimated two Phillips curves in this study. The results show that, over time, the coefficients of both the traditional Phillips curve and the NKPC have changed for the euro area, Germany, Italy and the Netherlands. The output gap was significant in explaining inflation in the early 1970s and up to the mid-1980s. Its influence on inflation diminished, becoming finally insignificant. For Austria the two models show contradictory results: While according to the traditional Phillips curve, the output gap has no longer been significant in explaining inflation

since the early 1990s, the estimation of the NKPC shows that the link has actually strengthened over time.

Studies that use the output gap as an explanatory variable for inflation are often criticized for the poor quality of output-gap data. Moreover, a frequent critique is whether such findings are of any use at all for monetary policy, since the data are only available with a lag and are often revised. Many argue that a monetary policy response to false estimations of the output gap could further undermine the relationship between the output gap and inflation.

But these results do not rule out the impact of international shocks – through production costs (oil and food prices, etc.) – on domestic inflation. One way of testing this hypothesis would be to include a foreign or global output gap in the regression. That is not really feasible, however, given the correlation among business cycles and the measurement errors in the foreign or global output gap (Gnan and Valderrama, 2006).

Nonetheless, the findings of this study have important implications for monetary policy. The weaker relationship between inflation and aggregate demand implies that it will be more difficult for monetary policy to bring inflation under control by reducing demand once inflation or inflation expectations have risen. The effectiveness of monetary policy thus depends more heavily on channels other than the traditional interest rate channel, for example the credit channel and the expectations channel.

For monetary policy, this implies that more attention should be paid to other indicators besides domestic economic activity, which represent other transmission channels (e.g. credit growth, inflation expectations and supply factors).

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# Stock Holdings in Austria

Based on micro data, this study reviews the stock holdings of Austrian households. Stock investment is not widely spread in Austria, and those stock holdings that do exist are concentrated among wealthy, high-income households. This finding from the OeNB's Survey on Financial Household Wealth (SFHW) ties in with available international data.

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JEL classification: D31, E2, G11, H31

Keywords: portfolio choice, wealth, incomplete portfolios, diversification

## 1 Introduction

By international comparison, the stock holdings of Austrian households are relatively moderate. Does the current structure of household financial wealth point to a strong desire for investment security, and does the low capital market participation rate reflect Austrians' conservative investment strategy? As the Deutsche Bundesbank had already observed in early 1997, a strong interest in stock investment might be interpreted as a sign of a markedly positive attitude toward risk-taking. So does this mean that Austrian investors tend to be rather risk-averse, trying to avoid the risk involved in holding stocks?

In a discussion with Werner Kretschmer, Member of the Management Board of Bank Austria Creditanstalt (BA-CA), former Austrian Federal Minister of Finance Ferdinand Lacina explained why he himself did not hold stocks: *"I don't want to be bothered with financial investment issues. Constantly observing stock price developments is simply too inconvenient. Personally, I prefer savings books – they are much more convenient."* (Lacina, 2008). So far, economic research has hardly dealt with this – presumably widespread – aversion against spending too much time on money matters. Theoretical literature focuses primarily on trying to understand rational optimizing actions taken by individuals. It is not

possible, however, to confirm or reject rational utility maximization strategies in economic models on the basis of empirical data on financial decisions, because important risk-related information is typically not available.

The fact that some portfolios exhibit a very low degree of diversification and strongly concentrate on classical forms of investment might, at first sight, indicate that these investors' risk aversion is high. Another interpretation, however, might be that the key determinants in this case are investors' insufficient financial education, their low saving capacity, a lack of stock market transparency or high entry and information costs. Moreover, depending on investors' personal circumstances – even if we assume identical preferences – making risky investments may sometimes be rational and sometimes not. It depends on a number of individual and social uncertainties (job, health, pension, etc.).

In the debate on the relative merits of a market-based and a bank-based financial system, the current literature does not identify one of the two systems as being superior in term of its influence on economic growth (Mooslechner, 2003). What is important in this context is the general level of financial sector development. Developed financial markets have a positive impact on macroeconomic performance.<sup>2</sup>

<sup>1</sup> The authors wish to thank Peter Mooslechner, Vanessa Redak, Lukas Reiss, Alfred Stiglbauer, Karin Wagner and Thomas Zotter for valuable suggestions and discussions. [pirmin.fessler@oebn.at](mailto:pirmin.fessler@oebn.at) and [martin.schuerz@oebn.at](mailto:martin.schuerz@oebn.at).

<sup>2</sup> For details on this topic, see the special issue of the OeNB's Focus on Austria 1/2003 entitled "Finance for Growth" ([www.oebn.at/en/img/foa\\_20031\\_tcm16-8299.pdf](http://www.oebn.at/en/img/foa_20031_tcm16-8299.pdf)).

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Hahn (2002) examined the linkage between financial development and business cycle fluctuations in 22 OECD countries over the period from 1970 to 2000, with a particular focus on the role financial development plays in the propagation of real and monetary shocks. Hahn's analyses show that both market-based and bank-based financial systems magnify monetary shocks and dampen real shocks. Interestingly, his results indicate that stock markets have a destabilizing effect on the business cycle.

The recent global financial turmoil has also left its mark on Austrian households's financial assets. Given that only few Austrian households actually hold stocks and that these holdings are concentrated among wealthy households, however, the related risks to financial stability are comparably low.

Financial wealth provides security and offers a wide range of possibilities. It has different functions for different people, depending in particular on the level of their income and financial wealth. While the less wealthy tend to focus on saving "for a rainy day," i.e. to make provisions for eventualities, it is aspects of inheritance, power and status that determine wealth accumulation for richer people (Schürz, 2008). When it comes to exploring the relation between risk-orientation and stock holdings, we may therefore not generalize (*Are Austrians risk-oriented?*). Rather, this relation has to be analyzed on the basis of social differentiation. The composition of a portfolio as such cannot be the single basis for drawing conclusions regarding the investor's risk-orientation – that is, if we are to understand the term as meaning more than just the willingness to bear financial risk with regard to one's disposable financial assets.

In general, risk is considered to be something disagreeable against which individuals try to protect themselves. In a stock exchange context, however, the term is reinterpreted and primarily associated with the chance to become rich. Financial advisors tend to see risk orientation as a value in itself and complain that even wealthy customers lack this value. In this discussion, however, it is important to distinguish between the terms risk, uncertainty and danger. To illustrate the differences, Wolfgang Bonß chooses a very colorful historic example in his book *Vom Risiko*: "While in former times sea-faring was risky for merchants, it was dangerous for sailors." Knowing people's precise personal circumstances and prospects is indispensable when it comes to assessing their willingness to take on risk. If we want to determine the actual risk a household faces at a precise moment in time, we must take into account aspects such as income (in)security, housing situation and health as well as the future security of public pension provision (for old age, work incapacity, etc.). In most cases, there are no empirical data on these issues.

In many OECD countries, economic policy focuses on privatizing collective social security systems – a move which entails new risks, dangers and uncertainties (Hacker, 2007). A public pay-as-you-go pension system means that the associated risk is borne collectively, while in private, funded pension systems risk is transferred to the individual insurance holders. In general, a restructuring of the pension system that relies on enforcement of individual old-age financial provisioning drives up the level of (direct or indirect) stock exchange participation. Economic policy agents tend to suggest

that public pension systems are no longer affordable.<sup>3</sup> Once people begin to believe in this hypothesis, there appear to be only two alternatives: Either they accept the danger that, in old age, they might be poor and have only insufficient security coverage in case of illness or they turn these dangers into manageable risks by making individual provisions. The latter option would imply that uncertainty triggers capital market participation.

In section 2, this study gives a brief overview of the relevant literature, while section 3 provides descriptive statistics on Austrian holdings of risky assets. Section 4 presents an international comparison and analyzes the importance of risky assets in households' portfolios. Section 5 analyzes the motives for holding risky assets and the corresponding investment behavior. With the aim of examining the determinants of stock holdings more closely, section 6 provides a logit estimation. Section 7 concludes.

## 2 Literature Overview

In his literature survey on "Household Finance," Campbell (2006) stresses that a small group of wealthy persons may distort the information value of macroeconomic data if the wealthy exhibit an investment behavior that deviates from the average. He concludes that wealthy people are much rather willing to take on financial risks and therefore make more investments in stocks.

Benartzi and Thaler (2001) provide empirical evidence for the hypothesis that households' portfolio decisions are by far less rational and future-oriented than economic theory might suggest. In particular, they underpin their pro-

position that investors typically pursue a *1/n strategy* with regard to their defined contribution plans – i.e. the contributions paid are equally distributed across the funds covered by the savings plan. This means that the extent of stock holdings not only depends on individual investment behavior, but also on the behavior of the financial service provider.

The literature gives a number of different explanations for why households might opt for portfolios that deviate from what is considered an efficient household portfolio. The most prominent explanatory factors are lack of confidence, a low level of investor protection and insufficient financial education (Guiso et al., 2005). Guiso et al. (2002) review the theoretical literature on optimum portfolio composition. Focusing on five OECD countries (the U.S.A., Germany, Italy, the U.K. and the Netherlands), the authors show empirically that investment in risky assets goes up hand in hand with financial wealth. Basically, small investors' possibilities of diversifying their stock portfolios are rather limited. As their volume of securities is usually relatively small, a diversification of stock holdings is only possible within tight limits. Moreover, for them, entry costs are a higher barrier than for wealthier investors (Guiso et al., 2002). King and Leape (1987) assume that people's readiness to hold risky assets also depends on their age, arguing that older people have acquired more know-how on stock prices, dividends and risks in the course of their lives. Surprisingly often, however, empirical data show that the relation between investment decisions and investors' age is relatively weak (Guiso and Japelli, 2002).

<sup>3</sup> According to Austria's government representative for the capital market Richard Schenz (2003), the majority of the population knows that the public pension system as we know it can no longer be financed.

The standard portfolio theory suggests that investors hold a combination of a “riskless asset” and a “market” portfolio, i.e. an optimal composition of risky assets (Gollier, 2002). The share of assets held in the market portfolio depends on the degree of risk aversion. According to this theory, every household should in fact hold risky assets. However, this is not the case. In fact, the share of households that have invested at least part of their financial assets in risky assets continues to be rather low in many countries. On the basis of data from 150 countries, Honohan (2006) shows that the share of risky assets in households’ total financial assets is highly concentrated and negligible for all the groups except the 5% most wealthy households.

Economic literature frequently uses the share of risky assets in investors’ portfolio as a measure of risk aversion. The term risky assets itself is problematic, as any type of investment is in fact risky. In general, however, stocks, mutual fund shares and bonds qualify as risky assets.<sup>4</sup> Stocks also include equity-like securities such as dividend-right certificates and participation certificates. Mutual fund shares comprise shares in equity funds, bond funds and mixed funds as well as in real estate, hedge and money market funds. Bonds constitute a very broad investment category, comprising bank bonds, government bonds, corporate and housing bonds, mortgage bonds and municipal bonds, federal treasury bills, foreign government bonds, deposit certificates and other bonds. The definition of risky assets is rather imprecise in particular with respect to bonds, as tradeable bonds range all the way from safe – e.g.

the short-term government bonds of an OECD country – to risky. This is why the values indicated for risky assets in this study must be interpreted as the upper limit of risky asset holdings.

The analysis of household portfolios needs to take account of a broader range of investment instruments than that of corporate portfolios. Households for example often consider relatively liquid forms of saving, such as savings books, to be long-term investments.

### 3 Austrian Households’ Investment Behavior

Data from the OeNB’s Financial Accounts impressively illustrate the rising importance of financial assets in Austria (chart 1). Moreover, microdata serve as a basis for analyzing, in greater detail, the structure of financial assets and the decision-making process regarding capital market participation.

The OeNB’s Survey on Financial Household Wealth 2004 (SFHW) provides detailed microeconomic data on the financial portfolios of Austrian households (Beer et al., 2006). The survey also covered a number of questions regarding people’s attitude to financial topics and their respective behavior (Fessler et al., 2007).

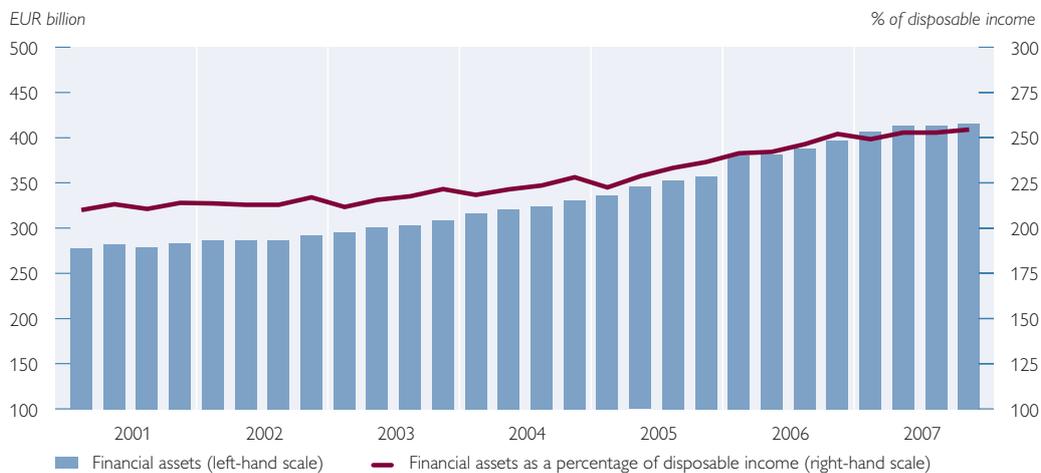
All in all, capital market participation is relatively low in Austria. According to the OeNB survey, 26% of Austrian households hold stocks and/or mutual fund shares and/or bonds, i.e. at least one risky asset.<sup>5</sup> It can be assumed that in the survey households sometimes, by mistake, qualified holdings of mutual fund shares as stock holdings. It is therefore difficult to separate these components, but such a separation is not relevant when analyzing

<sup>4</sup> This study applies the Luxembourg Wealth Study definition, according to which risky assets (RA) = stocks (ST) + total mutual funds (TM) + total bonds (TB).

<sup>5</sup> The corresponding survey weights for Austria were used for all data from the OeNB’s SFHW 2004.

Chart 1

### Gross Financial Assets of Austrian Households



Source: Statistics Austria, OeNB.

risk and the holding of risky assets as we do in this study.<sup>6</sup>

For quite a while, Austrian economic policy has been trying to promote stocks as an alternative to other types of investment such as building loan contracts. To enhance the acceptance of stocks as an investment instrument among the population and establish an equity culture, a number of measures have been taken, ranging from appointing a capital market representative to launching initiatives via the “Aktienforum” platform to reducing the tax rate on new shares and introducing pension products based on subsidized premiums (Schenz, 2003). In Austria, people’s awareness for stocks has increased over the last few years, which was probably attributable to the privatization of state-owned enterprises and the advertising activities of various public and private agents. The fact that 47% of respondents agreed to the statement “*It is easier to build financial wealth with stocks than with traditional savings*

*books/types of savings.*” provides impressive evidence that stocks are relatively broadly accepted as an investment instrument.

The daily coverage of current stock price developments in the media appears to have increased people’s familiarity with stock exchange issues, even among those who continue to invest exclusively in savings books, building loan contracts and life insurance policies. However, higher acceptance and the establishment of an equity culture are obviously not the key to making people invest in stocks. The broad acceptance indicated by our survey results might be traceable to the fact that respondents tend to give the answer they assume the interviewer wants to hear. In most cases, the fact that people appear to accept stocks as a means to build financial wealth has so far not been incentive enough for them to invest in stocks: only 16% of respondents claim to actually hold stocks themselves. This highlights a central finding

<sup>6</sup> Stocks may e.g. be interpreted as being mutual fund shares incorporating only one asset. As bonds are also taken into consideration here, participation rates with respect to risky investments tend to be overestimated rather than underestimated.

of empirical studies in behavioral economics that analyze financial education: People may consider a certain behavior generally adequate, but may still postpone any corresponding changes in their own actual behavior (Benartzi and Thaler, 2001). Moreover, certain attitudes toward financial issues and acquired financial know-how do not automatically prompt a specific financial behavior (Schürz and Weber, 2008).

When asked why they did not hold stocks, only respondents with higher income or wealthy respondents claimed that negative risk considerations were an issue. 69% of the lowest income group stated that they simply could not afford this type of investment, while – as expected – nobody in the highest income group (with a household income of above EUR 3,000) quoted a lack of resources as the reason for not holding stocks. In general, at least in people's perception, the fact that entry costs might be too high appears to be only of little importance. This factor is hardly more important for less wealthy groups than for wealthier households.

In particular, wealthy investors who in general have more possibilities (based on their income, job security, health status, etc.) make comparably higher investments in stocks.<sup>7</sup> Holders of risky assets have a higher income, a higher level of education and more financial assets. This is not surprising as, compared with other groups, they are exposed to fewer risks in other areas. Moreover, the pressure of having to sell risky assets when the stock market situation is unfavorable is lower for them, as they have additional resources of

financial wealth and income they can fall back on. Households that hold risky assets also engage in other, safe forms of saving. Almost all Austrian households claim to have a building loan contract or life insurance.

