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Inquiries

Oesterreichische Nationalbank, Communications Division
Postal address: PO Box 61, AT 1011 Vienna
Phone: (+43-1) 404 20-6666
Fax: (+43-1) 404 20-6698
E-mail: oenb.info@oenb.at

Orders/address management

Oesterreichische Nationalbank, Documentation Management and Communications Services
Postal address: PO Box 61, AT 1011 Vienna
Phone: (+43-1) 404 20-2345
Fax: (+43-1) 404 20-2398
E-mail: oenb.publikationen@oenb.at

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Analyses

Domestic Demand and Strong Exports Stimulate the Economy

Economic Outlook for Austria from 2006 to 2008 (June 2006)

Christian Ragacs,
Johann Scharler

1 Summary

According to the June 2006 economic outlook of the Oesterreichische Nationalbank (OeNB), Austria's real gross domestic product (GDP) is expected to grow 2.5% in 2006 and 2.2% in both 2007 and 2008. The OeNB's growth forecast for 2006 has been revised upward by 0.2 percentage point since the December outlook. Inflation will drop to 1.7% in 2006 (2005: 2.1%) and will fall further to 1.6% in 2007 and 2008. Employment will continue to increase substantially, but so will the labor supply. As a result, the unemployment rate will dip only slightly, to 5.1%.

Global economic growth (excluding the euro area) was very strong at 5.1% in 2005 despite persistently high oil prices and is expected to be 4.4% at the end of the forecast horizon, still above the long-term average.

Austria's *export markets* continue to pick up speed. However, exchange rate trends and slightly higher unit labor costs are weighing on Austrian exports' competitiveness. Therefore, Austria will lose some market share on its export markets in 2006, but is expected to temporarily regain some market share in 2007.

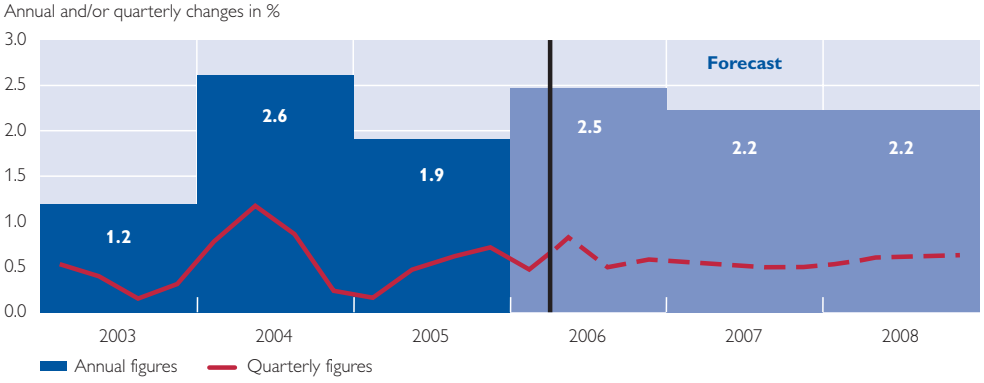
Net exports accounted for a relatively large portion of GDP growth in 2005 due to the low rate of import growth. However, import growth is expected to accelerate in 2006 as capital spending increases. Thus, net exports are expected to make a small – though consistently positive – contribution to growth across the forecast horizon.

Austria's *current account* posted a surplus of EUR 3 billion or 1.2% of GDP at the close of 2005, a result the likes of which had last been seen in 1982. The current account surplus is expected to increase to 1.8% of GDP by 2008.

The *inflation rate* will be subject to a number of different influences throughout the forecast horizon. Comparatively high GDP growth will have the Austrian economy operating closer to capacity than it has in the past few years. This development will not be accompanied by heavier price pressures, since the output gap will not close until the end of the forecast horizon. The current forecast

Chart 1

Real GDP Growth (seasonally adjusted)



Source: Eurostat, OeNB.

JEL classification: C5, E17
Keywords: forecast, Austria, macroeconometric model.

Table 1

OeNB June 2006 Outlook for Austria – Key Results[1]

	2005	2006	2007	2008
	Annual change in % (real)			
Economic activity				
Gross domestic product	+1.9	+2.5	+2.2	+2.2
Private consumption	+1.4	+2.1	+1.8	+1.8
Government consumption	+1.4	+1.7	+1.9	+2.4
Gross fixed capital formation	+1.9	+2.4	+3.1	+2.4
Exports of goods and services	+4.3	+6.0	+6.2	+6.3
Imports of goods and services	+4.4	+6.0	+6.4	+6.2
	% of nominal GDP			
Current account balance	+1.2	+1.4	+1.6	+1.8
	Percentage points of GDP			
Contribution to real GDP growth				
Private consumption	+0.8	+1.1	+1.0	+1.0
Government consumption	+0.3	+0.3	+0.3	+0.4
Gross fixed capital formation	+0.4	+0.5	+0.7	+0.5
Domestic demand (excluding changes in inventories)	+1.5	+2.0	+2.0	+1.9
Net exports	+0.1	+0.3	+0.2	+0.3
Changes in inventories (including statistical discrepancy)	+0.3	+0.2	+0.1	−0.0
	Annual change in %			
Prices				
Harmonized Index of Consumer Prices (HICP)	+2.1	+1.7	+1.6	+1.6
Private consumption expenditure (PCE) deflator	+1.9	+1.9	+1.8	+1.6
GDP deflator	+2.0	+1.7	+1.6	+1.6
Unit labor costs in the total economy	+1.0	+1.0	+1.1	+1.2
Compensation per employee (at current prices)	+2.4	+2.6	+2.6	+2.7
Productivity (whole economy)	+1.3	+1.5	+1.4	+1.4
Compensation per employee (real)	+0.5	+0.7	+0.8	+1.1
Import prices	+2.8	+2.8	+1.7	+1.4
Export prices	+1.7	+2.0	+1.8	+1.5
Terms of trade	−1.1	−0.8	+0.1	+0.1
Income and savings				
Real disposable household income	+2.3	+1.7	+1.3	+1.9
	% of nominal disposable household income			
Saving ratio	9.6	9.4	9.1	9.3
	Annual change in %			
Labor market				
Payroll employment	+1.0	+1.2	+1.1	+1.0
	%			
Unemployment rate (Eurostat definition)	5.2	5.1	5.1	5.1
	% of nominal GDP			
Budget				
Budget balance (Maastricht definition)	−1.5	−1.6	−1.2	−1.0
Government debt	62.9	62.2	61.1	59.9

Source: 2005: Eurostat, Statistics Austria; 2006 to 2008: OeNB June 2006 outlook.

[1] *The outlook was drawn up on the basis of seasonally adjusted and working-day adjusted national accounts data. Therefore, the historical values for 2005 may deviate slightly from the nonadjusted data released by Statistics Austria.*

assumes that oil prices will stabilize and there will be no second-round effects on wages and prices. Thus, the OeNB expects inflation to moderate to 1.7% for 2006 and then stabilize at 1.6% for the remainder of the forecast horizon.

While high energy prices will continue to curb *consumption*, the improving economic situation will lift consumer confidence. Increased employment will be a major driver of consumption growth. Collective wage agreements that are expected to be somewhat higher than in previous years and a slowing of inflation will boost private households' real purchasing power. The *saving ratio* rose 0.6 percentage point in 2005 to 9.6%. Increased private consumption and a slight reduction in the saving ratio are expected over the forecast period.

Bustling export activity, favorable financing conditions and the development of corporate earnings will stimulate investment in 2006 (2.4%). Following a further increase in 2007 (3.1%), the investment cycle will lose some steam in 2008 (2.4%). Investment in plant and equipment will undergo particularly strong growth in 2006.

The labor supply will continue to increase sharply by some 35,000 to 40,000 people each year, and although demand for labor is also growing strongly on the back of a positive economic situation, at rates of 0.9% (2006) and 0.8% (2007 and 2008), the *unemployment rate* will decline only slightly, to 5.1%, by 2008.

2 Technical assumptions

The OeNB compiled this forecast as its input for the Eurosystem's spring 2006 staff projections for macroeconomic trends in the euro area. The forecast horizon extends from the first quarter of 2006 to the fourth quarter of 2008. May 15, 2006, was the cutoff date for the underlying assumptions on global economic trends and for the technical assumptions on interest rates, exchange rates and crude oil prices. The OeNB used its macroeconomic quarterly model to prepare the projections.

The primary data source is the seasonally and working-day adjusted national accounts data compiled by the Austrian Institute of Economic Research (WIFO), which are fully available up to the fourth quarter of 2005 and which are available in preliminary form (flash estimates) for the first quarter of 2006. Whereas earlier forecasts were based on the technical assumption that short-term nominal interest rates would remain constant, the short-term interest rate used for this forecast horizon is based on market expectations for the development of the three-month EURIBOR. Thus, for 2006, 2007 and 2008, it is 3.0%, 3.6% and 3.7%, respectively. The long-term interest rates are aligned with market expectations for ten-year government bonds and are forecast to come to 4.0% (2006), 4.2% (2007) and 4.3% (2008). A constant rate of USD 1.27/EUR is assumed for the future USD/EUR exchange rate trend. Taking the values realized thus far into account, the average rate for 2006 is USD 1.25/EUR. Thus, a slight euro gain is expected.

The assumed oil price trend is based on the forward rates, which are expected to be USD 70.3, USD 73.9

and USD 71.9 per barrel Brent for 2006, 2007 and 2008, respectively.

The budget forecast includes only those measures that had been passed and suitably specified at the time that the OeNB outlook was prepared.

3 Robust Growth of the Global Economy

3.1 Global Economic Growth Remains Dynamic

Both global economic growth and the volume of world trade developed better than expected in 2005 as a result of strong growth in corporate earnings and favorable financing conditions. However, the U.S.A.'s positive contribution to global economic growth is expected to diminish somewhat in the years ahead. Global economic growth (excluding the euro area) was 5.1% in 2005 despite persistently high oil prices and is expected to still be 4.4% at the end of the forecast horizon.

Following several above-average years, growth in the *United States* will slow a bit due to an expected slackening of consumer demand. This will mitigate the high level of indebtedness of U.S. households as well as inflationary pressure. The U.S. current account deficit will remain high. In 2005, the budget deficit improved on the back of better economic conditions, but the structural deficit remained large and there are no indications that it will diminish considerably during the period covered by this forecast.

Asia will experience ongoing robust growth. *China's* growth will be driven by both domestic demand and exports. Despite expectations of only

Table 2

Underlying Global Economic Conditions

	2005	2006	2007	2008
	Annual change in % (real)			
Gross domestic product				
World excluding the euro area	+5.1	+5.0	+4.5	+4.4
U.S.A.	+3.5	+3.5	+3.0	+2.9
Japan	+2.7	+2.9	+1.9	+1.8
Asia excluding Japan	+7.6	+7.3	+6.8	+6.8
Latin America	+4.3	+4.0	+3.6	+3.5
United Kingdom	+1.8	+2.3	+2.8	+2.8
New EU Member States	+4.3	+4.6	+4.4	+4.3
Switzerland	+1.8	+2.1	+1.7	+1.7
Euro area (Eurosystem)[1]	+1.4	1.8–2.4	1.3–2.3	×
Euro area (European Commission)	+1.3	+2.1	+1.8	×
World trade (imports of goods and services)				
World economy	+7.0	+7.1	+6.2	+6.4
Non-euro area countries	+8.1	+7.7	+6.7	+6.8
Real growth of euro area export markets	+7.7	+7.6	+6.7	+6.7
Real growth of Austrian export markets	+6.2	+8.0	+5.9	+6.5
Prices				
Oil price in USD/barrel (Brent)	54.4	70.3	73.9	71.9
Three-month interest rate in %	2.2	3.1	3.9	4.1
Long-term interest rate in %	3.4	4.0	4.2	4.3
USD/EUR exchange rate	1.24	1.25	1.27	1.27
Nominal effective exchange rate (euro area index)	103.90	103.87	104.43	104.43

Source: Eurosystem.

[1] *Results of the Eurosystem's June 2006 projections. The ECB presents the results in ranges based on average differences between actual outcomes and earlier projections.*

moderate investment activity, many areas of production will continue to have excess capacities. For this reason, economic policy is aimed primarily at boosting consumer demand through more rapid wage growth and the introduction of a new social insurance system. The economic trend in *Japan* will also be powered by vigorous domestic demand and a recovery of exports, which will be helped by a weak yen and greater investment in plant and equipment in China.

Compared with 2004, real economic growth in the *European non-euro area countries* in 2005 was only moderate. However, a marginal recovery of both domestic demand and exports is expected for the forecast period.

The *new EU Member States*, which are especially important to Austria, are expected to achieve continued high growth rates (over 4%) throughout the forecast period. In Poland, Hungary and the Czech Republic, domestic demand will be the primary force fueling economic growth.

The *United Kingdom* experienced a slight recovery in the fourth quarter of 2005, and growth is expected to pick up between 2006 and 2007. *Switzerland* will achieve between 2.1% and 1.7% economic growth over the forecast period.

3.2 Euro Area Recovery

Economic activity in the euro area has improved considerably so far in 2006. The positive development of many confidence indicators signals a further strengthening of the economy.

After a stagnating development in the fourth quarter of 2005, *Germany's* economy picked up in the first quarter of 2006 despite weather-related problems. Both exports and imports rose sharply in January and February 2006. Real GDP growth will be driven primarily by net exports during the period covered by this forecast, but investment will also accelerate. Private consumption will probably receive an additional temporary boost in 2006 as consumers push forward purchases in anticipation of the VAT hike in 2007. The higher value-added tax will likely curb consumption growth in 2007. Considerably stronger real GDP growth could even bring the budget deficit to below 3% in 2006 and lower the unemployment rate.

Italy is expected to undergo a very moderate economic recovery during the forecast period, after experiencing economic stagnation in 2005. The improvement will be driven largely by domestic demand. Net exports are not expected to contribute to growth until 2007 and 2008, and then only slightly.

France has been one of the euro area countries with the most stable domestic demand, the factor that will continue to propel GDP growth over the entire forecast horizon. GDP growth is expected to rise relatively steeply in 2006 and then flatten out somewhat over the rest of the forecast horizon despite the expected decline of net exports over the forecast horizon, underscoring the importance of domestic demand for the French economy.

4 Austrian Exports Still Dynamic

Although Austrian exporters were able to improve their price competitiveness in 2005, thanks in part to a moderate wage policy, real export growth was slower than in 2004. Austria's real exports of goods and

Table 3

Growth and Price Developments in Austria's External Trade

	2005	2006	2007	2008
	Annual change in %			
Exports				
Competitors' prices in Austria's export markets	+3.3	+3.1	+1.6	+1.6
Export deflator	+1.7	+2.0	+1.8	+1.5
Changes in price competitiveness	+1.6	+1.1	−0.2	+0.0
Demand on Austria's export markets (real)	+6.2	+8.0	+5.9	+6.5
Austrian exports of goods and services (real)	+4.3	+6.0	+6.2	+6.3
Market share	−1.9	−2.0	+0.3	−0.2
Imports				
International competitors' prices on the Austrian market	+2.9	+2.9	+1.6	+1.5
Import deflator	+2.8	+2.8	+1.7	+1.4
Austrian imports of goods and services (real)	+4.4	+6.0	+6.4	+6.2
Terms of trade	−1.1	−0.8	+0.1	+0.1
	Percentage points of real GDP			
Contribution of net exports to GDP growth	+0.1	+0.3	+0.2	+0.3

Source: 2005: Eurostat; 2006 to 2008: OeNB June 2006 outlook, Eurosystem.

services increased 8.6% in 2004 but only 4.3% in 2005. This slowdown can be interpreted primarily as a delayed effect of a loss of market share owing to the euro's gains.

However, continued dynamic growth of the export markets is expected to accelerate export growth across the forecast horizon. Real export growth is expected to rise sharply in 2006, to 6.0%, and to continue to pick up somewhat in 2007 and 2008, to 6.2% and 6.3%, respectively. However, the euro's latest rise against the U.S. dollar, which began at the end of 2005, and slight increases in unit labor costs will weaken the price competitiveness[1] of Austrian exports. Therefore, Austria will continue to lose market share on the export markets in 2006 and will not begin to slowly regain it until 2007.

The forecast recovery of demand for capital goods – particularly plant and equipment – and rising private consumption will boost demand for imports. Import growth will accelerate to 6.0% or even slightly above 6% for 2006 to 2008. Thus, net exports will continue to contribute – though only marginally – to growth.

Surging oil prices in 2005 have resulted in a marked deterioration of the terms of trade. The oil price shock will continue to have delayed repercussions in 2006, but they will be less severe. The terms of trade are expected to improve slightly again in 2007 and 2008.

Austria's current account showed a surplus of EUR 3 billion or 1.2% of GDP at the close of 2005, a result the likes of which was last recorded in 1982.

[1] *Export competitiveness is expressed as the ratio of competitors' prices on Austria's export markets to the prices of Austrian exports. The competitors' prices are determined using a two-stage weighting process. For each export market, the other exporters' prices in the relevant country are aggregated, weighted by their import shares. The price of domestic production in the export market is also taken into account. The competitor prices determined in this way for each of Austria's export markets are then aggregated with the markets' respective shares of total Austrian exports.*

Table 4

Austria's Current Account

	2005	2006	2007	2008
	% of nominal GDP			
Balance of trade	2.6	2.8	3.0	3.1
Goods	1.1	1.0	1.1	1.2
Services	1.5	1.8	1.9	1.9
Euro area	−4.5	−4.0	−4.0	−4.0
Non-euro area countries	7.1	6.8	6.9	7.0
Balance on income	−0.6	−0.5	−0.5	−0.5
Balance on current transfers	−0.9	−0.9	−0.9	−0.8
Current account	1.2	1.4	1.6	1.8

Source: 2005: OeNB; 2006 to 2008: OeNB June 2006 outlook.

The nominal trade balance will continue to improve, thanks in large part to the services account, where the high number of overnight stays in the tourism industry will have a positive effect. For example, with 60 million (+1.3%) overnight stays in the 2005–2006 winter season, the number of stays in winter exceeded the number of stays in summer for the first time (Statistics Austria). The trade surplus will increase from 2.6% of GDP in 2005 to 3.1% in 2008. The surplus in the balance on goods will stabilize at around 1% of GDP. The balance of trade with euro area countries will improve slightly, while the trade surplus (% of GDP) with non-euro area countries will remain at its 2005 level.

The deficit on the income account, measured as a percentage of GDP, narrowed slightly in 2006 and is not expected to change through 2008. The small improvement in 2006 reflects the increasing maturity of outward foreign direct investments.

The current transfers balance will also improve slightly. Deficits of just under 1% of GDP are expected each year across the forecast horizon.

5 No Major Second-Round Effects of the Oil Price Surge

At 2.1%, inflation as measured by the HICP was only slightly higher in 2005 than in 2004. In the past few years, inflation has largely been determined by energy price developments. Across the forecast horizon, inflation will hinge on several factors. First, it is assumed that oil prices will rise only moderately from now on. Second, on the basis of previous experience, the changes in the price of oil are not expected to have any second-round effects on wages and prices. Third, even the comparatively high level of real GDP growth will not result in significant price pressure, since the Austrian economy is not producing at capacity yet. Thus, the OeNB expects inflation to slow considerably to 1.7% for 2006 and then to stabilize at 1.6% for the remainder of the forecast horizon.

When the effects of the oil price surge wear off, the terms of trade will also improve. Increasing unit labor costs will slow the growth of corporate profit margins.

Table 5

Price and Cost Indicators for Austria

	2005	2006	2007	2008
	Annual change in %			
HICP	+2.1	+1.7	+1.6	+1.6
HICP energy	+9.8	+7.6	+3.2	+1.5
HICP excluding energy	+1.5	+1.2	+1.4	+1.6
Private consumption expenditure (PCE) deflator	+1.9	+1.9	+1.8	+1.6
Investment deflator	+1.5	+1.4	+1.6	+1.6
Import deflator	+2.8	+2.8	+1.7	+1.4
Export deflator	+1.7	+2.0	+1.8	+1.5
Terms of trade	−1.1	−0.8	+0.1	+0.1
GDP deflator	+2.0	+1.7	+1.6	+1.6
Unit labor costs	+1.0	+1.0	+1.2	+1.2
Compensation per employee	+2.4	+2.6	+2.6	+2.7
Labor productivity	+1.3	+1.5	+1.4	+1.4
Collectively agreed wage settlements	+2.3	+2.7	+2.6	+2.6
Profit margins[1]	+1.0	+0.7	+0.5	+0.4

Source: 2005: Eurostat. Statistics Austria; 2006 to 2008: OeNB June 2006 outlook.

[1] GDP deflator divided by unit labor costs.

6 Domestic Demand Increasingly Drives Economic Activity

6.1 Consumption Picks Up While Saving Ratio Declines Slightly

Consumer demand has been very weak since the economic downturn in 2001. The increase in disposable household incomes as a result of the tax reform did not immediately yield a significant rise in consumer spending, instead boosting the saving ratio. At 1.4%, real consumption growth in 2005 was below the long-standing average. Starting in 2006, private households have begun to spend their income gains and savings. Although high energy prices continue to curb consumption, the improving economic situation will likely have a positive impact on consumer confidence. Thus, annual consumption growth rates of 2.1% (2006) and 1.8% (2007 and 2008) are expected for the forecast horizon.

Table 6

Determinants of Nominal Household Income in Austria

	2005	2006	2007	2008
	Annual change in %			
Compensation of employees	+3.4	+3.8	+3.7	+3.7
Payroll employees	+1.0	+1.2	+1.1	+1.0
Wages per employee	+2.4	+2.6	+2.6	+2.7
Self-employed income (net) and property income	+5.5	+4.7	+4.1	+4.2
Net transfers less direct taxes[1]	−2.2	−7.3	−8.5	−6.3
	Contribution to disposable household income in percentage points			
Compensation of employees	+2.8	+3.0	+2.9	+3.0
Self-employed income (net) and property income	+1.8	+1.5	+1.4	+1.4
Net transfers less direct taxes[1]	−0.3	−0.9	−1.1	−0.9
Disposable household income (nominal)	+4.2	+3.6	+3.2	+3.5

Source: 2005: Eurostat; 2006 to 2008: OeNB June 2006 outlook.

[1] Negative values indicate an increase in (negative) net transfers less direct taxes; positive values indicate a decrease.

Table 7

Private Consumption in Austria

	2005	2006	2007	2008
	Annual change in %			
Disposable household income (nominal)	+4.2	+3.6	+3.2	+3.5
Private consumption expenditure (PCE) deflator	+1.9	+1.9	+1.8	+1.6
Disposable household income (real)	+2.3	+1.8	+1.3	+1.9
Private consumption (real)	+1.4	+2.1	+1.8	+1.8
	% of nominal disposable household income			
Saving ratio	9.6	9.4	9.2	9.3

Source: 2005: Eurostat; 2006 to 2008: OeNB June 2006 outlook.

The expected increase in employment of about 0.9% on average in 2006, 2007 and 2008 will have a positive impact on consumption growth. In addition, slightly higher collective wage agreements than in previous years will also encourage consumer spending. Slower increases in prices and the associated rise in private households' real purchasing power will also help boost consumption.

Households' strong gains in disposable income as a result of the 2004/05 tax reform led to a sharp rise in the saving ratio in 2005. During this period, the saving ratio increased 0.6 percentage point to 9.6% of disposable household income. Savings are expected to be used increasingly for consumption over the forecast period. The expected acceleration of consumption growth in 2006 will bring the saving ratio down slightly, to 9.4%. In the two coming years, the saving ratio will stabilize at 9.2% and 9.3%, respectively.

6.2 Investment Activity Gains Considerable Momentum

Investment demand in 2005 was affected by the phasing out of the special investment subsidy at the end of 2004. In 2006, bustling export activity, favorable financing conditions and the development of corporate earnings will stimulate investment, though. Current confidence indicators clearly support expectations of increased investment growth. Investment growth will be 2.4% in 2006 and accelerate to 3.1% in 2007. However, expected increases in interest rates in the euro area will impair financing conditions over the forecast period. Company profit margins, measured as the difference between increases in unit labor cost and the GDP deflator, will likely shrink due to lower inflation and higher employee compensation. This, in turn, will weaken investment growth to 2.4% in 2008.

Although investment is growing faster than GDP, it is not enough to raise the investment share of GDP perceptibly. This ratio will hold relatively steady at 21.5% across the forecast horizon, which is low compared with historical values.

Investment in plant and equipment, the investment component that is most affected by the economic cycle, is expected to show especially strong growth at 3.6% in 2006, 4.6% in 2007 and 4.0% in 2008.

Residential construction investment remained down in 2005. Residential construction activity is expected to increase only modestly across the forecast horizon. However, because supply has not kept pace with rapidly rising demand in the past

Table 8

Investment Activity in Austria

	2005	2006	2007	2008
	Annual change in %			
Total gross fixed capital formation (real)	+1.9	+2.4	+3.1	+2.4
of which: Investment in plant and equipment (real)	*+1.9*	*+3.6*	*+4.6*	*+4.0*
Residential construction investment (real)	*−1.2*	*−0.8*	*+0.9*	*+1.1*
Non-residential construction investment and other investment	*+3.2*	*+2.0*	*+2.6*	*+1.5*
Government investment (real)	*+7.3*	*+3.9*	*+2.4*	*+1.5*
Private investment (real)	*+1.6*	*+2.4*	*+3.1*	*+2.5*
	Contribution to total gross fixed capital formation growth in percentage points			
Investment in plant and equipment (real)	+0.8	+1.5	+1.9	+1.6
Residential construction investment (real)	−0.2	−0.2	+0.2	+0.2
Non-residential construction investment and other investment	+1.3	+0.8	+1.0	+0.6
Government investment (real)	+0.4	+0.2	+0.1	+0.1
Private investment (real)	+1.5	+2.2	+3.0	+2.3
	Contribution to real GDP growth in percentage points			
Inventory changes (real)	−0.0	+0.1	+0.0	−0.1

Source: 2005: Eurostat; 2006 to 2008: OeNB June 2006 outlook.

several years, slightly positive contributions to growth are expected for 2007.

6.3 Unemployment Drops Only Slightly Despite Rising Employment

The situation on the labor market has improved since the start of 2006. In April 2006, nearly 13,400 (–5.4%) fewer people were registered as unemployed than in April 2005 (preliminary estimates from the Austrian Public Employment Service). Employment as registered by the Main Association of Austrian Social Security Institutions rose by nearly 53,100 jobs (+1.7%) year-on-year. The unemployment rate (preliminary Eurostat rate based on register figures) was 4.8% in April 2006, 0.3 percentage point lower year on year. Another positive signal is that at 32,600, the number of vacancies is the highest it has been in five years.

Much like in 2005, the Austrian labor market will be shaped by two opposing trends over the forecast period. On the one hand, demand for labor is increasing as the economy picks up. On the other hand, the labor supply is also growing continually. Thus, although the economic upturn is boosting employment, the unemployment rate will decline only slightly. Total employment will grow considerably over the forecast horizon, beginning with an especially steep increase in 2006 due to cyclical influences. In particular, the number of payroll employees will expand considerably while the number of self-employed persons (decline in the agricultural sector) and public sector employees will continue to shrink across the forecast horizon (based on ESA95 definitions).

Although the employment trend in 2006 indicates that the majority of the newly created jobs are part-time

Table 9

Labor Market Developments in Austria

	2005	2006	2007	2008
	Annual change in %			
Total employment	+0.6	+0.9	+0.8	+0.8
of which: Payroll employment	*+1.0*	*+1.2*	*+1.1*	*+1.0*
Self employment	*−1.1*	*−0.2*	*−0.2*	*−0.1*
Public sector employment	*+0.4*	*−0.1*	*−0.2*	*−0.7*
Registered unemployment	+3.2	−1.0	+0.7	+1.2
Labor supply	+0.7	+0.8	+0.8	+0.8
	%			
Unemployment rate (Eurostat definition)	5.2	5.1	5.1	5.1

Source: 2005: Eurostat; 2006 to 2008: OeNB June 2006 outlook.

(employment growth is stagnant in industries with primarily full-time work), full-time employment is also expected to increase over the forecast horizon.

The Austrian labor supply has already been growing relatively strongly in previous years. In 2005, the supply of payroll labor (i.e. payroll employees plus unemployed persons) increased 1.2% (42,700 people) while the total labor pool (including self-employed persons) grew 0.8%. This OeNB outlook assumes that the total labor supply will continue to increase by 0.8% each year, due in large part to structural effects (see box 1). All told, the expansion of the labor pool brought about by these effects is likely to be on the order of 22,000 to 34,000 persons annually, which translates to an increase of 0.5% to 0.8% a year.

7 Cyclical Risks Unchanged

As in the December 2005 outlook, the further development of oil prices remains the primary forecast risk. This outlook assumes relatively high, yet stable, oil prices for the entire forecast horizon. Ongoing geopolitical risks, low spare production capacities and high capacity utilization at refineries could result in additional price hikes.

Continuing global imbalances and associated uncertainties regarding exchange rate trends are another risk factor for this forecast. If the United States' high current account deficit proves unsustainable, the U.S. dollar could lose further strength.

Although the general economic trend in the euro area has firmed over the past months, it is still marked by uncertainty. This is particularly true of developments in Germany, where possible effects of comprehensive budget consolidation efforts pose a risk for economic activity in Austria.

Delayed effects of the second stage of the tax reform could still yield stronger consumption growth than anticipated in this outlook. Since the saving ratio is still high, the risks relating to consumption seem to be a bit more on the upside.

On the whole, the risks to the forecast appear to be balanced.

8 Short-Term Growth Prospects Somewhat More Optimistic than in the December 2005 Outlook

The biggest change in the external macroeconomic environment compared with the December 2005 outlook relates to the assumptions about oil prices and interest rate develop-

Box 1

Structural Causes of Labor Supply Growth in Austria

The labor supply has grown continuously over the past decade. According to the most recent demographic forecast, the working-age population will continue to grow rapidly in the years ahead. Unlike earlier forecasts, this one must assume from today's perspective (Statistics Austria's latest demographic forecast of fall 2005) that population growth will contribute significantly more to labor supply growth. The introduction of a central register of residents enables a far more accurate estimation of demographic development than the old method based on forward projections of the national census, which is carried out every ten years.

The following factors are likely to play a significant role in determining the labor supply over the next few years:

- *Migration and naturalization: The continued influx of foreign nationals to Austria is the driving force behind the forecast changes in the population and labor supply. By far the largest number of foreign workers comes from the former Yugoslavia (2005: 156,886) and Turkey (2005: 53,453). However, as these workers become naturalized citizens, their numbers diminish. Increasingly important sources of foreign labor are Germany, whose share of the foreign labor pool grew from 8.9% to 12.5% between 2003 and 2005, and the new EU Member States, whose share was around 11% in 2005. WIFO estimates that the foreign labor pool will grow by 17,000 people in 2006. This OeNB outlook anticipates further growth of 15,000 a year for 2007 and 2008.*
- *Higher early retirement age: The impact of the raising of the early retirement age is still mild, but it is becoming stronger. According to a rough estimate, the labor supply will increase by around 0.1% in 2006, 0.2% in 2007 and 0.3% in 2008.*
- *Training: People enrolled in training programs are not counted as either employed or unemployed. The temporary increase in funding for the Austrian Public Employment Service resulted in an increase in the number of people participating in training in 2006. However, this figure is expected to decline again by 2008. The labor supply forecast reckons with a reduction by 5,000 people in 2006 and an increase by the same number in 2007.*
- *Other demographic factors: The number of existing Austrian residents who attain working age increases by roughly 2,000 a year, which will contribute slightly to the growth of the labor supply.*

Structural Influences on the Labor Supply, 2006 to 2008

thousands

Year	Pension reforms 2003/04	Employees from abroad	Other demo-graphic factors	Training offered by Austrian Public Employment Service	Total
2006	+8	+17	+2	−5	**+22**
2007	+12	+15	+2	+5	**+34**
2008	+12	+15	+2	+0	**+29**

Source: OeNB.

Table 10

Change in the Underlying Global Environment since the December 2005 Outlook

	June 2006			December 2005		Difference	
	2006	2007	2008	2006	2007	2006	2007
	Annual change in %						
Growth of Austria's export markets	+8.0	+5.9	+6.5	+7.1	+6.6	+1.0	−0.7
Competitor prices in Austria's export markets	+3.1	+1.6	+1.6	+3.7	+1.5	−0.5	+0.1
Competitor prices in Austria's import markets	+2.9	+1.6	+1.5	+3.2	+1.4	−0.3	+0.2
	USD						
Oil price per barrel (Brent)	70.3	73.9	71.9	60.0	59.5	+10.3	+14.4
	Annual change in %						
Nominal effective exchange rate (exports)	−0.1	−0.1	+0.0	+0.6	+0.0	−0.6	−0.1
Nominal effective exchange rate (imports)	−0.1	−0.1	+0.0	+0.2	+0.0	−0.3	−0.1
	%						
Three-month interest rate	3.1	3.9	4.1	2.3	2.3	+0.8	+1.6
Long-term interest rate	4.0	4.2	4.3	3.6	3.7	+0.4	+0.5
	Annual change in %						
Real GDP, U.S.A.	+3.5	+3.0	+2.9	+3.5	+3.0	+0.0	+0.0
	USD/EUR						
USD/EUR exchange rate	1.25	1.27	1.27	1.19	1.19	+0.06	+0.08

Source: Eurosystem.

ments. For 2006 and 2007, this outlook assumes that oil prices will increase by USD 10.3 and USD 14.4 per barrel Brent, respectively. Forecast financing costs as measured on long-term interest rates are 0.4 and 0.5 percentage point higher for 2006 and 2007, respectively, than in the December 2005 outlook. The projected growth rate for Austrian export markets for 2006 has been revised upward from the December 2005 outlook, and the euro is expected to be somewhat stronger compared with the December assumptions. In a simulation using the OeNB's macroeconomic model, the effects of the changed external conditions appear to have a more negative impact on economic activity in both years than the external conditions put forward in the December outlook.

Table 11 lists the reasons for the forecast revisions as the effects of changed external assumptions, the impact of new data and other effects. The impact of new data includes the influence of revisions to historical data that had already been released at the time the last forecast was compiled as well as the projection error, i.e. differences between newly released quarterly figures and the figures projected in the last forecast. The item "Other" comprises a new expert assessment regarding the development of domestic variables such as government consumption, wage agreements and any changes to the forecast models.

The revision of Austria's GDP growth for 2006 (+0.2 percentage point) can be attributed to new data and positive results from current economic and confidence indicators. The growth revisions for 2007 (–0.1 percentage point) are largely due to changes to external conditions. However, their dampening effect will be mitigated by a stronger investment cycle in 2007 than forecast in the December 2005 outlook.

Table 11

Breakdown of Forecast Revisions

	GDP		HICP	
	2006	2007	2006	2007
	Annual change in %			
June 2006 outlook	+2.5	+2.2	+1.7	+1.6
December 2005 outlook	+2.3	+2.3	+1.9	+1.7
Difference	+0.2	−0.1	−0.2	−0.1
Due to:				
New data[1]	+0.1	+0.0	−0.3	+0.0
Revision of historical data	+0.0	+0.0	+0.0	+0.0
Projection error	+0.1	+0.0	−0.3	+0.0
External assumptions	−0.2	−0.5	+0.1	+0.1
Other[2]	+0.3	+0.4	+0.0	−0.2

Source: OeNB June 2006 and December 2005 outlooks.

[1] *Effect of revised historical data and new data (projection error).*
[2] *Different assumptions about trends in domestic variables such as wages, government consumption, effects of tax measures, other rating changes and model changes.*

9 Comparison with Other Forecasts

The available forecasts for Austria's further economic development do not differ significantly from this OeNB outlook (table 12). At 2.5%, the OeNB's forecast for economic growth in 2006 is at the higher end of the spectrum. This figure has been revised upward since the OeNB's December 2005 outlook. Up-to-date economic indicators as well as the latest data for 2005 and flash estimates for the first quarter of 2006 were available at the time this outlook was prepared.

Table 12

Comparison of Current Economic Forecasts for Austria

Indicator	OeNB			WIFO		IHS		OECD		IMF		European Commission	
	June 2006			March 2006		March 2006		May 2006		April 2006		May 2006	
	2006	2007	2008	2006	2007	2006	2007	2006	2007	2006	2007	2006	2007
	Annual change in %												
Key results													
GDP (real)	+2.5	+2.2	+2.2	+2.4	+2.0	+2.5	+2.2	+2.5	+2.2	+2.2	+2.1	+2.5	+2.2
Private consumption (real)	+2.1	+1.8	+1.8	+1.9	+2.0	+2.1	+1.8	+1.8	+1.9	×	×	+2.0	+2.1
Government consumption (real)	+1.7	+1.9	+2.4	+1.3	+0.5	+1.0	+0.5	+1.3	+1.3	×	×	+1.3	+1.3
Gross fixed capital formation (real)[1]	+2.4	+3.1	+2.4	+3.2	+2.7	+4.0	+3.2	+2.8	+3.6	×	×	+3.0	+2.4
Exports (real)	+6.0	+6.2	+6.3	+5.7	+5.0	+5.2	+4.8	+6.3	+6.7	×	×	+6.8	+5.0
Imports (real)	+6.0	+6.4	+6.2	+4.9	+5.0	+5.0	+4.4	+5.3	+6.9	×	×	+5.2	+4.5
GDP per employee	+1.5	+1.4	+1.4	+1.6	+1.2	+1.4	+1.4	×	×	×	×	+1.9	+1.3
GDP deflator	+1.7	+1.6	+1.6	+1.8	+1.9	+1.5	+1.2	+1.7	+1.8	+1.8	+1.7	+1.9	+1.8
CPI	×	×	×	+1.7	+1.9	+1.4	+1.6	×	×	+1.8	+1.7	×	×
HICP	+1.7	+1.6	+1.6	+1.9	+1.9	×	×	+1.8	+1.7	×	×	+1.7	+1.6
Unit labor costs	+1.0	+1.1	+1.2	+1.2	+1.2	×	×	×	×	×	×	+0.9	+0.8
Payroll employment	+0.9	+0.8	+0.8	+1.1	+0.9	+1.1	+0.8	×	×	×	×	+0.6	+0.9
	%												
Unemployment rate[2]	5.1	5.1	5.1	5.2	5.2	5.1	5.1	5.8	5.9	4.8	4.5	5.2	5.2
	% of nominal GDP												
Current account	1.4	1.6	1.8	0.6	0.7	0.4	0.6	1.9	1.8	0.9	0.9	×	×
Government surplus/deficit	−1.6	−1.2	−1.0	−1.9	−1.5	−1.8	−0.8	−1.9	−1.5	−1.8	−0.9	−1.9	−1.4
External assumptions													
Oil price in USD/barrel (Brent)	70.3	73.9	71.9	59.0	58.0	60.0	60.0	70.0	70.0	61.2	63.0	68.9	71.0
Short-term interest rate in %	3.1	3.9	4.1	2.7	3.0	2.9	3.2	2.7	3.4	3.0	3.4	×	×
USD/EUR exchange rate	1.25	1.27	1.27	1.16	1.12	1.23	1.23	1.27	1.27	1.19	1.20	1.22	1.22
	Annual change in %												
Euro area GDP (real)	1.8–2.4	1.3–2.3	×	+2.1	+1.9	+2.0	+1.8	+2.2	+2.1	+2.0	+1.9	+2.1	+1.8
U.S. GDP (real)	+3.5	+3.0	+2.9	+3.3	+3.0	+3.3	+3.0	+3.6	+3.1	+3.4	+3.3	+3.2	+2.7
World GDP (real)	+4.5	+4.1	+4.1	+4.6	+4.4	×	×	×	×	+4.9	+4.7	+4.6	+4.3
World trade	+7.1	+6.2	+6.4	+8.5	+8.0	+7.5	+6.2	+9.3	+9.1	+8.0	+7.5	+8.5	+7.1

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

[1] *For IHS: Gross investment.*
[2] *Eurostat definition; for OECD: OECD definition.*

Annex
Detailed Result Tables

Table 13

Demand Components (Real Prices)

Chained volume data (reference year = 2000)

	2005	2006	2007	2008	2005	2006	2007	2008
	EUR million				Annual change in %			
Private consumption	126,347	128,942	131,268	133,575	+1.4	+2.1	+1.8	+1.8
Government consumption	40,221	40,905	41,682	42,682	+1.4	+1.7	+1.9	+2.4
Gross fixed capital formation	48,641	49,831	51,368	52,598	+1.9	+2.4	+3.1	+2.4
of which: Investment in plant and equipment	*19,617*	*20,327*	*21,260*	*22,103*	*+1.9*	*+3.6*	*+4.6*	*+4.0*
Residential construction investment	*9,338*	*9,260*	*9,345*	*9,443*	*−1.2*	*−0.8*	*+0.9*	*+1.1*
Investment in other construction and other investment	*19,571*	*19,958*	*20,478*	*20,778*	*+3.2*	*+2.0*	*+2.6*	*+1.5*
Changes in inventories (including statistical discrepancy)	2,384	2,852	3,014	2,984	×	×	×	×
Domestic demand	217,592	222,529	227,332	231,840	+1.9	+2.3	+2.2	+2.0
Exports of goods and services	123,409	130,857	138,955	147,736	+4.3	+6.0	+6.2	+6.3
Imports of goods and services	113,938	120,723	128,441	136,439	+4.4	+6.0	+6.4	+6.2
Net exports	9,471	10,135	10,514	11,297	×	×	×	×
Gross domestic product	227,064	232,663	237,846	243,137	+1.9	+2.5	+2.2	+2.2

Source: 2005: Eurostat; 2006 to 2008: OeNB June 2006 outlook.

Table 14

Demand Components (Current Prices)

	2005	2006	2007	2008	2005	2006	2007	2008
	EUR million				Annual change in %			
Private consumption	136,422	141,821	146,982	151,958	+3.3	+4.0	+3.6	+3.4
Government consumption	43,677	45,263	46,940	48,890	+3.3	+3.6	+3.7	+4.2
Gross fixed capital formation	51,245	53,246	55,779	58,020	+3.4	+3.9	+4.8	+4.0
Changes in inventories (including statistical discrepancy)	4,042	5,370	5,210	5,067	×	×	×	×
Domestic demand	235,386	245,700	254,910	263,934	+4.5	+4.4	+3.7	+3.5
Exports of goods and services	127,824	138,278	149,462	161,317	+6.0	+8.2	+8.1	+7.9
Imports of goods and services	116,908	127,324	137,794	148,459	+7.3	+8.9	+8.2	+7.7
Net exports	10,915	10,954	11,668	12,858	×	×	×	×
Gross domestic product	246,301	256,655	266,578	276,793	+4.0	+4.2	+3.9	+3.8

Source: 2005: Eurostat; 2006 to 2008: OeNB June 2006 outlook.

Table 15

Deflators of Demand Components

	2005	2006	2007	2008	2005	2006	2007	2008
	2000 = 100				Annual change in %			
Private consumption	108.0	110.0	112.0	113.8	+1.9	+1.9	+1.8	+1.6
Government consumption	108.6	110.7	112.6	114.5	+1.8	+1.9	+1.8	+1.7
Gross fixed capital formation	105.4	106.8	108.6	110.3	+1.5	+1.4	+1.6	+1.6
Domestic demand (excluding changes in inventories)	107.5	109.4	111.3	113.1	+1.8	+1.8	+1.7	+1.6
Exports of goods and services	103.6	105.7	107.6	109.2	+1.7	+2.0	+1.8	+1.5
Imports of goods and services	102.6	105.5	107.3	108.8	+2.8	+2.8	+1.7	+1.4
Terms of trade	101.0	100.2	100.3	100.4	−1.1	−0.8	+0.1	+0.1
Gross domestic product	108.5	110.3	112.1	113.8	+2.0	+1.7	+1.6	+1.6

Source: 2005: Eurostat; 2006 to 2008: OeNB June 2006 outlook.

Table 16

Labor Market

	2005	2006	2007	2008	2005	2006	2007	2008
	thousands				Annual change in %			
Total employment	4,169.1	4,207.4	4,241.4	4,274.4	+0.6	+0.9	+0.8	+0.8
of which: private sector	*3,691.9*	*3,730.7*	*3,765.9*	*3,802.1*	*+0.6*	*+1.1*	*+0.9*	*+1.0*
Payroll employment (national accounts definition)	3,350.7	3,390.4	3,426.3	3,460.0	+1.0	+1.2	+1.1	+1.0
	%							
Unemployment rate (Eurostat definition)	5.2	5.1	5.1	5.1	×	×	×	×
	% of real GDP							
Unit labor costs (whole economy)[1]	66.1	66.8	67.5	68.4	+1.0	+1.0	+1.1	+1.2
	EUR thousand per employee							
Labor productivity (whole economy)[2]	54.5	55.3	56.1	56.9	+1.3	+1.5	+1.4	+1.4
	EUR thousand							
Real compensation per employee[3]	33.3	33.6	33.8	34.2	+0.5	+0.7	+0.8	+1.0
	At current prices, EUR thousand							
Gross compensation per employee	36.0	36.9	37.9	38.9	+2.4	+2.6	+2.6	+2.7
	At current prices, EUR million							
Total gross compensation of employees	120,646	125,207	129,790	134,542	+3.4	+3.8	+3.7	+3.7

Source: 2005: Eurostat; 2006 to 2008: OeNB June 2006 outlook.

[1] Gross wages as a ratio of real GDP.
[2] Real GDP divided by total employment.
[3] Gross wages per employee divided by the private consumption deflator.

Table 17

Current Account

	2005	2006	2007	2008	2005	2006	2007	2008
	EUR million				% of nominal GDP			
Balance of trade	6,507.1	7,082.0	7,903.2	8,550.0	2.6	2.8	3.0	3.1
Goods	2,762.3	2,467.7	2,893.8	3,337.1	1.1	1.0	1.1	1.2
Services	3,744.8	4,614.3	5,009.4	5,212.9	1.5	1.8	1.9	1.9
Euro area	−11,033.3	−10,357.1	−10,581.3	−10,919.5	−4.5	−4.0	−4.0	−3.9
Non-euro area countries	17,540.4	17,439.1	18,484.5	19,469.5	7.1	6.8	6.9	7.0
Balance on income	−1,375.9	−1,393.6	−1,344.0	−1,247.2	−0.6	−0.5	−0.5	−0.5
Balance on transfers	−2,118.0	−2,213.0	−2,290.9	−2,265.6	−0.9	−0.9	−0.9	−0.8
Current account	3,013.2	3,475.5	4,268.3	5,037.3	1.2	1.4	1.6	1.8

Source: 2005: OeNB; 2006 to 2008: OeNB June 2006 outlook.

Table 18

Quarterly Forecast Results

	2006	2007	2008	2006				2007				2008			
				Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
	Annual change in %														
Prices, wages and costs															
HICP	+1.7	+1.6	+1.6	+1.5	+2.0	+1.8	+1.7	+2.0	+1.6	+1.2	+1.4	+1.7	+1.7	+1.5	+1.5
HICP excluding energy	+1.2	+1.4	+1.6	+0.7	+1.3	+1.4	+1.4	+1.6	+1.4	+1.2	+1.4	+1.7	+1.7	+1.5	+1.5
Private consumption expenditure (PCE) deflator	+1.9	+1.8	+1.6	+1.8	+2.0	+1.9	+1.8	+2.0	+1.8	+1.7	+1.7	+1.6	+1.7	+1.7	+1.5
Gross fixed capital formation deflator	+1.4	+1.6	+1.6	+1.3	+1.4	+1.5	+1.5	+1.6	+1.6	+1.6	+1.6	+1.6	+1.6	+1.6	+1.6
GDP deflator	+1.7	+1.6	+1.6	+1.9	+1.8	+1.6	+1.5	+1.4	+1.6	+1.7	+1.7	+1.7	+1.6	+1.6	+1.4
Unit labor costs	+1.0	+1.1	+1.2	+1.2	+0.9	+0.9	+1.1	+1.0	+1.2	+1.2	+1.2	+1.3	+1.3	+1.2	+1.1
Nominal wages per employee	+2.6	+2.6	+2.7	+2.5	+2.5	+2.6	+2.7	+2.7	+2.6	+2.5	+2.5	+2.6	+2.7	+2.7	+2.7
Productivity	+1.5	+1.4	+1.4	+1.3	+1.6	+1.7	+1.6	+1.7	+1.4	+1.3	+1.3	+1.3	+1.4	+1.5	+1.6
Real wages per employee	+0.7	+0.8	+1.0	+0.6	+0.5	+0.7	+0.9	+0.7	+0.8	+0.8	+0.8	+1.0	+0.9	+1.0	+1.2
Import deflator	+2.8	+1.7	+1.4	+3.2	+3.1	+2.6	+2.2	+1.9	+1.7	+1.7	+1.6	+1.5	+1.4	+1.4	+1.4
Export deflator	+2.0	+1.8	+1.5	+1.9	+2.0	+2.1	+2.0	+2.0	+1.9	+1.7	+1.6	+1.6	+1.5	+1.5	+1.5
Terms of trade	−0.8	+0.1	+0.1	−1.3	−1.0	−0.5	−0.2	+0.0	+0.1	+0.1	+0.0	+0.1	+0.1	+0.1	+0.1
	Annual and/or quarterly changes in %, in real terms														
Economic activity															
GDP deflator	+2.5	+2.2	+2.2	+0.5	+0.8	+0.5	+0.6	+0.5	+0.5	+0.5	+0.5	+0.5	+0.6	+0.6	+0.6
Private consumption	+2.1	+1.8	+1.8	+0.5	+0.6	+0.4	+0.5	+0.4	+0.4	+0.4	+0.4	+0.5	+0.5	+0.4	+0.4
Government consumption	+1.7	+1.9	+2.4	+0.6	+0.2	+0.3	+0.3	+0.8	+0.5	+0.4	+0.5	+0.5	+0.7	+0.8	+0.8
Gross fixed capital formation	+2.4	+3.1	+2.4	+0.2	+1.2	+1.2	+1.1	+0.6	+0.5	+0.5	+0.5	+0.6	+0.7	+0.7	+0.7
of which: Investment in plant and equipment	*+3.6*	*+4.6*	*+4.0*	*−0.0*	*+1.8*	*+1.5*	*+1.3*	*+1.0*	*+0.9*	*+0.9*	*+0.9*	*+1.0*	*+1.0*	*+1.0*	*+1.0*
Investment in residential construction[1]	*−0.8*	*+0.9*	*+1.1*	*−1.1*	*−0.0*	*+0.1*	*+0.1*	*+0.2*	*+0.4*	*+0.5*	*+0.4*	*+0.3*	*+0.1*	*+0.0*	*−0.0*
Exports	+6.0	+6.2	+6.3	+1.4	+2.0	+1.8	+1.6	+1.3	+1.4	+1.4	+1.4	+1.6	+1.6	+1.7	+1.7
Imports	+6.0	+6.4	+6.2	+1.6	+2.0	+1.9	+1.7	+1.4	+1.4	+1.4	+1.5	+1.5	+1.6	+1.6	+1.6
	Contribution to real GDP growth in percentage points														
Domestic demand	+2.0	+2.0	+1.9	+0.4	+0.6	+0.5	+0.6	+0.5	+0.4	+0.4	+0.4	+0.5	+0.5	+0.5	+0.5
Net exports	+0.3	+0.2	+0.3	−0.0	+0.1	−0.0	+0.0	+0.0	+0.0	+0.1	+0.0	+0.1	+0.1	+0.1	+0.1
Changes in inventories	+0.2	+0.1	−0.0	+0.1	+0.1	−0.0	−0.0	−0.0	+0.1	+0.0	+0.0	−0.0	−0.0	−0.0	−0.0
	%														
Labor market															
Unemployment rate (Eurostat definition)	5.1	5.1	5.1	5.1	5.1	5.1	5.0	5.1	5.1	5.2	5.2	5.1	5.2	5.1	5.1
	Annual and/or quarterly changes in %														
Total employment	+0.9	+0.8	+0.8	+0.2	+0.2	+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	*+1.1*	*+0.9*	*+1.0*	*+0.3*	*+0.3*	*+0.2*	*+0.3*	*+0.2*	*+0.3*	*+0.2*	*+0.2*	*+0.2*	*+0.2*	*+0.2*	*+0.2*
Payroll employment	+1.2	+1.1	+1.0	+0.3	+0.3	+0.2	+0.3	+0.2	+0.3	+0.3	+0.2	+0.2	+0.2	+0.2	+0.2
	Annual and/or quarterly changes in %, in real terms														
Additional variables															
Disposable household income	+1.7	+1.3	+1.9	+0.4	+0.3	+0.4	+0.5	+0.1	+0.3	+0.4	+0.4	+0.4	+0.4	+0.7	+0.8
	% of nominal disposable household income (saving ratio) and % of real GDP (output gap)														
Household saving ratio	9.4	9.1	9.3	9.6	9.4	9.3	9.3	9.1	9.1	9.2	9.3	9.2	9.1	9.3	9.8
Output gap	−0.4	−0.2	−0.1	−0.7	−0.3	−0.3	−0.3	−0.2	−0.2	−0.2	−0.3	−0.2	−0.1	0.0	0.1

Source: OeNB December 2005 outlook. Quarterly values are seasonally adjusted.

[1] *Excluding other investment in construction and other investments.*

Is Germany's Influence on Austria Waning? Synchronization and Transmission of Cyclical Shocks

Gerhard Fenz,
Martin Schneider

This study analyzes the connection between business cycle fluctuations in Germany and Austria as well as the transmission of German shocks to Austria. Compared to Austria's links with other countries, the ties between Austria and Germany have loosened in relative terms in recent years; in terms of gross domestic product (GDP), however, a strong and steady increase has been recorded. Static and dynamic correlation measures point to a consistently high level of co-movement between Austria and Germany. While the Austrian economy lagged behind the German economy by one quarter in the 1970s, it now leads the German economy by one quarter. The Austrian economy's reaction to German shocks equals 0.4 times the German reaction. Monetary policy shocks are transmitted with the greatest impact, while supply and demand shocks trigger a far less pronounced reaction in Austria. Over time, monetary policy shocks have gained slightly in importance, while German demand shocks have become less important. On average across shocks, the transmission effect shows a marginal weakening. The relative importance of Germany and the international environment in explaining the forecast error for Austrian GDP has increased somewhat over time, whereas the domestic contribution to the forecast error has declined. On the whole, it is not possible to identify a decline in Germany's importance for the Austrian economy.

JEL classification: C32, E32, F41
Keywords: business-cycle, synchronization, vector autoregression, shock-identification, transmission.

1 Introduction

As a small and open economy, Austria is characterized by strong links with Germany, its largest neighbor. The ties between the two countries are the result of their geographical proximity, their common language, a number of cultural and institutional similarities as well as a turbulent common history. Germany has always had a major influence on Austria's economic development. Since the collapse of the communist regimes in the Central and Eastern European countries (CEECs), however, the importance of these countries for the Austrian economy has surged.

Against this backdrop, the question arises as to whether these developments have weakened Germany's influence on the development of the Austrian economy. Various aspects of the business cycle linkages between Austria and Germany have been analyzed in the relevant literature. Brandner and Neusser (1992) examine correlations between Austria and Germany based on a number of macroeconomic variables. They find a high contemporaneous correlation for GDP and investment but only a low one for private consumption. Winckler (1993) focuses on the orientation of Austrian economic policy toward Germany as a cause for the high level of co-movement, emphasizing the role of the social partners in wage negotiations as well as the role of Austria's hard currency policy. Hochreiter and Winckler (1995) examine sector-specific shocks in Germany and Austria from 1973 to 1989, finding no evidence of an increase in symmetry between the two countries. Cheung and Westermann (1999) analyze Austria's relations with Germany using an error correction model and come to the conclusion that a stable long-term relationship exists between Austrian and German industrial production.

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The International Monetary Fund (IMF) examined Austria's links with Germany and with the CEECs in a descriptive study (Epstein and Tzanninis, 2005), which identifies a marginal decrease in the correlation between Austrian and German GDP and attributes this development to the increasing relevance of the CEECs.

The purpose of this study is to examine empirically the influence of the German economy on business cycle fluctuations in Austria. We address this research question in several steps: Section 2 provides an introductory overview of the most important international business cycle links. Section 3 then describes the economic relations between Austria and Germany, addressing trade flows and direct investment in detail. In section 4, we proceed to examine the connection between business cycle fluctuations in Austria and its main trading partners. In addition to examining static correlations, we also evaluate frequency-domain measures. Section 5, the main part of the study, deals with the question of how strongly German structural shocks are propagated to Austria. For this purpose, we first identify supply and demand shocks as well as monetary policy shocks using a vector autoregression (VAR) model for Germany. In a second step, we determine the effects of these shocks on Austria during two periods (1972 to 1989 and 1990 to 2005). In section 6, we analyze the aggregate effects of global, German and Austrian shocks on GDP growth in Austria. Section 7 summarizes the results and draws a number of relevant conclusions.

2 Stable International Synchronization, Weakened Global Shocks

Business cycle fluctuations in Germany and Austria are heavily influenced by global and regional trends in addition to country-specific characteristics. For this reason, this section presents a brief overview of essential facts on the development of international synchronization in cyclical fluctuations.

2.1 Decreasing Volatility of Global Shocks

The volatility of business cycle fluctuations in industrialized nations has decreased substantially over time. Stock and Watson (2003a) show that the standard deviation of GDP growth in industrialized nations has declined by an average of one third since the 1960s. More than half of this development can be attributed to weaker global shocks, while improvements in monetary policy explain only a small part of the decline in volatility. Structural economic changes such as the increasing share of services and improved inventory management techniques have also contributed to the decline (OECD, 2002). An examination of demand components reveals that lower levels of volatility in inventory changes and in private consumption are the main factors responsible for the lower degree of fluctuations (Dalsgaard et al., 2002).