When interpreting the answers to the question “*Have you suffered price losses?*” one must bear in mind that the probability of such losses increases with the duration of the exposure and the diversification of the stock portfolio. Since a diversified stock portfolio corresponds to higher financial wealth, it is not surprising that wealthy stockholders record price losses more often. It is interesting, however, that price losses do not differ substantially in relation to stockholders' level of education or their age. Austrian stockholders perceive the ups and downs of stock prices as inevitable characteristics of stock holdings. Only a small proportion (18%) of stockholders think price losses are attributable to their own wrong investment decisions.

Insufficient portfolio diversification is often discussed in the literature. Table 1 shows that investments in the first and tenth wealth deciles in Austria differ considerably. While in the first decile, the percentage share of financial assets held in checking accounts is comparatively high and the major forms of investment are savings books, building loan contracts and life insurance policies, portfolios in the top decile are strongly diversified. While net financial assets<sup>8</sup> of the first decile are, on average, negative at EUR 8,000, they are positive for the uppermost decile at EUR 287,000.

<sup>7</sup> In the literature, this phenomenon is referred to as “background risks” (Cucurucu et al., 2004; Guiso and Paiella, 2001).

<sup>8</sup> Net financial assets are defined as gross financial assets less consumer loans.

Table 1

**Average Share of Investment Products in Gross Financial Assets**

|                             | Checking accounts | Saving plans (excluding building loan contracts) | Building loan contracts | Total of premium payments effected for life insurance | Mutual fund shares | Bonds | Stocks | Equity investments | Average net financial assets (NFA) |
|-----------------------------|-------------------|--------------------------------------------------|-------------------------|-------------------------------------------------------|--------------------|-------|--------|--------------------|------------------------------------|
|                             | %                 |                                                  |                         |                                                       |                    |       |        |                    | EUR                                |
| 1 <sup>st</sup> decile NFA  | 36.3              | 31.0                                             | 14.0                    | 16.7                                                  | 1.1                | 0.0   | 0.8    | 0.1                | -8,031                             |
| 5 <sup>th</sup> decile NFA  | 8.2               | 49.4                                             | 19.9                    | 18.4                                                  | 1.1                | 1.0   | 2.0    | 0.1                | 18,317                             |
| 10 <sup>th</sup> decile NFA | 1.3               | 46.4                                             | 5.9                     | 13.1                                                  | 7.1                | 9.3   | 10.9   | 5.8                | 287,003                            |

Source: The OeNB's SFHW 2004, calculated on the basis of individual households, all households.

Increasing financial wealth goes hand in hand with a strong rise in the capital market participation rate (table 2). While in the lowest wealth decile, only 2% of households hold risky assets, the comparable figure for the highest wealth decile is 81%.<sup>9</sup> In the uppermost wealth decile, the increase in participation is particularly strong.

Table 2

**Breakdown of Risky Assets by Gross Financial Assets**

| Wealth deciles | Share of households holding risky assets |
|----------------|------------------------------------------|
|                | %                                        |
| Decile 1       | 2                                        |
| Decile 2       | 7                                        |
| Decile 3       | 5                                        |
| Decile 4       | 9                                        |
| Decile 5       | 18                                       |
| Decile 6       | 20                                       |
| Decile 7       | 29                                       |
| Decile 8       | 34                                       |
| Decile 9       | 52                                       |
| Decile 10      | 81                                       |

Source: The OeNB's SFHW 2004.

The level of capital market participation can be analyzed with respect to a number of socioeconomic characteristics. Aside from household wealth, this study focuses on occupation, education and income (table 3).

Holdings of risky assets differ considerably across professional groups. Blue collar workers e.g. have a significantly<sup>10</sup> lower capital market participation rate than entrepreneurs, white collar workers or civil servants. The relatively high level of stock holdings recorded for civil servants – a professional group that is thought to be rather security-oriented – indicates that income security is an important criterion for holding stocks. People who have high and secure incomes can more easily afford to be risk-oriented in their portfolio management than those with lower incomes or a higher probability of losing their jobs.<sup>11</sup> The latter group needs additional security rather than additional risk, even if they might have the same risk orientation.

<sup>9</sup> These values are to be interpreted as upper limits with regard to holdings of actually risky assets.

<sup>10</sup> In the following, significant means significant at the 5% significance level.

<sup>11</sup> The participation rate of farmers is only listed for the sake of completeness. The number of farmers in the sample is too low to support a meaningful interpretation. Moreover, the number of households listed under "Occupational status of head of household" is smaller than in the other categories, as e.g. pensioners, students or the unemployed cannot be assigned to any of the subgroups.

Table 3

**Breakdown of Risky Assets by Socioeconomic Characteristics**

| Socioeconomic characteristics                              | Number of observations<br>(per category) | Share of households<br>holding risky assets | Deviation from<br>share in total<br>population |
|------------------------------------------------------------|------------------------------------------|---------------------------------------------|------------------------------------------------|
|                                                            |                                          | %                                           | Percentage points                              |
| Occupational status of head of household                   |                                          |                                             |                                                |
| Freelance professional                                     | 69                                       | 25                                          | -1                                             |
| Entrepreneur                                               | 80                                       | 39                                          | +13                                            |
| White collar worker                                        | 747                                      | 31                                          | +5                                             |
| Civil servant                                              | 273                                      | 35                                          | +9                                             |
| Farmer                                                     | 29                                       | 16                                          | -10                                            |
| Blue collar worker                                         | 235                                      | 15                                          | -11                                            |
| Educational level of head of household                     |                                          |                                             |                                                |
| Compulsory schooling or lower                              | 308                                      | 8                                           | -18                                            |
| Apprenticeship/vocational school, vocational middle school | 1.205                                    | 21                                          | -5                                             |
| Secondary academic school, vocational or technical school  | 659                                      | 36                                          | +10                                            |
| Technical college/university                               | 384                                      | 47                                          | +21                                            |
| Net household income                                       |                                          |                                             |                                                |
| up to EUR 749                                              | 116                                      | 3                                           | -23                                            |
| EUR 750 to EUR 1.349                                       | 466                                      | 9                                           | -17                                            |
| EUR 1.350 to EUR 2.249                                     | 898                                      | 21                                          | -5                                             |
| EUR 2.250 to EUR 2.999                                     | 497                                      | 36                                          | +10                                            |
| EUR 3.000 and above                                        | 579                                      | 48                                          | +22                                            |
| Total                                                      |                                          | 26                                          |                                                |

Source: The OeNB's SFHW 2004.

The participation rate of the group *compulsory schooling or lower* is significantly different from that of the group *apprenticeship/vocational school*. This group records a significantly lower participation rate than the groups *secondary academic school/vocational school* and *technical college/university*.

At the same time, higher-income households much rather participate in the stock market than lower-income households. Only the participation rates of the lowest two groups in terms of income do not differ significantly from each other. Household financial wealth, however, accounts for the biggest variations in capital market participation.

Summing up, we can say that participation in the capital market increases in line with financial wealth,

net income and the level of education. The participation rate is highest in the highest wealth decile, in the group with the highest net income, the group with the highest level of education, and with entrepreneurs.

#### 4 Investment Behavior – An International Comparison

This section describes the group of households that hold risky assets (i.e. stocks and/or mutual fund shares and/or bonds) and the subgroup of households that hold *stocks and/or mutual fund shares*. The focus is on households that actually participate in the capital market. Of the 738 households that hold risky assets in the sample covered in the OeNB's SFHW 2004, a total of 119 households hold bonds but not hold stocks or mutual fund shares.

619 households in the sample belong to the subgroup of households that hold stocks and/or mutual fund shares.<sup>12</sup>

It is difficult to make international comparisons since there are hardly any microdata available and the data that do exist cover different points in time. Therefore, this study focuses on the structure of capital market participation across wealth deciles, and not on the exact level of participation rates. In the following, we will compare data for Austria with those for selected other countries from Guiso et al. (2002), which were collected in the 1990s. In general, one may assume that participation rates tend to have increased over time, especially since financial assets have also been going up markedly. Substantial decreases in participation rates in times of financial crises should affect participation at the lower end of the distribution more strongly than at the upper end, since wealthier households will find it easier to absorb shocks.

International comparison shows that Austria has a low participation rate

and that in Austria risky assets account for merely a small share in the total financial assets of those who hold risky assets. While the percentage of those holding stocks or mutual fund shares in Austria is around 22%, it is approximately 32% in the U.K., around 34% in the Netherlands and as high as around 49% in the U.S.A.<sup>13</sup> The participation rates in Italy and Germany (around 19% in both countries) are comparable to the one in Austria (table 4). Differences in participation rates across countries are primarily attributable to the different pension systems. It is interesting to note that the lowest wealth deciles in most countries are characterized by similarly low participation rates; significant differences can be observed only in the upper deciles, owing in part to institutional reasons and different financial systems (market-based versus bank-based). Principally, stock markets play a more prominent role in market-based financial systems (like the U.S.A. and the United Kingdom). Germany and Austria, by contrast, belong to the

Table 4

#### Breakdown of Holdings of Stocks and/or Mutual Fund Shares by Gross Financial Assets

|                | Quartile 1 | Quartile 2 | Quartile 3 | Quartile 4 | Top 5% | Share in total population |
|----------------|------------|------------|------------|------------|--------|---------------------------|
|                | %          |            |            |            |        |                           |
| U.S.A.         | 4.4        | 38.3       | 66.0       | 86.7       | 93.7   | 48.9                      |
| United Kingdom | 4.9        | 11.9       | 37.8       | 71.1       | 83.9   | 31.5                      |
| Netherlands    | 4.4        | 16.9       | 36.8       | 75.9       | 92.3   | 33.5                      |
| Germany        | 6.6        | 17.6       | 22.1       | 29.3       | 41.6   | 18.9                      |
| Italy          | 3.4        | 10.8       | 19.6       | 38.9       | 54.6   | 18.9                      |
| Austria        | 3.9        | 9.7        | 20.7       | 52.3       | 74.0   | 21.7                      |

Source: Guiso et al. (2002, table 1.5) for the U.S.A., the U.K., the Netherlands and Germany; the OeNB's SFHW 2004 for data on Austria.

<sup>12</sup> 301 of these households hold only stocks, 156 hold only mutual fund shares, and 162 hold both.

<sup>13</sup> For reasons of comparability, bonds are not included in this calculation. These are data from the 1990s; to be precise, they were collected in 1998 for the U.S.A., in 1997 and 1998 for the U.K., in 1997 for the Netherlands, in 1993 for Germany and in 1998 for Italy. More recent comparable data – at least for the U.S.A. and Italy – can be found in the Luxembourg Wealth Study, in which Austria also participates. In the U.S.A., the average participation rate was around 30% in 2001 (immediately after the financial crisis), and in Italy it stood at approximately 18% in 2002.

group of bank-based financial systems (for a typology of financial systems, see Levine, 2002).

Table 5 shows the average share of risky assets in the total portfolios of those households that hold the respective capital market instruments. On average, households that invest in risky assets invest slightly below one-third of their financial wealth in such assets.

Table 5

**Share of Risky Assets in Gross Financial Assets<sup>1</sup>**

|                                               | Average share in financial assets |
|-----------------------------------------------|-----------------------------------|
|                                               | %                                 |
| Stocks and/or mutual fund shares              | 23                                |
| Stocks and/or mutual fund shares and/or bonds | 28                                |

Source: The OeNB's SFHW 2004.

<sup>1</sup> Only households holding the respective capital market instruments.

Table 6 shows the respective shares of risky assets across wealth deciles. While the total amount of households' financial assets has a strong impact on the participation rate, it hardly changes the share of risky assets in total financial assets. The share of total financial assets invested in risky assets<sup>14</sup> is not higher among wealthy households than among less wealthy households, whereas the absolute amounts invested in risky assets increase markedly as households' financial assets go up. The phenomenon that the share of total financial assets invested in risky assets does not increase – or increases only marginally – from one wealth decile to the next can also be observed in most of the other countries under observation (Guiso et al., 2002, table 1.7).

<sup>14</sup> The precision of the estimated shares weighted for Austria increases in the higher deciles owing to higher participation rates; in the lower deciles, it is very low. Overall, the participation rate increases across financial wealth deciles; there is no significant difference in the share of risky assets in total financial assets for those households that hold risky assets.

Table 6

**Share of Risky Assets in Gross Financial Assets<sup>1</sup>**

| Financial wealth deciles | Number of households in the sample that hold risky assets | Average share of risky assets in financial assets |
|--------------------------|-----------------------------------------------------------|---------------------------------------------------|
|                          |                                                           | %                                                 |
| Decile 1                 | 6                                                         | 30                                                |
| Decile 2                 | 14                                                        | 34                                                |
| Decile 3                 | 9                                                         | 21                                                |
| Decile 4                 | 26                                                        | 25                                                |
| Decile 5                 | 39                                                        | 21                                                |
| Decile 6                 | 58                                                        | 22                                                |
| Decile 7                 | 81                                                        | 27                                                |
| Decile 8                 | 92                                                        | 24                                                |
| Decile 9                 | 149                                                       | 27                                                |
| Decile 10                | 264                                                       | 34                                                |

Source: The OeNB's SFHW 2004.

<sup>1</sup> Only households holding risky assets.

Entry costs or other fixed costs might at least partly explain the low variation in average shares of risky assets in total financial assets. In the United Kingdom, holders of risky assets have invested almost half of their assets in this investment category. While this ratio is clearly higher than in Austria, the variation between the individual wealth deciles is just as low (Banks and Tanner, 2002). Another explanation would be that investors, their financial advisors or their financial service providers follow *1/n principles* in their investment strategies. Another factor supporting this view is that standard saving instruments are used throughout all categories, including the uppermost decile – even as capital market participation rates go up. Investment in risky assets appears to be an *additional* option as financial wealth increases; it does not replace classical types of saving in the portfolio (e.g. building loan contracts or life insur-

ance policies) but has a complementary function.

## 5 Investment Motives and Information-Seeking Behavior

Based on the results of the OeNB's 2004 SFHW (see annex), it is possible to analyze the investment motives and information-seeking behavior of various types of households. In the following, we compare the saving motivation, information-seeking behavior, confidence in information providers and wish for government intervention of holders of risky assets and those who do not hold such assets.

When asked about their saving motivation, the share of respondents who replied that they save for retirement was significantly higher among those who hold risky assets than among those who don't. Personal pension plans are thus an issue primarily for wealthy, high-income households. This suggests that people's motivation for saving depends on how much they can actually put aside. Despite subsidized pension schemes, lower-income households seem to have much weaker incentives to save for retirement than higher-income households. Furthermore, holders of risky assets state significantly more often that they save for consumption (luxury items, vacations) than the other group. Overall, motivations for saving are also more diversified among households in the upper wealth deciles.<sup>15</sup>

Holders of risky assets obtain information significantly more often and rely on a larger number of information sources than those who invest in safe assets only. The information-seeking behavior of the two groups differs

mostly in their consultation of the Internet, newspapers and independent financial advisors. Holders of risky assets are ready to pay a higher price for obtaining information, which may be related to the fact that making investments is more important for them than for households that do not hold risky assets, and that they are therefore willing to deal with the topic more comprehensively. The fact that they can also make higher profits because they have more money to invest, however, justifies the higher cost of obtaining comprehensive information. Households that do not hold risky assets obviously tend to rely more on advice by their banks than on comparing information obtained from various sources. In Austria, bank customers – who typically keep close relations with their banks (house bank principle) – often obtain cost-free stock investment advice from their respective bank. However, free investment advice involves a conflict of interest between customers, who wish to obtain objective information, and financial advisors, who wish to sell specific products. Lower-income customers are much more affected by this incentive problem than wealthy customers.

One question in the OeNB SFHW addresses the state-subsidized personal pension scheme in place in Austria. Based on the answers to this question, we can compare how much potential investors know about this investment possibility. In this respect, no significant difference was found between holders of risky assets and those who do not hold such assets: Even though the scheme was highly advertised, one-third of respondents was unable to

<sup>15</sup> The possibility of multiple responses is accounted for in the calculation of significance levels.

identify the fundamental difference between interest rate and premium.<sup>16</sup>

The survey respondents were also asked how much confidence they had in the various institutions that provide financial information. The share of respondents who said they trusted financial service providers (banks, insurance companies, etc.) and the OeNB is significantly higher among holders of risky assets than among the other group. Both groups considered the Austrian consumer affairs organization (Verein für Konsumenteninformation) to be the most reliable information provider.

The question addressing legal provisions that improve the comparability of financial products yielded especially noteworthy results: While the majority of both groups would welcome such government intervention, agreement was significantly higher among those who do not hold risky assets (81%) than among those who do (74%). This points to considerable uncertainty in the face of a confusingly broad range of financial products (Fessler et al., 2007; Schürz and Weber, 2008).

The OeNB's 2004 SFHW does not include a lottery question, which usually serves to measure risk aversion.<sup>17</sup> Instead, survey respondents were asked to rate the following statement: "*When I invest, high profit is more important to me than high security.*" Possible answers were "completely applicable," "rather applicable," "inapplicable" or "completely inapplicable." While 17% of respondents voiced agreement, the overwhelming majority replied that the statement was

inapplicable or completely inapplicable (74% among holders of risky assets, 84% among the other group). This result provides some indication of respondents' level of risk aversion – those who agreed to the statement would probably consider themselves risk-oriented. The validity of this self-assessment, however, seems doubtful, as the question is based on the disputable stereotype of a dichotomy between rather risk-oriented and rather risk-averse persons. Investment security is a key issue for everyone who makes investment decisions. Almost all households opt for safe assets, and only those who are very wealthy additionally invest in risky assets.