2.2 Globalization Boosts International Linkages

Over the last few decades, barriers to trade and capital controls have gradually been dismantled, and this has brought about an enormous increase in international trade links as well as highly integrated financial markets. Rapid advances in telecommunica-

tions technologies have, inter alia, created a situation in which intangible factors such as confidence spill over to other countries more quickly. However, the effects of these developments on the co-movement of economies are theoretically ambiguous. On the one hand, stronger international trade links reinforce the transmission of demand shocks. Deregulation as well as technological innovations have made it easier for companies to hedge risks and to gain access to financing. Moreover, consumers also have more ways of smoothing their consumption. On the other hand, if intensified foreign trade is a result of interindustry specialization, it will bring about higher levels of specialization and thus also asymmetric reactions to sectoral shocks. Integrated financial markets may bring about a concentration of capital flows to countries with high productivity growth, thus reducing synchronization.[1]

2.3 Stable Synchronization among Industrialized Nations over Time

On the whole, the sharp increase in international links would justify expectations of higher co-movement in international business cycle fluctuations. A large body of empirical literature deals with this question.[2] A majority of empirical studies find the effect of increasing trade links on synchronization to be positive (Frankel and Rose, 1998). The available empirical evidence indicates that strong growth in financial flows also reinforces synchronization (Imbs, 2004).

The results of empirical studies which examine the development of synchronization between industrialized nations over time are ambiguous, however, as they are sensitive with regard to method, country selection, the length of observation periods, etc. However, most of the literature finds evidence of a more or less unchanged synchronization between industrialized nations (except in the early 1990s[3]). The apparent paradox of stable synchronization coupled with intensified trade and financial flows can be explained by a decreasing volatility of global shocks, which has caused country-specific shocks to gain in relative importance.

Synchronization among countries in the euro area increased in the 1990s, while Anglo-American countries (U.S.A., Canada, United Kingdom) followed their own pattern of economic development.[4] Efforts to fulfill the criteria set forth in the Maastricht Treaty to create a monetary union accounted for a major part of the increase in synchronization between euro area countries. This reduced the individual countries' freedom to generate country-specific fiscal shocks.

Table 1 provides an overview of the determinants of synchronization. The strength of global shocks has a positive effect on synchronization,

[1] *Imbs (2004) provides an overview of the effects of financial market integration on synchronization.*

[2] *Dalsgaard et al. (2002), Doyle and Faust (2002), Helbling and Bayoumi (2003), IMF (2001), OECD (2002), Stock and Watson (2003a, 2003b), etc. A highly compact overview can be found in Kose (2004).*

[3] *At that time, German reunification and the bursting of the Japanese real estate bubble constituted two important country-specific shocks.*

[4] *Empirical examinations of G-7 countries distinguish between an Anglo-American cluster (U.S.A., Canada, United Kingdom) and a continental European cluster (Germany, France, Italy), while the Japanese economy shows an entirely independent pattern (Helbling and Bayoumi, 2003; Stock and Watson, 2003b).*

Table 1

Changes in the Synchronization of Cyclical Fluctuations over Time: Results from Empirical Literature

	Effect on synchronization	Change over time	Effect on synchronization over time
Global shocks	Positive	Decreasing	Decreasing
Country-specific shocks	Negative	Decreasing	Increasing
Transmission of shocks between countries	Theoretically ambiguous, empirically positive	Increasing	Increasing
Synchronization	Unchanged among G-7 countries, stronger among euro area countries, weaker between industrialized nations and developing countries		

Source: Authors' depiction of literature cited.

i.e. stronger global shocks lead to a higher synchronization of cyclical fluctuations. As the strength of global shocks has decreased over time, synchronization has gone down. Conversely, a decrease in the amplitude of country-specific shocks will bring about an increase in synchronization. According to the empirical literature, the stronger transmission of cyclical fluctuations caused by stronger links between countries also enhances synchronization. As these links have intensified dramatically over time, a synchronizing effect can be observed. Overall, the three factors shown above have left the level of synchronization among industrialized nations largely unchanged.

3 Economic Relations between Austria and Germany Intensify Continuously despite Austria's Stronger Orientation toward Eastern Europe

In line with the global trend, Austria has also seen a sharp increase in international trade and financial flows over the last three decades. This section provides a brief overview of the most significant developments in Austria with special attention to its links with Germany and the CEECs.

3.1 Trade: European Integration and Vertical Specialization Intensify Trade Links

3.1.1 Strong Increase in Overall Foreign Trade

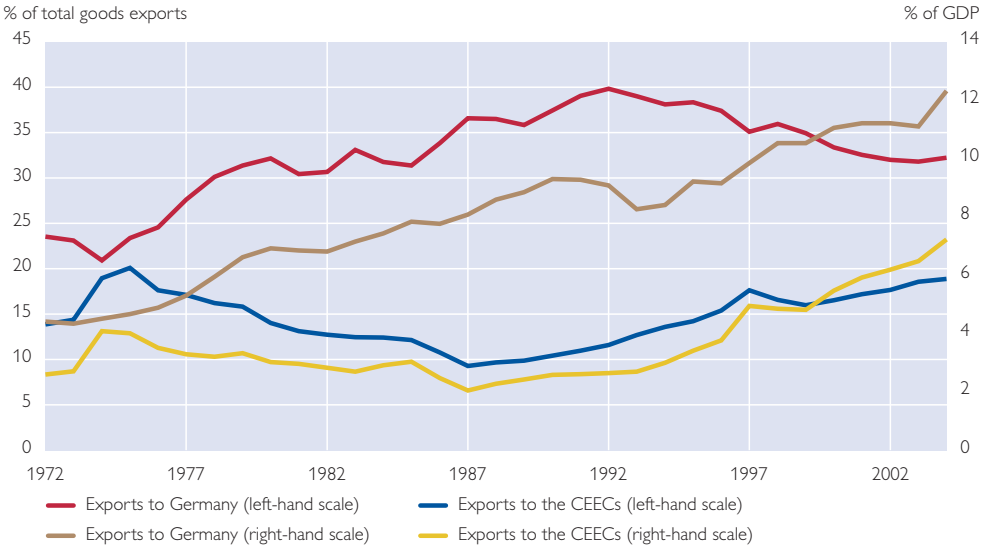
Austria's foreign trade links have intensified dramatically in recent years. Measured as the total of imports and exports, trade grew almost twice as fast as economic output (measured in terms of GDP) between 1972 and 2004. Goods exports in particular have developed dynamically (2.2 times faster than GDP). In that period, Austria's trade share (i.e. the total of imports and exports expressed as a percentage of GDP) rose from just under 60% to almost 100%. In addition to the global dismantling of trade barriers as well as reduced transport and communication costs, Austria's accession to the European Union (EU) – and subsequently to monetary union – and developments in the CEECs are responsible for this change.

3.1.2 Changes in the Regional Export Structure

The regional distribution of Austria's trade flows has changed dramatically over time. Germany's share in Austria's total goods exports rose from a

Chart 1

Austrian Goods Exports to Germany and the CEECs



Source: Statistics Austria.

low of 21% in 1974 to 40% in 1992.[5] Since that time, this share has declined, not least owing to the collapse of the communist regime in the CEECs and their reorientation with regard to external trade. In absolute terms, however, Germany's role is constantly expanding. Expressed as a percentage of GDP, goods exports to Germany have increased steadily, from 4% of GDP at the beginning of the period under review to 12% in 2004. The percentage of Austrian exports to the CEECs has shown the opposite development. A temporary increase in the early 1970s – when, at first, the CEECs were not as heavily affected by the oil crisis – was followed by a continuous decline in the ensuing years. On the one hand, Austrian economic policy pursued deeper integration into the EU, and on the other hand the indebtedness of the CEECs went up dramatically. It was not until the Eastern European economies opened up that trade relations began to show clear signs of revival. In 2004, the CEECs' share in Austrian goods exports reached the level attained in 1975.

3.1.3 Changes in Sectoral Export Structure Caused by Intraindustry Trade and Cross-Border Production

In addition to its regional structure, the sectoral structure of Austria's trade in goods has also shifted considerably over time. On the one hand, Austria has seen a sharp increase in intraindustry trade. Measured by the Grubel-Lloyd index, the share of intraindustry trade in overall trade with Germany rose from 47% in 1972 to

[5] *Unfortunately, longer time series (broken down by region) are not available for trade in services. However, since 1992 services exports have developed less dynamically than goods exports. While services exports to Germany equaled almost two thirds of goods exports in 1992, this ratio had dropped below 50% by 2004. Austria's overall services exports amounted to 33% of total goods exports in 2004.*

Table 2

Austrian Trade in Goods by Selected Regions

	EU-15	Germany	CEECs[1]	Italy	U.S.A.	Switzerland	Total
Exports (% of total exports)							
1972	57.9	**23.6**	13.9	9.6	4.5	11.5	100.0
1990	67.9	**37.4**	10.4	9.8	3.2	6.9	100.0
2004	59.1	**32.2**	18.9	8.6	5.9	4.9	100.0
Exports (% of GDP)							
1972	10.8	**4.4**	2.6	1.8	0.8	2.2	18.7
1990	16.9	**9.3**	2.6	2.4	0.8	1.7	24.8
2004	22.6	**12.3**	7.2	3.3	2.3	1.9	38.2
Imports (% of total imports)							
1972	70.4	**42.6**	8.8	7.2	3.2	7.3	100.0
1990	71.1	**44.0**	6.8	9.1	3.6	4.3	100.0
2004	66.5	**43.0**	15.1	6.8	3.2	3.1	100.0
Imports (% of GDP)							
1972	17.7	**10.7**	2.2	1.8	0.8	1.8	25.1
1990	21.1	**13.0**	2.0	2.7	1.1	1.3	29.7
2004	25.8	**16.6**	5.8	2.7	1.3	1.2	38.8

Source: OeNB, authors' calculations.

[1] *Albania, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Russia, Serbia and Montenegro, Slovakia, Slovenia and Ukraine.*

79% in 2004.[6] A large share of intraindustry trade is characteristic of trade relations between highly developed industrialized nations which have similar production structures and enjoy economies of scale in production; it leads to an increase in synchronization.

At the same time, the phenomenon of vertical integration due to cross-border production chains has become far more important in recent years. Hummels et al. (2001) show that from the 1970s to the 1990s alone, the extent of vertical integration in the countries belonging to the Organisation for Economic Co-operation and Development (OECD) increased by one-third; today, vertical integration is responsible for more than 20% of all OECD exports. The most prominent example in economic relations between Germany and Austria is the increasing integration of the Austrian automotive supply industry into German automobile manufacturing, which manifests itself clearly in the higher share of machines and vehicles in overall exports to Germany, which grew from 26% in 1972 to 46% in 2004. In the same period, the opposite development was recorded in the share of semi-finished and finished goods (which decreased from 39% to 21%) as well as raw materials (which dropped from 9% to 2%).

In parallel to the rise in the importance of exports for the Austrian economy, increasing vertical integration caused a sharp uptrend in imports as well. This movement led to a decline in the domestic value added per unit of exports. Between 1976

[6] *The Grubel-Lloyd index measures the share of intraindustry trade (IIT) as follows:* $IIT=1-\sum_i|X_i-M_i|/\sum_i(X_i+M_i)$, *where* X_i *and* M_i *refer to goods exports and imports for sector i. The Grubel-Lloyd index was calculated at the SITC two-digit level.*

Table 3

Value Added Generated by Goods Exports in Austria

	Multipliers from input-output tables (primary effects only)	Value added	
		Induced by overall exports	Induced by exports to Germany
		% of GDP	
1976	0.73	14.5	3.6
1983	0.69	14.9	4.9
1990	0.69	17.2	6.4
1995	0.69	16.5	6.3
2000	0.63	20.8	6.9

Source: Authors' calculations based on the input-output tables for 1976, 1983, 1990, 1995 and 2000.

and 2000, the primary value added multiplier slipped from 0.73 to 0.63 (table 3). However, as exports to Germany have gone up sharply in relation to GDP, their importance for the Austrian economy has also increased – despite declining value added effects and regional shifts. The primary value added generated by goods exported to Germany[7] has nearly doubled since the mid-1970s (1976: 3.6% of GDP; 2000: 6.9% of GDP; see table 3).

3.2 Internationalization of Financial Flows

In recent years, financial market integration has progressed even more rapidly than the internationalization of trade flows. Limited data availability makes it rather difficult to analyze international capital flows to and from Austria prior to 1990; however, such an analysis would not be particularly useful in the first place, as the Austrian capital market was not fully opened up until the 1980s.

The most striking development since 1990 can be found in inward and outward FDI, the levels of which have risen from 3%, respectively 7%, of GDP to more than 20% each. With a share of 40%, Germany plays a dominant role in Austria's inward FDI, while – after their highly dynamic development in recent years – the CEECs carry similar weight in outward FDI. Comparably high growth rates were also recorded in inward and outward portfolio investment, for which data broken down by region are not available, however.

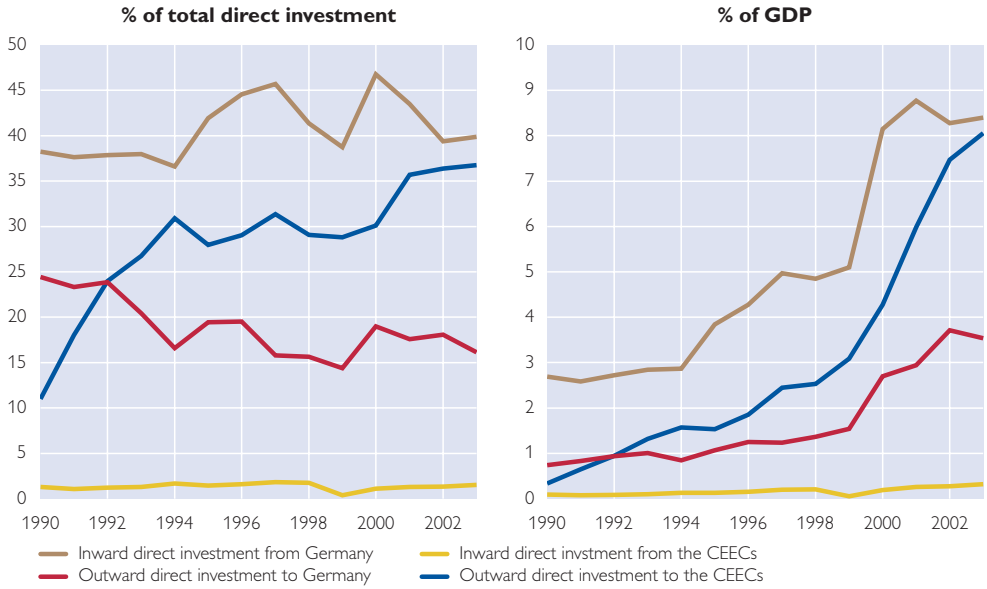
4 High and Stable Synchronization of Cyclical Fluctuations in Germany and Austria

This section examines the degree of synchronization between the Austrian and German economies. Chart 3 provides a first indication of the high level of co-movement between the two economies, while in many phases the U.S. economy shows an entirely different pattern of development. In the 1970s and early 1980s, when the world economy was hit hardest by global shocks (first and

[7] *Primary value added denotes the value added generated in the export sector and all sectors supplying intermediate goods. It does not include secondary effects due to increasing consumption induced by additional incomes. Moreover, value added effects caused by services exports are not reflected in the results shown in table 3. A rough calculation based on secondary effects estimated at one-third of primary effects as well as services exports to the tune of 33% of goods exports (2004) shows that the overall (primary and secondary) effects of goods and services exports to Germany account for approximately 12% of Austrian GDP. Thus, Austria's overall exports generate some 37% of GDP.*

Chart 2

Austrian FDI vis-à-vis Germany and the CEECs



Source: OeNB.

second oil price shock, sharp global interest rate hikes, the Volcker disinflation period, debt crisis), all three economies showed similar developments. The only apparent exception was the recession of 1978 in Austria, which was a budget and current account crisis triggered by an "Austro-Keynesian" economic policy stance that was adopted after the first oil price shock. In the first half of the 1980s, the U.S.A. enjoyed high growth rates (induced by U.S. President Reagan's policy of tax cuts cou-

Table 4

Austrian FDI Stocks

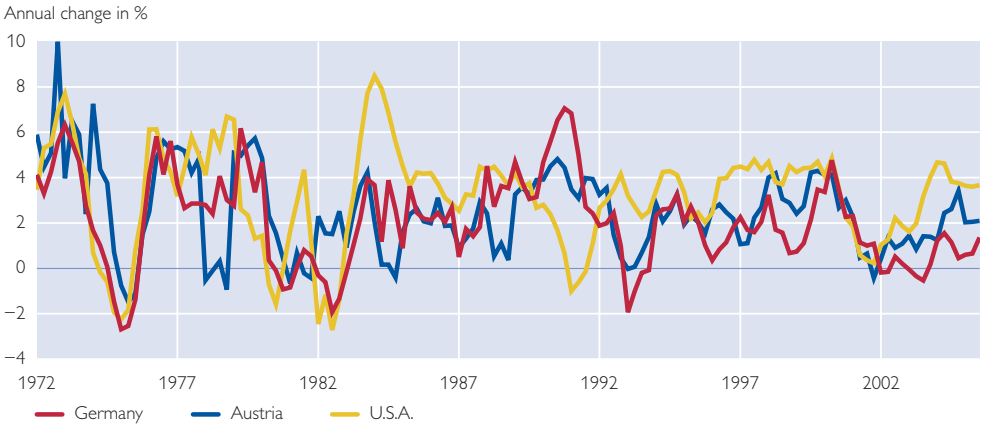
	1990	1995	2000	2003
	% of total outward (inward) FDI			
Inward FDI from Germany	38.2	41.9	46.8	39.9
Outward FDI to Germany	24.4	19.4	19.0	16.1
Inward FDI from the CEECs[1]	1.3	1.4	1.1	1.5
Outward FDI to the CEECs[1]	11.0	28.0	30.1	36.8
	% of Austrian GDP			
Inward FDI from Germany	2.7	3.8	8.1	8.4
Outward FDI to Germany	0.7	1.1	2.7	3.5
Inward FDI from the CEECs[1]	0.1	0.1	0.2	0.3
Outward FDI to the CEECs[1]	0.3	1.5	4.3	8.1
	Total FDI			
Outward FDI (EUR million)	3,683	8,674	26,674	44,308
Outward FDI (% of GDP)	3.0	5.5	14.2	21.9
Inward FDI (EUR million)	8,513	14,458	32,704	42,632
Inward FDI (% of GDP)	7.0	9.2	17.4	21.1

Source: OeNB, authors' calculations.

[1] *Albania, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Republic of Moldova, Macedonia, Poland, Romania, Russia, Serbia and Montenegro, Slovakia, Slovenia and Ukraine.*

Chart 3

Growth in Real GDP in Austria, Germany and the U.S.A.



Source: Statistics Austria, Bureau of Economic Analysis, Eurostat.

pled with higher defense spending), whereas growth in Germany and Austria was substantially weaker. In the 1980s, Austria went through two crises triggered by domestic factors, specifically by budget consolidation measures and the crisis in the state industries. Starting in 1990, the German and Austrian economies became increasingly decoupled from the U.S. economy. While the situation in Europe was influenced by German reunification and the resulting recession in 1993, the U.S.A. saw strong growth (after a recession in 1991) thanks to high productivity growth throughout the rest of the 1990s. The global recession which emanated from the U.S.A. in the year 2000 also produced an economic slump in Germany and Austria, although it did not affect Austria as severely as it did Germany.

Several measures are used to depict the degree of synchronization between Austrian cyclical fluctuations and those of its main trading partners. These measures are calculated for two periods (1972 to 1989 and 1990 to 2005) and for "rolling windows."

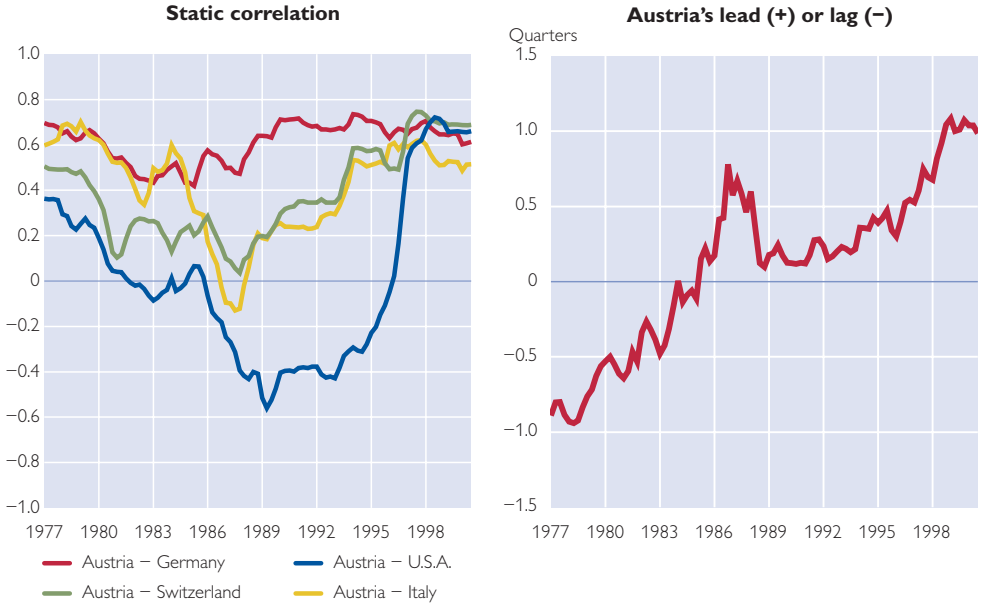
The left-hand panel in chart 4 shows the static correlations in real GDP growth (year on year) between Austria and its main trading partners Germany, Italy, the U.S.A. and Switzerland. These correlations were calculated for ten-year centered rolling windows. Calculations reveal a persistently high correlation between Austria and Germany which only weakened slightly in the 1980s as a consequence of two domestically triggered lapses in growth.[8] Austria's correlation with other countries is characterized by the fact that – starting from a high level during the phase of global shocks – it weakened steadily or even became negative, then increased again in recent years.[9]

[8] *The correlations were also calculated with deviations from a Hodrick-Prescott filtered trend and for quarterly growth rates. The results for the trend deviations are very similar to those for annual growth rates, while – due to high volatility – the results for quarterly growth rates hardly reveal any connections.*

[9] *Helbling and Bayoumi (2003) attribute the decline in the correlation between EU countries and the U.S.A. in the early 1990s to country-specific shocks with unchanged transmission strength, while all other business cycle developments are put down to global shocks.*

Chart 4

Static and Dynamic Relationship between Austria and Its Main Trading Partners (Real GDP Growth)



Source: OeNB.

In addition to examining the strength of contemporaneous correlation, this study addresses the question of whether German and Austrian business cycle fluctuations occur contemporaneously or whether there is a time lag between them. For this purpose, we calculated correlations for various leads and lags in two periods (1972 to 1989 and 1990 to 2005). Table 5 shows the maximum correlation along with the lead/lag for which it was found. This shows that the Austrian and German economies developed contemporaneously in the first period, while the maximum correlation found in the second period points to a one-quarter lead on the part the Austrian economy. This result can be refined further using spectral analysis methods, the fundamentals of which are discussed in box 1.

The right-hand panel in chart 4 shows the delay of the Austrian economy relative to Germany for ten-year rolling windows. A positive delay indicates a lead, while a negative delay points to a lag in the Austrian economy. The panel clearly shows that Austria's fluctuations have consistently shifted forward in relation to Germany's fluctuations. Whereas in the 1970s a lag of 1 quarter was recorded, the Austrian economy currently leads the German economy by 1 quarter. The overall shift thus amounts to 2 quarters. Observed across the two periods mentioned above, the shift is less pronounced (–0.8 to +0.6 quarters; see table 5). However, this result does not justify the conclusion that Austria's business cycle has become decoupled from its German counterpart. One reason for Austria's increasing lead may be the dramatic increase in the significance of the automotive supply industry as an upstream stage of production. While the delay vis-à-vis Germany turns out to be highly stable over time, the delay vis-à-vis other trading partners shows erratic fluctuations in

Box 1

Spectral Analytic Measures of Synchronization between Two Series

Co-movement between two time series has traditionally been analyzed in the time domain, i.e. by analyzing correlations. Apart from that method, spectral analysis techniques also offer an attractive means of analyzing co-movement for various frequencies (e.g. Croux et al., 2001). The idea behind this technique is that stationary time series can be composed of oscillations in various frequencies. For the purpose of bivariate spectral analysis, the auto-covariance matrix of series x and y up to a certain number of leads and lags is transformed into spectral density matrices by means of a Fourier analysis. The diagonal elements of the spectral density matrix $F_{\{x_t y_t\}}(\omega)$ *describe the spectrum of the two time series for frequency* ω*, while the off-diagonal elements describe the co-spectrum. The co-spectrum* $f_{xy}(\omega) = c_{xy}(\omega) + iq_{xy}(\omega)$ *is a complex number and can thus be decomposed into a real part* $c_{xy}(\omega)$ *and an imaginary part* $iq_{xy}(\omega)$*. A number of meaningful measures can be derived from the co-spectrum. The dynamic coherence measure* $C_{xy}(\omega) = |f_{xy}(\omega)| / \sqrt{f_x(\omega) f_y(\omega)}$ *is the frequency domain's counterpart to the static correlation and describes the correlation between two series for a certain frequency. However, it does not contain any information on the relative position of the two series, which means that a temporal shift in one of the two series leaves coherence unchanged. The delay* $d_{xy}(\omega) = -\tan^{-1}\left(q_{xy}(\omega)/c_{xy}(\omega)\right)/\omega$ *indicates the number of periods (in this case quarters) by which time series x leads, or lags behind, time series y. If the delay is greater than zero, then series x leads series y. In this study, these measures are analyzed for the business cycle frequencies with a duration of 1½ to 8 years.*

some cases, thus it was not depicted. This stems from the fact that the co-spectrum has no informative power in cases of weak correlation.

Table 5 also shows the results of the Granger causality test, which is used to test whether a variable which is delayed by one or more periods has predictive power for another variable. If this is the case, Granger causality is found (Hamilton, 1994). The null hypothesis to be tested in this context is that Granger causality is not present. The p-values are shown in table 5. If these values are lower than the critical value (e.g. 10%), then the null hypothesis can be rejected. The results show that Germany's GDP growth only exhibits Granger causality for Austrian GDP growth in the first period, but not in the second period. This confirms the results regarding delay, which indicate that Germany's lead in the first period turned into a lag in the second. In no case should the lack of Granger causality in the second period be taken as an indication of a decoupling of the Austrian economy from the German economy. For the U.S.A., a stable lead is also only found in the first period. For Switzerland, the null hypothesis cannot be rejected for both periods, while Granger causality is found in both periods in the case of Italy.

5 Influence of German Shocks on Austria Halved despite Nearly Unchanged Transmission

The high level of co-movement between the two business cycles can be caused by international shocks as well as by the transmission of specific German shocks to Austria. However, the descriptive analyses carried out in section 4 do not justify conclusions as to potential causes of the high degree of synchronization. In section 5, we therefore analyze the transmission of specific German shocks to the Austrian economy. Using a VAR model,

Table 5

Co-Movement of Austria's Economy with Its Main Trading Partners

	Static correlation			Dynamic coherence[2]	Delay[3] (Quarters)	Granger causality[4] (p-values)
	Contem-poraneous	Maximum[1]				
Germany						
1972 to 1989	0.60	0.60	(0)	0.66	−0.75	0.01
1990 to 2005	0.72	0.75	(1)	0.76	0.63	0.80
1972 to 2005	0.62	0.62	(0)	0.68	0.43	0.00
U.S.A.						
1972 to 1989	0.23	0.33	(−2)	0.27	−1.67	0.05
1990 to 2005	0.13	0.22	(−4)	0.13	−1.21	0.54
1972 to 2005	0.21	0.30	(−2)	0.24	−0.56	0.02
Switzerland						
1972 to 1989	0.38	0.43	(1)	0.44	0.91	0.76
1990 to 2005	0.58	0.58	(0)	0.61	−0.30	0.27
1972 to 2005	0.42	0.44	(1)	0.47	0.22	0.98
Italy						
1972 to 1989	0.56	0.56	(0)	0.62	−0.15	0.02
1990 to 2005	0.54	0.54	(−1)	0.59	−0.14	0.09
1972 to 2005	0.54	0.54	(0)	0.59	0.42	0.00

Source: Authors' calculations.

[1] *The figures in parentheses indicate the number of leads (+) or lags (−) exhibited by Austria in relation to country i (in quarters) for which the maximum correlation was found.*
[2] *For business cycle frequencies (i.e. from 6 to 32 quarters).*
[3] *+(−): Austria leads (lags) country i.*
[4] *Null hypothesis: Country i exhibits no Granger causality for Austria (tested for one lag).*

we identify three structural shocks for Germany (supply shock, demand shock, monetary policy shock) and examine their transmission to Austria as well as any potential changes over time.

5.1 VAR Model

A model for estimating the strength of the transmission of specific German shocks to Austria has to fulfill multiple requirements: It has to capture explicitly the dynamic relationships between central macroeconomic variables in the two economies, sufficiently test the influence of the international environment and enable the identification of German shocks.

The VAR model used here satisfies these requirements. To keep the model as simple as possible and to ensure the proper identification of German shocks, the following simplifying assumptions were made: The Austrian economy has no effect on Germany. The transmission of German effects to Austria via other countries is not explicitly modeled. Austria and Germany exert no influence on the international environment. The model consists of one country block for Germany and one for Austria. These country blocks comprise one variable each for the level of real activity, inflation and monetary policy. These variables are depicted by real GDP, the Harmonized Index of Consumer Prices (HICP) and the three-month interest rate.[10] Growth in U.S. GDP (year on year) and in the HWWA Commodity Price Index

[10] *The time series ($(1-L^4)$ for GDP, $(1-L^4)(1-L)$ for the HICP and $(1-L^4)$ for the interest rate) were differentiated in such a way that the transformed time series are stationary.*

(first difference of the inflation rate) was used as a proxy for the international environment. The data are available on a quarterly basis. The observation period starts in the first quarter of 1972 and ends with the third quarter of 2005, thus focusing on the time after the collapse of the Bretton Woods system in 1971.

To examine the change in transmission from Germany to Austria over time, the model was estimated for two periods.[11] The reunification of Germany was chosen as a logical point in time to separate these periods. The first period thus comprises the years 1972 to 1989, while the second period covers 1990 to 2005 (up to the third quarter). As the Austrian schilling was in effect pegged to the Deutsche mark as from 1979, Austria basically had no independent monetary policy from that point onward. No notable differences in the development of three-month interest rates in Germany and Austria can be observed after 1981. As a result, the model was estimated without Austrian interest rates for the second period. The lag length in the models (one quarter) was calculated using Akaike's and Schwarz's information criteria. The identification of structural shocks in Germany is described in box 2.

Chart 5 shows the three structural shock series determined for Germany along with the growth rate in Germany's real GDP. The volatility of monetary policy shocks[12] declined substantially over the observation period. The highest volatility was observed at the beginning of the 1970s (after the collapse of the Bretton Woods system and the ensuing reorientation of Germany's monetary policy) and in the early 1980s (the Volcker disinflation period). In line with the relevant literature (Christiano et al., 1999), the explanatory power of monetary policy shocks is generally low for changes in aggregate output and inflation (each under 10% measured in terms of their contribution to forecast error variance).

In contrast, more than 50% of changes in aggregate output are explained by demand shocks, which especially reflect developments in fiscal policy. The special economic development observed in the German economy after reunification and the fiscal policy countermeasures taken after the two oil price shocks were identified as demand shocks. Interestingly enough, demand shocks cannot explain the weakness in growth between 2001 and 2004. After a negative monetary policy shock in 2001, a series of negative supply shocks (stock market collapse, strong exchange rate fluctuations, oil price hikes) were primarily responsible for the low level of growth in that period. Supply shocks mainly refer to shocks which influence prices, wages and other production costs. In this analysis, technological innovations do not play a decisive role in the definition of supply shocks. Supply shocks explain most of the variation in infla-

[11] *To ensure that the German shocks identified in both periods are equivalent in qualitative terms, the structure of the German VAR block was held constant for both periods and identical rotations were selected for both periods (see box 2). This implies that the coefficient matrices* $\boldsymbol{A}_{DD}$ *and* $\boldsymbol{B}_{D}$ *(box 2) are the same for both periods and that the German block in the VAR model can be estimated for the entire period (from 1972 to 2005) and not separately for the two subperiods.*

[12] *In addition to data problems and the changing expectations of private economic actors, changes in the monetary policy strategy are the main cause of monetary policy shocks (Christiano et al., 1999).*

Box 2

Identification of Shocks in Germany

In its reduced form, the VAR model is given by the following equation:

$$\begin{bmatrix} x_t^A \\ x_t^D \end{bmatrix} = \begin{bmatrix} A_{AA}(L) & A_{AD}(L) \\ 0 & A_{DD}(L) \end{bmatrix} \begin{bmatrix} x_{t-1}^A \\ x_{t-1}^D \end{bmatrix} + \begin{bmatrix} B_A(L) \\ B_D(L) \end{bmatrix} y_t + \begin{bmatrix} \varepsilon_t^A \\ \varepsilon_t^D \end{bmatrix}$$

*where x_t^A, and x_t^D denote the vectors of the endogenous variables (for Austria and Germany). Vector y_t contains the exogenous variables. Matrices **A** and **B** contain the coefficients for the endogenous and exogenous variables, and (L) stands for the lag operator. The coefficients of the Austrian variables in the German block were restricted to 0. ε_t^A and ε_t^D represent the residuals.*

To employ the model estimated in this way to simulate the transmission of structural shocks in Germany to Austria, it is first necessary to identify these shocks. As the reduced form alone does not suffice to identify the structural model, it is necessary to use suitable restrictions for this purpose. In the identification scheme used in this study, restrictions derived from economic theory are imposed on the impulse response functions.[1] A German supply and demand shock as well as a monetary policy shock are identified. These shocks must satisfy the following restrictions: In a supply shock, the reactions of GDP and inflation as well as those of GDP and interest rates have to be negatively correlated. In a demand shock, the reactions of GDP and inflation as well as those of GDP and interest rates have to be positively correlated. The monetary policy shock is identified by a positive correlation between GDP and inflation as well as by a negative correlation between GDP and interest rates. The sign restrictions can be derived from a number of theoretical models, which is a major advantage of the method selected. They are just as consistent with the standard textbook aggregate-demand aggregate-supply framework as with more advanced Dynamic Stochastic General Equilibrium (DSGE) models in the style of Smets and Wouters (2002).

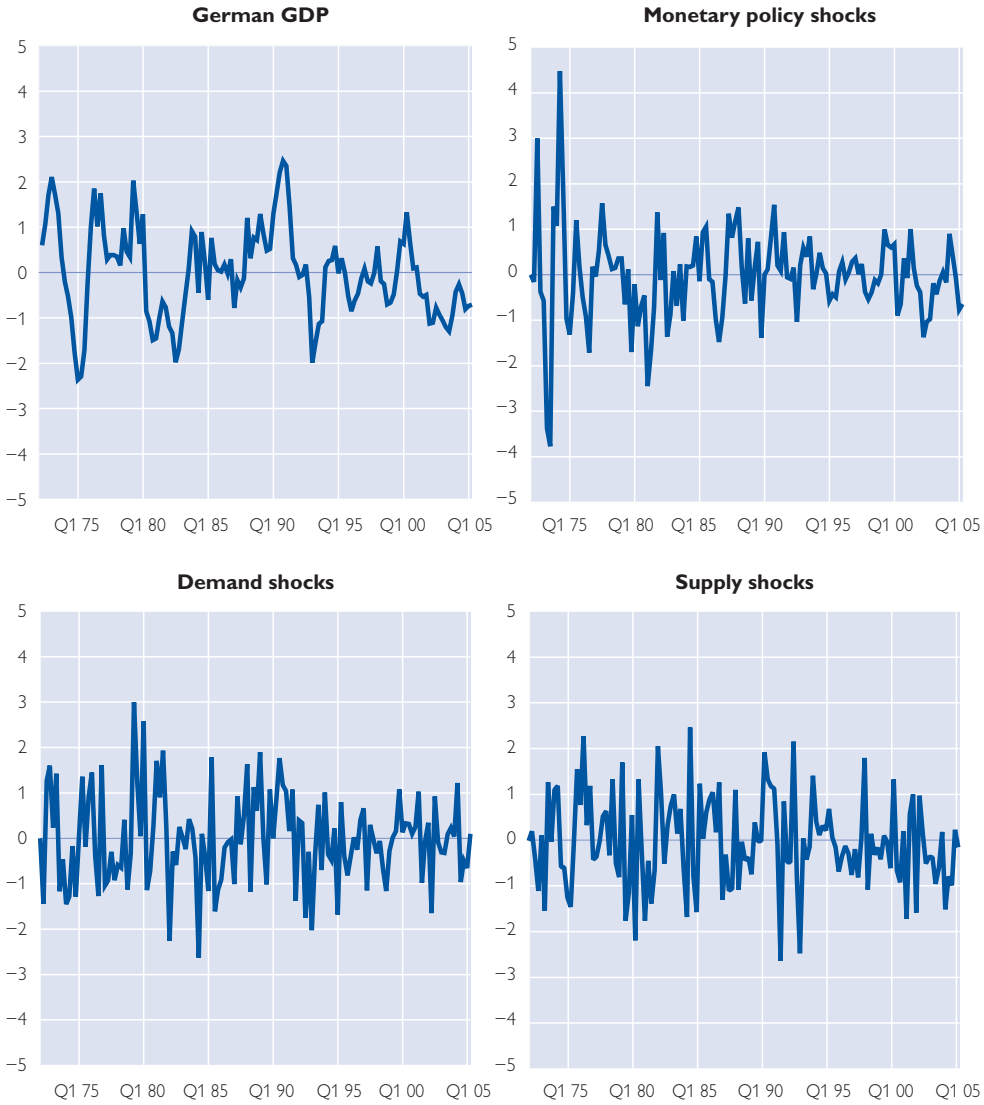
To implement the identification scheme, the German residuals are first decomposed into orthogonal shocks using an eigenvalue decomposition. At first, these residuals do not allow an economic interpretation and are only identified clearly as a whole, but not for each individual shock. Therefore, through multiplication by an orthonormal rotation matrix they can be rotated as desired in the space defined by the eigenvectors. When $N = 3$ German series, this gives us three $(= N*(N-1)/2)$ rotation axes around which the shocks can be rotated. Each rotation axis is subdivided into 15 steps, yielding a total of $15^3 = 3{,}375$ different rotations. For each of these rotations, we now check whether the restrictions mentioned above are satisfied. A detailed technical description of this method can be found in Fenz and Schneider (2006) as well as Canova (2005) and Uhlig (2005). By applying this method, we arrive at a total of 182 valid rotations, which are sorted in descending order based on the total covariance for the imposed restrictions. Starting with the first valid rotation, the rotation to be finally used was selected on the basis of visual inspections of the impulse response functions and the German shock series.

[1] *This identification scheme was first introduced in the literature in Canova (2005) as well as Canova and de Nicoló (2003). The relevant literature also provides a number of additional identification schemes in which the restrictions usually apply to the contemporaneous link between the shocks. The most common schemes are the Cholesky decomposition introduced by Sims (1980) as well as the theory-based formulation of linear relationships between unobservable shocks and the classification of shocks as transitory and permanent according to their effects. For an overview of various identification schemes, see Uhlig (2005).*

Chart 5

Historical Development of GDP Growth and Structural Shocks in Germany

Annual change in %; standardized values



Source: Authors' calculations.

tion and capture just over one-third of the variation in aggregate output.

5.2 Strong Transmission of German Shocks to Austria

Using the VAR model, we can now examine the transmission of German shocks to Austria. In this context, three questions are of particular interest: First, how strongly do specific shocks in Germany affect the Austrian economy relative to the German economy? Second, are there differences between the various types of shocks in terms of transmission strength? Third, has transmission changed over time? To answer these questions, the model's impulse response functions were calculated over 40 quarters for the three structural shocks in Germany. To determine the strength of Austria's reaction compared to Germany's, the cumulative impulse response functions for Aus-

tria after a ten-year period are divided by the corresponding German results.

Table 6 provides an overview of the results, which show that the transmission of German shocks to Austria is indeed strong. The reaction of Austria's GDP to an average shock in Germany is 0.44 times the reaction of German GDP.[13] Between the first and the second period, transmission weakened slightly from 0.46 to 0.42.[14]

The various shocks are transmitted to Austria to varying degrees, with monetary policy shocks showing the strongest transmission, as they trigger a reaction in Austria which, on average, is 0.83 times the reaction in Germany. This appears plausible because, during the long periods of identical monetary policy, such shocks were transmitted to Austria directly and not indirectly via the Germany economy. Between the first and second period, an increase in the transmission strength of the monetary policy shock could be observed. This can be attributed to two causes: First, Austria had its own monetary policy until the Austrian schilling was practically pegged to the Deutsche mark in 1979. Second, the effect of monetary policy shocks may have been reinforced by the beginning of monetary union in 1999 if these shocks are similar across euro area countries. A supply shock in Germany has a substantially weaker effect (0.36) on Austria than a monetary policy shock. This effect remains almost unchanged over time. The weakest transmission was found in the case of a demand shock. Supply shocks such as wage or technology shocks are likely to have more direct effects than a demand shock, which only makes its way to Austria through German import demand. The transmission of demand shocks weakened the most, specifically from 0.36 to 0.21. The reason for this development might lie in the changing effects of German fiscal shocks, which are among the most important sources of demand shocks in Germany. Whereas fiscal shocks only took effect in West Germany in the first period, massive investments and transfers to the east German Länder have been recorded since reunification. These shocks affected the Austrian economy to a lesser extent than the previous fiscal shocks.

In addition to the strength of transmission, the amplitude of German shocks also plays a decisive role in their effects on business cycle fluctuations in Austria. The standard deviation of German shocks declined by an average of one-third (table 7). The decline (by more than half) in the volatility of monetary policy shocks is especially pronounced, while the decrease in the volatility of supply shocks (–11%) and demand shocks (–30%) was substantially lower. This is an international phenomenon which has also been observed in other countries. Stock and Watson (2003a) also find an average decrease in volatility

[13] *The strength of transmission was defined as the cumulative reaction of Austria's GDP to a certain shock in Germany after ten years in relation to the effects on German GDP. The reaction to an "average" shock in Germany was determined by averaging the cumulative Austrian impulse responses across the three shocks and dividing the result by the corresponding value for Germany. After a maximum of three years, none of the three shocks still had a significant influence on German or Austrian GDP.*

[14] *Most of the impulse response functions are very similar for a majority of the 182 valid rotations (box 2). Averaging across these rotations yields a mean transmission of German shocks to Austria of 0.41 (from 1972 to 1990) and 0.38 (from 1991 to 2005). In the selected rotation (table 6), a very similar reaction pattern emerges with values of 0.46 and 0.42.*

Table 6

Strength of Transmission of German Structural Shocks to Austria[1]

	Supply	Demand	Monetary policy	Average
1972 to 1989	0.37	0.36	0.77	0.46
1990 to 2005	0.35	0.21	0.89	0.42
1972 to 2005	0.36	0.28	0.83	0.44
1990 to 2005/1972 to 1989	0.95	0.58	1.16	0.91

Source: Authors' calculations.

[1] *Cumulative effects on the level of Austrian output after ten years in relation to the corresponding effects in Germany.*

Table 7

Influence of German Structural Shocks on Business Cycle Fluctuations in Austria

	Supply	Demand	Monetary policy	Average
Standard deviation of German structural shocks, 1990 to 2005 compared to 1972 to 1989	0.89	0.70	0.45	0.66
Strength of transmission, 1990 to 2005 compared to 1972 to 1989	0.95	0.58	1.16	0.91
Influence of German structural shocks, 1990 to 2005 compared to 1972 to 1989	0.84	0.41	0.52	0.61

Source: Authors' calculations.

Table 8

Forecast Error Variance Decomposition for Austrian GDP Growth

	Global shocks	German shocks	Austrian shocks
1972 to 1989			
Contemporaneous	0.00	0.11	0.89
After 1 year	0.19	0.23	0.58
After 3 years	0.23	0.26	0.52
After 10 years	0.23	0.26	0.51
1990 to 2005			
Contemporaneous	0.04	0.14	0.81
After 1 year	0.19	0.27	0.54
After 3 years	0.28	0.28	0.44
After 10 years	0.29	0.28	0.43

Source: Authors' calculations.

by approximately one-third in industrialized nations (see section 2).

If both effects (the decreased volatility of German shocks and the slightly weakened transmission) are considered together, then the decline in the influence of German shocks on the Austrian economy comes to about 40%. This is primarily attributable to the influence of demand shocks and monetary policy shocks, which weakened by approximately half, whereas the influence of German supply shocks weakened only slightly.

6 Domestic Shocks Losing Importance

Now that the previous sections have shown that declining volatility caused the absolute importance of German shocks for business cycle fluctuations in Austria to decline by 40% between

the two periods under review, the next question is that of the relative importance of international, German and Austrian shocks. As documented in numerous studies, the decline in business cycle fluctuations is a global phenomenon (see section 2.1). Therefore, one can conjecture that the relative reduction in the importance of German shocks is far lower (if it exists at all).

In order to answer the above question, a slightly modified version of the model was estimated and an alternative identification scheme was applied.[15] The eight shocks obtained in this manner were divided into three groups (international, German and Austrian shocks). The significance of the shocks is depicted in the form of a forecast error variance decomposition for Austrian GDP. Using the variance decomposition, it is possible to show which share of variance in the forecast error is explained by the respective shock for a certain forecasting horizon.

In the short term, the bulk of the forecast error is explained by domestic shocks, whereas German and international shocks hardly play a role. As the forecasting horizon is lengthened, however, the share of domestic shocks falls to approximately half, and the relevance of German and international shocks increases.

Between the first and the second period, a decrease of 8 percentage points (to 43%) in the significance of domestic shocks can be observed. Most of this decline is explained by the stronger influence of global shocks, but Germany's influence also increases, albeit only slightly. Given Austria's increasing international trade links, the result appears to be plausible.

7 Summary and Conclusions

The processes of globalization in general and of European integration in particular have brought about a sharp increase in cross-border flows of goods, capital and information for European economies. The integration of the CEECs in particular has been highly significant for Austria. Against this backdrop, this study examines the connection between business cycle fluctuations in Germany and Austria as well as the transmission of German shocks to Austria.

A descriptive presentation of the trade and financial flows between Austria and Germany shows that Austria's links with Germany have lost significance in relative terms. In terms of GDP, however, a continuous increase can be observed. Exports to Germany are responsible for approximately 12% of Austria's GDP growth. Static and dynamic correlation measures show a high and stable degree of co-movement between the Austrian and German economies which clearly exceeds Austria's synchronization

[15] *Not least because of the required processing power, using the method described in section 5 to simultaneously identify seven or eight shocks is not possible. To answer the important question of the relative importance of global, German and Austrian shocks nevertheless, section 6 uses a Cholesky decomposition, which does not allow an immediate economic interpretation of the shocks owing to its atheoretical approach. Based on the assumptions that Austria's influence on Germany and the world economy as well as Germany's influence on the world economy are negligible, it is still possible to generate a sufficiently accurate estimate of the relative importance of global, German and Austrian shocks for economic fluctuations in Austria. In contrast to section 5, the two proxy variables for the international environment are now treated not as exogenous but as endogenous variables. The residuals in this model are orthogonalized using a Cholesky decomposition, ranking the international variables first and then the German and the Austrian variables. This sequence reflects our assumptions regarding contemporaneous causalities between the variables.*

Box 3

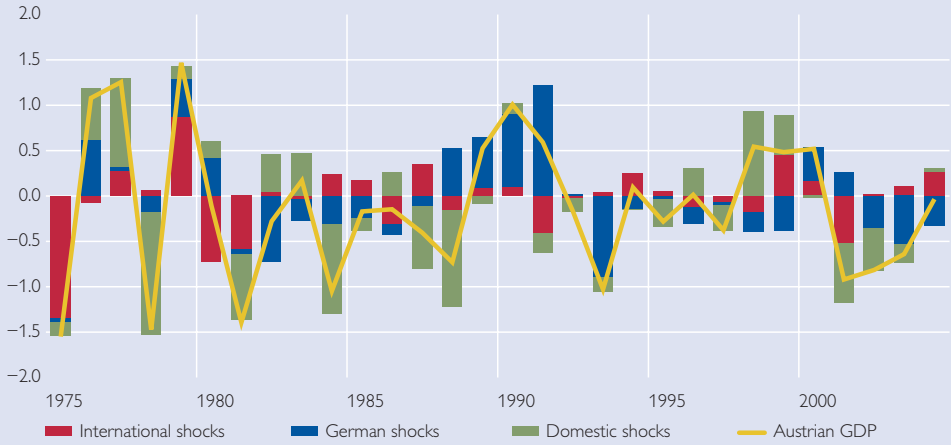
Decomposition of Business Cycle Fluctuations in Austrian GDP Growth

Chart 6 shows the historical decomposition of Austria's GDP growth into international, German and Austrian shocks. For this purpose, the model was estimated over the entire observation period. The shocks were determined by applying a Cholesky decomposition to the residuals. The contribution of a shock at time t comprises the contemporaneous influence at time t as well as the delayed influence of the shock in all previous periods.

Chart 6

Decomposition of Business Cycle Fluctuations in Austrian GDP Growth

Annual change in % (standardized for mean = 0 and standard deviation = 1)



Source: Authors' calculations.

The first oil price shock in 1973–1974 triggered the recession of 1975. In 1976 and 1977, growth was supported by means of expansionary fiscal policies. This resulted in a budget deficit and – as a result of Austria's hard currency policy – a current account deficit, which then required a partial change of the monetary and fiscal policy course. Consolidation measures led to a recession in 1978 and are clearly visible as a domestic shock in chart 6. The early 1980s were characterized by negative international shocks (the second oil crisis in 1979–1980, high inflation rates, global interest rate increases). In the 1980s, the Austrian economy was hit by a number of negative domestic shocks linked to budget consolidation and the crisis in nationalized industries. At the end of the 1980s, positive shocks in Germany played an increasingly important role. The special economic development in post-reunification Germany was also carrying the Austrian economy in the early 1990s. The recession of 1993 must also be viewed in this context. The economic downturn that emanated from the U.S.A. in 2001 was further reinforced by domestic shocks, which were reflected in consumption and investment slumps. Since end-2002 and up to the end of the observation period, the German economy had a persistent dampening effect on Austrian economic growth.

with other important trading partners. The most important change observed is related to the timing of business cycle fluctuations in these two countries. While the Austrian economy lagged behind the German business cycle fluctuations by approximately 1 quarter in the 1970s, it now leads the German economy by 1 quarter.

The strength of the transmission of German shocks to Austria was examined using a VAR model for the periods from 1972 to 1989 and from 1990 to 2005. For this purpose, specific German supply and demand shocks as well as monetary policy shocks were identified. The results indicate the strong transmission of German business cycle fluctuations to Austria. On average, a positive German shock that amounts to 1% of GDP leads to an increase of 0.4% in Austria's GDP. German monetary policy shocks are transmitted with the greatest impact, while supply and demand shocks trigger a far less pronounced reaction in Austria. A comparison of the two periods shows that monetary policy shocks are now transmitted more strongly, whereas the transmission of German demand shocks has weakened. On average across the shocks, however, transmission has only weakened slightly. The average strength of German shocks lessened by one-third in the second period and thus entailed a decline of close to 40% in the amplitude of Austrian business cycle fluctuations caused by German shocks, despite the fact that the strength of transmission remained nearly unchanged.

An analysis of the relative importance of international, German and Austrian shocks for Austrian business cycle fluctuations based on forecast error variance decomposition shows a relative increase in the importance of international and – albeit to a lesser extent – German shocks, which now each explain just over one-fourth of fluctuations in Austrian growth. By contrast, the relative importance of domestic shocks has decreased to less than half.

To summarize the specific results of this study, no decline in Germany's influence on business cycle fluctuations in Austria can be observed. Instead, the increasing level of internationalization has actually weakened the impact of domestic shocks. This trend points to the decreasing leeway for active economic stabilization in national economic policy as well as to the need for stronger economic policy coordination at the international level.

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The Lisbon National Reform Programs: New Ideas for Austria's Economic Policy

Jürgen Janger

Following the relaunch of the Lisbon Process, the EU Member States drew up their national reform programs (NRPs) in the second half of 2005. This paper starts by pinpointing potential new ideas for Austria's economic policies and policymaking from a selection of other NRPs, with the aim of suggesting means how to further improve the quality of the Austrian NRP. The author then examines the question of whether the reform program in itself can increase the likelihood of actually transforming the measures announced in the NRP into tangible policies.

The topics discussed include competition policy, education and further training, employment promotion measures, public sector reform, and support programs for small and medium-sized enterprises (SMEs). Austria's economic policymaking may find stimulus in the forward-looking, cross-sectoral and goal-oriented political strategies and action plans of other countries, which also contain elements of monitoring and evaluation.

The NRP's prospects for success in improving the implementation of economic policies depend on whether or not it can become an effective commitment device for growth- and employment-oriented economic policy. Arguably, this will only be possible if a number of conditions are met: The NRP must achieve a higher profile in public consciousness and its signaling effect must be clarified through precise analyses of the influence on growth and employment engendered by the measures set out in the program. Furthermore, the appointment of an official body (such as the European Commission or an independent research institute) to evaluate and report on the progress of each country would be of value.

JEL classification: O10, O57
Keywords: economic policy, political economy of reform.

1 Introduction

In 2000, the Member States of the European Union (EU) agreed on a common European growth strategy in response to unexpectedly high productivity growth rates experienced in the U.S.A. over the period from 1995 to 2000. The EU's initiative to boost employment and economic growth – the Lisbon Agenda – broadly aimed at making the EU the world's most dynamic and competitive economy by 2010. It defined numerous subsidiary goals in several sectors (employment, research and development, education and further training, market integration, environmental sustainability, and social cohesion). The scientific foundations for this agenda were only provided retrospectively in the form of the Sapir Report's economic analysis (2004), and scientific debate about the strategy itself is only now beginning to be published (e.g. Kohler, 2006). These analyses conclude that, for more than ten years now, the U.S.A. has been turning what was initially a negative productivity growth differential with the EU into a positive one, which has led to a divergence rather than convergence of gross domestic product (GDP) per capita. The Lisbon Strategy, at heart a supply-side-oriented growth policy, is therefore justified if it focuses on an increase in productivity growth rates.

The mid-term evaluation of the Lisbon Strategy for growth and employment found fault with the generally inadequate progress in many areas and saw a lack of national accep-

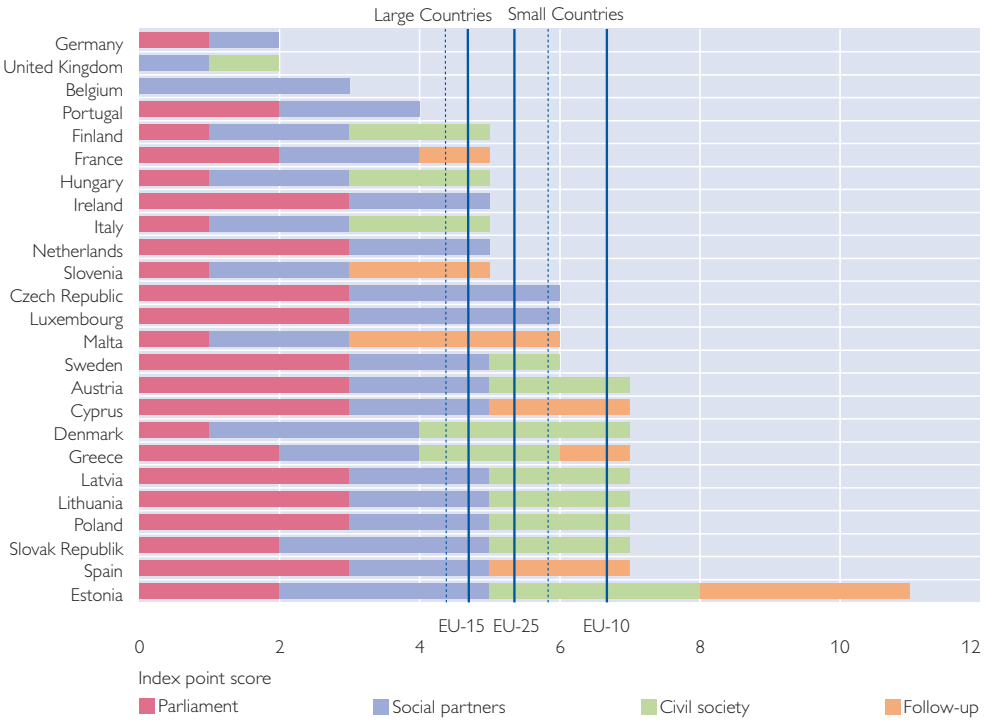
Refereed by:
Karl Aiginger, WIFO.

tance and implementation of the Lisbon goals as one of the main causes for this disappointing delivery (Kok, 2004). Consequently, the reformed Lisbon Process requires Member States to produce forward-looking strategy papers for the promotion of growth and employment, referred to as national reform programs (NRPs), which are valid for three years (Farre-Capdevila, 2006, for a more comprehensive presentation of the new course of action). This approach corrects for the criticism that many countries did not have consistent growth strategies. According to the proposal issued by the European Commission (2005a) the NRPs should consist of succinct political documents (approximately 30 to 40 pages in length) that identify the key country-specific challenges and set out the policy initiatives and concrete measures taken or planned in response to these challenges. The implementation of the NRPs will be evaluated annually, and minor adjustments may be made each year. The new Integrated Guidelines, which bring together two existing sets of guidelines – the previously separate Employment Guidelines and the Broad Economic Policy Guidelines – will now serve as a basis for Member States' NRPs. The guidelines, which cover a three-year period, provide the basic structure for the economic policy of the Member States, to be proposed by the European Commission and adopted by the European Council. The focus is on three priority areas – macroeconomic guidelines (e.g. quality and sustainability of public finances), microeconomic guidelines (e.g. internal market, innovation, education and training, SMEs) and employment guidelines.