## 6 Logit Estimation

In the following, we calculate a logit model to estimate the probability of holding *stocks and/or mutual fund shares*.<sup>18</sup> We aim at identifying the determinants for holding stocks and/or mutual fund shares and at assessing their relative importance. In addition, the model controls whether or not variations in capital market participation that are associated with factors such as income, education level and financial wealth are correlated with each other and/or other control variables. The log of gross financial assets, a dummy variable vector for household income and a dummy variable vector for the education level were included as independent variables.<sup>19</sup> The respective mode is used as the reference class.

<sup>16</sup> The wording of the question was such that yes would have been the correct answer, and the anchoring bias phenomenon may be expected to lead to upward rather than downward distortion.

<sup>17</sup> Banca d'Italia's Survey on Household Income and Wealth, for example, features a question on how much money respondents would pay for a 50% chance of a LIT 10 million lottery prize.

<sup>18</sup> Bonds are not included here because (1) it is disputed whether or not they actually belong to the category of risky assets and (2) bond holdings possibly follow different patterns than stock and mutual fund holdings. Anyway, the results for Austria hardly change if bond holdings are included.

<sup>19</sup> Beer et al. (2006) use a similar methodological approach. The information on education levels refers to heads of households.

Including age and the squares and cubes of the household head's age<sup>20</sup> allows us to examine possible nonlinear effects of age on the decision to participate in the capital market. Nonlinear effects are taken into account for three reasons: First, the investment horizon of younger households is markedly longer than that of older households. Second, home purchases are usually made in prime age and followed by a period in which the probability of holding risky assets should be relatively low (repayment of home loans). Third, the capital market participation rate of older households should be rather low according to the life cycle hypothesis. In addition, this age cohort possibly never considered capital market participation as an option, given that the Austrian stock market was less developed when these households took long-term investment decisions. Further control variables are a dummy variable for home-owning households, for (married) couple households, for Vienna-based households and for risk aversion related to investments.

Table 7 presents the estimation results including odds ratios with corresponding standard errors, marginal effects as well as other information on estimation diagnostics.<sup>21</sup>

The estimation results can be interpreted in terms of odds ratios or marginal effects. Odds ratios measure the expected effect of explanatory variables. They refer to unit changes of the independent variables. In our case, they refer to the corresponding odds of holding stocks and/or mutual fund shares,

with a value above 1 indicating a rise in probability. When interpreting odds ratios, it is important to distinguish between continuous and dummy variables. Odds ratios for dummy variables – unlike those for continuous variables (such as the log of gross financial assets or age) – refer to a change in the respective variable from 0 to 1 and thus to group membership. For instance, belonging to the group *academic secondary school/higher-level technical and vocational school* increases the odds of holding stocks and/or mutual fund shares by a factor of around 1.6 relative to the group *apprenticeship/vocational school/medium-level technical and vocational school*.

Marginal effects indicate the absolute change in the estimated probability of holding *stocks and/or mutual fund shares* conditional on a marginal change in the independent variables, and are evaluated at the means or modes, respectively. If we use the mean, respectively the mode, for all variables included in the model, the probability of holding *stocks and/or mutual fund shares* comes to around 0.08. The results for marginal effects, like those for odds ratios, reflect the dominant role of households' financial wealth. A higher marginal effect was observed only for the *risk aversion* dummy variable. In comparing marginal effects, we must consider that marginal effects for dummy variables refer to the total possible change from 0 to 1. For the (continuous) financial wealth variable, by contrast, a marginal change in the mean leads to an increase by almost 9 per-

<sup>20</sup> In the OeNB survey, the household head is either the household member identified as such by the interview partner or the one with the most accurate knowledge about the respective household's finances.

<sup>21</sup> In addition to the information on estimation diagnostics presented here (pseudo  $R^2$ , ROC), we also used other assessment criteria, e.g. the Hosmer Lemeshow test, Nagelkerke's  $R^2$ , McFadden's  $R^2$ , Cox and Snell's  $R^2$  as well as classification accuracy. All these criteria produced satisfactory results, but the literature is fundamentally divided as to the various  $R^2$  measures.

Table 7

**Holdings of Stocks and/or Mutual Fund Shares – Logit Estimate**

|                                                                                                       | Odds ratio | Standard error | Marginal effect <sup>1</sup><br>P(Y X) = 0.083 |
|-------------------------------------------------------------------------------------------------------|------------|----------------|------------------------------------------------|
| Gross financial assets (log)                                                                          | 3.175***   | 0.216          | 0.088***                                       |
| Age                                                                                                   |            |                |                                                |
| Age                                                                                                   | 0.732***   | 0.087          | -0.024**                                       |
| Squares of age                                                                                        | 1.005**    | 0.002          | 0.000**                                        |
| Cubes of age                                                                                          | 0.999*     | 0.000          | -0.000*                                        |
| <b>Dummy variables</b>                                                                                |            |                |                                                |
| Household income (excluding EUR 1,350 to EUR 2,249)                                                   |            |                |                                                |
| up to EUR 749                                                                                         | 0.423      | 0.282          | -0.046*                                        |
| EUR 750 to EUR 1.349                                                                                  | 1.080      | 0.232          | 0.006                                          |
| EUR 2.250 to EUR 2.999                                                                                | 1.514***   | 0.240          | 0.037**                                        |
| EUR 3.000 and above                                                                                   | 1.738***   | 0.280          | 0.053***                                       |
| Education (excluding apprenticeship, vocational school, medium-level technical and vocational school) |            |                |                                                |
| Compulsory schooling or lower                                                                         | 0.717      | 0.184          | -0.022                                         |
| Academic secondary school, higher-level technical and vocational school                               | 1.580***   | 0.214          | 0.042***                                       |
| Technical college, university                                                                         | 1.626***   | 0.261          | 0.045**                                        |
| Risk-averse households                                                                                | 0.366***   | 0.052          | -0.115***                                      |
| Home-owning households                                                                                | 1.399**    | 0.190          | 0.022**                                        |
| (Married) couple households                                                                           | 0.765*     | 0.115          | -0.023*                                        |
| Vienna-based households                                                                               | 1.426***   | 0.192          | 0.031**                                        |
| Number of interviews                                                                                  | 2,556      |                |                                                |
| Pseudo R <sup>2</sup>                                                                                 | 0.29       |                |                                                |
| Area below the receiver operating characteristics (ROC) curve                                         | 0.85       |                |                                                |

Source: Authors' calculations based on the OeNB's 2004 SFHW.

<sup>1</sup> Evaluated at the mean (continuous variables) or mode (dummy variables); marginal effects for dummy variables refer to a change from 0 to 1.

Note: \*\*\*, \*\*, \* means significant at the 1%, 5% and 10% significance level.

centage points in the predicted probability of holding *stocks and/or mutual fund shares*.<sup>22</sup>

The probability of a household owning *stocks and/or mutual fund shares* rises significantly with its gross financial wealth, income and education level. Moreover, it is higher for home-owning or Vienna-based households but lower for (married) couple households. The risk aversion dummy – capturing those respondents who disagree with the statement “*When I invest, high profit is more important to me than high security*” – is significantly negative in the

model, as expected. Gross financial assets have by far the highest explanatory power, though.

A joint assessment of all three age variables highlights the influence of age on the probability of holding *stocks and/or mutual fund shares*. We can show that this probability declines until the age of around 40, remains relatively constant after that and drops again sharply at retirement age. This means that, ceteris paribus, the probability of holding stocks is higher for relatively low-aged households. The age factor is, however, hardly relevant in countries in which

<sup>22</sup> Using the means, respectively the modes, of all other variables and the 10<sup>th</sup>, 25<sup>th</sup>, 50<sup>th</sup>, 75<sup>th</sup> and 90<sup>th</sup> percentiles for gross financial assets produces the following probabilities of holding *stocks and/or mutual fund shares*: 10<sup>th</sup> percentile: 0.011; 25<sup>th</sup> percentile: 0.034; 50<sup>th</sup> percentile: 0.083; 75<sup>th</sup> percentile: 0.215; 90<sup>th</sup> percentile: 0.394.

capital market participation is traditionally high. This might point to a future increase in Austrians' capital market participation, as younger people are more concerned about their public pension income than older people.

Our results are consistent with those reported by Haliassos and Bertaut (1995), who estimate a similar logit model for the U.S.A. and also find that financial wealth, income and education level have a positive influence on capital market participation. Their data set is superior in that it allows the authors to directly include unemployment risk in the model, whereas in our case, it was only possible to use the income and education dummy variables as imperfect proxies.

## 7 Conclusions

Stocks are not widely spread in Austria, and stock holdings are concentrated among wealthy, high-income households. This finding from the OeNB's 2004 Survey on Financial Household Wealth (SFHW) ties in with available international data.

The share of risky assets in total financial assets is not a suitable indicator of households' risk aversion. Less wealthy households, which – in terms of financial wealth, income, job security, health, etc. – typically face higher risks and dangers than wealthier households, mainly hold safe, low-return assets so as to minimize risk at least in their investment portfolios. This does not imply that they are generally more risk-averse than wealthy households.

While wealthier households also hold safe assets, their willingness to complement their portfolios with risky assets increases in line with their financial assets. At around one-third, the average share of financial assets that households holding risky assets have invested in risky assets is rather low in Austria, and it hardly changes with rising income or financial wealth.

Assuming the same level of risk aversion and assuming that the risk of unemployment or illness decreases as financial wealth increases, wealthier households should opt for riskier investments than less wealthy households. However, the collected data do not confirm this assumption, indicating that the share of risky assets tends to be disproportionately low in the portfolios of wealthy households. This hypothesis is confirmed by the fact that even households in the top decile of gross financial wealth invest in building loan or life insurance contracts.

There seem to be two main reasons for Austrians' low stock holdings: the well-functioning public pension and health care systems on the one hand and the limited saving capacity of some households on the other. To date, the pay-as-you-go pension system still provides a certain level of income security that many Austrian households consider adequate. Hence, they do not believe it is necessary (yet) to make riskier investments. This perception seems to be changing, especially among younger households, which might lead to higher capital market participation in Austria.

## Annex

### The OeNB's 2004 Survey on Financial Household Wealth (SFHW) – Selected Questions

1. *What is your motivation for saving up money?*
  - Saving for retirement
  - My family's financial security
  - Major purchases (house, car, flat, etc.)
  - Medical expenses (dentist, operations, etc.)
  - Saving up money in case I lose my job
  - Nothing particular – just for a rainy day
  - Other, i.e.:
  
2. *Which sources do you rely on when you seek information on financial issues?*
  - I talk to my financial advisor at my bank.
  - I get brochures at my bank.
  - I gather information at different banks.
  - I talk to independent financial advisors.
  - I talk to my family.
  - I talk to friends.
  - I talk to my colleagues at work.
  - I consult with the staff council at my workplace.
  - I browse the internet for information.
  - I rely on information from newspapers.
  
3. *Which of the following do you regard as the most reliable information source on financial issues?*
  - Federal government/parliament
  - Oesterreichische Nationalbank (OeNB)
  - Austrian Chamber of Labour
  - Austrian Federal Economic Chamber
  - Financial service providers (banks, insurance companies, etc.)
  - Schools, universities, other providers of higher education
  - Other training institutions (adult education providers, etc.)
  - Employer
  - Austrian consumer affairs organization (Verein für Konsumenteninformation)
  
4. *Would you welcome legal regulations promoting increased comparability of financial products?*
  - Yes
  - No
  
5. *Have you suffered price losses so far?*
  - Yes
  - No
  
6. *What were the reasons for the price losses?*
  - Insufficient knowledge
  - Beginner's mistakes

- Natural stock exchange developments
- Other, i.e.:

#### 7. *Why don't you have any shares?*

- Too risky in comparison with other investment forms
- On the basis of advice I got at my bank
- Costs/fees too high
- On the basis of advice I got from friends
- Lack of advice/insufficient knowledge
- I can't afford it
- Other, i.e.:

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# The Impact of EU Enlargement in 2004 and 2007 on FDI and Migration Flows

## Gravity Analysis of Factor Mobility

*This paper contributes to the ex post assessment of macroeconomic effects triggered by the 2004 and 2007 wave of EU enlargement, with a specific focus on factor trade, i.e. the cross-border mobility of labor and capital. While most of the potential for trade in goods and for foreign direct investment (FDI) was tapped ahead of actual enlargement, above all migration effects are spread out over a longer period, given transition arrangements for labor market integration.*

*We use (innovative) gravity models to establish the potential for factor trade and cross-check the results against recent developments. Our key finding is the uneven development of capital and labor mobility since EU enlargement. While migration potentials are materializing as expected, FDI stocks have remained relatively stable at already high levels. Furthermore, we observe a nonlinear relationship between migration and per capita income that may be explained on theoretical grounds and attributed to institutional factors. While the highest-income countries (above all Slovenia and the Czech Republic) are already turning into immigration countries, the low-income countries and those last to join the EU (Bulgaria and Romania) are likely to see further emigration and more FDI inflows.*

*JEL classification: C33, F15, O11*

*Keywords: EU enlargement, factor trade, labor mobility, capital mobility, migration, foreign direct investment, gravity model*

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### 1 Introduction

The effects of the large EU enlargement rounds of 2004 (NMS-10) and 2007 on both new (NMS-12) and old (EU-15) Member States of the European Union have been studied in numerous ex ante assessments. However, only a small number of papers focused specifically on the euro area (for an overview see Fidrmuc et al., 2002, and Lammers, 2004). The number of ex post assessments is still limited (European Commission, 2006; Breuss, 2007). Theoretically, the free movement of goods and services has been assessed rather thoroughly (Tajoli, 2007; Papazoglou et al., 2006; Ferragina et al., 2005), but with regard to the free movement of persons and capital, scientific evidence is still limited. Finally, the issue of labor mobility has never been more

topical, because actual EU accession was more crucial for labor mobility than it was for the free movement of capital or goods and services. After all, cross-border trade and services between the EU and the former candidates for EU membership were liberalized much earlier, through the Association Agreements of the early 1990s.

Pinning down the very moment when the macroeconomic effects of EU enlargement started to emerge is difficult, insofar as the fall of the Iron Curtain and the ensuing ten-year EU accession process as well as the deepening of European integration through the creation of a monetary union triggered similar effects. Taking into account those classification problems, the results of the first ex post studies appear to exceed expectations, above all for the

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new Member States. Gligorov and Richter (2007) find the convergence trend to have accelerated: In the three years following EU accession (2004 to 2006), the NMS-10 had a growth advantage of 3.1 percentage points over the EU-15, compared with 1.7 percentage points in the three years preceding EU entry. In a comparison spanning a somewhat longer period, Breuss (2007) found GDP growth to have accelerated by around 2.5 percentage points year on year in the new Member States, but by a mere 0.1 percentage points in the euro area. In line with earlier assessments, Austria emerges as the euro area country that has benefited disproportionately more from the EU's enlargement to the east (Havlik, 2005; Breuss, 2006).

What integration-related factors have been contributing to growth? The integration effects basically consist of five elements (Breuss, 2007): trade effects, factor mobility effects, fiscal effects, single market effects and monetary union effects. For the reasons outlined above, this paper focuses on the growth effects of factor mobility – a truly comprehensive assessment would, of course, require an analysis of all growth transmission channels.

The *factor mobility effects* central to this study relate to the factors capital and labor. In search of higher yield, capital in the form of FDI typically flows to countries with a lower stock of capital. Similarly, workers in search of higher wages migrate to countries which offer more productive employment opportunities. While FDI-related factor yields have been realized on a cross-border basis since the *fall of the Iron Curtain*, labor migration from east to west remained limited even after the

EU accession of the new Member States in virtually all countries of the euro area. Not taking into account intra-EU distribution effects, the transition arrangements limiting the freedom of movement of persons do not appear to make sense from an economic view. After all, economically speaking, it is the recipient that benefits from factor mobility; in other words, capital mobility boosts growth in the new EU Member States, while labor mobility boosts growth in the euro area.<sup>2</sup>

In addition to reviewing the empirical literature and providing a descriptive analysis of the available data, we use (innovative) gravity models to analyze the effects enlargement had on factor mobility. Gravity analyses are a method of choice for integration studies, as they specifically take into account geographic distance and income gaps as key underlying factors. Even so, gravity analyses have rarely been used in the past, and if so, they were mostly applied to trade flows rather than to FDI and migration. Among other things, we look into the question of whether goods and factor trade are supplements or substitutes for each other. We discuss direct effects on growth, (prices), employment and fiscal developments as well as indirect effects (e.g. productivity effects through division of labor) and attempt to answer the following questions:

- How large are potential FDI flows to, and migration flows from, the new EU Member States?
- To what extent have potential FDI and migration flows materialized since EU accession?
- What FDI and migration flows are to be expected following EU accession?

<sup>2</sup> *Significant capital inflows plus significant labor outflows, however, have led to macroeconomic stabilization problems in some Eastern European countries, while in recipient countries large-scale immigration poses policy challenges in terms of integrating migrants and infrastructure planning. At the same time, anecdotal evidence on the outsourcing of production capacity to other countries has drawn a lot of attention.*

We also address the following issues: Has the forecast win-win situation of EU enlargement materialized? When may we expect the potential for positive effects to have been fully exploited? How are the benefits split among countries, regions, factors and sectors? Are there losers, too? Can economic policymakers contribute to optimizing and sustaining those benefits?

The paper is structured as follows: Section 2 below discusses the relevant literature, a number of stylized facts and institutional framework conditions for factor mobility in an enlarged EU. Section 3 presents gravity analyses on FDI and migration. Section 4 provides an interpretation of the results and a number of conclusions for policymaking.

## 2 Factor Mobility and EU Enlargement

The economic integration of two economic areas may take two forms: Either the two regions trade goods and services; or capital and workers – i.e. the production factors required to produce the goods and services in the first place – move between the two regions. In this respect, it matters whether mobile production factors complement or supplement cross-border trade. Conventional international trade theories provide divergent answers to this question. While goods trade and factor trade substitute each other in a framework building on the Heckscher-Ohlin model (Mundell, 1957), easing some of the highly restrictive assumptions suggests that trade and factor mobility may well supplement each other (Markusen, 1983). Ultimately, this question will have to be assessed empirically, taking due account of the given context.

On balance, the complex interrelation of the variables trade, FDI and migration is influenced by a large number of factors, including educational at-

tainment, geographical distance, trade barriers and income gaps (Schiff, 2006). Unlike the two key drivers of globalization, namely trade and FDI, migration has played a comparatively minor role in terms of magnitude, despite the rise in migration flows in recent years. In 2006, a mere 1.3% of the working population of the EU-15 were NMS-10 nationals (Brückner, 2007), whereas FDI flows from the EU-15 made up some 31% of the GDP of the new Member States (2004 enlargement round), and the Central and Eastern European countries that joined the EU in 2004 (the NMS-8) imported more than 13% of the goods exported by the EU-15 (European Commission, 2006).

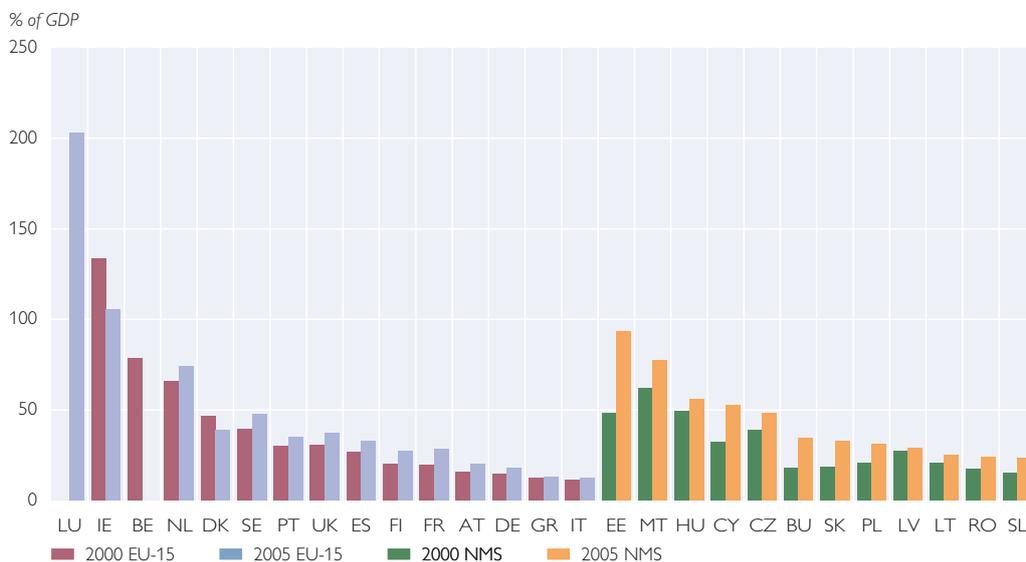
### 2.1 Direct Investment and EU Enlargement

Ever since the end of the Cold War and the political and economic opening-up of Eastern Europe, the economic geography of Europe has changed fundamentally. The “new economic geography” attempts to combine the choice of location and location factors in order to produce a comprehensive assessment of the challenges created by such restructuring (Venables, 2006). A key finding in this respect is that location, i.e. “nearness or distance,” is positively correlated with growth and productivity. Mobile factors tend to reinforce those effects, as they tend to migrate to locations where productivity effects are expected to be high. While a host of determinants are of an exogenous nature (Bevan und Estrin, 2004), geographical location advantages and the ensuing location choices largely depend on endogenous economic determinants as well.

Economic analysis of the change in economic framework conditions triggered by EU enlargement has largely

Chart 1

### Inward FDI Stocks



Source: UNCTAD.

concentrated on the traditional determinants so far. For instance, Austria, Germany and Finland have seen their export shares to the NMS-8 grow significantly, which has fundamentally changed foreign trade flows within the EU. Developments have been even more conspicuous in the area of factor mobility. While capital liberalization was a key prerequisite for participation in the Single Market, sweeping transitional restrictions have decisively limited or postponed mobility across labor markets. At the same time, the redesign of ownership structures reflects specific parameters, such as the privatization process observed across Eastern Europe.

FDI inflows have played a crucial role in the economic transformation and integration process in Eastern Europe. Foreign investors have been looking above all for new markets as well as favorable prices for input factors. In the target countries, FDI has above all improved the income and growth potential and has intensified

competition; moreover, the target countries benefit from the transfer of technology and know-how.

The last decade was generally a period of strong growth in FDI flows to Central and Eastern Europe, and increasingly also to Southeastern Europe. On average, FDI stocks now account for about 40% of GDP in the NMS-10. This share is markedly above the world average and also exceeds the shares of India or China, some of the most popular target countries of our time. Yet this pattern may possibly also reflect a shift in FDI dynamics from Greece, Spain and Portugal (representing the EU's enlargement to the south) to the new Member States from Central and Eastern Europe, rather than a mere expansion of FDI flows (Breuss et al., 2004).

As the pattern of FDI flows to Eastern and Southeastern Europe shows, integration developments are driven by a mix of determinants (Fischer, 2003), not least by the preferences and goals of consumers and investors, which are in

turn influenced by a broad range of influencing factors. In the debate, investors resident in industrial economies that target emerging markets are seen as being attracted almost exclusively by cheap production costs, above all by low wages and by low taxes, whereas ownership aspects, location factors and internationalization advantages have been found to be most relevant in actual fact (Dunning, 1993). Location-specific advantages are highly divergent for different types of businesses. Horizontally organized companies, which produce identical goods and services in different locations, may use FDI above all to avoid trade costs and to tap large or distant markets (Markusen, 1995). Vertically organized companies will diversify their manufacturing across regions above all to improve their cost structure. The challenge for economic theory is to summarize these incentives in a comprehensive view of FDI-relevant factors. Empirical studies have shown the (expected) market potential for FDI to dominate by far (Lankes and Venables, 1996; Blonigen, 2005).

Key aspects include absolute and comparative advantages, the direct control of foreign interests as well as generally the intensification of ties with major foreign markets. Solving the fundamental problem of geographic (and economic) distance is apparently a staggered process: The first step toward internationalization is cross-border trade in goods and services, which may occur with only very little direct involvement abroad. In a second step, companies may establish branch offices or subsidiaries abroad in order to systematically work local markets. Alternatively, companies may invest in existing firms abroad; in this case internationalization strategies of originally locally oriented firms contribute significantly to minimizing risks and reinforcing competi-

tiveness. Ideally, investor motives will broadly match the requirements of target countries or firms, with the interests of the latter focusing on expanding production capacities, enhancing productivity growth, benefiting from employment opportunities and getting access to technological know-how.

## 2.2 Migration and EU Enlargement

While empirical studies consistently identify income gaps and unemployment as the key drivers of migration, economic theory does not provide a fully satisfactory model for analyzing the causes and effects of migration. This has led to the coexistence of several interdisciplinary approaches, which basically attribute migration to a variety of push and pull factors (Arango et al., 1993).

*Macroeconomic* theories in the neo-classical tradition explain migration with a (skill) mismatch in labor supply and demand as well as with national wage differences. In contrast, *microeconomic* models explain decisions of individuals with cost-benefit deliberations based on lifecycle income and taking into account investment in human capital. In a model developed by Todaro and Maruszko (1991), for instance, the perspective of international migration prompts rural workers to flock to urban migration centers. Thus, accelerated rural depopulation pushes up urban unemployment despite emigration. *Newer economic* theories assume that the decision to migrate is taken at the family level rather than by individuals. The objective of migration is the collective maximization of income in absolute and relative terms (compared with reference families or neighbors) as well as risk minimization under the conditions of underdeveloped insurance markets (harvest failure). Thus, family members often work in both local and foreign

labor markets. *Dual labor market theory* highlights demand-side pull factors resulting from four characteristics of modern industrial societies: (i) structural wage inflation, (ii) lack of motivation for low-status jobs, (iii) economic dualism between a human capital-intensive core workforce and the peripheral workforce, and (iv) demographic trends in labor supply. The *world system theory* explains international migration with the structure of the global economy. Breaks and shifts occurring in the sending countries uproot and mobilize workers, whose services are in demand in cities throughout the world. According to the *network theory*, the probability of cross-border migration rises with interpersonal relations between (former) migrants and those left behind, as diaspora networks lower the risks involved in migration. *Institutional theory* puts the spotlight on private (humanitarian) organizations, which constitute social capital for migrants. Attempts to combine the theories outlined focus either on the cumulative reasons for social, cultural and economic change or are inspired by the *migration system theory*, according to which political and eco-

nommic relations have a stronger impact than geographical distance.

One of the key findings of the empirical literature, as evidenced by chart 2, is the nonlinearity of the relationship between the degree of development and migration. In a historical overview spanning over two centuries, Hatton and Williamson (2005) outline a synthesis of the theoretical models mentioned above. Migration probability is a factor of income levels; but only once a given level is reached, migration flows will start to swell, even if income prospects brighten by and by in the country of origin. In turn, remigration will start once the income differential has reached a maximum. More recently, this pattern could have been observed during the EU's enlargement to the south as well as the Asian tiger countries' take-off.

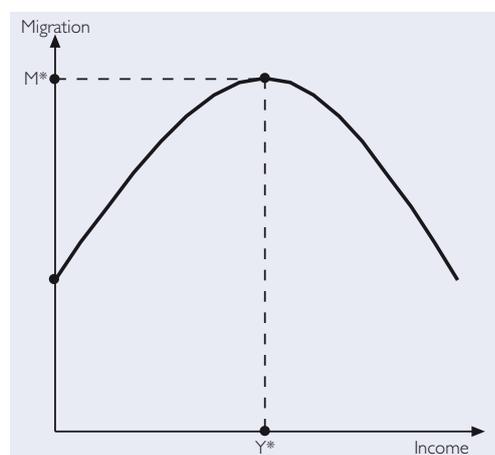
### Magnitude

In the first two years following enlargement, the number of foreign residents in EU-15 countries originating from NMS-8 countries rose from 910,000 at the beginning of 2004 to roughly 1.3 million people in 2006. The number of Bulgarians and Romanians that have moved to EU-15 countries is estimated to be in a similar range (900,000), but this figure should be interpreted with caution (Federal Ministry of Technology and Economics, 2007).

With regard to migration intentions, Eurobarometer surveys of 2005 showed the eight new EU members from Central, Eastern and Southeastern Europe (CESEE) split down the middle: Whereas Czech, Hungarian, Slovak and Slovenian labor had a comparatively low propensity to migrate to another EU country, the citizens of the three Baltic states and of Poland were more interested in migrating. In the latter countries, living or working in

Chart 2

### Relationship between Migration and Income



Source: Schiff (2007).

Table 1

**Residents in EU-15 Countries Originating from NMS-8 Countries**

|                | 2000                    | 2002  | 2003  | 2004  | 2005     | 2006     |
|----------------|-------------------------|-------|-------|-------|----------|----------|
|                | <i>in 1,000 persons</i> |       |       |       |          |          |
| Austria        | 60.4                    | 44.6  | 41    | 53.7  | 80.5     | 78.9     |
| Belgium        | 9.3                     | 12.2  | 9.5   | 15.6  | 25.6     | 59.9     |
| Denmark        | 8.7                     | 10    | 10.2  | 10.5  | 11.3     | 13.3     |
| Finland        | 12.9                    | 14.8  | 15.8  | 16.5  | 18.3     | 17.8     |
| France         | 37.8                    | 44.9  | 35.1  | 34    | 46.8     | 29.6     |
| Germany        | 416.5                   | 453.1 | 466.4 | 480.7 | 438.8    | 481.7    |
| Greece         | 13.8                    | 14.9  | 16.4  | 15.2  | 20.6     | 20.1     |
| Ireland        | 6.4                     | 8.6   | 49.1  | 54.1  | 58.5     | 58.5     |
| Italy          | 34.4                    | 41.5  | 42.2  | 55.6  | 67.8     | 79.8     |
| Luxembourg     | 1.1                     | 1.2   | 1.1   | 1.1   | 0.7      | 0.7      |
| Netherlands    | 9.4                     | 11.2  | 12.2  | 13.1  | 17.9     | 23.2     |
| Portugal       | 0.4                     | 0.7   | 0.6   | 0.7   | 0.8      | 0.3      |
| Spain          | 10.6                    | 30    | 41.5  | 46.7  | 61.8     | 74.3     |
| Sweden         | 23                      | 22.9  | 21.4  | 21.1  | 23.3     | 26.9     |
| United Kingdom | 52.7                    | 62    | 78.6  | 81.4  | 180.8    | 328.6    |
| EU-15          | 697.3                   | 772.3 | 841.1 | 909.0 | 1,053.40 | 1,293.50 |

Source: National population statistics, Eurostat (cited from Brückner, 2007).

another EU country within five years was conceivable for about 1% to 2% of all citizens, and for 7% to 9% at a later time. Those figures are not substantially higher than the corresponding EU-15 figures, e.g. for the citizens of the three Scandinavian countries plus Ireland and Luxembourg.

**Institutional Migration Factors**

The decision to migrate to another country, to move on to a third country or to remigrate does not depend on political, cultural and economic conditions alone, but also on the institutional framework.

The institutional framework basically consists of a country’s general immigration rules and its EU (and euro area) perspective. In addition, financial frameworks such as the social security system or labor market institutions also play a crucial role. Moreover, the institutional framework also relates to access to public services, such as schools and universities, that the families of migrant workers may use. Finally, even the tax system of a country may be con-

sidered part of the institutional framework – even though migrants might not go for a particular country solely because of its tax system, and are unlikely to fully understand the intricacies of a given tax regime *ex ante*.

Yet many migration models assume that migrants are aware of the relevant institutional peculiarities. In this particular case, however, the assumption of complete information is certainly not appropriate. While the economic drivers of migration decisions, such as wage differentials or differences in unemployment rates, are fairly transparent, this is less so the case for institutional factors. The sheer complexity of the issue (requiring e.g. a cross-country comparison of pension systems), the unknown probability of certain events (do emigrants even expect to be unemployed at some point?) and the process of permanent change to which social security systems are subject make it hard to pin down “institutional differences.”

Over time, information deficits become smaller, because the more people

migrate to a given country, the more easily other migration candidates will be able to access information. Information snowballing effects also explain why migrants tend to cluster in particular areas rather than to spread out evenly across potential target countries. Cases in point are the migration waves from Poland to the United Kingdom and<sup>3</sup> to Ireland, but also migration from Romania and Bulgaria to Spain, Italy and Greece.

The target country, in turn, plays a role by either accepting, fostering or limiting emigration. Ireland, the United Kingdom and Sweden opted against limiting the freedom of movement of NMS-8 workers in the first place; other countries have since followed suit in opening their labor markets. One year before the transition period limiting access for NMS-8 workers may be extended one more time, those restrictions have been retained only in a handful of countries, including Germany and Austria.

In contrast, in the second wave of EU enlargement toward the east, in 2007, all old Member States (apart from Finland and Sweden) retained their restrictions for immigration from Bulgaria and Romania. Even the United Kingdom refrained from offering Romanian and Bulgarian workers immediate free entry. This stance was mainly explained with the predominance of migrants going into agricultural jobs, the ensuing regional reallocation of migration and related longer-term challenges for society, especially language and schooling problems.

Germany and Austria, whose long borders with the EU's newest Member States make them particularly attractive for commuters, adopted a number of specific measures on top of their generally defensive policies. Germany, for instance, gives preferential treatment to IT workers among migrants. In its immigration law reforms of 2003 and 2005, Austria introduced an automatic residence and work permit for foreign graduates from Austrian universities and a green card scheme. At the end of the 1990s, Austria concluded an agreement on the employment of cross-border workers with Hungary, and another such agreement with the Czech Republic in mid-2005. There are plans to conclude a similar agreement with Slovakia.

At the same time, the source countries can also control migration through their institutional frameworks. The Iron Curtain was perhaps the most extreme form of such control; other, more subtle measures include the loss of entitlements accrued in the social security system (e.g. no possibility to transfer accrued benefits) and barriers or disadvantages with regard to the sale of property (e.g. high sales taxes for property). In contrast, a deterioration of social conditions, which widens the gap to other countries, may fuel migration. Such economic policy decisions are, however, typically motivated by reasons other than demographic policy considerations. In other words, health care, regional or education policy measures may have an indirect impact on migration decisions.