The fact that all Member States submitted their NRPs to the European Commission by fall 2005 in spite of the very short deadline was seen as a cause for renewed optimism. However, initial evaluations of the NRPs by the European Commission (2006) and others (e.g. Mariusz and Bates, 2006), detect significant heterogeneity between the programs. Smaller or new Member States seem to have taken the NRPs "more seriously" than the larger or older Member States, as can be seen from a comparison of the levels of involvement of different stakeholders in the drafting of the NRPs and the monitoring of their implementation (chart 1). For the evaluation of parliamentary engagement, a score of 0 (no involvement) to 3 (plenary discussion) was allocated, likewise for that of the social partners and civil society. In the category of follow-up, the scale ranged from 0 (no follow-up) to 3 (follow-up at prime minister level).

Chart 1

Ownership Index



Source: Pisani-Ferry and Sapir (2006).

The Austrian NRP consists of three sections. Part 1 describes the program's seven strategic priorities and details a number of policies (table 1). In parts 2 and 3, which are only loosely related to part 1, individual policies are assigned to the 24 guidelines (part 2 is a tabular summary and part 3 provides detailed comments). The Austrian NRP is described as an overview of existing measures and can therefore be characterized as taking a predominantly backward-looking view. In its summary of the Austrian NRP, the European Commission (2006) points out the program's strengths (innovation and environmental technology, active labor market policy, and improvements in the apprenticeship system; a generally coherent package of measures) and weaknesses (competition in the service sector, in particular a lack of commitment to the liberalization of the liberal professions; adult vocational training; the employment rate of older workers; childcare facilities; improvement in the literacy and numeracy skills of schoolchildren at all levels; lack of lifelong learning strategies; integration of migrants in the labor market). The summary concludes that overall a more ambitious and long-term approach would have been welcome.

Table 1

Overview of the Austrian NRP

Priorities	Goals	Measures
Sustainability of public finances	Balanced budget over the economic cycle; reduction of total tax ratio to 40% of GDP by 2010; increase in growth potential through stronger future-oriented investment (in research, education and infrastructure)	Administrative reform; reform of tasks
Labor market and employment policy	Economic growth; flexicurity; reconciliation of work and family life	Pension reform (active old age); 2005 Employment Promotion Act
Research and development, innovation	3% R&D ratio; increase in performance and efficiency of the research and innovation system	"Research Billion" program; research tax allowance; consolidation of support structures
Infrastructure (including broadband)	Main focus on upgrading and extending Central and Eastern European transport links; Brenner Base Tunnel; broadband infrastructure	Infrastructure initiative: EUR 300 million in financing in May 2005; 2000 to 2014: EUR 40 billion in total funding for road and rail infrastructure
Strengthening Austria's position as a business location and SME action plan	Facilitation of business start-ups and attracting new companies; maintaining and expanding business headquarters; improvements in business financing	Regional employment and growth initiative 2005; procedural initiative; tax reform 2004; entrepreneurship initiative; start-up initiative; better regulation
Education and further training	Improvements in the quality and quantity of education and further training	Working paper on lifelong learning; modular design of vocational training (2006); apprenticeship initiative; 2002 University Act
Environmental technologies and efficient management of resources	Promotion of renewable energies, improvement of energy efficiency; use of environmental technologies to stimulate growth	Implementation of the Environmental Technology Action Plan (ETAP, a database on environmental technologies, awarding of pilot projects for the establishment of technology platforms, etc.); formulation of an action plan to increase resource efficiency (2006); emissions trading (2005)

Source: NRP for Austria.

The first part of this study was made possible by the availability of all NRPs on the Internet[1]. It presents an overview of economic policy measures and processes from other countries that either do not exist in Austria or are currently under discussion and that might help improve the quality of the Austrian NRP.

Based on findings drawn from the literature on the political economy of reforms, the second part of this study attempts to evaluate the prospects for success of the Austrian NRP in terms of actually transforming the proposals contained in the program into tangible results (and any subsequent additions to the program, e.g. the ideas of other countries or proposals from the WIFO white paper to be published in the fall of 2006): Will the NRP actually contribute to growth and employment or, like the National Action Plan for Employment, fundamentally remain just one more report to the European Commission?

2 What Can Austria Learn from Other NRPs?

Two-way learning and the communication of best practice models are one of the NRPs' explicit aims (European Commission, 2005a). The following collection of potential ideas for Austria's economic policy is based exclusively on an assessment of the NRPs drawn up by Germany, the United Kingdom, Sweden, Finland, Den-

[1] *http://europa.eu.int/growthandjobs/pdf/nrp_2005_en.pdf*

mark and the Netherlands, as well as, to a more limited extent, those of Estonia and Ireland. It does not contain an evaluation of actual economic policy or any specific measures; rather it is a brainstorming of ideas intended to provide new impetus for the structure and content of Austrian economic policy. The countries evaluated were selected for a variety of reasons: strong growth or employment (all except Germany), institutional compatibility with Austria (Germany), an experience of similar problems (e.g. Denmark – research, training and education) or the quality of the national NRP (e.g. Finland, Denmark).

According to Ochel (2004), international comparisons are conducted either to observe weaknesses vis-à-vis comparable countries and to thus build up pressure on decision-makers to vindicate their policies, or to adapt other countries' solutions as a basis for one's own economic policy. As this study does not conduct a policy evaluation, it can only fulfill the second aim, which is to propose ideas for the solution of problems. Only a small proportion of the many and varied NRPs produced by other Member States can be presented in this paper.

2.1 Potential Ideas for Economic Policy Measures

2.1.1 Proactive and Investigative Competition Policy

In its comparison of NRPs, the European Commission (2005b, 2006) criticized the fact that few of the programs had set priorities in competition policy. An exception was Denmark, which pursues a proactive competition policy based on economic analysis. Denmark's aim is to halve the number of sectors experiencing competition problems from 64 in 2001 to 32 by 2010 and to reduce the level of net retail prices to the EU average.

The Danish competition authority has identified these sectors in a number of forward-looking reports using a tailor-made template for economic analysis and cross-country comparisons. The analysis procedure comprises three steps. First, the importance of a sector is established using size indicators (turnover, employment). This step is followed by a purely quantitative examination in which a series of different indicators (table 2) are allocated weightings, which are then added together. The key point here is the overall picture these indicators present, as high concentration alone, for example, does not always indicate competition problems. If, however, a sector also demonstrates low levels of market share mobility, high earnings, above-average wages and a below-average entry rate, competition is likely to be weak. If the overall score is above a certain level, the competition authority carries out further assessments by analyzing more closely past competition cases initiated in the sector in question as well as by conducting comparisons with other countries or the findings of the European Commission.

Also Estonia and the United Kingdom both follow a proactive competition policy. In 2004, the latter carried out a review of the regulations of legal services with the aim of increasing competition and innovation while safeguarding public interests and improving consumer protection (Clementi, 2004).

Table 2

Competition Indicators for the Identification of Sectors with Weak Competition

	Criterion	Weighting score
Public regulation	Competition restricted by regulation, yes = 1, no = 0	3
Concentration	Share of turnover of the four largest companies (concentration rate 4) higher than 80%	2
Import-adjusted concentration	Import-adjusted concentration rate 4 higher than 50%	1
Entry rate	Annual entry rate less than 3% in the manufacturing industry, less than 8% in the services industry	2
Market share mobility	Less than 10% p.a.	2
Diversification of productivity	Diversification of productivity 25% above average	2
Wage premium	Wage level 15% above that of the Danish furniture industry	1
Rate of return	Rate of return 50% higher than the average for all Danish sectors	2
Price level	Price index three percentage points above the average of nine selected EU Member States	3
Assessment by the competition authority	Specific assessment	×

Source: NRP for Denmark.

2.1.2 Education and Further Training

The area of education and further training from the primary to the tertiary level is a core element in many of the NRPs, most of which are geared toward the goals of the European Education Strategy to be achieved by 2010 (European Commission, 2005c):

- 15% increase in the number of graduates in science and technology (annual growth rate of 1.6%) and elimination of the gender gap (Austria: 3.3% growth between 2000 and 2002; share of women graduates in 2002: 21.4%; EU-25: 30.5%);
- reducing the number of young people aged 18 to 24 that are educated only to lower secondary level to 10% (Austria 2004: 9.2%);
- 85% of all 22-year-olds should have completed upper secondary education (Austria 2004: 85.3%);
- level of participation in lifelong learning at least 12.5% of the adult population (Austria 2004: 12%);
- reducing the percentage of 15-year-olds with only the lowest level of reading and writing proficiency to 15.5% (Austria: increase from 14.6% to 20.7% from 2000 to 2003).

The Austrian NRP does not mention these goals; the objectives in education and further training concentrate heavily on apprenticeship training and less on school education.

There is a clear trend throughout all of the NRPs examined as far as tertiary education is concerned: a variety of measures are to be taken to increase the quality of top-level research and doctoral studies as well as the number of graduates (both in general and in scientific and technological subjects).

Germany plans to implement an Excellence Initiative, i.e. a strategy to

increase top-level research through the development of graduate schools (structured doctoral studies), centers of excellence, and excellence clusters at existing universities and research institutes. The European Commission (2006) described this initiative as exemplary. The goal is to raise tertiary education entry rates to 40% by 2010 through a variety of approaches, such as opening up universities to students who have successfully completed an apprenticeship training program and making it easier, in general, to switch between apprenticeship, lifelong learning and university education.

Finland plans to introduce new selection and application procedures for students with the aim of reducing the average age of new students (21) and graduates (27) by one year. Students will have access to a tax-deduction scheme for study loans, and the competitiveness of university education is to be enhanced through networks of graduate schools.

Sweden intends to establish top-level research institutes, investment more in postgraduate education and increase the share of individuals who have completed tertiary education. In Sweden, the expansion of university education falls within the responsibility of the universities and is evaluated by the government. One priority is the inclusion of migrants and those segments of society that usually have little contact with the education system into the pool of potential new university students. Students aged 40 to 55 will receive better access to university grants, and the level of grants available to students with children is to be raised.

The Netherlands plans to improve the quality of doctoral studies, establish centers of excellence at universities, create better career prospects for researchers, and achieve the European growth targets for university graduates. Talented students and researchers from other countries are to be recruited to the country in greater numbers through a combination of less onerous official procedures, higher grants and an increase in the number of Dutch information centers abroad.

The NRPs also contain numerous proposals to improve the quantity and quality of primary and secondary education, in particular through the introduction of nationwide standards and assessment procedures. In addition, some countries place strong emphasis on the greater integration of migrants into the educational system.

In this respect, Denmark is particularly interesting for Austria, as it faces similar challenges: very high education spending on the one hand and only average results in international performance comparisons on the other. In response to this problem, Denmark plans to introduce the "reform program for upper secondary education", which entails improving teacher education in mathematics and the sciences while raising the quality of teaching in these subjects at the same time, drawing up a national action plan for reading, reducing the number of subjects taught at the upper secondary level (the long-term goal is one subject per teacher) and introducing assessment procedures to promote overall quality development. The objectives of the program are to increase the share of people aged 18 to 24 with an upper secondary qualification from the present 78% to 95% by 2015 and thus to provide a solid basis for lifelong learning, and to step up the percentage of university graduates from 42% to 50%.

The program entitled "A new chance for everyone" was especially designed for the children of migrants, who tend to record high school dropout rates. The program guarantees the availability of apprenticeship position, but at the same time obliges all young unemployed people (aged between 18 and 25) who receive social assistance and have no vocational training qualification to take up the available position. Those who fail to do so will lose their benefits. In addition, child benefits will only be paid to the parents of young adults aged 15 to 17 if their child is participating in an education program or holds a job that contains an element of vocational training. This interplay between state guarantees and personal obligations is typical for the overall policy approach in Denmark, for example in its labor market policy.

Germany intends to introduce all-day schooling to promote a new culture of teaching and learning, to improve the quality of education and to reduce the effects of social background on educational achievement. In addition, the introduction of standards in pre-school education, mandatory continuing training for teachers and school evaluation procedures are planned. Migrant children are to receive additional language training as well as early skills diagnosis and support programs.

As the foundations for innovative thinking are laid at a very young age, Finland aims to promote creativity in early childhood (productivity growth ultimately being based upon creativity).

In 2006, Sweden implemented individual development plans for all school children in addition to implementing a comprehensive quality improvement agenda that introduced nationwide educational standards. The development plan sets out the specific steps that are required for each pupil to attain the national targets. Sweden also has individualized schooling programs, which e.g. enable students to complete some subjects at school while at the same time receiving vocational training in the form of an apprenticeship.

All of the NRPs contain proposals of how to raise the participation of the adult labor force in lifelong learning and how to finance continuing education initiatives.

In its strategy for lifelong learning, the German government seeks to encourage the social partners to agree upon individual training time accounts and to accompany these with protection against company insolvency. The systematization of further training is to be promoted by a nationwide framework of standards. Quality assurance and educational consultation are aimed at making the range of educational opportunities offered more transparent, thus enabling all segments of the population to participate in education and further training activities.

Ireland follows the enterprise-led network approach "skillnets" (www.skillnets.com; cited as an example by the European Commission). This approach encourages small and medium-sized enterprises (SMEs) with similar skill needs to form collective training networks and to decide upon the content of their individual training programs. The skillnets program provides funding and support for the establishment of the network, e.g. by providing trained managerial specialists. It enables companies to achieve economies of scale when jointly purchasing training services. At the same time, the forma-

tion of networks according to individual demand maximizes educational relevance and can create additional positive externalities (e.g. knowledge spillovers similar to those occurring in clusters).

2.1.3 Employment

Almost all of the NRPs aim to boost employment by encouraging the reconciliation of work and family life. According to the EU's employment strategy (European Commission, 2005d), the Member States should, by 2010, achieve an overall employment rate of 70%, a 60% female employment rate and a 50% employment rate among older workers. In addition, childcare is to be provided to 90% of children between the age of three and the mandatory school age and to 33% of children under the age of three.

Germany intends to double the number of childcare facilities available for the under three-year-olds from the current level of 10% to almost 20%. Several partnerships (Allianz für Familie, local alliances for families) have been established with companies, trade unions, the authorities and various associations and organizations with the aim of creating tangible improvements toward reconciling work and family life, e.g. by helping to tailor opening times at childcare centers to working hours and by assisting women to return to work. The "Erfolgsfaktor Familie 2005" initiative (www.erfolgsfaktor-familie.de, a competition for companies to encourage them to adopt a more family-friendly employment policy), the Internet portal www.mittelstand-und-familie.de (which focuses on workforce development in SMEs) and the project "Work-Life Balance – Motor für wirtschaftliches Wachstum und gesellschaftliche Stabilität" all aim to give examples of best practice and raise the awareness of the issue of family-friendly work policies.

To address the fact that fertility rates are particularly low for women with an academic education and to promote employment opportunities for highly qualified persons, parents who interrupt their employment career to raise a family will receive 67% of their previous net pay for one year (up to a maximum of EUR 1,800 per month).

The United Kingdom aims to deliver universal, high-quality and affordable childcare for all children aged 3 to 14 through its Ten Year Childcare Strategy.

Sweden wants to reach the EU target figures for childcare availability by 2010, and in Denmark a "Family and Working Life Commission" is developing recommendations for actions to be taken.

2.1.4 Public Sector Reform

All of the NRPs examined contain administrative reforms that seek to improve the effectiveness and efficiency of public administration while directing more public funding to growth-promoting sectors.

The United Kingdom pursues a strongly target-oriented approach, in which public service agreements and spending reviews are set for a period of three years and efficiency targets linked to output indicators are specified for each administrative department. An efficiency increase of at least 2.5% per year is mandatory. Any financial or human resources saved will not be merely dispensed with, but reallocated to other public services experiencing greater demand (frontline services). The implementa-

tion of this reorganization plan will be driven and coordinated by a cross-departmental "efficiency team." Moreover, the efficiency of the public sector is also evaluated by independent experts (Gershon, 2004).

Finland has launched a productivity action program for the public sector. Each ministry has to prepare a productivity improvement plan for its respective area of administration with the aim of filling only one out of every two positions that become vacant through natural attrition. This approach translates into a productivity increase of 2% p.a. or corresponds to the labor input of 17,500 persons (almost 15% of the public sector workforce). By 2011, some 35,000 employees will have left the public sector by natural attrition (i.e. through retirement or a move to the private sector), and this development is to be used to introduce organizational and strategic changes. Administrative departments and agencies will increasingly be transformed either into unincorporated state enterprises or private companies. Where similar services can be provided across several public sector departments, e.g. in the areas of finance and human resources administration, service centers will be created, which will stimulate an estimated 40% productivity increase by 2009. The resources freed up through this process will be redeployed elsewhere.

Denmark plans to merge some jurisdictions and municipalities to enhance public sector efficiency. As in Finland, service centers will be created within public administration to ensure better quality and the concentration of administrative functions (e.g. accounting and financial management). Public-private partnerships are to be promoted throughout.

Germany intends to modernize civil service law with a view toward stronger performance orientation and flexibility in career progression, as well as to facilitate an interchange of personnel between private enterprises and public administration, thus establishing closer links and stronger cohesion between the two sectors.

2.1.5 Small and Medium-Sized Enterprises, Business Start-Ups

The proposals to promote small and medium-sized enterprises (SMEs) and to boost the number of business start-ups are complex, with common aspects being a stronger focus on fast-growing SMEs (known as "gazelle companies"), a rise in the number of female entrepreneurs and increases in venture capital.

The United Kingdom intends to increase the relatively low share of women in the overall number of founders of enterprises with a special action plan: The intermediate target is to achieve 20% female business ownership by 2006. The measures adopted to reach this goal will be evaluated on a regular basis and include improvements in childcare facilities, the establishment of women's networks, special education opportunities for women, etc. The Centre for Female Entrepreneurship at the University of Luton conducts research on the subject and also offers support and counseling services. In addition, a package of measures to provide business coaching for small high-growth companies is being developed, addressing, among other things, the particular difficulties in financing, opening up new markets, innovation and employee training encountered by such companies.

In 2005, Finland introduced legislation to provide unemployment

coverage for entrepreneurs, thus lowering another barrier to the creation of new businesses. High-growth companies will be supported by appropriate venture capital, research and development (R&D) and export policies. Another of Finland's priorities is to encourage female entrepreneurship.

In Germany, initiatives such as the "Bundesweite Agentur für Gründerinnen" (a national agency for female entrepreneurs) aim to promote the career and business potential of women in a more targeted manner. Another objective is to reduce the outlay in money and time required to start a limited liability company.

Denmark is introducing a benchmarking system to measure business start-up rates and the number of growth companies, as well as the quality of business environment conditions. Another initiative provides special tax relief for growth entrepreneurs.

2.2 Ideas for Economic Policymaking

Besides detailing a number of possible policy approaches, the NRPs also deliver insights into the ways in which other European countries plan and implement economic policy initiatives.

2.2.1 Forward-Looking, Cross-Sectoral Economic Policy Implementation Programs

Each year, Finland compiles a "Government Strategy Document" containing detailed implementation measures that translate the government program into concrete actions, which are then broken down into annual schedules. Furthermore, the Finnish government produces cross-sectoral policy programs that focus on specific key areas and are subject to mandatory evaluation.[2] Recent examples cover cross-sectoral topics such as employment, entrepreneurial activity, and information and communication technologies (ICT). These programs aim at the effective deployment of resources, the development of policies demonstrating a high degree of consistency and the utilization of synergies between sectors and shall therefore take precedence over the initiatives of individual ministries.

Estonia also uses its NRP as the basis for detailed annual "working schedules."

2.2.2 Prioritization Based on Analyses of Strengths and Weaknesses

Few of the NRPs subject their national economies to an analysis of strengths and weaknesses, a process that would facilitate policy prioritization and sequencing. This is partly attributable to a lack of basic methodological harmonization of the NRPs (Pisani-Ferry and Sapir, 2006). Finland and Denmark first identify their medium-term challenges and then set priorities based on numerical goals.

None of the NRPs discuss the sequencing of initiatives in terms of their impacts on budget, growth or employment. Answering the questions of how much of an effect on GDP or employment growth rates a policy will have, and how quickly, would certainly improve an NRP's prospects for success, while at the same time enhancing consistency not only with other initiatives, such as stability and convergence programs,

[2] *For more information, see http://www.government.fi/toiminta/hallitusohjelman-seuranta/strategia-asiakirja/en.jsp*

but also with real economic development. A new study analyzing the impact of the Lisbon targets (Gelauff and Lejour, 2006) e.g. concludes that attainment of the R&D and employment targets will significantly influence growth rates, while regulatory reforms and internal market integration will have a comparatively lesser effect. Human capital goals only start having an impact with a certain time lag.

2.2.3 Numerical Targets and Indicators for the Evaluation of Success

Many countries go beyond the strategic objectives established by the Lisbon Strategy and use numerical targets or indicators in their NRPs. To set realistic targets, it is helpful to ascertain the policy scope and leverage available. Once set, targets permit the monitoring and evaluation of policies and serve to ensure transparency on matters such as the future direction of economic policy, the instruments employed to reach economic policy goals, and the measures taken by other economies to achieve similar objectives. The European Parliament, too, has started to demand a more target-based approach (the individual countries are to make stronger commitment to targets by 2007).

Estonia continues to use the structural indicators published by Eurostat to gauge the progress and the effectiveness of the measures in place. At the European level, the tables comparing the different national situations and assessing the progress achieved in the Member States were abandoned with the reform of the Lisbon Process. This is because comparisons across all indicators are of only qualified value, as the Member States have different strengths and weaknesses and their priorities can therefore differ considerably. A benchmarking exercise taking these national characteristics into account would nevertheless be of critical value (see the criticism expressed by Pisani-Ferry and Sapir, 2006).

The Netherlands has set a number of targets for specific policy areas, e.g. innovation policy, where the country aims for an EU top-five position in the following areas by 2010: R&D spending by companies, turnover share of new products, patents per million inhabitants, and share of science and technology graduates in the overall workforce. As far as SME policy is concerned, the goal is to raise the share of entrepreneurs in the workforce to at least 10% and to exceed the EU-25 average by at least 0.5 percentage point. Between 2003 and 2010, the turnover generated by technology-oriented new businesses (technostarters) is planned to double to EUR 2.6 billion.

2.2.4 Transparency and Communication of NRPs

Ultimately, the NRPs provide insights regarding the transparency of policy-making and the communication of their respective objectives and contents to the public. The Swedish government, for example, drafted its NRP jointly with its constituent provinces; as a result of this effort the NRP complements local and regional growth programs, which has the benefit of ensuring coherent policy decisions. The NRP was communicated to representatives from civil society, the social partners and other stakeholders, who were invited to suggest priorities and submit their own proposals.

2.3 Summary: Possible Solutions for Austria

In summary, solutions that could be implemented in Austria can be identified in several areas. A forward-looking, investigative competition policy could actively make out sectors facing competition problems and propose remedial changes.[3] The education system could benefit from a number of initiatives aimed at both quantitative and qualitative improvements (in the university sector, this could include top-level research, graduate schools and a general increase in tertiary education participation). In many countries, specific programs for the promotion of disadvantaged groups of the population, e.g. migrant children, are being developed. In terms of promoting employment, all countries are moving as one in the direction of reconciling work and family life through more and better childcare facilities, local alliances between businesses and other civil society groups, improvements to family support services, etc. Education and employment initiatives are largely consistent with the corresponding European strategies. Public sector reform focuses on the transition to output-based systems: an approach intended to improve efficiency while maximizing cost-effectiveness by concentrating public expenditure on growth promotion. Support for SMEs is shifting more and more toward fast-growing companies for which specific counseling services and improved financing terms are made available.

The strategies and action plans of other countries that seek to achieve preset targets through a forward-looking, cross-sectoral approach can also provide new ideas for structuring Austria's economic policy processes. The definition of targets is based on an analysis of strengths and weaknesses that makes it possible to set clear priorities. The measures to be put in place are described in detailed implementation plans, and their implementation itself is monitored continually. Furthermore, the success of policy measures in achieving their goals is evaluated. Other countries' NRPs also provide new ideas for making the preparation process more transparent and for communicating the NRP to the public, e.g. in the form of seminars for stakeholders from civil society.

For part of Austria's economic policy, a similar approach to that described in section 2.2 has been successfully put into practice (at least in part): The federal government has set targets for an increase in the R&D ratio from an initial 2.5% to 3% (starting from 1.9%), and the Austrian Council for Research and Technology Development (a central advisory committee) develops medium-term strategies and is responsible for monitoring and coordination activities. With the introduction of the Austrian Research Promotion Agency and the Austrian Science Fund, the number of bodies charged with administering support schemes has been greatly reduced. The Austrian government's Research and Technology Report is used as an annual monitoring instrument; projects and institutions (for example the Austrian Science Fund and the Austrian Industrial Research Promotion Fund are subject to evalu-

[3] *In principle, this is already one of the tasks of the Austrian Federal Competition Authority (BWB). However, with only 17 qualified employees (compared with 68 in Denmark), it is somewhat difficult to implement (BWB, 2005).*

ation. A network of independent research institutes and consultants (WIFO, Joanneum Research, ARCS Technopolis, Austrian Institute for Industrial Research, etc.) regularly compiles analyses and new sets of measures.

The 2005 ICT master plan developed by the Austrian Regulatory Authority for Telecommunications and Broadcasting (RTR-GmbH) is an excellent example for the conceptual design of economic policy. Detailed analyses of strengths and weaknesses, the definition of targets, proposals for the implementation and sequencing of policies (e.g. via a central ICT coordination agency, an institution that has been successful in other countries), are always described in comparison with international best practice. The master plan is, however, still awaiting its political implementation. Nevertheless, a similar approach could be considered for other areas (e.g. competition policy, education and training, etc.).

3 NRPs: Real Economic Growth Strategy or Just Another Report? Reflections on the Political Economy of Reforms

The political economy of reforms deals with questions such as why reforms take place at all, why reforms are not implemented in spite of the long-term positive effects they would have, and what effects different political systems have on reforms. For an overview, see Rodrik (1996). Research in this area centered primarily on transition and development economies and has only recently begun to expand its scope of analysis to OECD countries (e.g. IMF, 2004). In spite of numerous theoretical and empirical studies, complete and robust empirical generalizations are yet to be established (Williamson, 1994; Castanheira et al., 2004). Rodrik (1996, p. 32) e.g. observes that "most economists are on the side of speed, stealth, and consequently reform from above," while Munchau (2006a, p. 13) writes: "In the absence of a perceptible strategy, why should voters accept reforms that bring certain sacrifices in the short run and only vague benefits at some distant time in the future?" Change processes can only be assessed, and the prospects for the success of change instruments (such as a national reform program) can only be evaluated against country- and situation-specific criteria, taking into account factors such as prevailing electoral law, the economic position, and structural circumstances.

The NRPs are fundamentally a commitment device for the Member States to ensure the development of a consistent strategy for growth in line with the demands of the Kok Report (2004), which calls for redoubled efforts on a national level. Is Austria's NRP an effective commitment device for a growth- and employment-oriented economic policy? Does it improve the implementation prospects for the policy proposals it contains? Does it support the integration of concepts from other countries? Can it contribute to overcoming vested interests and uncertainty? Can it act as a catalyst for reform? Does it provide a feasible coordination strategy for policy sequencing over the coming years?

On the one hand, the NRPs adopt a gradual approach, with economic policy reform being implemented through a process of stepwise successive changes. As they are supposed to be drawn up using the input of as

many stakeholders as possible (e.g. representatives of the social partners and civil society), they are participatory and do not advocate "quick reforms from above."

The purpose of economic policy in Austria does not consist of initiating a fundamentally new beginning or launching a growth process such as might be required in a developing country. The key issue is rather to effect a gradual, progressive change in economic conditions and economic policy measures in order to facilitate sustainable growth (Wörgötter, 2006).[4] The critical challenge for Austria is to transform the country's economic structure and economic policy toward maintaining its position at the forefront of the most productive OECD countries in the long run. The transition from a catch-up model of progress to an innovation-oriented approach requires the setting of new and different priorities (Aghion and Howitt, 2006; Sapir et al., 2004), e.g. in the fields of university education and competition policy.