<sup>3</sup> According to data from the U.K. Workers Registration Scheme (Home Office, 2008) more than 508,000 Polish citizens applied for the right to work in the U.K. between 2004 and 2007. An opinion poll reveals that the majority of U.K. immigrants intend to stay only less than three months. As was to be expected given population size and the historical ties between Poland and the U.K., Polish migrants account for the highest share of (66%) of all applications, followed by applicants from Lithuania and Slovakia (both 10%). This notwithstanding, the share of U.K. population originating from NMS-8 countries was still rather low at 0.4% in 2005 (the share of EU-15 citizens being 1.7%; Federal Ministry of Economics and Technology, 2007).

Table 2

### Labor Market Restrictions for NMS-8 Citizens in EU-15 Countries

|                | Access for NMS-8 workers |                        | Access for Bulgarian and Romanian workers <sup>1</sup> |  |
|----------------|--------------------------|------------------------|--------------------------------------------------------|--|
|                | May 2004 to April 2006   | May 2006 to April 2009 | 2007 and 2008                                          |  |
| Austria        | limited                  | limited                | limited                                                |  |
| Belgium        | limited                  | limited                | limited                                                |  |
| Denmark        | limited                  | limited                | limited                                                |  |
| Finland        | limited                  | open                   | open                                                   |  |
| France         | limited                  | limited <sup>2</sup>   | limited <sup>2</sup>                                   |  |
| Germany        | limited                  | limited                | limited                                                |  |
| Greece         | limited                  | open                   | limited                                                |  |
| Ireland        | open                     | open                   | limited                                                |  |
| Italy          | limited                  | open <sup>3</sup>      | limited <sup>4</sup>                                   |  |
| Luxembourg     | limited                  | limited                | limited                                                |  |
| Netherlands    | limited                  | open <sup>5</sup>      | limited                                                |  |
| Portugal       | limited                  | open                   | limited                                                |  |
| Spain          | limited                  | open                   | limited                                                |  |
| Sweden         | open                     | open                   | open                                                   |  |
| United Kingdom | open                     | open                   | limited                                                |  |

Source: European Commission and [www.EurActiv.com](http://www.EurActiv.com) (cited from OECD, 2007b).

<sup>1</sup> Access for Bulgarian and Romanian workers is limited also on the labor markets of Malta and Hungary.

<sup>2</sup> Excluding health care, transport, construction, and hotels and restaurants.

<sup>3</sup> Since July 2006.

<sup>4</sup> Simplified access procedures in individual industries.

<sup>5</sup> Unlimited access in most industries since April 2006; generally unlimited access since May 2007.

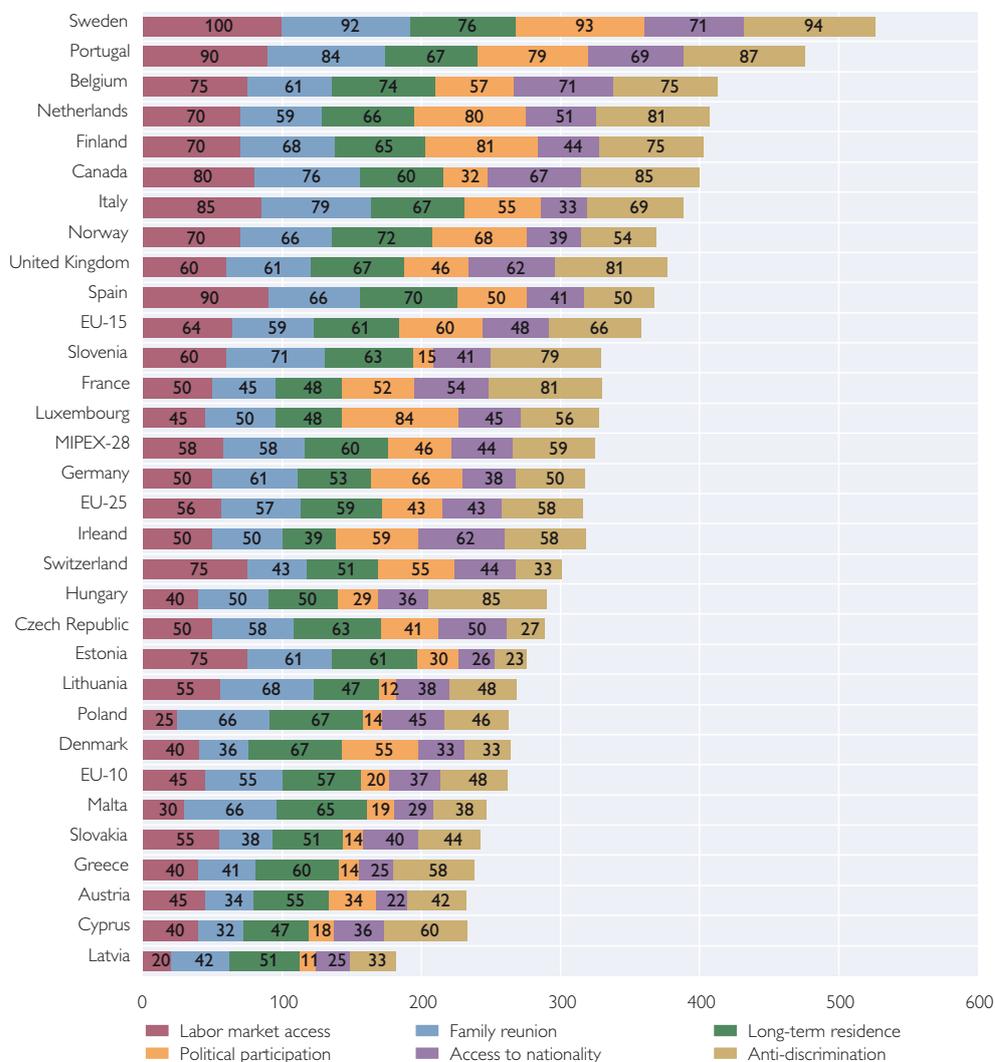
A systematic overview of the legal situation of migrants in Europe is provided by the Migrant Policy Integration Index (MIPEX; Niesser et al., 2007; chart 3). MIPEX measures legal and other policies to integrate migrants in the EU-25 and three non-EU countries. On balance as well as in every one of the six policy areas covered by MIPEX, the EU-25 have only come halfway in establishing best practice. So far, Sweden has been the only country to reach the best practice rank with regard to access to the labor market as well as good integration promotion figure in the final ranking across the six policy strands. Among the 25 EU countries covered by MIPEX, 9 countries have measures in place that may be deemed partly favorable. Those countries are the Scandinavian countries, the countries of the Western Mediterranean, Belgium, the Netherlands and Luxem-

bourg, and the United Kingdom. Integration policies in Lithuania, Cyprus, Greece, Slovakia and Austria have been found to be unfavorable at least in some instances. The lowest-scoring countries are the Baltic countries, the countries of the Eastern Mediterranean, the Central European EU member countries as well as Denmark. In the EU average, labor market access policies are only halfway home in complying with best practice standards. Overall and in every single policy area, the countries of the Western Mediterranean (Spain, Italy and Portugal) as well as the Scandinavian countries (e.g. Finland and Sweden) score best. Central and Eastern Europe brings up the rear in key areas, in particular with regard to implementation policies and security issues.

It is a fact that so far Slovenia has lost the smallest number of workers to Western European countries. This would

Chart 3

### Migrant Policy Integration Index (MIPEX)



Source: Niessen et al., 2007.

imply that the political situation in the source country is another key institutional factor. Slovenia has provided not only political stability, but its politicians were firmly committed to joining the EU and introducing the euro as soon as possible. A sound EU and euro perspective may evidently reduce or even offset economic emigration incentives. The citizens of Slovenia have seen their expectations met in this respect: Slovenia was the first Central and Eastern

European country to introduce the euro (in 2007). However, the “political perspective” proposition does not fully hold. After all Lithuania, which had applied for a rapid launch of the euro together with Slovenia, had a very ambitious euro roadmap until its application was rejected because it failed to meet the inflation criterion – and Lithuania is among the countries with the highest relative outflow of migrants.

### Migration Decision Influenced by Pull and Push Factors

Migration determinants may be broken down into *push* and *pull factors*. Principally, any given factor (such as unemployment benefits) may be both a push factor in some instances (high unemployment benefits in the target country) and a pull factor in other instances (low unemployment benefits at home).

Apart from pronounced wage differences, which may be partly offset by higher costs of living in the recipient country, the latter's labor market situation is one of the biggest pull factors. This is particularly evident in the case of the United Kingdom, the preferred target country of many Polish workers. In 2004, the U.K. was the country with the lowest unemployment rate and the highest employment rate among the EU-25. In fact, the U.K. had achieved this favorable position already in the mid-1990s, when Germany was still struggling with a rising unemployment rate. This sustained positive performance of the U.K. labor market turned the country into a most attractive target for migrants. By contrast, in Poland, a typical emigration country, the unemployment rate was twice as high (18%) as in the Czech Republic (7%), which has seen a considerably lower outflow of migrant workers.<sup>4</sup> Finally, the average standard of living evidently influences migration decisions as well. After all Slovenia, which has by far the highest GDP per capita among the CESEE EU members, has seen very few workers leave.

Unlike these macroeconomic indicators, the influence of divergent social security regimes is often overrated. Thus, countries that have restricted access to their labor markets at the same time have restricted access to social transfers. While NMS-8 workers are enrolled in a social security system, i.e. get unemployment, pension and health care coverage and therefore have access to public health care services in countries where these exist, they are cut off from income transfers, such as welfare assistance that kicks in once the regular benefits have been exhausted. This partly also holds true for countries with minor access restrictions, such as Denmark, Ireland and the United Kingdom.<sup>5</sup> Sweden is the only country to already fully apply the equal treatment principle enshrined in community law (Federal Ministry of Economics and Technology, 2007).

Often, the family structure of migrants adapts to this policy of barring access to a number of welfare benefits or the systems favor unattached immigrants (singles). Out of the NMS-8 workers registered in the U.K. between 2004 and 2007, 93% did not have any family in their target country, and only 6% had family members below the age of 17 (Home Office, 2008). The number of applicants for tax-financed means-tested welfare benefits such as child benefits and residential allowances thus remained rather limited.<sup>6</sup> At the same time the restricted access to the social systems favors comparatively short working stays. Many Poles leave

<sup>4</sup> Budnik (2007) shows that unemployed Poles have the highest propensity to emigrate. In addition, EU accession provided an incentive for numerous people already holding jobs to migrate to countries with liberal migration regimes.

<sup>5</sup> This does not necessarily imply that the access restrictions for public welfare benefits are stringent. Ireland for instance pays child benefits for the children of migrants that live abroad, and migrants gain full access to the entire spectrum of services after two years of residence in Ireland (OECD, 2008). In contrast, migrants to Denmark may lose their residence permit when they become unemployed.

<sup>6</sup> Between May 2004 and December 2007, a total of 21,759 applications for income or unemployment support and pension benefits were filed; yet only 4,872 of these were accepted for further processing.

their home country for just a few months, return back home for several months and then look for another job on the Western European labor market. Their behavior resembles that of seasonal workers and is in fact attributable to seasonal peaks in individual industries (such as agriculture and tourism), but also to the social security frameworks of the target countries.

In the source countries – the NMS-10 – social security systems are seldom sophisticated. After all, the previous planned economies were built on the concept of full employment. With the change from planned to market economies having been characterized by deregulation and liberalization, the number of social benefits that might principally be used to control migration flows is limited.

Information on institutional factors that are typical of individual labor markets is not readily accessible, and even harder to compare across countries. By way of approximation, comparisons can be made about public spending on active and passive labor market measures. While in the “old” EU countries, public expenditure on labor market activation programs and income support programs accounts for as much as 4.3% of GDP (Denmark; table 3), public spending accounts for as little as 0.5% of GDP in the Czech Republic or 0.7%

of GDP in Hungary. A somewhat higher measure of 1.3% of GDP in Poland reflects above all a huge early retirement wave in response to extremely high unemployment rates and structural labor market problems.

Those statistics also show that even one of the most popular target countries, the United Kingdom, does not spend above-average amounts on labor market measures (0.7% of GDP). As described above, the United Kingdom has a number of rules in place which substantially limit the access of immigrants to social benefits. This would imply that the proposition that migration flows may be controlled through social systems is not fully conclusive.

#### Migrations Trends in NMS-12 Countries

East-west migration flows have changed fundamentally over time (Kaczmarczyk and Okólski, 2005): Permanent immigration to the West was predominant prior to the fall of the Iron Curtain and peaked temporarily immediately thereafter, but soon sank to a relatively low level at which it broadly stabilized. At present, Bulgaria and Romania are the only two countries from which larger numbers of people still wish to emigrate permanently. In parallel, temporary migration flows have increased, above all over short distances (such as Polish seasonal workers going to Ger-

Table 3

#### Public Expenditure for Labor Market Programs in OECD Countries

|                                  | AT  | BE  | DK  | SF  | FR  | DE  | GR  | IE  | IT  | LX  | NL  | PT  | SP  | SE  | UK  | CZ  | HU  | PL   | SK <sup>1</sup> |
|----------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----------------|
| Data for 2005 in % of GDP        |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |                 |
| Total                            | 2.1 | 3.5 | 4.3 | 2.8 | 2.5 | 3.3 | ×   | 1.5 | 1.4 | 1.2 | 3.4 | 2.0 | 2.2 | 2.5 | 0.7 | 0.5 | 0.7 | 1.3  | ×               |
| Labor market activation programs | 0.6 | 1.1 | 1.7 | 0.9 | 0.9 | 1.0 | ×   | 0.6 | 0.5 | 0.5 | 1.3 | 0.7 | 0.8 | 1.3 | 0.5 | 0.3 | 0.3 | 0.4  | ×               |
| Income support programs          | 1.5 | 2.4 | 2.5 | 1.9 | 1.6 | 2.4 | 0.4 | 0.8 | 0.8 | 0.7 | 2.0 | 1.3 | 1.5 | 1.2 | 0.2 | 0.2 | 0.4 | 0.9  | 0.3             |
| Unemployment rate                | 5.8 | 8.4 | 4.8 | 8.4 | 9.8 | 9.1 | 9.4 | 4.4 | 7.8 | 4.6 | 5.0 | 7.7 | 9.2 | 5.8 | 4.8 | 8.0 | 7.3 | 17.7 | 16.2            |

Source: OECD (2007b).

<sup>1</sup> Excluding social assistance.

many). Apart from economic factors, ethnic reasons evidently also play a big role in this respect (such as historical and linguistic ties with the recipient countries, for instance in the case of Romanians migrating to Hungary and Germany).

An equally interesting phenomenon is the fact the NMS region is increasingly turning into a target for migration itself (especially the Czech Republic, most of all for Ukrainians and Slovaks; but also Hungary for citizens of former Yugoslavia and Romania). Based on migration stock data, Estonia, Latvia, Slovenia and the Czech Republic have already turned into net immigration countries (Ratha and Xu, 2008).<sup>7</sup> The latest results of labor surveys would imply that most of the NMS-10 are witnessing similar developments, at least with regard to permanent migration (Schreiner, 2008). However, those findings do not reflect undocumented migration. The Czech Republic and Hungary have the highest share of migrants from Asia (China and Vietnam). Furthermore, the NMS-10 report rising numbers of asylum seekers as well as substantial transit migration into the West.

### 3 Gravity Analysis of Enlargement Effects

Gravity models lend themselves well to analyzing the channels of economic integration. They are primarily based on the assumption that any kind of interaction between two countries is dependent on country size and the distance between the countries. Gravity models have a long history not only in migra-

tion research (with pioneering contributions from Sjaastad, 1960, and Lowry, 1966); they have also been used to model FDI and trade flows (Bussière et al., 2005; Egger, 2005; Ferragina et al., 2005; Hamilton and Winters, 1992; Papazoglou et al., 2006). In contrast, there is little experience with the estimation of potential FDI flows (Görg and Greenaway, 2003).

We use gravity models to analyze three questions below:

- How large are potential FDI flows to, and migration flows from, the new EU Member States?
- To what extent have potential FDI and migration flows materialized since EU accession?
- What FDI and migration flows are to be expected following EU accession?

#### 3.1 Gravity Analysis of FDI Flows

For the purpose of this paper, the effect of EU membership on FDI flows from Western to Eastern countries will be estimated in the framework of a standard gravity model.<sup>8</sup> The basic gravity model is specified as follows:

$$\log(FDI_{ijt}) = \alpha + \beta_1 \log(GDP_{it}) + \beta_2 \log(GDP_{jt}) + \beta_3 \log(POP_{it}) + \beta_4 \log(POP_{jt}) + \beta_5 \log(D_{ij}) + \varepsilon_{ijt}$$

where  $FDI_{ijt}$  occurs from country  $j$  to country  $i$  at time  $t$ ,  $GDP_{ijt}$  refers to real GDP,  $POP_{ijt}$  is population,  $D_{ij}$  is the distance between the capital cities of countries  $i$  and  $j$  and  $\varepsilon_{ijt}$  is a random shock assumed to be uncorrelated across country pairs and in time. Given the

<sup>7</sup> Stock data on migration do, however, point in the opposite direction: In the course of the transformation process, the population of the Central and Eastern European EU-8 dropped by 1.1 million citizens, that of the Western Balkans even by 2.7 million people (Mansoor and Quillin, 2006).

<sup>8</sup> It should be noted that, although they have become the most frequently used workhorse of applied trade economists, gravity equations are not without criticism (Anderson and van Wincoop, 2003).

panel structure of our data, the error term can be specified as composed of a fixed country-pair effect (which summarizes all time-invariant factors affecting the investment flow between country  $i$  and country  $j$ , among others geographical distance) and a fixed time effect common to all country pairs. The specification is thus given by

$$\log(FDI_{ijt}) = \alpha + \beta_1 \log(GDP_{it}) + \beta_2 \log(GDP_{jt}) + \beta_3 \log(POP_{it}) + \beta_4 \log(POP_{jt}) + \phi_{ij} + \lambda_t + v_{ijt}$$

where the FDI data refer to FDI inward stocks sourced from The Vienna Institute for International Economic Studies (wiiw). GDP and population data are sourced from the World Bank's World Development Indicators. All data are yearly and cover (in the best cases) the period from 1992 to 2005. Table 4 presents the identity of the investing and recipient countries.

We estimated the specifications presented above; the results are displayed in table 5.

The results do not show any significant effects of membership on FDI for the specification without bilateral fixed effects. The estimates of the specification with fixed effects imply negative effects (significant at the 5% level) of EU membership on Western investment flows into the Central and Eastern European region. Apparently, it is not a particular enlargement date that is decisive, but rather the general perspective of improved circumstances.

The estimation of country-specific effects does not produce homogenous results across countries. Only three countries (the Czech Republic, Hungary and Lithuania) show significant reductions in FDI in the period following their accession. The rest of the countries do not present significant effects.

Table 4

#### Countries in the Sample (FDI Analysis)

| Investing countries | Host countries |
|---------------------|----------------|
| Austria             | Bulgaria       |
| Belgium             | Czech Republic |
| Denmark             | Estonia        |
| Finland             | Hungary        |
| France              | Latvia         |
| Germany             | Lithuania      |
| Greece              | Poland         |
| Ireland             | Romania        |
| Italy               |                |
| Netherlands         |                |
| Portugal            |                |
| Spain               |                |
| Sweden              |                |
| United Kingdom      |                |

Source: OeNB.

Table 5

#### Estimates - FDI Gravity Equations

|                                  |                |                |               |               |
|----------------------------------|----------------|----------------|---------------|---------------|
| GDP (investing countries)        | -1.71 (-10.78) | -1.71 (-10.75) | -1.92 (-3.11) | -1.88 (-3.09) |
| GDP (host countries)             | 0.51 (5.25)    | 0.59 (4.65)    | -2.53 (-2.52) | -2.34 (-2.20) |
| Population (investing countries) | 2.09 (11.60)   | 2.10 (11.59)   | 20.50 (11.05) | 20.28 (11.13) |
| Population (host countries)      | 0.46 (3.99)    | 0.37 (2.56)    | -1.13 (-0.29) | 0.05 (0.01)   |
| Distance                         | -1.44 (-31.82) | -1.44 (-27.98) | -             | -             |
| EU                               | -              | -0.41 (-1.17)  | -             | -0.30 (-2.16) |
| EU*distance                      | -              | -0.01 (-0.13)  | -             | -             |
| Country pairs                    | 134            | 134            | 134           | 134           |
| Total observations               | 1.114          | 1.114          | 1.114         | 1.114         |
| Adjusted R <sup>2</sup>          | 0.37           | 0.37           | 0.91          | 0.91          |
| Bilateral fixed effects?         | no             | no             | yes           | yes           |
| Time effects?                    | yes            | yes            | yes           | yes           |

Source: OeNB.

\* Dependent variable: bilateral FDI inward stock. Robust t-statistics in parentheses. Estimation includes a constant, not reported.

In the case of the Czech Republic and Hungary, the explanation for these results could lie in the fact that these most advanced countries were targeted by investors relatively soon, especially when it became clear that they would be among the first countries to join the EU.

It should be noted, however, that the specification does not include potentially important explanatory variables. To the extent that these variables are country-specific or country pair-specific and constant (or very persistent) over time, they will be accounted for by the fixed-effect structure which underlies the panel. Furthermore, we also included a variable that accounts for the moment when the accession countries enacted Association Agreements with the EU. The estimate of the parameter associated with this variable was positive but not significant, and it did not change the size, sign or significance of the other parameters in the model.<sup>9</sup>

Our finding of broadly unchanged investment trends following EU enlargement is not really surprising in the light of the analysis in section 2. Whereas migration remained highly regulated, the barriers restricting capital mobility were removed in most new Member States already from the early 1990s onward. Meanwhile, the level of euro area FDI flows into the new Member States has already come to exceed the level of intra-euro area FDI.<sup>10</sup>

### 3.2 Gravity Analysis of Migration

We also estimate a gravity model to quantify the effect of distance and

country size on migration flows from Eastern to Western Europe. Specifically, we estimate a parallel specification to that used in the FDI analysis, that is:

$$\log(M_{ijt}) = \alpha + \beta_1 \log(GDP_{it}) + \beta_2 \log(GDP_{jt}) + \beta_3 \log(POP_{it}) + \beta_4 \log(POP_{jt}) + \beta_5 \log(D_{ij}) + \varepsilon_{ijt}$$

and

$$\log(M_{ijt}) = \alpha + \beta_1 \log(GDP_{it}) + \beta_2 \log(GDP_{jt}) + \beta_3 \log(POP_{it}) + \beta_4 \log(POP_{jt}) + \phi_{ij} + \lambda_t + v_{ijt}$$

We estimate alternatively these two specifications enlarged with an EU membership effect in order to quantify the effect of joining the EU on migration flows.

Table 6 shows which countries were used in the regressions, for which yearly data were sourced from Eurostat (for migration data) and the World Bank's World Development Indicators (for the rest of the variables) for the period from 1985 to 2005.

We will include the EU membership effect in two different ways: For the specification including the distance we will include both a dummy variable taking the value 1 for the years 2004 and 2005 if the country joined the EU in 2004, and the interaction of this dummy with the distance variable. This allows us to model the potential decline in migration costs triggered by EU membership. The results of this simple model indicate that, after controlling for all time-invariant effects and the usual gravity variables, joining the EU

<sup>9</sup> Hajkova et al. (2006) explicitly assess the issue of the effect of taxation on FDI location among OECD economies. Unfortunately, lack of comparable data for the economies in this study for the full period covered did not allow us to include taxation variables in the model. In principle, third-country factors may also play a role in FDI flows. Adequately accounting for such factors would exceed the scope of this paper, so we decided to stick to a simple specification including only bilateral variables.

<sup>10</sup> In the finance sector in particular the economic optimum is likely to have been exceeded already (Eller et al., 2006).

Table 6

### Countries in the Sample (Migration Analysis)

| Recipient countries | Emigration countries   |                       |
|---------------------|------------------------|-----------------------|
| Austria             | Albania                | Lithuania             |
| Belgium             | Armenia                | FYR Macedonia         |
| Denmark             | Azerbaijan             | Malta                 |
| Finland             | Belarus                | Moldova               |
| Germany             | Bosnia and Herzegovina | Poland                |
| Italy               | Bulgaria               | Romania               |
| Luxembourg          | Cyprus                 | Russian Federation    |
| Netherlands         | Czech Republic         | Serbia and Montenegro |
| Portugal            | Estonia                | Slovakia              |
| Spain               | Georgia                | Slovenia              |
| Sweden              | Hungary                | Tajikistan            |
| United Kingdom      | Kazakhstan             | Turkey                |
|                     | Kyrgyzstan             | Turkmenistan          |
|                     | Latvia                 | Ukraine               |
|                     |                        | Uzbekistan            |

Source: OeNB.

increases migration by 17% compared to the control group of countries. The model with distance interaction allows us to differentiate the size of the effect across countries depending on their geographical remoteness. The results suggest that the EU membership effect tends to be concentrated on reducing migration costs and incentivizing for relatively distant countries.

The results for the specification with an EU membership dummy summarize average effects across individual countries. In order to assess and quantify the effects for individual countries, we also estimated the model without bilateral fixed effects, including individual interaction effects for the distance variable and a dummy variable for each new EU member in the years 2004 and 2005.

Chart 4 shows the estimates of the distance interaction for each country, together with twice the standard deviation of the estimate. Positive values indicate that the reduction of migration by distance was smaller after EU accession.

Unlike in the case of investments, the barriers preventing the free movement of people were removed only a decade later – upon actual enlargement – and even then only very cautiously. While the mobility potential of capital was used to the full, the mobility potential of labor just kept growing. As the transitional arrangements restricting the free movement of workers on EU labor markets expire (at the latest by 2011 or 2013) migration is expected to resume.

However, the theoretical arguments discussed above imply a nonlinear rela-

Table 7

### Estimates – Migration Gravity Equations

|                                  |                |               |               |               |
|----------------------------------|----------------|---------------|---------------|---------------|
| GDP (investing countries)        | 2.59 (11.01)   | 2.59 (10.93)  | 1.32 (1.26)   | 1.27 (1.17)   |
| GDP (host countries)             | 0.19 (4.9)     | 0.19 (4.61)   | -0.7 (-5.45)  | -0.69 (-5.15) |
| Population (investing countries) | -1.02 (-4.32)  | -1.02 (-4.3)  | 36.57 (7.47)  | 36.63 (7.47)  |
| Population (host countries)      | 0.54 (20.94)   | 0.54 (18.82)  | -2.53 (-8.47) | -2.5 (-8.35)  |
| Distance                         | -1.24 (-26.89) | -1.28 (-21.3) | -             | -             |
| EU                               | -              | -2.54 (-3.78) | -             | 0.17 (2.56)   |
| EU*distance                      | -              | 0.33 (3.85)   | -             | -             |
| Country pairs                    | 317            | 317           | 317           | 317           |
| Total observations               | 3.030          | 3.030         | 3.030         | 3.030         |
| Adjusted R <sup>2</sup>          | 0.67           | 0.67          | 0.90          | 0.90          |
| Bilateral fixed effects?         | no             | no            | yes           | yes           |
| Time effects?                    | yes            | yes           | yes           | yes           |

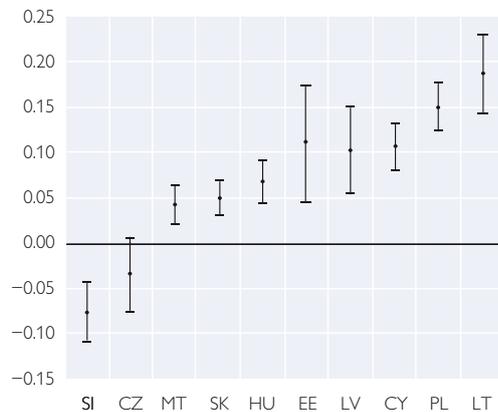
Source: OeNB.

\* Dependent variable: bilateral migration flows; robust t-statistics in parentheses..

Chart 4

### Country-Specific Cost Reduction Estimates

± twice standard deviation estimate



Source: OeNB.

relationship between migration and development. The higher-income new Member States (Slovenia and the Czech Republic) already show clear signs of a slowdown in emigration; indeed, those countries have already made the transition from an emigration to an immigration country (Schreiner, 2008).

At the same time, a few other countries (Lithuania and Poland) see considerably more people emigrate than may be explained by the variables of the gravity equation prior to EU accession (income, distance, population). Here, the high outflow of workers may reflect high unemployment or institutional factors in the source and target countries. The two comparatively low-income countries, Bulgaria and Romania, are still lagging behind in terms of factor mobility.

The key result of the two gravity analyses is that FDI and migration developed asymmetrically after the EU enlargement rounds of 2004 and 2007. This dichotomy may be explained with the hypothesis that the production factors are mutually substitutive with regard to their mobility. In line with standard trade theory based on the Heck-

scher-Ohlin model, this hypothesis is based on factor endowment considerations: Capital and labor need each other in production, but they are allocated unevenly across countries. Therefore, capital will need to move where labor is in abundant supply, or labor will need to move to a country with more capital. Yet, this would be putting the complex relationship between the two factors too simply; in actual fact, this relationship has to be assessed specifically for each country (Landesmann, 2001).

## 4 Conclusion

Our assessment of the characteristics of the European integration process yielded a three-step process:

(i) In a first development stage driven by the fall of the Iron Curtain – many years before the first Eastern European countries actually joined the EU – trade between east and west was gradually intensified, in both directions. At the time, the major barriers were on the Western European side, while the Eastern European markets opened up very rapidly to trade and services from Western Europe. Overall, this substantially enhanced trade integration between the two parts of Europe.

(ii) The second development stage, which somewhat overlapped with the first, was characterized by signs of increasing direct investment flows between the two regions of today's EU. Fueled by the privatization process, a wave of ownership transformation swept across Eastern European countries, causing property to change into the hands of, above all, Western European investors, for a variety of reasons.

(iii) Last but not least, slowed down by political decisions, labor mobility is gradually evolving as an additional driver of the integration process.

From a monetary perspective, allowing EU citizens to fully enjoy the four fundamental freedoms enshrined in Community law is to be welcomed. According to the optimum currency

area theory (Mundell, 1961), mobile production factors are an important substitute for the exchange rate instrument as an adjustment channel in the case of country-specific shocks.

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## Highlights

# Toward the First Decade of Economic and Monetary Union – Summary of the 36<sup>th</sup> Economics Conference

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*The 36<sup>th</sup> Economics Conference hosted by the Oesterreichische Nationalbank (OeNB) on April 28 and 29, 2008, was dedicated to looking back on the first ten years of the euro and ahead to future challenges for Economic and Monetary Union (EMU). With contributions invited from both economic policymakers and academics, the conference was designed to foster an objective and informed debate on this significant chapter in recent economic history. The OeNB succeeded in bringing together high-ranking representatives of central banks, international and national policymakers as well as representatives of the business community and of academia.*

## **The Euro: The Right Response to Globalization**

In his opening speech, *Klaus Liebscher, Governor of the OeNB*, underlined that introducing the euro had been the right move for Europe in response to mounting globalization; just as joining EMU as a founding member had been the right thing to do, and a very important step, for Austria. With the Great Inflation of the 1970s in mind, policymakers had granted the Eurosystem a high degree of independence and a clear statutory mandate to maintain price stability as its primary objective when designing the new monetary constitution for Europe. Hovering slightly above 2%, euro area inflation had consequently been persistently low from the start of monetary union despite a number of price shocks. The success of EMU was not a given, though; making EMU work also required efforts in other areas of economic policy. A smooth functioning of monetary union was above all dependent on stringent fiscal policies and dynamic structural reforms. Governor Liebscher attributed the favorable macroeconomic developments in the first decade of EMU precisely to the euro and the Eurosystem's stability-oriented mone-

tary policy. All countries participating in monetary union had benefited from the euro, and Austria in particular judging from the considerable welfare gains. Austria had been able to substantially improve its competitiveness, as reflected in robust GDP growth and a positive growth gap of roughly ½ percentage point against the euro area average in recent years. The euro had, indeed, given a fresh impetus to Austria's internationalization. Furthermore, the enlargement of the EU, and of the euro area, had been and continued to be most important for Austria as well. Governor Liebscher reiterated that the Eurosystem was open to further members, subject to the principle of equal treatment with the current euro area members when it came to assessing whether prospective members had met the convergence criteria. Recent inflation developments had forcefully driven home the message that monetary and economic policymakers needed to remain watchful of underlying inflation trends. Contrary to some predictions of an end to inflation, recent developments had emphasized the continued need for vigilance. The OeNB was proud to contribute to the success of EMU.

### **Call for Reforming EU Economic Policymaking Structures and Strengthening the Social Agenda**

In his opening address (“The Euro in an Enlarged EU – An Austrian Perspective”), *Alfred Gusenbauer, Chancellor of the Federal Republic of Austria*, confirmed that the euro was working effectively and had asserted itself well as an international currency. Credit for this internationally acknowledged success story was due above all to the ECB – whom the chancellor congratulated on its tenth anniversary – and the national central banks (NCBs). Gusenbauer presented five propositions: *First*, the European Social Model should be included in the Lisbon reform agenda. *Second*, notwithstanding some progress, economic policy coordination would need to be enhanced further. Above all, it would take a framework to design economic stimulus packages in concerted action if required. *Third*, the euro exchange rate should not be the responsibility of central banks alone; there was a broader need for closer monitoring and coordination. *Fourth*, the external representation of the euro area should be improved, and the international financial architecture should be reinforced. Policymakers should consider establishing a global regulatory body – a world financial organization – within the framework of the Bretton Woods institutions. *Finally*, the chancellor called for the introduction of a tax on financial transactions. He concluded with a plea for resolute action in policymaking, based on bold vision. Getting European citizens to accept the EU more wholeheartedly called for renewed political confidence in Europe.