3.1 Can the NRP Help to Initiate Changes and Reforms?

Empirical evidence shows that long periods of stagnation or prolonged episodes of slow growth or crises tend to lead to reform (IMF, 2004). When it comes to finding ways to implement growth- and employment-oriented economic policy measures, such observations are of relatively limited value, as provoking a crisis to push reform is obviously not a feasible approach. The international discussion about the role of crises in reform processes is strongly influenced by the macroeconomic crises in emerging economies, such as interventions by the International Monetary Fund (IMF) or debt and currency crises. That being the case, they hardly provide a useful comparison or model for the Austrian situation. Furthermore, deep recessions often lead to bad economic policy, as measures are implemented out of short-term necessity rather than with sustainable improvements in mind, and crisis-driven reform programs focus only on narrow aspects of the economic picture (Krueger, 2005).

Reforms would be easier to launch in periods of economic upturn, as increasing taxation revenues provide more funding flexibility for changes: In times of adequate financial resources, there is no need to take away from one group in order to give to another. The prevailing mood is less uncertain, and there is more tolerance and willingness to accept change. In actual fact, however, observations show that fewer changes tend to be implemented in economically favorable times (IMF, 2004; Blanchard, 2006). The NRPs could therefore act as key instruments in establishing regular adjustments to the changing macroeconomic conditions beyond the economic cycle. The most relevant criterion in the evaluation of the Austrian NRP's success potential is therefore whether the program will contribute to strategically directing the country's economic policy toward medium- and long-term employment and growth policies. Another important question is whether the NRP will promote changes, particularly in times of economic upturn.

The NRP institutionalizes the annual debate about growth and employment policy and thus at least

[4] *See Rodrik (2005) for the different requirements to ignite and sustain growth.*

makes it onto the political agenda. However, to have a real impact on growth policy during economically favorable times, the NRP must send sufficiently strong signals to the population at large, in order to engender public pressure and foster a willingness to accept change.

Climate policy finds itself in a situation similar to that of the Lisbon Agenda. Everyone is aware that there is a problem, but there is no immediate crisis in sight, and therefore political initiatives, Kyoto-style goals and time schedules have, to date, barely led to tangible steps being taken. Any real changes in behavior are becoming apparent only now with the hefty increase in oil and fuel prices. This demonstrates that clear (price) signals, transmitted to the general public directly or via the media, are important catalysts for reform. An economic crisis also makes it very obvious to both policymakers and the population that something must happen. Likewise, the NRP must contain strong signals that the public will recognize. One way of generating such signals ("pseudo prices") would be to put the effects of the growth and employment initiatives into detailed figures, not only in terms of their extent, but also in terms of their temporal effect and possible interdependence. This requires superior understanding and a broad consensus on the part of economists.

What role does the communication and implementation of planned reforms play, and what is the NRP's contribution in this context? Based on his many years of experience with reform processes within the OECD, Koromzay (2004, p. 4) writes that "…the timing of reform can surely be influenced – perhaps decisively – by political leadership. Effective communication can crystallize the vague sense that "something is wrong" into a broad perception for the need for change." However, Tichy (2003, 2005), in a comparison of trend indicators from continental Europe and Scandinavia, warns against the use of crisis rhetoric to secure the acceptance of reforms because this approach unsettles the public and ultimately makes reform even more difficult as it increases risk aversion. Comprehensive economic and social policy reforms must always be incorporated into a credible overall concept. Munchau (2006b) shares Tichy's opinion: "By embedding economic reforms in a transparent strategy, Sweden avoided the uncertainty emitted as a toxic by-product elsewhere."[5]

The implementation and communication of changes within the NRP as a broad, transparent strategy for growth is thus far more likely to have a positive impact on the overall success of reform efforts.

3.2 Can the NRP Help to Overcome Vested Interests?

If a relatively small group of people secures high per-capita profits by maintaining the status quo, but a relatively large group will achieve small individual per-capita profits from change, then there are completely different incentives for the political pursuit of special interests (Olson, 1965). Due to its size, the small group can and will behave more aggressively and in a more coordinated manner to maintain the status quo than the large

[5] *See Tichy (2003, p. 17) who finds that in Scandinavia, a well-coordinated and credible combination of education policy, technology policy, social policy and targeted deregulation might have played a decisive role.*

group will in pushing for change. This is how an initiative which, despite leading to an overall improvement in collective benefit, would entail losses for the small, well-organized group will fail in the face of this small group's opposition. A variation on this theme is that the loss for one group is certain and will occur immediately after the introduction of a particular measure, whereas the benefit for the population at large is uncertain and may only take effect after a number of years. The anticipated benefit to the large, diffuse group mostly bears little relationship to the outlay required. Classic examples of special interest groups are those of the liberal professions in Austria, and also the French agricultural interests.

Commitment devices can help to ensure that what is good for the population at large prevails over the interests of individual groups. The degree of commitment is derived from the (political) costs that would result from failure to meet the agreed targets. Probably the strongest instrument of this kind in recent Austrian economic history was the accession to the European Union. Joining the EU required numerous adjustments, in particular to product markets. The credibility of economic policy was strongly improved by its "all or nothing" approach ("We must implement these measures or we won't be able to join.") (Janger, 2005). It was plain to see for the broad public that a high price would have to be paid if Austria failed to implement the measures necessary for EU accession.

In comparison with this, the NRP is clearly lagging behind; it can never attain the same level of importance in terms of commitment because there are no clearly visible immediate consequences (refusal of acceptance into the European Union) and no obvious costs of nonimplementation. Failure to apply the reforms set out in the NRP would probably only in the medium term lead to a noticeable economic downturn, which the population as a whole would most likely not view as a direct result of the nonimplementation of NRP reforms.

In its empirical study of reforms in OECD countries, the IMF (2004) notes, however, that comprehensive packages of measures (such as the NRP) facilitate the implementation of economic policy measures because they communicate to the public that change is not a process directed against individual groups, but rather a broad transformation affecting nearly all stakeholders, which makes reform easier to accept. Losses arising from one policy measure are balanced out by the benefits resulting from another (this assumes that there is general public awareness of the measures or, indeed, of the entire program).

In summary, the NRP may not be as powerful a tool as accession to the EU in terms of its ability to overcome vested interests, but it is still better than the status quo.

3.3 Can the NRP Help to Overcome Uncertainty?

Uncertainty about the economic effects of a reform (aggregate uncertainty) can hinder the implementation of reform programs. Even if, on an economic level, the overall effect of a change is perceived with certainty to be positive, uncertainty about this effect on a personal level may constitute an obstacle to implementing the reform (Fernandez and Rodrik, 1991). In other words, although a measure would add to the collective good, it is impossible to ascertain who the winners and losers

will be before it is actually adopted.[6] Too many stakeholders might believe that they would be on the losing side and not support change, thus creating a bias toward the status quo. This phenomenon may especially occur in the context of labor market or welfare system reforms.

National and international debate and research, which form the basis for the NRPs, could very well reduce both aggregate and personal uncertainty in relation to individual policy measures. The IMF (2004) also stresses the importance of international spillovers – success in other countries helps to reduce uncertainty. NRPs directly encourage this international exchange, and as a small, open economy, Austria has a natural tendency to look beyond its borders. The NRP has, by all means, the potential to alleviate the uncertainty surrounding reform efforts.

3.4 Sequencing of Economic Policy Measures

Is a participatory, gradual and sequential reform approach more successful than a fast, radical transformation imposed by government representatives without input from the stakeholders it will affect? The NRP is a clear example of the former. Upon closer consideration, this question is easy to answer. The most recent debate about gradual versus radical reform stems from the former communist countries' transition to market economies and is thus of little practical use for Austria's situation. In contrast to these countries' experiences, most reforms in industrial countries take place gradually (IMF, 2004). There are three arguments in favor of this approach.

From a purely budgetary point of view, it is difficult to implement many changes at once, particularly in periods of relatively slow economic growth – and not only because of budgetary restrictions. Moreover, private enterprise needs a stable environment for planning economic activities such as making investments: Expectational stability is an important factor for boosting investment activity.

Rapid changes to complex systems (e.g., competition or education policies), such as the measures required in Austria to reduce the gap to efficiency leaders, are extremely difficult for government to implement without the input and assistance from the stakeholders affected. In addition, there is a risk of unintended consequences. Also, although Jean-Claude Juncker once declared that it was clear what needs to be done (The Economist, 2006), this is in no way the case. Munchau (2006c) challenges his assertion, citing Blanchard's labor market survey (2006), which questions the merits of labor market measures that were considered to be proven. On the surface, policy priorities might actually seem quite clear (everyone believes that more education and research is a good thing), but

[6] *One strategy for the defense of narrow group interests often consists of making the consequences of change appear uncertain on an aggregated level because the members of the interest group are certain on a personal level of the disadvantages of the initiative (see Annett et al., 2004).*

when it comes to the details, there are many unresolved problems.[7]

A final argument relates to the sustainability of change: In the event of a change in government, a prior involvement makes canceling growth policy measures unlikely (Rodrik, 1996; Castanheira et al., 2004). Austrian electoral law, which is based on proportional representation and seldom leads to absolute majorities, also makes rapid reform on the part of the government unlikely. Consideration of the social partners' views does not necessarily lead to reform blockades either: on balance, in Austria their policies have been directed toward the benefit of society as a whole rather than the defense of narrow special interests. In addition, the social partners can support the NRP process by publishing their own ideas.

Altogether, the way the NRP is structured on the basis of a broadly inclusive and gradual approach appears to favor the implementation of growth and employment policies.

4 Conclusion: Conditions for the Effective Implementation of the NRP

Will the NRP be successful in Austria? Although the program has some points in its favor, it does, however, also suffer from three fundamental weaknesses: It does not wield the same power as e.g. the prospect of joining the EU did, it does not send out any strong "price signals," and the population is largely unaware of its existence. Therefore, it can only avoid the fate of the National Action Plan for Employment and become more than just another report if the following conditions are met:

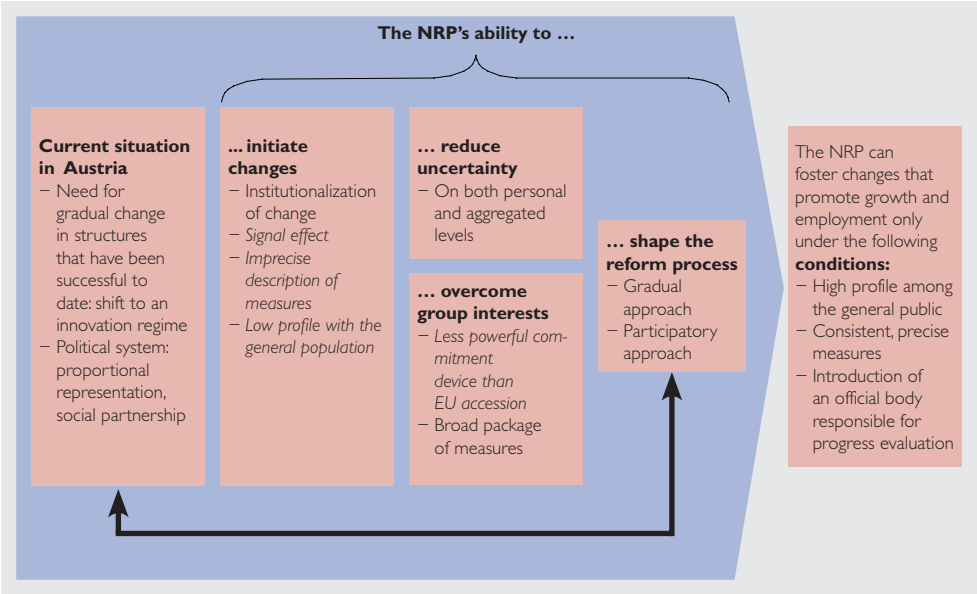
First, a clear understanding of its content and aims is essential: (1) which policy measures promote growth and employment, and (2) what will the exact impacts on growth and employment be (scope of the program; time lag)? This should ensure that clear signals are sent out. Austrian economists are challenged to provide the necessary analytical fundamentals and, in this context, the white paper currently being produced by WIFO is very welcome. The NRP must, of course, be adapted to new insights that might arise.

To increase its commitment power, the NRP must gain a higher profile in the public's awareness than it presently has. Its presentation and discussion in parliament was hardly covered by the media at all. "Public rather than peer pressure" (Tabellini and Wyplosz, 2004) calls for extensive debate in national parliaments, in the media, with the social partners, etc. The NRP's content must be actively communicated. However, this will most probably only happen after the program has been implemented with some success, as governments are hardly likely to call their own actions into question. Despite the emphasis on implementation at a national level, it may well be useful to charge a government-independent body with the official task of assessing the progress achieved against national priorities, e.g. by comparing national progress at a European level – a practice that was abandoned in 2004 – and communicating the results. This need

[7] *On this subject, see Rodrik (2005, p. 1), who contrasts two statements Arnold Harberger made on the issue of economic policy in developing countries in 1985 and 2003:"Countries that have run their economies following the policy tenets of the professionals have on the whole reaped good fruit from the effort; likewise, those that have flown in the face of these tenets have had to pay the price"(1985) vs."When you get right down to business, there aren't too many policies that we can say with certainty deeply and positively affect growth"(2003).*

Chart 2

Prospects for Success (Based on the Structure of the NRP)



Source: OeNB.
Note: Possible structural deficiencies of the NRP are printed in italics.

not necessarily be the responsibility of the European Commission; it would be equally appropriate to assign this role to research institutes.[8] A fair comparison would, however, require a standardized methodology for the analysis of a country's strengths and weaknesses, followed by the identification of priorities on the basis of the results gathered (Pisani-Ferry and Sapir, 2006).

The NRP has, in principle, the potential to become more than just another report, subject to a number of improvements. If these do not materialize, the NRP's success is in jeopardy.[9] The degree of success, in this context, must be considered relative to the scope of the Austrian NRP, which definitely has potential for future expansion. Section 2 of this study presents policy ideas from other NRPs that might be useful for Austria's program; moreover, we suggest that the content of the WIFO white paper should, if possible, be incorporated into the NRP. Furthermore, the Austrian NRP contains very few numerical targets, whose attainment would represent a tangible measure of the program's performance: the "top 3 strategy" (positioning Austria among the three best performers across the European structural indicators), which occupied a prominent place in the Cardiff Report (Austrian Federal Chancellery, 2004), is no longer part of the program.

The questions of whether or not the NRP can contribute to the institutionalization of change and whether it will become a medium-term, credible and transparent growth concept in the sense of Aiginger (2004), Gnan

[8] *For the European level, see Annett et al. (2004, p. 67): "Given the absence of an external enforcer under the open method of coordination, incentives must be put in place to promote self-enforcement, which will be facilitated by building consensus over a core body of reforms and making peer pressure more effective."*

[9] *In this case, only an improvement in interministerial cooperation is likely, since growth and employment are often cross-sectoral issues.*

et al. (2004) and Tichy (2003) is ultimately dependent on political will. The European Union may provide support for the process of economic reform, but even without the European dimension – and independently of the Lisbon Agenda – the pursuit and implementation of a medium-term, consistently applied employment and growth strategy would be highly beneficial.

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The Austrian Pension System – How Recent Reforms Have Changed Fiscal Sustainability and Pension Benefits

Markus Knell,
Walpurga Köhler-Töglhofer,
Doris Prammer[1]

This article discusses the most recent pension reforms in Austria, which were mainly triggered by the need to alleviate the budgetary pressure stemming from the age structure of the Austrian population. Using synthetic indicators, derived from the government's budget constraint, the paper assesses fiscal sustainability before and after the major pension reforms. Austria's fiscal sustainability was clearly improved by the reforms. The two main factors behind this improvement are a projected increase in the average effective retirement age and a projected reduction in the generosity of the mandatory state pension system. Based on available data, the paper assesses the current and prospective level of Austrian public pension benefits and puts them into an international perspective.

JEL classification: H55, H60, E62
Keywords: public pensions, social security, fiscal sustainability.

1 Introduction

The twofold demographic challenge – increasing life expectancy and low fertility rates – has put most pension systems under budgetary pressure. Over the last decade this has led to massive requests for reforms throughout Europe. In Austria the sequence of legal changes has been particularly rapid with – overall substantial – pension reforms in 2000, 2003 and 2004. At the same time, a number of international organizations have taken up the before mentioned issues by publishing extensive surveys and proposals. Important studies in this area have, e.g., been provided by the World Bank (Holzmann and Hinz, 2005), the OECD (2005a, 2005b) and the EU's Economic Policy Committee (EPC, 2001, 2006). Given the implications of the demographic challenge for pension systems and, by extension, for public finances, many publications have put particular emphasis on the ensuing effects on fiscal sustainability and on the maintenance of sustainable public finances. This article also considers the main factors behind the improvement in the Austrian fiscal situation and looks in particular at the projected development of pension benefits.

Section 2 gives an overview of the Austrian pension system, followed by a description of the three pension reforms implemented in Austria since 2000 in section 3. Section 4 assesses the effects of the reforms on fiscal sustainability based on the most recent projections of old-age-related expenditures, using inter alia indicators proposed by the European Commission. Section 5 discusses the projected changes in the generosity of the pension system. The focus is both on the current Austrian situation and on the projected future development implied by the pension reforms. Section 6 offers concluding remarks.

2 An Overview of the Austrian Pension System

2.1 Key Facts

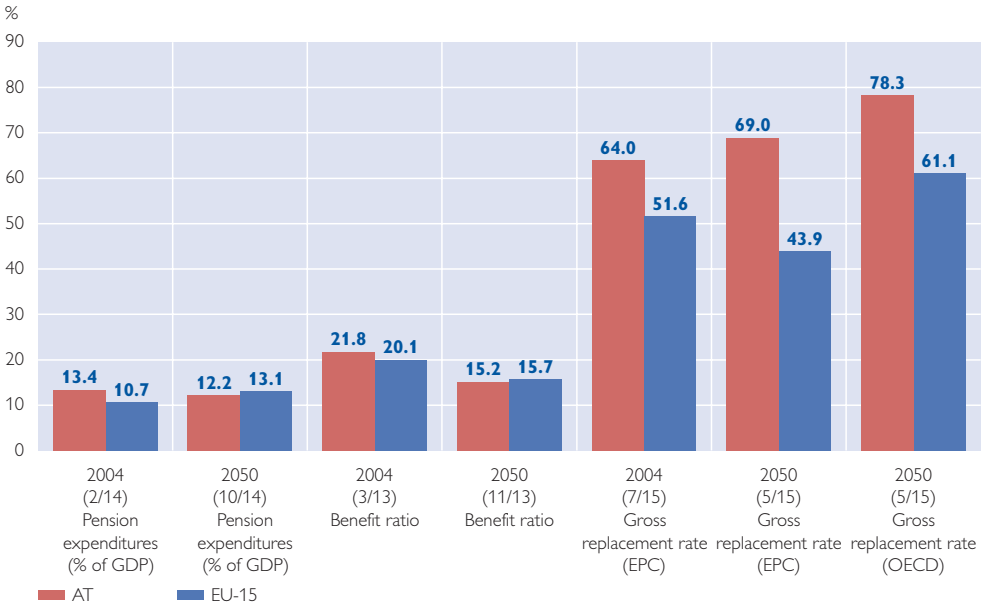
Being a "Bismarckian" system, Austria's pension system is dominated by

[1] *The opinion expressed in this study is that of the authors and may differ from the views of the Oesterreichische Nationalbank. The authors wish to thank Daniele Franco, Ernest Gnan, Peter Part and Alfred Stiglbauer for valuable comments and suggestions.*

Refereed by Daniele Franco, Banca d'Italia.

Chart 1

Indicators on the Generosity of Pension Systems for Austria and the EU-15 (2004 and 2050)



Source: OeNB calculations based on EPC (2006, tables 3.3, 3.11 and 2.2 (Annex)) and OECD (2005a, table 4.1).

Note: The figures in parenthesis give the rank of the Austrian value among the EU-15 Member States. The OECD calculations show the pension entitlements of a worker who enters the system in 2005 at the age of 20 and retires at the standard pension-eligibility age. Thus, the first year of retirement might vary between 2045 (if the standard eligibility age is 60) and 2050 (if it is 65).

the first pillar: the public pay-as-you-go (PAYG) scheme, which is mandatory and benefit oriented. The public pension system provides for direct old age and invalidity pensions as well as for indirect benefits such as survivors' and orphans' pensions. If required, these benefits are supplemented from general tax revenues by a means-tested payment, which is provided to guarantee minimum income in retirement, i.e. to cover the poverty risk of the elderly.

Up to 2005, the first pillar consisted of different schemes for different occupational groups, which reflected the historical development of the pension system. The pension harmonization law of 2004 was the first effort aimed at introducing a uniform pension system for all occupational categories with uniform contribution rates and benefit entitlements.[2] As roughly 93%[3] of the labor force are covered by the rather generous public pension system,[4] the second (occupational pension scheme) and third pillars (individual pension provision) used to play a minor, albeit increasing role. The occupational pension scheme gained in importance when a new severance pay scheme was introduced in 2002. Under the new scheme, employers are required to contribute 1.53% of the gross monthly pay for each of their employees, who

[2] *Exceptions apply to civil servants working for the regional and local authorities (who are not in the new system) and to the self-employed and to farmers (who pay lower contributions).*

[3] *See Felderer et al. (2006).*

[4] *The public pension system does not cover a certain category of the self-employed (liberal professions) and employees with very low earnings; the initial gross replacement rate is 64% (see chart 1).*

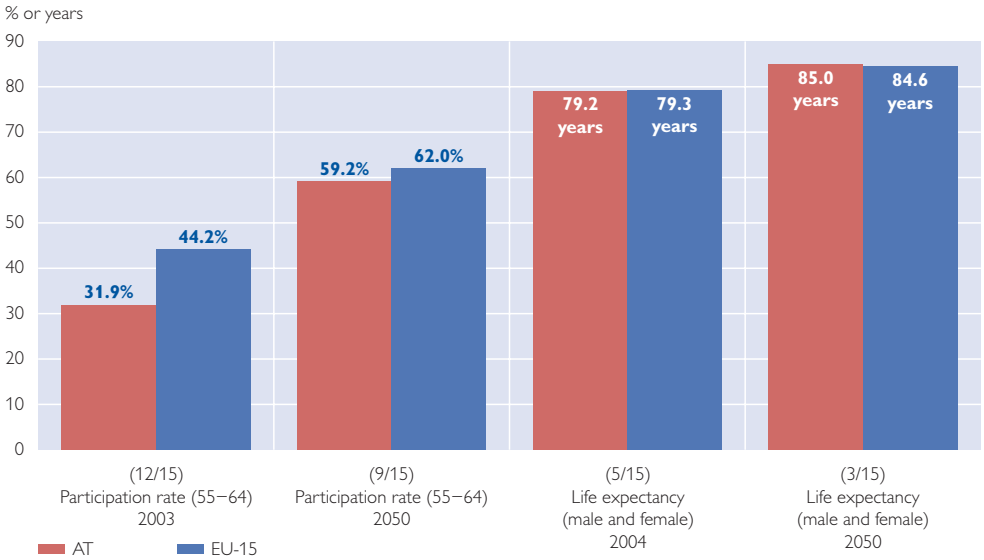
may opt for a lump-sum payout or a lifelong pension at the time of retirement. Similarly, the launch of a state-subsidized private pension scheme ("Zukunftsvorsorge") in 2003, which aimed at encouraging people to also save for retirement themselves, resulted in an increased importance of the third pillar.[5]

Spending on first-pillar pensions is primarily financed by the contributions of economically active people. Their contributions – as a rule 22.8% of the given contributory wage[6] – cover roughly two-thirds of the pension payout. In addition, direct contributions are supplemented by contributions of central government funds to finance entitlements for periods of paid unemployment, military service/community service and child-raising, while general tax revenues are used to cover remaining pension scheme imbalances.

The statutory old age retirement age is still 65 years for men and 60 years for women. Until 2000, early retirement was possible at 60 years for men and 55 years for women. Following a ruling by the Constitutional Court on the principle of equal treatment, women's statutory retirement age will be gradually adjusted to that of men.[7] These legal provisions notwithstanding, employees currently start to draw direct pensions at the average age of 57.7 years, which is mirrored in the very low share (27%) of "ordinary" old-age pensions. Another mirror image is the low partici-

Chart 2

Participation Rates of Older Workers (55-64) and Life Expectancy



Source: OeNB calculations based on EPC (2006, tables 2.2, 2.5 and 2.6).

Note: Life expectancy (at birth) is measured as the average of the value for men and women. The figures in parenthesis below the data again give the rank of the Austrian value among the EU-15 Member States.

[5] *See Url (2003), Eckert and Prammer (2003).*

[6] *For employees, 10.25% is paid by the employee and 12.55% is paid by the employer.*

[7] *For early retirement the adjustment period is 2019–2028 and for statutory retirement the adjustment period is 2024–2033.*

pation rate[8] in the age group 55–64 years, amounting to 31.9% in 2003. While Austria's participation rate among the prime-age workers (25–54) is well above the EU average with 87.4%, it is the third-lowest among EU-15 countries in the group aged 55–64 (see chart 2).[9]

2.2 Key Parameters

The individual initial pension level is calculated as follows:[10]

Initial pension = accrual rate x pension assessment base

For each insurance year, an accrual rate is attributed, adding up to a maximum of 80% of the assessment base. Before the reforms, the accrual rate was 2% per year, implying that the maximum amount was reached after 40 years.

The assessment base is derived from average annual earnings over the assessment period, which equals the number of insurance years used to calculate the entitlements. Past earnings are transferred into current purchasing power units by a series of revaluation factors. Up to 2004 these factors were determined by the Ministry of Social Affairs and ex post turned out to follow broadly consumer price inflation.

Current pensions are adjusted as follows:

Pension = pension of the previous period x adjustment factor

Previously, the adjustment factor was determined by the Ministry of Social Affairs according to the principle that average pensions should grow at the same speed as average wages (both net of social security contributions). Due to the ongoing changes in the structure of pension beneficiaries,[11] pension adjustments turned out to broadly follow consumer price inflation.[12]

3 Pension Reforms since 2000

Comparing EU-15 expenditure rates, Austria's total public pension expenditure was the second-highest among the EU-15 in 2004 at 13.4% of GDP. Given the twofold demographic challenge, which is particularly unfavorable for Austria, the EPC (2001) had expected pension expenditure to surge to 18.7% in 2035 and to drop thereafter to still 17.0% of GDP in 2050[13] – thereby building up substantial budgetary pressure.

As the public pension system implies large implicit liabilities whose amount is related to the age structure of the population, Austria's pension reforms were thus mainly triggered by the need to alleviate the budgetary pressure stemming from the increasing number of pensioners in absolute terms and relative to the working-age population. While in 2005 the old-age dependency ratio[14] was 25%, it is projected to double by 2050. This indicates that the current support ratio

[8] *The participation rate is the ratio of the labor force to the working-age population, i.e. the portion of the population aged between 15 and 64 that is either employed or actively seeking employment.*

[9] *For a more detailed description of the Austrian pay-as-you-go pension system see Stefanits, Obermayr and Wörister (2004), Holzmann and Heitzmann (2002), Wöss (2000).*

[10] *Compare Knell (2004).*

[11] *Structural changes are the result of the entrance of new pensioners into the system, which are usually entitled to higher benefits than those leaving the system (dying). Hence the average pension increases automatically.*

[12] *See Knell (2004), Mayrhuber and Url (2000).*

[13] *In the case of Austria, projections were provided by the Austrian Ministry of Finance.*

[14] *The number of people aged 65 years and above relative to those between 15 and 64.*

of four people of working age for every elderly citizen moves to a ratio of only two people of working age for every elderly citizen. The additional tax increase required to finance expected expenditure increases has become a primary concern of economic policy.

Hence, the pension reforms in 2000, 2003 and 2004 were aimed at improving the sustainability and, in addition, the actuarial fairness of the Austrian PAYG pension system. While the pension reform in 2000 mainly focused on increasing the effective retirement age, a comprehensive reform, changing various parameters which influence pension benefits, was implemented in the following two reform phases.

3.1 Reform of 2000

The aim of the pension reform in 2000 was twofold: First, it was designed to contribute to short-run fiscal consolidation. Second, a Pension Reform Committee ("Kommission zur längerfristigen Pensionssicherung") was appointed to deal with the long-term sustainability of the Austrian pension system on a regular basis, which influenced the discussion on the following pension reforms.

The reform comprised the following measures:

- Abolition of early retirement due to reduced capacity to work. However, to avoid socially unwarranted hardship, entry conditions to retirement due to invalidity were eased.
- The early retirement age for the remaining early retirement schemes[15] was gradually increased by 18 months in total from October 2000 onward up to 61.5 years for men and 56.5 years for women.[16]
- Actuarial fairness was increased by raising early retirement discounts and by increasing late retirement credits. The early retirement discount amounts to 3 accrual points per year but is capped at a maximum of 10.5 accrual points or a loss of 15% of pension entitlements. As with the rise in early retirement age, transition periods were introduced to avoid hardships. People working beyond the statutory retirement age were granted a credit of 4% of the assessment base per year of later retirement.
- Eligibility criteria for survivors' pensions were tightened. While the surviving spouse used to be entitled to between 40% and 60% of the deceased spouse's pension benefits, this entitlement was cut to between 0% and 60%, depending on the survivor's own income/pension benefits.