### **Acclaim for the ECB’s Stability-Orientation – Need for Open Markets and Low Inflation**

*Wilhelm Molterer, Vice Chancellor and Finance Minister of the Republic of Austria*, praised the euro as an anchor of stability-oriented policymaking in Europe. The euro required member states to strive for greater coherence of their economic policies. Looking ahead, Molterer singled out six issues: *First*, he called for a clear commitment to the ECB’s stability policy, to its price stability objective and to its independence. Putting any of those principles in question would be the wrong conclusion from the current financial turmoil. *Second*, market liberalization rather than protectionism was the right response to the slowing of the economy – above all also with regard to labor market issues. *Third*, to successfully combat inflation, competitiveness and deregulation needed to be enhanced further. *Fourth*, there was a need for tax relief measures, above all for a reduction of the tax rates on labor – without jeopardizing fiscal discipline, though, because fiscal discipline was of the essence for stability-oriented policymaking. *Fifth*, the power to innovate had to be strengthened. Molterer showed concern about the mounting unwillingness to embrace change in the EU and in Austria. *Sixth*, global markets needed global rules, which is where the IMF had an important role to play. At the same time, so as not to paralyze financial markets they must not be overregulated. The Vice Chancellor called EMU a success story that was without a true alternative, which had helped turn Europe into a reliable and key anchor of global stability, and he concluded with congratulations on the good functioning of the ECB.

### **The Eurosystem Works Smoothly, Is Efficient in Crisis, and Has Fast Achieved a High Degree of Credibility**

*Jean-Claude Trichet, President of the ECB,* addressed the track record of the ECB and on the challenges lying ahead for the Eurosystem. He noted that the ECB had rapidly become a mature institution, and that the Governing Council of the ECB was working smoothly and efficiently. Good and efficient cooperation among the ECB and the NCBs in numerous committees and working groups was highly significant for the achievement of shared Eurosystem decisions. This close and professional interaction had also been critical for the good start of EMU and for the smooth changeover to the euro. Over the years, the Eurosystem had established a high degree of credibility, having successfully withstood such tests as the bursting of the Dot-com Bubble or the terrorist attacks of September 11, 2001. The progressive integration of new members into the euro area had worked well. Thus, inflation had remained in a tight vicinity of 2% over the past ten years. By the time the financial turmoil hit in mid-2007, the Eurosystem had repeatedly been warning against such developments. When those risks materialized, the ECB reacted immediately with a sequence of fine-tuning operations, in order to keep the very short-term money market rates close to the main refinancing rate and to contain spreads in the longer-term segments of the market. President Trichet stressed that those liquidity operations had not changed the monetary policy stance of the Eurosystem – which remained anchored on maintaining price stability over the medium term. It was after all beyond the power of money market operations to eliminate the underlying causes of the tensions. The recent de-

velopments had shown that the ECB had adopted the right monetary policy stance: flexible action guided by a steady and unwavering compass.

### **The ECB Fulfills Its Stability Mandate; Combating Inflation Is a Social Policy Measure**

*Jean-Claude Juncker, President of the Eurogroup,* shared his views on “EMU and EU Policymaking – Intelligent Design or Learning by Doing?” He addressed the astonishing difficulty of successfully communicating the euro’s manifold advantages and the numerous benefits of EU integration and EU enlargement to the general public: After all, the euro had entailed remarkable savings in transaction costs, intra-European exchange rate tension had been eliminated, fiscal rules had managed to bring fiscal deficits down considerably, inflation had dropped significantly, and the interest rate level had fallen visibly below pre-EMU levels. Despite some progress with reform, major anti-reformist forces remained in Europe that would make key structural reforms unpopular. Juncker argued that counterinflationary measures were in fact social policy measures, since the socially marginalized suffered most from high inflation. The ECB had succeeded in fulfilling its price stability mandate and in anchoring inflation expectations at low levels, thus justifying the confidence placed in it. Yet combating inflation was not an issue for the ECB alone; wage settlements needed to be kept in line with productivity growth.

### **The EU’s Economic Policymaking Structures Reflect What Is Politically Feasible**

Coordinating European economic policies was a tall order according to Eurogroup president Juncker. While the negotiations on the Treaty of Maastricht

had been informed by a consensus on a single monetary policy, the policy frameworks for a single economic policy were found to differ too strongly. Therefore, the responsibility for economic policy had remained with the Member States – subject to a variety of coordination mechanisms. Despite the lack of consensus on a uniform perspective among the members of the Eurogroup, there was still a need to exert a high degree of verbal discipline in communicating national policies, which is why the Eurogroup had started to negotiate “terms of reference” on central issues. While this “weak form” of economic policy coordination was not ideal, it reflected the political reality of Europe today.

### **World Economy and Euro Area Economy to Decouple from U.S. Economy?**

*Edward P. Lazear, Chairman of the Council of Economic Advisers (U.S.A)*, sketched a not so pessimistic picture of current economic developments in the U.S.A. as the debate in the media or some forecasts would imply. Lazear stressed that the U.S.A. was not experiencing another Great Depression, and most probably not even a recession. The economy was growing, and the unemployment rate continued to be low at a level of just a little above 5%. He was positive that the fiscal stimulus package approved in February 2008 was going to boost the economy in the second half of the year. Real estate prices had peaked already in 2006, long before the onset of financial market turbulence. The latter had triggered a rapid adjustment of risk premia on asset-backed securities, and many people had lost their jobs as a result of the troubles in the financial sector. Yet on balance, the tightening of credit standards need not necessarily have adverse effects, even

though investment had been dampened. Unlike in the past ten years, U.S. output growth was benefiting from the robust global economy in 2007, above all from the momentum in emerging markets. Ultimately, Lazear did not see the global economy or the EU economy decoupling from the U.S. economy for the U.S.A. were too big an economic power and had too many ties with the rest of the world.

### **Klaus Liebscher Prize Awarded to German and Austrian Researchers**

Following the morning session, the Klaus Liebscher Prize for excellent scientific papers on European monetary union or European integration issues was awarded for the fourth time. This year’s winners were *Kerstin Gerlach, University of Mannheim*, who received the prize for her paper on the economic policy theory of international financial integration; as well as *Silvia Rocha-Akis and Aleksandra Riedl, both Vienna University of Economics and Business Administration*, who received the prize for a joint paper on the theory and empirics of tax competition in Europe. *Executive Director Josef Christl* introduced the prize winners and their papers, while *President Herbert Schimetschek* recalled the history and intentions of the Klaus Liebscher Prize. Following two short presentations of the papers by the winners themselves, the prizes were awarded by *Executive Director Christl* and *Governor Liebscher*.

### **Fruitful Dialogue between Economic Scientists and Policymakers in the First Decade of EMU**

*Charles Wyplosz, Graduate Institute of International Studies (Geneva)*, assessed the first decade of EMU: “What Have Academics Learned from the Experience

of EMU? What Has EMU Learned from Academics?” From a political perspective, monetary union had followed from the EU’s Single Market by sheer necessity: Capital liberalization and fixed exchange rates were simply not compatible with independent monetary policies of the individual nation states. In the academic debate, monetary union had mostly been discussed against the background of the theory of optimum currency areas (OCA theory), yet it had taken a while for OCA criteria to be acknowledged in the political debate as well. In contrast, with regard to the Stability and Growth Pact, politicians had moved ahead and had designed such a pact before the academic debate had actually gotten fully underway. The political rationale had been to avoid, first, the monetization of public deficits through central bank financing and, second, national deviations from fiscal discipline. While those arguments had been acknowledged in principle in the academic debate, the actual design of the Stability and Growth Pact had been subject to much controversy among academics. The major points of criticism were that the exceptional circumstances under which debt and deficit thresholds may be exceeded had been defined too narrowly, and that the pact did not distinguish between different purposes of debt usage. Some but not all of those points of criticism had been taken up by politicians. Furthermore, academics often also criticized the ECB’s two-pillar strategy. De facto experience with EMU in the first ten years had repeatedly shown that the ECB’s monetary policy was broadly in line with current developments in theory, and that this debate much rather had the character of a discussion of principles. According to Wyplosz, politicians and academics had indeed displayed an ability to learn from each

other. With regard to EMU, politicians invariably moved faster than academics, but the dialogue had been intensified, and the integration of the two areas had strongly deepened and improved, not least as a result of the great research efforts made by the central banks themselves.

### **Effects of Monetary Union Have Materialized as Expected; Looking Ahead to Guaranteeing the Future of the Euro**

The subsequent panel discussion dealt with various substantial aspects of EMU, such as enlargement, financial integration, the impact of EMU on trade, and guaranteeing the sustainability of the euro.

*Mathilde Maurel, Université Paris 1*, tackled EMU enlargement issues, above all the need to bridge the gap between the criterion on price stability that candidates have to meet as a prerequisite for EMU accession and the strong output growth fueled by the catching-up process, which raises inflationary pressures. She discussed the possibility of and the rationale for adjusting the convergence criteria to the specific situation of the catching-up countries. From Maurel’s point of view the accession criteria were endogenous and would thus be fulfilled upon the introduction of the euro. Therefore she did not consider an early enlargement of EMU to pose a risk for monetary union and its goals.

*Philip Lane, Trinity College Dublin*, first showed that the elimination of intra-European exchange rate risks had considerably boosted the integration of the interbank market and of the money market. Likewise, EMU was an asset for formerly national stock markets, and it had fueled FDI flows between the euro area countries and driven up bond market issuance substantially. At

the same time, major catching-up needs remained in the retail segment, but the outlook for integration was bright in this area as well. In a second step, Lane discussed the macroeconomic implications of financial integration. Although enhanced integration had made risk allocation more efficient within EMU, other forces had acted in a countervailing fashion. In the long term, EMU would benefit from greater financial integration.

Cross-checking the positive effects of EMU on trade anticipated and broadly discussed *ex ante*, *Andrew K. Rose, University of California (Berkeley)*, summarized conventional wisdom on the quantitative effects of EMU on trade that had actually materialized, based on a systematic review of the empirical literature of the past ten years. His key finding was that EMU had caused trade to grow by at least 9% and probably by as much as 21%, and that this effect was likely to intensify over time. In addition, the growing interlinkage of trade increased the coherence of business cycles, thus preparing the ground for an optimum currency area; yet the empirical evidence was limited so far, given the lack of long data series.

Next, *Charles A. E. Goodhart, London School of Economics*, posed the question “Is the Euro Sustainable?” and discussed four scenarios that could possibly threaten the existence of EMU: The first scenario was Germany exiting from EMU because it was being pushed to deliver inflationary policies. As a *second* scenario, he described the possibility of a number of Eurogroup finance ministers bringing pressure to bear on the ECB to drop its anti-inflationary policy. As a *third* critical scenario he mentioned an anti-euro party carrying the majority of popular votes. A *fourth* scenario might be a feedback effect

stemming from widening and mutually reinforcing interest rate differentials that caused weaker Member States to feel the costs of EMU membership more strongly. According to Goodhart, the euro might indeed become unsustainable if those effects were all to materialize at the same time. However, he considered such a turn of events to be highly unlikely; and the probability of such a result might be reduced further as the political union deepened and as the labor markets became more flexible.

### **Banking Supervision: Basel II Supports Adjustment to New Challenges**

*Arnout H. E. M. Wellink, President of De Nederlandsche Bank and Chairman of the Basel Committee on Banking Supervision*, explored the issue of “Banking Supervision in the Euro Area: Experiences, Challenges and Prospects.” He considered three developments to be instrumental: Banks had become increasingly market-dependent, had increasingly embarked on international operations, and the banking sector had become more concentrated. President Wellink explained how the new Basel II Accord, which had been fully implemented in the EU in the form of the Capital Requirements Directive only since early 2008, might facilitate adjustment to those developments: Above all, Basel II raised the risk sensitivity in capital adequacy calculations, made off balance sheet exposures subject to regulatory capital charges as well, and enhanced the disclosure of banks’ securitization activities. President Wellink rejected criticism leveled against the procyclicality of the new Capital Requirements Directive and – addressing lessons learned from the recent financial turmoil – stressed that the Basel Committee stood ready to make the necessary

adjustments to the framework. Looking ahead, Wellink highlighted the challenges for banking supervisors following from the internationalization of the banking industry. He was in support of continuing to build on the existing institutional structures but skeptical about the creation of a pan-European supervisory structure in the near term. With regard to ensuring an effective interplay between supervisors and central banks, President Wellink considered it difficult to draw a line, in practice, in a modern financial system between the responsibility for systemic stability and that for prudential supervision. Effective cooperation between supervisors and central banks required close and continuous information sharing. Important synergies created by combining prudential supervision tasks and the responsibility for financial stability reinforced the arguments for bringing both responsibilities as closely together as possible.

### **Historic Experiment of EMU Has Been a Success, but Major Challenges Remain**

*Hans Tietmeyer, Former President of the Deutsche Bundesbank, explored “Economic and Monetary Union from a Historical Perspective,” looking back to when the very idea was first voiced in 1961, and ahead to future challenges. Making EMU happen had been the result of a protracted and at times controversial convergence process merging divergent economic and monetary conceptual frameworks. The decisive breakthrough had been made possible by the efforts of outstanding politicians; at the same time historic framework conditions – the Single Market, the fall of the Iron Curtain and German reunification – had provided crucial incen-*

*tives to realize the EMU project. Notwithstanding the heterogeneous background of the key players and central banks involved, the Eurosystem had been successful in fast establishing its credentials. The key foundation for the Eurosystem’s credibility was its tried and tested independence from political influence, which was particularly important and remarkable given the system’s diverse background. Tietmeyer stressed that, so far, the catalytic power of the euro with regard to deepening economic union had been limited: It had not been possible to fully implement the Stability and Growth Pact, the Lisbon process was yet to bring substantial progress, and the integration of labor markets was as yet highly rudimentary. More analytical transparency and a stronger role for the European Commission might move reform along. According to Tietmeyer, monetary union did not presuppose uniform political conditions, but the latter must not distort competitive conditions in the long run – a social union that reinforced rigidities rather than weakening them was not compatible with a monetary union. EMU was such an important milestone in history that failure or turning the clock back was out of the question. Referring to the enlargement of the euro area, the former Bundesbank president observed that the convergence criteria had been applied almost too loosely so far. Current inflation was – still – astonishingly low. Yet the inflation-dampening impact of globalization was vanishing. Finally, the ECB had been implementing better monetary policies than the U.S. Federal Reserve System, but it might have moved faster to raise key interest rates on occasion.*

### **Austria's Hard Currency Policy Continued with EMU and the Euro**

A panel discussion among economic policymakers on “Austria and EMU” concluded the conference. *Christine Marek, State Secretary in the Federal Ministry of Economics and Labour*, saw the stability-oriented policy of the Eurosystem as a continuation of Austria's hard currency policy. EMU had strengthened the European economy and supported macroeconomic developments. The euro was a strong reserve currency, and financial markets in the euro area were powerful. The ECB had a proven track record in fulfilling its price stability mandate, which Marek supported wholeheartedly. Yet currently high inflation rates were a cause for concern; it was important not to set off a wage-price spiral. Austria had benefited from EMU above all through enhanced integration into the world economy and the resulting boost for output and employment growth. The Treaty of Lisbon was important for making cooperation among the EU-27 more efficient, for bringing the EU closer to its citizens, and thus for the future evolution of the EU.

### **Keeping Up the Reform Momentum in Economic Policymaking in Austria Is Essential**

*Markus Beyrer, Secretary General of the Federation of Austrian Industry*, stressed that being competitive as a location was even more important in a currency union. While Austria was doing quite well in international location rankings, there had, however, been signs of reform fatigue lately, which is why efforts to maintain Austria's attractiveness as a business location would have to be intensified. The ECB was on the right track in steadily implementing its stability policy, although doing so was not

always easy in the short term. The important thing for economic policymaking was to aim at sustainability – and in this respect rules were helpful. In the field of monetary policy, Europe had bid farewell to activist reaction patterns motivated by short-term goals, instead taking its cue from the Deutsche Bundesbank as the best practice model. Beyrer noted that, in monetary policy matters, Austria had a much longer track record in sustainability than in fiscal policy matters. EMU had triggered a fiscal policy turnaround in Austria – initially out of short-term considerations with a view to being among the founding members of EMU. With the reform of its budget system law, Austria was on the right track, but the envisaged efforts would not suffice to overcome the major spending blocks looming ahead. The thing to do was to move from a spending-oriented revenue policy to revenue-oriented spending. Open issues included above all the latest softening of the pension reform, the health care reform, the administrative reform and the Austrian Stability Pact. Generally speaking, fiscal policy would need a stringent framework similar to that established for monetary policy. Opening the Austrian labor market only gradually to the Eastern European EU citizens was a major mistake of Austrian economic policy. If Austria wanted to excel in bringing companies to set up their headquarters here, it would at the same time have to be open to skilled workers from abroad.