3.2 Reform of 2003

The pension reform adopted in June 2003, which entered into force as of January 1, 2004, changed the key parameters of the Austrian pension system:

- The assessment period (i.e. the averaging period used for calculating the assessment base) will be increased to the best 40 years of earnings for which contributions were paid (from the best 15 years, or the best 18 years in case of early retirement). The averaging

[15] *Early retirement on account of long insurance histories and early retirement due to long-term unemployment, as well as phased retirement.*

[16] *The early retirement age was increased by two months at the beginning of every quarter.*

period will be expanded by 12 months every year; thus the extension will be fully phased in by 2028. Periods of unpaid leave granted to care for terminally ill relatives ("Familienhospiz") as well as extended child care periods[17] will be taken into consideration in the averaging period.

– The annual accrual rate will be reduced from 2 to 1.78 by 2009,[18] such that the maximum replacement rate of 80% of the assessment base will be reached after an insurance history of 45 years (instead of 40 years).
– Early retirement on account of unemployment was fully abolished. The minimum age (61.5 for men and 56.5 for women) for early retirement on account of long-term insurance contributions will be increased in steps until 2017 to the statutory retirement age of 65 for men and 60 for women.
– To reduce incentives for early retirement, the benefit discount for every year of earlier retirement was increased from 3 accrual points to 4.2% of the assessment base, up to a maximum of 15% of the pension entitlement. The premium for later retirement was increased from 4% to 4.2% of the assessment base capped by a maximum.
– Regarding the pensions of tenured civil servants, the reform mirrors the private sector scheme: extension of the averaging period for the assessment base to 40 years (with a transition period until 2028); reduction in the annual accrual rate; stepwise increase in the statutory retirement age to 65 years (for civil servants with long tenure, early retirement at age 61.5 is only possible in exchange for an early retirement discount); increase of pension contributions by 1 percentage point.

Exceptions from the rules on the accrual rate as well as on the retirement age apply to long-term insured persons (45 contribution years), and workers performing heavy physical work. Furthermore, until 2032, entitlement cuts resulting from the pension reform will be capped at 10%. However, this cap does not apply to pension losses due to changes in the early retirement provision.

3.3 Reform of 2004

The two cornerstones of this pension reform were the introduction of a uniform pension law for most occupational schemes and the establishment of individual defined benefit pension accounts within the PAYG system for those born after January 1, 1955.[19] In the course of this reform several adjustments to the existing pension provisions were made:

[17] *A maximum period of 24 months per child (instead of 18 months before) will be credited for paid child care periods.*

[18] *The following accrual rates will apply: 1.96 in 2004; 1.92 in 2005; 1.88 in 2006; 1.84 in 2007 and 1.80 in 2008.*

[19] *Sometimes this framework is referred to as a "notional defined benefit" system. This, however, is an oxymoronic expression since financial accounts are organized on a defined contribution basis, and a true imitation of financial accounts within the PAYG structure has to use the "notional defined contribution" (NDC) approach. In fact, the new Austrian system is much closer to the German point system than to the Swedish NDC framework as explained in Knell (2005). Similar to the NDC systems, however, the new Austrian system will involve personal accounts that capture all paid-in contributions and the accrued interest, and as from 2007, the pension insurance system must send an account statement on the insured person's request.*

- The guiding formula 45/65/80 indicates the pension entitlement according to the new system, i.e. the first pillar guarantees a pension benefit of 80% of the assessment base after 45 insurance years at the standard retirement age of 65 years. Hence, the accrual rate implicitly remains unchanged at 1.78, the level established with the reform of 2003.
- Given the new guiding formula, the assessment period is extended to lifetime earnings (maybe >40 years).
- The possibility of early retirement has been reintroduced through the establishment of a pension corridor. Retirement between 62 and 68 years is either discouraged by pension discounts in case of early retirement or rewarded by pension credits when retirement is postponed – both amounting to 4.2% of the assessment base per annum (up to a maximum amount of 15% of pension benefits for discounts and 12.6% of pension benefits for credits). Entitlement is restricted to persons with at least 37.5 years of pensionable service.
- Past contributions are transferred into current purchasing power using average gross growth rates of earnings[20] as the revaluation factor.
- Existing pensions are indexed to consumer price inflation, implying that the adjustment factor is now also de iure equal to the inflation rate without using overly complicated adjustment methods.
- The cap on pension losses was further reduced to 5% and will only gradually (by 2024) be increased to 10% and thus partly offsets the cost savings achieved with the reform of 2003.
- Contribution rates were harmonized to 22.8%; for self-employed and farmers, the personal contribution is supported by a copayment financed out of general tax revenues.
- A sustainability factor was introduced, which will trigger an adjustment process in case central demographic factors deviate from their projections. However, the adjustment of key parameters of the pension system is subject to a political process rather than an automatic trigger.[21]

To maintain trust in the Austrian PAYG scheme, the new regulations of the pension harmonization are only fully applied to those who had not acquired any pension entitlements before January 1, 2005. For those younger than 50 on that date, pension entitlements are calculated as a mix of old and new provisions on a *pro rata temporis* basis, while those older than 50 are exempt from the new system.

Even though the introduction of personal accounts is designed to increase the transparency and the actuarial fairness of the pension system, long transition periods contravene this aim.

4 Fiscal Sustainability of the Austrian Pension System

4.1 Long-term Pension Projections

The budgetary pressure of population aging was given prominence by the EPC in its reports on budgetary impacts posed by aging populations in 2001 and 2006. While the challenges of population aging are similar among

[20] *More precisely: yearly change in the average contribution base.*

[21] *For an assessment of the Austrian sustainability factor see Knell (2005).*

the EU-15, the implied consequences and costs with respect to pension expenditure and other age-related expenditure vary considerably. Using common assumptions on the development of main macroeconomic variables, EU Member States provided projections of their public pension expenditures, while the European Commission covered other age-related expenditure (spending on education, unemployment, health care and long-term care) up to 2050. With its earnings-related first pillar, Austria topped the EU-15 pension expenditure ranking with a rate 14.5% of GDP in 2000.[22] On that basis (EPC, 2001), Austria's pension expenditure was projected to continuously increase and peak at 18.7% of GDP in 2035. The projected subsequent fall to 17% of GDP in 2050 still was comparably high relative to the EU-15.[23] This high and increasing pension expenditure would have put considerable strain on fiscal sustainability. Given the already high tax burden, increasing openness as well as international tax competition, tax increases to finance projected pension expenditure increases were not considered feasible.

In contrast to the 2001 EPC report, the latest EPC report on the "Impact of ageing populations on public spending" (2006) draws a much brighter picture of Austria's pension expenditure developments, reflecting the projected favorable effects of the three pension reforms on fiscal sustainability. Starting in 2004 at a level of 13.4% of GDP – still the third-highest among the EU-25 – the Austrian authorities now project pension expenditure to decrease by 1.2 percentage points to 12.2% of GDP in 2050. Even though model assumptions and demographic projections have changed as a result of which dependency ratios are slightly less unfavorable than before,[24] a good part of the improvement in pension projections is attributable to the pension reforms. The intended increase in the effective retirement age and the adjustment of pension payments to an actuarially fair system are both expected to reduce the pressure on pension expenditure and to improve the sustainability of Austria's public finances. Hence, Austria is now projected to be the only country among the EU-25 that shows a considerable decrease of pension expenditure as a share of GDP without having resorted to switching part of the public old-age pension scheme to a private funded scheme.

4.2 Definition of Sustainable Public Finances

Sustainability is a complex concept for which various definitions exist. Intuitively, fiscal policies are sustainable if they can be continued indefinitely; unsustainable policies will ultimately have to be modified. Thus, assessing fiscal sustainability answers the question whether the current course of fiscal policy can be sustained indefinitely without causing the debt ratio to explode; or whether the government would have to increase taxes and/or decrease spend-

[22] *Associated administrative expenditure is included in the EPC (2001) projections but excluded in the EPC (2006) projections.*

[23] *The evolvement of the pension expenditures over time is mainly the result of "baby boomers" entering and exiting the pension system.*

[24] *The dependency ratio was estimated to be 54% in 2050 in the EPC 2001 projections, while it was projected to be only 52% in the EPC 2006 projections.*

ing to avoid repudiation. Basically, public finances can be considered to be unsustainable if the debt-to-GDP ratio reaches a level beyond which a country faces difficulties issuing new debt. However, this maximum level of debt is not measurable ex ante. Therefore sustainability is assessed by looking at the dynamics of the debt ratio over time, given no policy change, in particular with a view to determining whether the debt ratio is stable, declining or increasing.

Above all, the analytical definition of fiscal sustainability is not straightforward (see Balassone and Franco, 2000). The literature offers at least three main definitions of sustainability. The interpretation given by Domar (1944) requires the public debt ratio to converge to a finite value in order to avoid a continuously growing tax ratio. A second definition, advocated by Buiter (1985), Blanchard (1990) and Blanchard et al. (1990), requires the debt ratio to converge back to its initial level. Finally, a definition proposed by Blanchard (1990) and Blanchard et al. (1990) stipulates that the present discounted value of all future primary surpluses should be equal to the initial level of debt, implying that the discounted debt ratio should converge to zero.[25] Thus, while there is no unique theoretical benchmark of sustainability, all three definitions do imply that an ever-increasing debt ratio is not sustainable. At the same time, the fact that sustainability is a forward-looking concept creates the operational challenge that the assessment must be based on long-term projections, which are subject to wide margins of error.[26] Additional difficulties arise with regard to the statistical definition of the main variables to be used for the assessment of sustainability. One prominent example is public debt. Theoretically, the correct variable would be net debt, i.e. government liabilities minus government assets. However, since very few data are available on government assets, gross debt is used as a proxy.

To assess the pressure on public finances from aging populations, several synthetic sustainability indicators, such as the indicators S1 and S2 used by the European Commission, have been developed. On the basis of long-term projections of deficit-debt dynamics, these indicators highlight adjustment efforts required to reach a certain sustainable debt ratio at a given point in the distant future.

The **first indicator, S1,** derived from the government intertemporal budget constraint in its finite horizon form, measures the difference between the current tax ratio and the constant tax ratio that would be required to generate a given debt ratio (for instance 60% of GDP) at the end of a given period. In the case at hand, S1 indicates the difference between Austria's current tax ratio and the constant tax ratio it would need to apply to reach a debt ratio of 60% of GDP in 2050, given a primary expenditure ratio that evolves according to the long-term projections for all age-

[25] *For the relation between the different concepts see Balassone and Franco (2000).*

[26] *In practice the assessment of long-term sustainability in the context of ageing is characterized by a high degree of uncertainty. The results depend on the assumptions on future trends of demographic developments, macroeconomic developments (productivity and output growth), and budgetary developments of age-related expenditures. In addition, sustainability is influenced by structural reforms that may affect either potential growth or the budgetary profile of certain expenditure categories.*

related[27] spending items while all non-age-related items are held constant as a share of GDP. A positive value of S1 signals an unsustainable policy insofar as, on the basis of the current fiscal policy, the government would not be able to ensure the 60% of GDP target in 2050. Thus, an improvement of the primary balance is needed to restore sustainability.[28] However, even closing the tax gap, i.e. immediately increasing the current tax ratio to the level suggested by the indicator, only ensures that the 60% target debt level will be reached at the end of the period; it does not restrict debt dynamics after that date in any way. Hence, even a negative S1 value can be consistent with unsustainable public finances in the very long run, as the debt ratio might be on an explosive path after the end of the period (see Langenus, 2006).[29]

The **second indicator, S2,** is based on the infinite horizon approach of the government intertemporal budget constraint. It measures the change in the tax ratio required to equalize the present discounted value of all future primary balances with the current stock of public debt;[30] again based on the assumption that the primary expenditure ratio evolves according to the long-term projection of age-related spending items while all non-age-related items are held constant as a share of GDP. The value of S2 depends on the differential between the interest rate and the growth rate, on the discount factor – as well as on the level and the profile of age- and non-age-related expenditure, the current stock of gross debt and the current tax-to-GDP ratio. While S2 avoids the risk of unfavorable debt dynamics at the end of the period due to its infinite time horizon, in practice it narrows down fiscal sustainability to convergence to a relatively low – or even to a zero – debt ratio. This, however, might be considered as being rather restrictive.

According to the European Commission (2005), both S1 and S2 are only rough approximations of the sustainability gap. Attention should focus on the sign of the indicators and their magnitude, not on the exact value, as the latter is highly sensitive to underlying debt projections (which are derived from mechanical partial equilibrium analyses) and, in the case of S2, to the applied discount factor. Thus, these indicators signal "only" whether fiscal adjustment is required (evident from the sign of the indicators) and feasible without large structural reforms (evident from the magnitude of the indicators). With respect to the exact value, in particular, alternative assumptions regarding the primary balances at the beginning of the projection period can substantially change the projected behavior of the debt ratio. Therefore the projected evolution of debt levels is not a forecast of possible or even likely out-

[27] *Age-related spending comprises pension payments as well as spending on health care, long-term care, education and unemployment.*

[28] *The primary balance may be improved by both revenue and expenditure measures.*

[29] *Actually, any information on the future evolution of the primary balance beyond the target year is ignored in the calculation. At the same time, choosing the calculation horizon involves a tradeoff in that the period should be long enough to capture all major future developments which might impact on the primary balance but also short enough to minimize the degree of uncertainty.*

[30] *The European Commission uses a third indicator, the so-called required primary balance (RPR), which derives a required primary balance from S2. This third indicator, however, is not used in our paper.*

comes. Instead, the indicators are only a tool to structure policy debate and at best provide an indication of the timing and scale of emerging budgetary challenges that could occur on the basis of "no policy change" (Giammarioli et al., 2006, p. 19).

4.3 Effect of the Austrian Pension Reforms on Fiscal Sustainability

In our assessment of the sustainability of public finances, we use age-related expenditure – comprising pension payments as well as spending on health care, long-term care, education and unemployment – as given by the EPC reports of 2001 and 2006.[31] The Austrian pension expenditure projections cover all public pension expenditure except for the "Ausgleichszulage," which is a means-tested payment supplementing very low pensions currently amounting to roughly 0.4% of GDP, and except for administrative expenditure in the 2006 projections.

Our baseline scenario (see table 1, *pension projections EPC (2006) scenario*) assumes that, starting from the fiscal situation (deficit and debt ratio) in 2005, revenues and non-age-related expenditure are kept constant (all as a share of GDP) at the 2005 level for the entire projection horizon. Age-related expenditure develops according to the projections presented in EPC (2006).[32]

Based on these assumptions, the debt extrapolation shown in table 1 gives an indication of the sustainability of public finances with respect to age-related expenditure, assuming no policy change.

According to the baseline scenario, the debt-to-GDP ratio, which stood at 62.9% in 2005, is projected to decrease over the coming two decades, before it starts rising when the "baby boomers" retire. At roughly 50% of GDP in 2050, the debt ratio is of no particular concern judging from the chosen definition of fiscal sustainability (reaching a debt-to-GDP ratio of 60% in 2050).

This is in stark contrast to the situation prior to the pension reforms. Using the pension expenditure projections provided in EPC (2001), but leaving all other variables unchanged from the 2005 scenario indicates that the debt dynamics were on an explosive path (see table 1, *pension projections EPC (2001) scenario*). Assuming no change in non-age-related expenditure or revenues compared to the baseline scenario, the high projected pension expenditures would have raised the debt ratio to 285.7% of GDP in 2050 (see chart 3 and table 1).

Further scenarios in table 1 show the debt dynamics for different assumptions on nominal interest rates, namely the effects of an interest rate

[31] *All age-related expenditure except for pension expenditure was projected by the European Commission. Pension expenditure projections were provided by and prepared under the responsibility of the Member States – in the case of Austria projections were provided by the Austrian Ministry of Finance – and peer reviewed by the Ageing Working Group of the EPC.*

[32] *In particular data underlying tables 3.3, 4.13, 5.18, 6.9 and 7.2 of the EPC (2006) report were used. This information is also comprised in the Austrian country table of the statistical annex to the EPC report. Assumptions on macroeconomic developments such as GDP growth and interest rates are taken from the EPC report, in particular from the Austrian country table of the statistical annex to the report. Nominal interest rates are kept constant at 5% over the entire projection period, while GDP growth rates vary according to employment and productivity projections over the projection period. In case yearly data are not available, we generate yearly data by interpolating five year data.*

Table 1

Debt Developments for Various Scenarios

Gross debt

in % of GDP

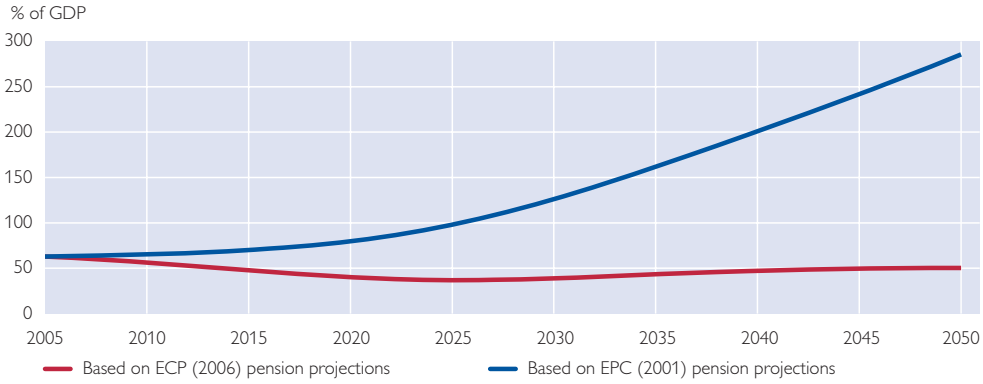
	2005	2008	2010	2020	2030	2040	2050
2005 Scenario							
Baseline (EPC (2006) pension projections)	**62.9**	**59.6**	**56.3**	**40.1**	**38.8**	**47.2**	**50.4**
interest rate +1 pp	62.9	61.4	59.3	48.9	54.4	72.2	88.2
interest rate −1 pp	62.9	57.8	53.5	32.6	26.8	30.1	27.1
EPC (2001) pension projections	62.9	64.3	65.2	79.6	126.1	201.0	285.7
Varying contributions	62.9	59.7	56.5	40.1	41.4	55.2	65.3
2008 Scenario							
Baseline (EPC (2006) pension projections)	×	59.5	54.0	25.3	8.6	−0.9	−19.1
Varying contributions	×	59.5	53.9	24.6	9.8	5.0	−7.3

Source: Statistics Austria, Austrian Stability Programme of November 2005; OeNB calculations based on EPC (2001, table 3.5), EPC (2006, tables 3.3, 3.24, 4.13, 5.18, 6.9, 7.6, and the Austrian country table of the statistical annex).

Note: 2005 Scenario: The baseline scenario projects non-age-related expenditure and revenues to remain constant as shares of GDP at their 2005 levels, while age-related expenditure follows the projections of EPC (2006). Interest rate ±1 pp assumes an increase or a decrease by 1 percentage point in the interest rate level compared with the baseline scenario. EPC (2001) pension projections are based on the pension projections provided by the EPC in 2001. Varying contributions use the contribution projections provided by EPC (2006) instead of the constant revenue rate assumption. All 2005 scenarios are based on the budgetary data realized in 2005. 2008 Scenario: The underlying budgetary data are the forecasts for 2008 drawn from the update of the Austrian Stability Programme of November 2005.

Chart 3

Debt Dynamics



Source: Statistics Austria; OeNB calculations based on EPC (2006) and EPC (2001).

level of 4% and 6%, respectively; i.e. a change by 1 percentage point compared with the baseline scenario *(interest rate ±1 pp scenario)*. The *varying contributions scenario*, finally, assumes that revenues are not held constant, but that social security contributions evolve as projected in EPC (2006)[33] (while the remaining assumptions coincide with those from the baseline scenario). In this scenario not only expenditure, but also revenue evolves in line with demographic projections and allows for structural changes.[34] Thus, it probably gives the most realistic picture in this highly stylised exercise, since it incorporates the impact of aging on both revenues

[33] *Compare table 3.24 of the EPC report and the Austrian country table of the statistical annex to the EPC report.*

[34] *Over the projection horizon, the number of public employees is expected to decrease. However, before the recent pension reforms, public employees' social security contributions were not capped by an upper bound. Hence their contributions were higher than those of the rest of the labor force.*

Table 2

Synthetic Sustainability Indicators of the European Commission

	S1	S2
2005 Scenario		
Baseline (EPC (2006) pension projections)	**−0.1**	**0.0**
interest rate +1 pp	0.3	0.5
interest rate −1 pp	−0.6	−0.5
EPC (2001) pension projections	3.4	4.2
Varying contributions	0.1	0.4
2008 Scenario		
Baseline (EPC (2006) pension projections)	−1.3	−1.1
Varying contributions	−1.1	−0.8

Source: OeNB calculations based on EPC (2001, 2006) projections of age-related expenditure and revenue ratios, using the debt dynamics presented in table 1.

Note: S1 shows the sustainability gap that evolves when targeting a debt ratio of 60% of GDP in 2050. S2 indicates adjustment needs arising from the requirement to respect the intertemporal budget constraint. Positive values signal fiscal nonsustainability, while zero or negative values signal fiscal sustainability. For the assumptions underlying the various scenarios please refer to the notes to table 1.

and expenditures. While the debt ratio in 2050 at 27.1% of GDP is well below the reference value of 60% of GDP in the *interest rate –1 pp scenario*, it overshoots the debt limit in the two other scenarios *(interest rate –1 pp scenario* and *varying contributions scenario)*.

The two 2008 scenarios assume that non-age-related revenues and non-age-related expenditure are held constant at the GDP ratio projected for 2008 in the latest update of the Stability Programme of November 2005. Assumptions on the interest-growth differential and on age-related expenditure are the same as those used for the 2005 baseline scenario, but the start date was moved to 2008. As the 2008 scenarios assume a balanced budget position in line with the Stability Programme, the starting point for the debt projections is more favorable than under the other scenarios and hence the debt ratio is projected to even turn negative. This result illustrates the hypothetical model character of these long-term projections. In practice, such outcomes are highly unlikely, as non-age-related expenditure ratios and revenues would not be held constant in case of a huge budget surplus and a rapidly decreasing debt ratio.

In the following, fiscal sustainability is assessed by way of calculating the indicators S1 and S2 (table 2). As already displayed by the debt dynamics, Austria's public finances were on an unsustainable path before the recent pension reforms *(pension projections EPC (2001) scenario)*. The positive figures derived for both S1 and S2 point to a sustainability (or tax) gap of similar magnitude: Sustainability could only have been achieved by a permanent increase in revenues or an immediate permanent reduction in expenditures of at least 3.4% of GDP (S1). By contrast, according to the baseline scenario 2005, using the projected pension expenditure path given by EPC (2006), the estimated future impact of aging is comparably low, reflecting the cost-saving reforms of the pension system implemented since 2000. Indeed, the positive sustainability gaps are eliminated under the baseline scenario 2005 *(pension projections EPC (2006) scenario)*. In other words, given the assumptions applied, the baseline scenario does not reveal any further needs for adjustment. This holds even

more under the assumption of lower interest rates *(interest rate –1 pp scenario)*. However, under less favorable financing conditions *(interest rate +1 pp scenario)* the sign of S1 and S2 points to further adjustment needs (of roughly 0.5 percentage point). The sustainability indicators also signal a need for adjustment when the EPC assumptions on demographic developments and structural changes are incorporated into the contribution projections: The S2 indicator projected according to the *varying contributions scenario* amounts to 0.4.

As already indicated by the projected debt developments, the risk to public finance sustainability can also be dealt with by sticking to the medium-term consolidation plans laid down in Austria's update of the Stability Programme of November 2005. Starting off from a balanced budget position in 2008, the two 2008 scenarios produce negative figures for S1 and S2, even in the *varying contributions scenario*.

Given the estimates of old-age-related expenditure in EPC (2006) – whose pension expenditure is projected by the Austrian authorities – and judging from the sustainability gap indicators derived on this basis, the recent Austrian pension reforms successfully reduced the budget burden stemming from aging and the associated risks to public finance sustainability. However, these findings are subject to considerable uncertainty, in particular since demographic forecasts are rather unreliable once one looks beyond 20 to 30 years ahead. Furthermore, as pointed out above, the underlying projected pension expenditures do not include means-tested top-up benefits.

5 Main Factors behind the Improvement in Fiscal Sustainability

The EPC has undertaken a decomposition to determine the main factors behind the changes in pension expenditures. The results of this exercise are summarized in table 3. The data indicate that, everything else equal, the demographic changes would induce an increase in the Austrian dependency ratio by 84.5%. The effects of the pension reforms and expected behavioral changes will, however, counteract this cost-increasing trend. The EPC predicts considerable changes in the take-up ratio (–43.3%) and the benefit ratio (–32.3%)[35] that – together with an increase in the employment rate – are enough to more than neutralize the increase in the dependency ratio. For the average EU-15 country these two counteracting effects – increases in the retirement age and decreases in pension payments – are also present, although considerably smaller in size.

The baseline projection assumes that the participation rate of older workers (55–64) will increase in Austria from 32% to almost 60%, slightly below the expected EU-15 average (see chart 2). This increase does not seem to be unrealistic considering the fact that the implied average retirement age in 2050 will be around 61.5 – basically the value that could be observed at the beginning of the 1970s. At the same time one has to admit that these forecasts are certainly characterized by a high degree of uncertainty. Given the available data we are not able to say more about the main factors underlying the drop in the take-up ratio, e.g. whether it is due to a general increase in the retire-

[35] *For definitions of the take-up and the benefit ratio see table 3 and box 1.*

Table 3

Decomposition of the Change in Pension Expenditures between 2005 and 2050

%

	Pension expenditures		Due to growth in			
	2005	% change 2005 to 2050	Dependency ratio	Employment rate	Take-up ratio	Benefit ratio
Austria	13.2	−7.5	84.5	−10.1	−43.3	−32.3
EU-15	10.5	22.1	72.1	−9.3	−14.9	−24.1

Source: EPC (2006, table 3.13).

Note: The dependency ratio is defined as the ratio of the old population (65+) to the population between 15 and 64. The employment rate reflects the relationship between the population between 15 and 64 and the number of employed persons. The take-up ratio is the share of pensioners relative to the old population (65+). The figures do not sum exactly to zero due to interaction effects.

ment age or whether the increase is projected to be concentrated on certain groups (disability pensions, public sector pensions etc.). In any case, a number of political measures could be helpful or even necessary in order to increase the supply of and demand for old age workers, as documented at length in OECD (2005b). The pension reforms have certainly been important steps in this direction as they provide better incentives for longer working careers and later retirement.

In this article, we want to focus on the second factor that is mainly responsible for large reductions in pension expenditures: the decrease in the benefit ratio. This allows us to present and sort out differences in frequently used (and sometimes confused) indicators for the generosity of pension systems. Furthermore, it also allows us look at the pension system under the perspective of whether it is able to guarantee adequate incomes for the retired population. The importance of adequacy was stressed in the publications by the World Bank (Holzmann and Hinz, 2005), the OECD (2005a) and the EPC (2006).[36]

5.1 Generosity of the Austrian Pension System – Changes from 2004 to 2050

In order to understand the dynamics of the projected developments in pension benefits it is important to distinguish between different concepts and indicators that can be used for this purpose. Box 1 describes some commonly used indicators.

Chart 1 summarizes indicators on the generosity of pension systems and their development over time.[37] Based on these data we can make a number of observations.

– The *benefit ratio is projected to decrease until 2050*. In 2004, Austria was among the EU-15 countries with the highest benefit ratio (rank 3/13) and with the highest pension expenditure (2/14). Over the next 45 years the Austrian benefit ratio is expected to de-

[36] *The OECD (2005a), e.g., describes the two main objectives of pension systems as: (1) redistributing income toward low-income pensioners; (2) helping workers maintain living standards. Similarly, Barr (2000) summarized the genuine functions of old-age income support as follows: poverty relief, consumption smoothing and insurance.*

[37] *In addition we also have data on net replacement rates (both by the EPC and the OECD), on gross replacement rates of all pensions (not only public pensions as in chart 1) and on pension wealth (a variable constructed by the OECD that takes the whole retirement period into account). In order not to clutter the picture we have, however, chosen to confine ourselves to the representative sample of indicators reported in chart 1.*

Box 1

Commonly Used Indicators to Assess the Generosity and Adequacy of Pension Systems

Replacement rates *specify the value of pension benefits as a share of individual earnings (lifetime average or last-period earnings). The replacement rate can be interpreted as a measure of the insurance role of a pension system, since it indicates to what extent pension systems are able to preserve an employee's standard of living in retirement. The OECD's figures (2005a) reflect the assumption that the parameters of the pension system prevailing in 2002 stay unchanged*[1] *and refer to a worker who enters the system at the age of 20 and retires after a full career at the standard pension eligibility age (which varies between countries, typically ranging from 60 to 65). The figures reported in EPC (2006) are based on the hypothetical career of a person who retires at the age of 65 after 40 years of full-time work at average earnings. The replacement rates can be stated on a gross or on a net basis (excluding taxes and social security contributions of workers and pensioners).*

The (relative) ***pension level*** *specifies the value of pension benefits as a share of average economy-wide earnings. The pension level is an appropriate measure for the adequacy of a pension system, since it indicates the relative position of a pensioner compared to the average wage earner. The OECD (2005a) calculates the pension levels by taking the estimations for the benefits of full career workers and dividing them by average earnings. The EPC (2006, p. 82) also provides a related measure, the benefit ratio, which is defined as average pension relative to output per worker (as a proxy for the average wage). The indicator is thus not derived from individual calculations for pension entitlements but uses the aggregate figure.*

[1] *For Austria, the measures apparently broadly mimic the system after the reform of 2004 since they assume a 40-year assessment period and a revaluation with the growth rate of earnings (OECD, 2005a, p. 92).*

crease by 6.6 percentage points, which is the largest drop among all EU-15 members and will relegate Austria to rank 11.