### **Euro Helps Avoid the Disadvantages of a World without the Euro**

*Georg Kovarik, Chief Economist of the Austrian Trade Union Federation*, emphasized that EMU had brought Austria more stability and security in times of finan-

cial turmoil. The main advantage of EMU was that it spared us the disadvantages we would have without it. Wages were growing more slowly now. While the past few years had undoubtedly been marked by economic recovery, numerous people did not see themselves as benefiting from growth. Even employer associations had been criticizing the ECB of wielding too restrictive a policy more recently. The economy was expected to slow down soon, among other things because the euro exchange rate was too high. While inflation was somewhat above 3%, core inflation was only somewhat above 2%. As inflation was internationally driven by commodity price increases, a high-interest policy was not the right instrument to contain inflation. The EU would benefit from a better coordination of policies among central banks, social partners and governments. The macroeconomic dialogue of the EU was in urgent need of reform. With regard to the gradual opening of the Austrian labor market to Eastern European workers, Kovarik argued that the market was already open to skilled workers. The immediate opening of the labor market in the United Kingdom and in Ireland had also had undesired consequences, such as a brain drain in Eastern Europe. Austria's citizens would not understand the rationale for a more rapid liberalization.

### **EMU Skeptics Have Been Proved Wrong**

*Bernhard Felderer, Director of the Institute for Advanced Studies*, recalled that according to OCA theory, the optimum currency area was defined such that EMU should never have been created in the first place. Yet so far putting the cart before the horse had, indeed, been very successful. Contrary to critics' predictions, EMU had entailed a sus-

tained and broad convergence of interest rates at low levels – benefiting also the hard currency block countries originally united in the European Monetary System. The predicted current account problems had not materialized, by and large. Moreover, EMU had led to a marked improvement of fiscal balances. General government debt had gone down across the board, with some countries having made particularly great progress. Yield spreads between government bonds had also narrowed considerably. While the smaller euro area countries had been better at coping with the pressures arising from globalization, there was an urgent need for swift reform also in the larger countries. Last but not least there was a need to reconsider the size and the role of government, and to reduce the tax burden on labor.

### **Euro Has Entailed Numerous and Major Advantages for Austria; Intensified Competition Has Contained Inflation**

*Karl Aiginger, Director of the Austrian Institute of Economic Research*, argued that EMU had pushed up growth by 1.7% in five years, or by 0.3 percentage points each year. Thanks to EMU, inflation volatility had been generally reduced to the low German level, and growth and unemployment were subject to less uncertainty these days. The Austrian economy had again been outperforming the euro area economy in recent years, and the current account was now firmly in surplus. Since Austria's participation in EMU, the domestic inflation rate had been significantly lower than in the decade before. As was to be expected, Austria's unemployment rate had become more closely aligned with that of the EU. Austria had turned from a technology taker to a frontier economy, and had risen to the opportunity

of its changing geo-economic position. In the next ten years, migration, climate change, income and wealth issues as well as the aging of society would dominate the debate. Aiginger argued that the economic momentum of Austria's neighbors, the catching-up potential and the size of the BRIC countries (Brazil, Russia, India and China) and a controlled flexibilization of the labor market were offering opportunities. In the public sector it was important to check objectively whether the private sector might not be in a position to provide some services in a better way and at a better price. The currently high inflation rates were to be seen against the backdrop of the ample liquidity supply worldwide; commodity price increases were being passed on to end products, and there was not enough competition in the energy sector. This was the hour of competition policy; fiscal policy and monetary policy were not in a position to contribute much to combating inflation under the current circumstances.

### **It Takes More Reforms to Keep Up the Success of the Euro**

*Josef Christl, Executive Director and Member of the Governing Board of the OeNB, identified a broad consensus on the success of the euro, as evidenced by numerous before-EMU and after-EMU comparisons of economic indicators. Monetary union had also contributed substantially to the completion of the Single Market. Price transparency had increased, transaction costs had gone back, and competition had been stimu-*

lated. Thus, monetary union had delivered exactly as promised. Christl argued that the past few months in particular had highlighted the monetary union's role as a protective shield against turmoil and shocks. EMU had amply proved to be a stability anchor for the European economy and for the EU. At the same time, Europe had gained in visibility worldwide with the euro. The results presented at the conference justified the introduction of a single currency in Europe, and they also justified the confidence in the future of EMU and were biding well also for the success of further enlargements of the euro area. The ECB was contributing to the integration of the European economy by enhancing transparency and by making monetary policy more predictable. The ECB had swiftly asserted itself as a credible guarantor of stability. Yet challenges remained, including above all the divergent development of unit labor costs. Here, politicians were called upon to take the necessary action for change. For a flexible and competitive European economy, it was necessary to implement the Lisbon agenda as soon as possible, and to start thinking about the post-Lisbon process. In the realm of fiscal policy, it was important to strengthen the preventive arm of the Stability and Growth Pact. The EU required more effective institutional structures: Vis-à-vis the rest of the world, the significant and growing role of the euro would need to be matched by a more active role of Europe in international forums.



Notes

# Abbreviations

|          |                                                                                                                             |            |                                                                                                                                          |
|----------|-----------------------------------------------------------------------------------------------------------------------------|------------|------------------------------------------------------------------------------------------------------------------------------------------|
| ARTIS    | Austrian Real Time Interbank Settlement (the Austrian real time gross settlement system)                                    | IHS        | Institut für Höhere Studien und Wissenschaftliche Forschung – Institute for Advanced Studies, Vienna                                     |
| A-SIT    | Secure Information Technology Center – Austria                                                                              | IIF        | Institute of International Finance                                                                                                       |
| ASVG     | Allgemeines Sozialversicherungsgesetz – General Social Security Act                                                         | IIP        | international investment position                                                                                                        |
| A-Trust  | A-Trust Gesellschaft für Sicherheitssysteme im elektronischen Datenverkehr GmbH (accredited certification service provider) | IMF        | International Monetary Fund                                                                                                              |
| ATX      | Austrian Traded Index                                                                                                       | ISO        | International Organization for Standardization                                                                                           |
| BCBS     | Basel Committee on Banking Supervision (BIS)                                                                                | IWI        | Industriewissenschaftliches Institut – Austrian Institute for Industrial Research, Vienna                                                |
| BIC      | Bank Identifier Code                                                                                                        | JVI        | Joint Vienna Institute                                                                                                                   |
| BIS      | Bank for International Settlements                                                                                          | LIBOR      | London Interbank Offered Rate                                                                                                            |
| BOP      | balance of payments                                                                                                         | M3         | broad monetary aggregate M3                                                                                                              |
| BSC      | Banking Supervision Committee (ESCB)                                                                                        | MFI        | monetary financial institution                                                                                                           |
| CACs     | collective action clauses                                                                                                   | MRO        | main refinancing operation                                                                                                               |
| CEBS     | Committee of European Banking Supervisors (EU)                                                                              | MoU        | memorandum of understanding                                                                                                              |
| CEE      | Central and Eastern Europe                                                                                                  | NACE       | Statistical Classification of Economic Activities in the European Community                                                              |
| CEEC(s)  | Central and Eastern European country (countries)                                                                            | NCB        | national central bank                                                                                                                    |
| CESEE    | Central, Eastern and Southeastern Europe                                                                                    | OeBS       | Oesterreichische Banknoten- und Sicherheitsdruck GmbH (Austrian banknote and security printing works)                                    |
| CESR     | Committee of European Securities Regulators                                                                                 | OECD       | Organisation for Economic Co-operation and Development                                                                                   |
| CIS      | Commonwealth of Independent States                                                                                          | OeKB       | Oesterreichische Kontrollbank (Austria's main financial and information service provider for the export industry and the capital market) |
| CPI      | consumer price index                                                                                                        | OeNB       | Oesterreichische Nationalbank (Austria's central bank)                                                                                   |
| EBA      | Euro Banking Association                                                                                                    | OPEC       | Organization of the Petroleum Exporting Countries                                                                                        |
| EBRD     | European Bank for Reconstruction and Development                                                                            | ÖBFA       | Österreichische Bundesfinanzierungsagentur – Austrian Federal Financing Agency                                                           |
| EC       | European Community                                                                                                          | ÖNACE      | Austrian Statistical Classification of Economic Activities                                                                               |
| ECB      | European Central Bank                                                                                                       | POS        | point of sale                                                                                                                            |
| Ecofin   | Economic and Financial Affairs Council (EU)                                                                                 | PRGF       | Poverty Reduction and Growth Facility (IMF)                                                                                              |
| EEA      | European Economic Area                                                                                                      | R&D        | Research & Development                                                                                                                   |
| EFC      | Economic and Financial Committee (EU)                                                                                       | RTGS       | Real-Time Gross Settlement                                                                                                               |
| EIB      | European Investment Bank                                                                                                    | SDR        | Special Drawing Right (IMF)                                                                                                              |
| EMS      | European Monetary System                                                                                                    | SDRM       | Sovereign Debt Restructuring Mechanism (IMF)                                                                                             |
| EMU      | Economic and Monetary Union                                                                                                 | SEPA       | Single Euro Payments Area                                                                                                                |
| EONIA    | Euro OverNight Index Average                                                                                                | SPF        | Survey of Professional Forecasters                                                                                                       |
| ERM II   | exchange rate mechanism II (EU)                                                                                             | STEP2      | Straight-Through Euro Processing system provided by the Euro Banking Association                                                         |
| ERP      | European Recovery Program                                                                                                   | STUZZA     | Studiengesellschaft für Zusammenarbeit im Zahlungsverkehr G.m.b.H. – Austrian Society for Payment System Research and Cooperation        |
| ESA      | European System of Accounts                                                                                                 | S.W.I.F.T. | Society for Worldwide Interbank Financial Telecommunication                                                                              |
| ESAF     | Enhanced Structural Adjustment Facility (IMF)                                                                               | TARGET     | Trans-European Automated Real-time Gross settlement Express Transfer                                                                     |
| ESCB     | European System of Central Banks                                                                                            | Treaty     | Treaty establishing the European Community                                                                                               |
| ESRI     | Economic and Social Research Institute, Dublin                                                                              | UCIT(s)    | undertaking(s) for collective investment in transferable securities                                                                      |
| EU       | European Union                                                                                                              | ULC        | unit labor cost                                                                                                                          |
| EURIBOR  | Euro Interbank Offered Rate                                                                                                 | UN         | United Nations Organization                                                                                                              |
| Eurostat | Statistical Office of the European Communities                                                                              | UNCTAD     | United Nations Conference on Trade and Development                                                                                       |
| FATF     | Financial Action Task Force on Money Laundering                                                                             | VaR        | value at risk                                                                                                                            |
| FDI      | foreign direct investment                                                                                                   | WBI        | Wiener Börse Index (all-share index of the Vienna stock exchange)                                                                        |
| Fed      | Federal Reserve System (U.S.A.)                                                                                             | WEF        | World Economic Forum                                                                                                                     |
| FMA      | Austrian Financial Market Authority                                                                                         | WIFO       | Österreichisches Institut für Wirtschaftsforschung – Austrian Institute of Economic Research                                             |
| FOMC     | Federal Open Market Committee (U.S.A.)                                                                                      | wiiw       | Wiener Institut für internationale Wirtschaftsvergleiche – The Vienna Institute for International Economic Studies                       |
| FSAP     | Financial Sector Assessment Program (IMF/World Bank)                                                                        | WKÖ        | Wirtschaftskammer Österreich – Austrian Federal Economic Chamber                                                                         |
| FWF      | Fonds zur Förderung der wissenschaftlichen Forschung – Austrian Science Fund                                                | WTO        | World Trade Organization                                                                                                                 |
| 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 logistics company)         |            |                                                                                                                                          |
| HICP     | Harmonised Index of Consumer Prices                                                                                         |            |                                                                                                                                          |
| HIPC     | Heavily Indebted Poor Countries                                                                                             |            |                                                                                                                                          |
| IBAN     | International Bank Account Number                                                                                           |            |                                                                                                                                          |
| IBRD     | International Bank for Reconstruction and Development                                                                       |            |                                                                                                                                          |
| ICT      | information and communication technology                                                                                    |            |                                                                                                                                          |
| IDB      | Inter-American Development Bank                                                                                             |            |                                                                                                                                          |
| IFES     | Institut für empirische Sozialforschung GesmbH – Institute for Empirical Social Research, Vienna                            |            |                                                                                                                                          |
| ifo      | ifo Institute for Economic Research, Munich                                                                                 |            |                                                                                                                                          |

## 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.

# List of Studies

## Published in Monetary Policy & the Economy

For further details on the following publications see [www.oenb.at](http://www.oenb.at)

### Issue Q2/07

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Economic Outlook for Austria from 2007 to 2009 (June 2007)  
*Gerhard Fenz, Christian Ragacs, Martin Schneider*

Output Growth in Austria and Germany: What Explains the Growth  
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Characteristics of Household Debt in Austria  
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Credit Claims as Eligible Collateral for Eurosystem Credit Operations  
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Capturing the Link between M3 Growth and Inflation in the Euro Area –  
An Econometric Model to Produce Inflation Forecasts  
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Bidding Behavior in Austrian Treasury Bond Auctions  
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60 Years of Marshall Plan Aid – A Critical Appraisal  
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Europe – Quo Vadis? 50 Years Treaty of Rome  
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Robust Economic Activity in the Euro Area  
Inflation Remains Moderate  
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Economic and Financial Education:  
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*Ernest Gnan, Maria Antoinette Silgoner, Beat Weber*

Financial Capability of Austrian Households  
*Pirmin Fessler, Martin Schürz, Karin Wagner, Beat Weber*

Financial and Economic Education Products and Services of  
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Selected Central Banks' Economic and Financial Literacy Programs

*Manfred Fluch*

Human Capital and Economic Growth –

Summary of the 35<sup>th</sup> Economics Conference of the Oesterreichische Nationalbank

*Jürgen Janger, Burkhard Raunig*

#### **Issue Q4/07**

Growth Prospects for Austria Are Weakening

Economic Outlook for Austria from 2007 to 2009 (December 2007)

*Christian Ragacs, Klaus Vondra*

Comparing the Predictive Accuracy of Macroeconomic Forecasts  
for Austria from 1998 to 2006

*Christian Ragacs, Martin Schneider*

Effects of the Full Opening of the Austrian Labor Market to EU-8 Citizens

*Klaus Prettnner, Alfred Stiglbauer*

The Competitiveness Challenge: EU Member States in International Trade

*Antje Hildebrandt, Maria Antoinette Silgoner*

International Trade & Domestic Growth:

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#### **Issue Q1/08**

Inflationary Pressures Worldwide despite Downturn in Growth

Dampened Growth also Expected in the Euro Area

*Wolfgang Pointner, Martin Schneider, Josef Schreiner*

Current Inflation Developments in Austria

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**Issue Q2/08**

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Economic Outlook for Austria from 2008 to 2010 (June 2008)

*Gerhard Fenz, Martin Schneider*

Supply-Side Triggers for Inflation in Austria

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Do Aggregate Demand Factors Influence Current Inflation Developments?

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Stock Holdings in Austria

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The Impact of EU Enlargement in 2004 and 2007 on FDI and Migration Flows

Gravity Analysis of Factor Mobility

*Andreas Breitenfellner, Jesús Crespo Cuaresma, Peter Mooslechner,*

*Doris Ritzberger-Grünwald*

Toward the First Decade of Economic and Monetary Union –

Summary of the 36<sup>th</sup> Economics Conference

*Ernest Gnan, Martin Summer*

# Periodical Publications of the Oesterreichische Nationalbank

For further details see [www.oenb.at](http://www.oenb.at)

## **Monetary Policy & the Economy** quarterly

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

## **Statistiken – Daten & Analysen** quarterly

This publication contains brief 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 and 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 published at irregular intervals.

## **econ.newsletter** quarterly

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

For further details see [www.oenb.at/econ.newsletter](http://www.oenb.at/econ.newsletter)

## **Financial Stability Report** semiannual

Issued both in German and English, the Financial Stability Report 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

The English-language publication Focus on European Economic Integration is the successor publication to Focus on Transition (published up to issue 2/2003). Reflecting a strategic regional research priority of the OeNB, this publication is a channel for communicating our ongoing research on Central, Eastern and South-eastern European (CESEE) countries ranging from economic country studies to studies on central banking issues and related topics. One of the purposes of publishing theoretical and empirical studies in the Focus on European Economic Integration, which are subject to an external refereeing process, is to stimulate comments and suggestions prior to possible publication in academic journals.

## **Workshops – Proceedings of OeNB Workshops**

three to four issues a year

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 generally available in English only.

## **Working Papers**

about ten papers a year

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.

## **Economics Conference (Conference Proceedings)**

annual

The Economics Conference hosted by the OeNB is an international platform for exchanging views and information on monetary and economic policy as well as financial market issues. It convenes central bank representatives, economic policymakers, financial market players, academics and researchers. The conference proceedings comprise all papers presented at the conference.

## **Conference on European Economic Integration (Conference Proceedings)**

annual

This series, published in English by a renowned international publishing house, reflects presentations made at the OeNB's annual conference on Central, Eastern and Southeastern European issues and the ongoing EU enlargement process (formerly East-West Conference).

For further details see [ceec.oenb.at](http://ceec.oenb.at)

## **Annual Report**

annual

The Annual Report of the OeNB provides a broad review of Austrian monetary policy, economic conditions, new developments in the financial markets in general and in 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 OeNB's financial statements.

## **Intellectual Capital Report**

annual

The Intellectual Capital Report is a review of the OeNB's intellectual capital and its use in the OeNB's business processes and services. The report clarifies the relationships between different types of human, relational, structural and innovation capital and describes various determinants that influence the OeNB's intellectual capital. The report provides an integrated view of the OeNB and serves to assess the consistency of the OeNB's intellectual capital with its knowledge-based strategic orientation.

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