– As regards Austrian *gross replacement rates*, the EPC predicts an *increase both in absolute terms* (from 64% to 69%) *and in relative terms* (an improvement from rank 7 to rank 5). The projections of the OECD are similar, although slightly higher (78.3%). The main reason for these differences seems to be that the EPC assumes 40 years of contributions while the OECD uses 45 years for most countries. Furthermore the EPC measure is based on a comparison with last-period income while the OECD calculation is related to lifetime average earnings.
– As far as the *size of the replacement rates* is concerned, both the EPC and the OECD predict figures above the EU-15 average. In terms of net replacement rates (not shown in chart 1), both the EPC and the OECD predict a rise from about 80% (2004) to about 95% (2050).
– By contrast, the *size of the benefit ratio* is quite *low*. In 2004, for Austria (EU-15) it was calculated as 21.8% (20.1%) while the replacement rates were about three times larger. This seeming discrepancy will be addressed in the following.

5.2 Low Benefit Ratios – High Replacement Rates? The "Standard Pensioner" is Not Representative

How can we square the low benefit ratio (21.8%) with replacement rates of 64% and above? First, the benefit

ratios calculated by the EPC are biased downwards since output per employed worker is *not* a good proxy for the average wage. In fact, under the marginal productivity theory of distribution (and the assumption of a Cobb-Douglas production function) the wage would be given by output per employed worker (average productivity) multiplied by the labor share. In other words, the EPC understates the true benefit ratio.[38] For Austria, output per worker in 2004 was around EUR 61,000 while average gross income of employed persons amounted to EUR 25,300. Using the latter number increases the benefit ratio from 21.8% to 52.5%. This measure is clearer and politically more meaningful and it should be considered for future publications by the EPC. In this section we will use the (revised) figure as our benchmark level for the benefit ratio. Even this figure, however, is considerably lower than the replacement rates reported for the standard pensioners.

This brings us to a second reason behind the divergence of the two variables. The "standard pensioners" (retiring at the age of 65 after a full career of 40 to 45 years of average earnings) on which the calculations of the replacement rates are based are not representative of the retired population as a whole. This follows from the fact that the initial gross replacement rate of the average full-career earner neglects four factors:

– **Intragenerational Earnings Differences**
  The replacement rates reported in chart 1 do not measure a country's average replacement rate but rather the replacement rate of the average person. The average wage earner might not be representative of the general earnings distribution and the general pension system. The Austrian system, however, is rather "Bismarckian," i.e. shows a high correspondence between contributions and benefits. This is reflected in small intragenerational variations in initial replacement rates. The OECD (2005a), e.g., reports identical replacement rates (78.3%) for a large class of earners and lower rates only for persons above the contribution ceiling. Overall, earnings differences are not the main factor behind the discrepancy between the benefit ratio and replacement rates.

– **Early Retirement and Disability Pensions**
  The assumption of a full-career worker retiring at the statutory age of 65 is not an accurate reflection of the current situation. Austria is among the countries with the lowest retirement age (in 2004 it was 58.5 for men and 56.9 for women). Table 4 collects information on the heterogeneous pension levels of new retirees. The average initial pension level for men and women is 56.2%, which is considerably below the 80% benchmark but still somewhat above the (revised estimate of the) benefit ratio. This low value is due to the influence of shorter contribution periods (especially for women), the existence of early pensions and the high proportion of disability pensions

[38] *To see this, assume a normal Cobb-Douglas production function with* $Y = L^{\alpha}K^{1-\alpha}$. *The competitive wage is thus given by* $w = \alpha(Y/L)$. *The EPC calculates the benefit ratio as the average pension divided by output per worker* (Y/L). *Using the wage w in the denominator thus increases the benefit ratio by* $(1/\alpha)$.

Table 4

The Pension Level of New Entrants

%

	Male		Female		Male and female	
	Pension level	% of all pensions	Pension level	% of all pensions	Pension level	% of all pensions
All (private sector) pensions	68.9	100.0	43.5	100.0	56.2	100.0
Old-age and early pensions	76.9	56.3	46.2	76.0	59.0	65.9
Disability pensions	58.5	43.7	33.7	24.0	50.4	34.1
All (private sector) pensions (excluding cross-national pensions)	80.0	×	47.2	×	62.8	×

Source: The figures are OeNB calculations based on data from Stefanits, Obermayr and Wörister (2004), Wörister (2005) and Statistics Austria (2006).

Note: Figures refer to the years 2002 and 2003 and include all private sector social security pensions (i.e. public sector pensions are excluded). The pension level is defined as the respective pension divided by the average gross income of all employed persons (Statistics Austria (2006, table 9.02); excluding the self-employed). In 2002 the number of new entrants was 71,387, and the share of cross-national pensions was around 18%.

(43.7% for men) that have a much lower average pension level (58.5% for men).[39]

– **Pension Adjustment**
The replacement rates reported in chart 1 and the pension levels in table 4 refer only to the *initial* pensions. The initial values might, however, give a misleading picture of the true generosity of a country's pensions system since they neglect the issues of life expectancy, retirement age and the indexation (adjustment) of pension benefits. If pensions are, e.g., adjusted annually with the rate of inflation then the pension *level* (i.e. pension benefits relative to average economy-wide earnings) will decrease constantly as long as real wages grow at a positive rate. This will lower the average benefit ratio.

To estimate the approximate size of this effect let us look at an average earner who retires at the age of 65 with a remaining life expectancy of 15 years (the value for Austria in 2004, see chart 2).[40] Furthermore, assume that (in accordance with the new Austrian pension system) her/his initial replacement rate (and pension level) is 80%.

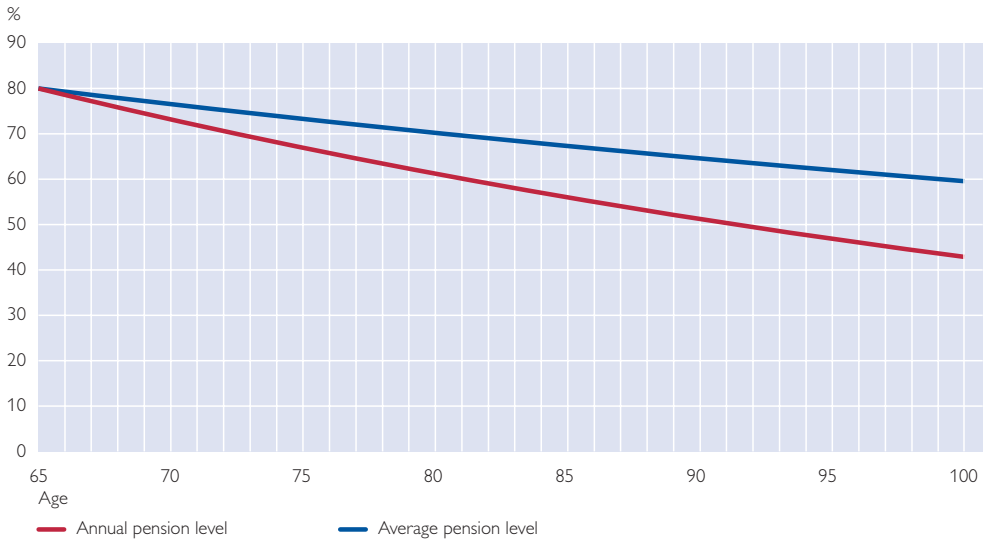
In chart 4 we illustrate the consequences of an indexation with the rate of inflation under the assumption that labor productivity and real wages grow at an annual rate of 1.8% (as in the EPC simulations). This assumption implies a drop in the annual pension level to 61% by the age of 80 or to 70% on average over the whole retirement period. In other words, at the age of 80 the pension level will on average be 12.5% (= (80–70)/80) lower than the pension level of new entrants. Given the early retirement age over the last decades, in Austria this effect could even be somewhat higher. A simple back-of-the-enve-

[39] *On the issue of disability pensions and the reasons behind the low benefits see Stefanits, Obermayr and Wörister (2004). In passing, note that the figures in table 4 also include cross-national benefits that are often very low and reduce the average accordingly. For the question of adequacy it is reasonable to exclude these cross-national payments since they refer to foreign pensioners that are furthermore likely to have additional sources of old-age income (cf. Wörister, 2005). Doing this increases the average pension level of male initial retirees to 80% (see table 4).*

[40] *In fact, the remaining life expectancy at the age of 65 is even higher (16 years) and forecast to increase to 22 years by 2050.*

Chart 4

Effect of Indexing Pensions with the Inflation Rate on Annual and Average Pension Levels



Source: OeNB calculations.

Note: The chart shows the annual and average pension level of a worker who retires at the age of 65 with a pension level of 80%. Underlying assumptions: Pensions are adjusted with the rate of inflation, and real wages grow at a rate of 1.8% p.a.

lope calculation confirms this rough estimation. In table 5 we report that in 2003 the average (private sector) pension level across all cohorts was 44.5%, which is 21% below the average pension level of new entrants (56.2%) (table 4).

The low average pension level of 44.5% is, however, not solely due to the pension indexation effect. It also reflects the effect of survivors' pensions, which are typically pretty low (28.1%). As indicated in table 5, the level of all existing direct pensions (i.e. old-age and disability pensions together) averaged 50.2% in 2003, thus falling 11.4% short of the initial pension level of 56.2% – which ties in neatly with our rough estimation of the indexation effect. Survivors' pensions are also the main reason why the number of *pensions* (on which most Austrian statistics and the EPC report are based) are not equal to the number of *pensioners*. As documented in table 5, about 13.8% of all pensioners received two or more pension payments in 2003. Thus the pension level of the average *pensioner* is likely to be higher than the stated 44.5%. And the pension level of the average *Austrian* pensioner will even be higher than that due to the influence of cross-national pensions.[41]

– **Public Sector Pensioners**
A last factor to be considered when comparing the benefit ratio with the replacement rates is the role of public sector pensioners. As shown in table 5 the average pension level for a public sector retiree in 2003 was 142.4%. This high level is partly due to the more generous pension regulation and the absence of pension (and contribution) ceilings (before the re-

[41] *Excluding cross-national pensions increases the level of the average (private sector) pension from 44.5% to 54.7%.*

Table 5

The Pension Level across All Cohorts

%

	Male and female	
	Pension level	% of all (private sector) pensions
All (private sector) pensions	44.5	100.0
All (direct) pensions	50.2	74.1
Old-age and early pensions	52.5	74.0
Disability pensions	43.6	26.0
Survivors pensions	28.1	25.9
All (private sector) pensions (excluding cross-national pensions)	54.7	×
Average pension of public sector employees	142.4	×
Share of persons with more than one pension	13.8	

Source: The figures are OeNB calculations based on data from Hauptverband (2004) and Statistics Austria (2006).

Note: Figures refer to the year 2003. The pension level is defined as explained in table 4. The number of public sector pensions stems from Statistics Austria (2006, table 8.15); they amount to about 9.5% of all (private and public) pensions. For the calculation of the public sector pension level we used the information in Statistics Austria (2006, table 9.26). The share of cross-national pensions was around 11%. The data for the number of multiple pensions is from Haydn (2006).

form of 2004) and partly due to higher average educational patterns of public sector employees that are reflected in higher incomes and pension benefits. Taking into account their share in total employment (about 9.5%), we can again make a back-of-the-envelope calculation. Using the data in table 5 the average pension level of *all* pensions (male and female, private and public sector employees) should amount to: $44.5\% \times (1-0.095) + 142.4\% \times 0.095 = 53{,}7.\%$. This number is fairly close to the (revised) benefit ratio of 52.5%.

Summing up, the discrepancy between the benefit ratios and the considerably higher replacement rate figures can be explained by the influence of pension adjustments, early retirement, disability and survivor's pensions and the distinction between private and public sector pensions.

5.3 Factors Underlying the Reduction in the Benefit Ratio until 2050?

Chart 1 shows that the forecasts about the benefit ratio and the replacement rates point into opposite directions. The benefit ratio is predicted to *decline* from 21.8% to 15.2% until 2050 while the (initial) replacement rate (for full-career pensioners) is predicted to *increase* from 64% to 69%. Even if (as argued above) the EPC's calculation of the *level* of the benefit ratio is not completely accurate, this should not impair its informative value for the evolution over time. How will the predicted large drop in pension benefits be accomplished and why does it deviate so much from the development of the initial full-career pensions?

Table 6 summarizes information about the importance of the three main categories of pensions that can be found in EPC (2006) and the accompanying country material: private sector pensions, public sector pensions and survivors' pensions (from both the private and public sector). Unfortunately, this is the finest categorization available, preventing consideration of further subcategories (like pension of new entrants, disability and corridor pensions etc.). The decrease in the benefit ratio is quite unevenly distributed across

Table 6

Main Factors Behind the Change in the Benefit Ratio (2004–2050)

	Change in benefit ratio (2004 to 2050) %	Share of all pensions (2004)	Share of all pensions (2050)	Contribution to the 30.2% reduction in the benefit ratio percentage points
Private sector pensions (old-age, early and disability)	−14.7	65.1	73.9	−8.9
Public sector pensions (old-age, early and disability)	−52.0	9.0	4.4	−11.8
Survivors' pensions	−60.6	25.9	21.7	−9.9
All pensions	−30.2	100.0	100.0	×

Source: The table contains OeNB calculations based on EPC projections for the Austrian pension system.

Note: Survivors' pensions include private and public sector survivors. We only report the change in the benefit ratio between 2004 and 2050 since this variable is not affected by our reservations concerning its level. The last column is calculated as the product of the change in the benefit ratio (first column) times the "importance" of this group (i.e. the share of total pension expenditure that went to this group in 2004). The residual of the decomposition (due to interaction effects) is 0.4 percentage point.

the three groups. While survivors' pensions and public pensions are predicted to fall by more than 50%, the expected decrease in the average private sector benefit ratio (or pension level) is 15%. To calculate the contribution of each of the three groups to the total reduction in the average benefit ratio of 30.2% (or 6.6 percentage points) we have to take into account the initial benefit ratios in 2004 and the relative size of the three groups. The results of this decomposition are reported in the last column of table 6.

The largest contribution (–11.8 percentage points) to the 30.2% reduction is projected to come from the relatively small group of civil servants. Not only is their size predicted to shrink from 9% to 4.4%, but they will also face a drop in the benefit ratio (–52%). However, this decline happens from rather high starting levels. One goal of the pension harmonization has in fact been to align public and private pensions. Even in 2050 the average public sector pension is predicted to be more than 50% higher than the average private sector pension (down from 170% in 2004). Since in 2050 all initial pensions will be calculated using the harmonized system, this remaining difference can only be due to the influence of old pensions and to different educational patterns and income histories in the two sectors.

The contribution of the survivors' pensions to the total reduction is also considerable (–9.9 percentage points). Without further knowledge about the assumptions that underlie this change it is, however, hard to assess the consequences of this development. A reduction in survivors' pension might, e.g., simply indicate that more people receive sufficient direct pensions. This is basically the interpretation that can be found in the Austrian country fiche of the EPC report where the reduction is attributed to increases in female labor supply, changing family structures and a slow convergence of male and female life expectancy.

Note that the private sector pensions, which account for 65% of all pensions in 2004 (increasing to 74% in 2050), will make the smallest contribution (–8.9 percentage points) to reducing benefit ratios. In the country fiche it is, e.g., stated that the reduction in the benefit ratio (by 14.7%) reflects a combination of higher deductions for early retirement, lower accrual rates, the longer (lifetime) assessment periods and the pension adjustment with the rate of inflation. The relative importance of each of

these factors is, however, not quantified. Our guess is that the reduction is mainly due to two factors: higher deductions for early retirement and pension indexation. Even though the EPC projects an increase in the employment rate of older workers (see chart 2), as many as about 1/3 of all people in the labor force are assumed to retire before the age of 65 even in 2050. This will be reflected in deductions for early retirement. These deductions are, however, not unavoidable since people can choose to retire later and earn higher benefits. In fact, one goal of the introduction of a pension corridor with actuarially fair deductions was to give people more choice along this dimension. This, however, makes predictions about the future retirement age even more difficult. The latter will depend on the attractiveness and take-up of corridor pensions and also on future claims and regulations of the disability (and heavy worker) pension. An important issue in this respect is whether individuals can in fact decide freely on their retirement age or whether they are constrained by labor market conditions. In any case, for the system as a whole there exists a "tradeoff" between shorter working lives (higher take-up ratio) and smaller pensions (lower benefit ratio). The ultimate adequacy of the pension system will therefore also depend on the success of the various policies that try to increase the retirement age (OECD, 2005b).

Regarding the second factor, pension indexation, the increase in life expectancy *per se* has a significant cost-dampening effect on average pension levels. Chart 4 illustrates this point. Until 2050, average life expectancy in Austria is expected to increase from 79 to 85 years (see chart 2). This increase alone will reduce the average benefit ratio (or pension level) by 5%. The constant decrease in the relative pension level due to indexation with inflation might reach considerable dimensions for long-lived individuals. According to chart 4, for instance, a standard pensioner who reaches an age of 100 will earn a pension benefit that amounts to only 43% of average wages. Indexation with inflation certainly reduces the fiscal burden of a pension system. One might discuss, however, whether the combination of high initial replacement rates with price indexation is preferable to an alternative combination of low initial replacement rates and wage indexation. The former provides less insurance against longevity and is less conducive to preventing old age poverty (cf. Diamond, 2004).[42]

Given the available data it is difficult to draw firm conclusions about the future adequacy of the Austrian pension system. The aggregate pension data include cross-national pen-

[42] *This is also recognized by the EPC:"The projected fall in the 'benefit ratio' is partly due to reforms, which index pension benefits to prices instead of wages thus reducing the generosity of public pensions over time. While resulting in budgetary savings, the adequacy of pensions, including for mixed funded systems, should be kept under review, as it may lead to future pressure for policy changes"(EPC, 2006, p. 14). On the other hand one could argue that inflation indexation is meant as a redistributional measure if life expectancy and income are positively correlated.*

sion payments and multiple pensions and do not reveal much about the size and adequacy of future individual (or household) pension benefits.[43] In any case, the evolution of pension benefits over time should be monitored closely, to detect possible conflict with the goal of adequacy early on.

6 Conclusions

The recent Austrian pension reforms were triggered by the need to alleviate budgetary pressure stemming from the age structure of the Austrian population. The reforms considerably improved the sustainability of the Austrian pension system and of public finances in general. At the same time they reduce the generosity of the Austrian pension system.

Regarding fiscal sustainability, two main findings emerge:

- Given the estimations of old-age-related expenditure as provided by the EPC and the Austrian authorities, the calculated sustainability gap indicators suggest that Austria will be able to meet the challenge of an aging population. Hence the pension reforms were successful in reducing the risks to public finance sustainability.
- Forecasts on pension expenditure do not include expenditures for the "Ausgleichszulage." This might entail unforeseen increases in pension expenditure. Furthermore, the figures do not include expenditures on public subsidies to the voluntary, private funded pillar ("Zukunftsvorsorge").

As regards the generosity of the Austrian pension system, the following conclusions emerge:

- The two main factors behind the expected decrease in Austrian pension expenditures are the projected increase in the average retirement age and the projected decrease in the benefit ratio. Both effects are broadly in line with the trend in other EU-15 countries, although of a larger magnitude.
- The development between the initial replacement rate for full-career workers and the benefit ratio (or pension level) is decoupled since the latter includes the effects of early, disability and survivors' pensions and of pension indexation with the rate of inflation.
- The predicted decrease in the pension level until 2050 is shared by three groups: private sector pensioners, public sector pensioners and survivors. The reductions for the private sector will be close to 15% and are presumably the consequence of two effects. First, the increase in life expectancy (by 6 years) together with the indexation to inflation and, second, the deductions due to early retirement. The exact magnitude of the latter effect is hard to predict as it will depend on the success of various measures to increase the average retirement age.
- It is difficult to draw firm conclusions from the aggregate data about the impact of the changes in the pension levels on the individual adequacy of the pension system. First, the aggregate data include cross-country pension payments and multiple pensions.

[43] *For the sake of comparability we want to give also a revised figure for the benefit ratio in 2050. Assuming that the revision factor for the benefit ratio 2004 stays constant over time at 2.41 (= 52.5% / 21.8%) this would suggest a (revised) benefit ratio in 2050 of 36.6% (= 15.8% × 2.41).*

Second, in order to assess the adequacy of the pension system it would be necessary to make projections of the level and distribution of individual (or household) pension payments.

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Austrian Households' Financial Wealth: An Analysis Based on Microeconomic Data

Christian Beer,
Peter Mooslechner,
Martin Schürz,
Karin Wagner

Microeconomic data on households are providing increasingly important information for many economic policy issues. This study presents the results of a survey conducted by the Oesterreichische Nationalbank on Austrian households' financial wealth. The descriptive presentation of household financial wealth also covers data on household debt and investment. Household income is shown to have a significant influence on the level of financial assets.

The results of logit estimates and a cluster analysis demonstrate the prominent role of net household income on investment decisions. By far the greatest volume of household financial assets is invested in savings deposits and in deposits made under building loan contracts, but 16% of all households also stated that they owned stocks.

JEL classification: D14, D31, G11
Keywords: households' wealth, portfolio choice, financial assets.

1 Introduction

Austrian financial accounts data show that the Austrian household sector's financial wealth increased by some 60% in nominal terms from the end of 1995 to mid-2005. During this period, the share of securities in financial assets expanded marginally; within this aggregate, investment shifted from bonds to stocks and mutual fund shares (Andreasch, 2006). With households'[1] financial assets on the rise and their investment in capital markets growing, interest rate and asset price developments are increasingly influencing households' investment behavior.

However, aggregate data reflect only the development of the household sector as a whole and do not provide any information about developments within this sector, which may well be quite heterogeneous. Consequently, micro asset, investment and debt structure data at the household level provide indispensable information about numerous issues relevant to economic policy.

A growing number of central banks recognize the importance of household microdata and thus conduct surveys to collect such data. Among others, the Federal Reserve Board (Bucks et al., 2006), the Banca d'Italia (Brandolini et al., 2004), the Banco de España (Bover, 2004) and De Nederlandsche Bank conduct such surveys. These surveys provide information important for research about e.g. the following issues: the consumption and savings behavior of households in relation to the level and composition of household income, wealth effects on consumption and on the transmission mechanism, any credit rationing measures, wealth and income distribution, the influence of income risk on households' consumption decisions, the impact of tax incentives on households' savings behavior, general financial knowledge, financial investment decisions, the consequences of different pension systems and financial stability-related aspects such as the exposure of household investments to capital market risk and finally household debt sustainability.

As it is important to link the variables at the center of analysis (e.g. consumption, investment or financial wealth) with the socioeconomic char-

Refereed by:
Vanessa Redak, OeNB;
Holger Stein,
Johann Wolfgang
Goethe-Universität
(Frankfurt am Main).

Research assistance:
Thomas Scheiber.

[1] *The term "households" in this study refers to private households.*

acteristics of households to analyze all of these issues, an analysis is possible only with the help of detailed microdata.

This study presents the results of a survey the Oesterreichische Nationalbank (OeNB) conducted on Austrian households' financial wealth in the summer and fall of 2004;[2] its purpose was to capture microdata on households' financial wealth, investment and debt. This paper is organized as follows: The main results of the survey are presented in section 2. The data on household investment and saving behavior provided by the survey are analyzed in the next sections. Additional details about the design of the survey and methodological aspects are explained in the notes. The study concludes with an annex of tables that provides data on selected issues.

In interpreting the data in this study, it should be noted that this is the only cross-section survey that has been conducted so far. Repeated cross-section surveys or, ideally, a panel would be desirable as a basis for research in most of the areas listed above.

2 Households' Financial Assets – Overview of the Main Results

2.1 Concept of Financial Assets in This Study

Based on information households provided on their financial assets, their gross financial assets were calculated as follows:

gross financial assets =
current account holdings[3]
+ savings deposits including deposits made under building loan contracts
+ value of bonds
+ value of stocks quoted on the stock exchange
+ value of mutual fund shares (equity funds, bond funds, mixed funds, real estate funds, hedge funds, money market funds)
+ value of holdings in enterprises
+ accumulated payment of life insurance premiums.

In this study, net financial assets are defined as gross financial assets excluding consumer loans. Net financial assets include neither home loans nor their counterpart, real estate holdings. Taking home loans into account might have distorted the estimate of household assets, whereas there is less danger of distortion in the case of consumer loans, as the value of the consumer goods purchased with such loans generally declines quickly.

2.2 Net Income Is the Prime Determinant of the Level of Financial Assets

The survey shows Austrian households' gross financial assets to average EUR 54,666[4] (median: EUR 23,579). Austrian households' gross financial assets are offset by consumer loans averaging EUR 2,876, so that average

[2] *The market research institute FESSEL-GfK collected the data.*

[3] *Only data sets that could be evaluated fully were used in this analysis. The survey did not cover cash holdings. After all, whether to include cash in assets is a matter of debate (transaction balances, loss of value etc.).*

[4] *A comparison of these data with financial accounts data shows gross financial assets as calculated on the basis of the survey represent about 50% of the financial assets recorded in the financial accounts. In an international comparison, the degree of consistency between micro- and macrodata is fairly high. The degree of consistency differs among investment categories (see also Andreasch, 2006, for financial accounts data). Hahn and Magerl (2006) provide information about Austrian households' total assets.*

net assets come to EUR 51,790 (median: EUR 21,855). The median values are far lower than the averages, indicating that both gross and net financial assets are highly unevenly distributed.

Considered by socioeconomic criteria, the level of financial assets is shown to depend markedly on household net income. Households with a monthly net income of less than EUR 750, for example, have net financial assets of EUR 6,621 (median: EUR 3,583); the net financial assets of households with incomes in excess of EUR 3,000 average EUR 117,779 (median: EUR 53,039).

The education level of the household head also accounts for substantial differences in wealth positions. Households headed by persons who have only completed compulsory education dispose of average net financial assets of EUR 19,148 (median: EUR 7,835). The amount of financial assets rises in parallel to the education level of household heads: the households of university and Fachhochschule (technical/vocational college) graduates own financial assets averaging EUR 93,586 (median: EUR 41,381).

Broken down by the occupational status of household heads, households headed by entrepreneurs have the by far highest net financial assets (average: EUR 189,778; median: EUR 38,372). The large gap between the average and the median in this category is noteworthy. Ranked by the size of average net financial assets, owners of business are followed by civil servants, employees, free professionals and farmers. Households headed by workers have the lowest average level of financial assets at EUR 24,539. At EUR 11,521, the median financial wealth of free professionals is lower than that of workers (EUR 15,528).

Broken down by the household head's age, the youngest group in the survey (18 to 29 years) has the lowest average net financial assets, namely EUR 15,816 (median: EUR 5,903). Net household financial wealth rises from category to category, peaking at an average of EUR 79,010 in the group of household heads aged 60 though 69.[5] The share of households with negative net financial assets is higher than average among 30- to 39-year-old household heads, as especially many households in this category have taken out consumer loans. A presentation of financial assets across age groups produces a hump-shaped curve, which corresponds to the theoretical expectations about individuals' asset developments according to the life cycle model.[6]

2.3 Debt Focuses on Housing Loans

Principally, only consumer loans are included in the calculation of net financial assets in this study (section 2.1). However, data on home loans and outstanding housing debt were also collected in the survey to complete the picture of household debt. These data and data on total household debt are examined below.

Overall, more than 40% of all Austrian households have taken out loans, 30% of which are for consumption purposes, nearly 60% for housing purposes and over 10% for both purposes. As in the case of financial

[5] *Median household financial assets rise up to the group of 50- to 59-year-olds.*

[6] *In principle cross-sectional data from a (static) age distribution at a specific survey date must not be interpreted as dynamic across the life cycle.*

assets, there is a positive correlation between borrowing and household net income. The relative share of consumer loans, however, is higher among low-income households. If one looks at the different age groups, households headed by 30- to 39-year-olds are most likely to borrow, with home and consumer loans equally important in this group. The reason for this age group's high debt is its high demand for long-term consumer goods and investment in housing.

Broken down by marital status, the share of household debt is highest among (married) couples. Households whose main residence is owner-occupied housing (homeowners) have an above-average number of loans and an especially high share of housing loans.

The average Austrian household has borrowed some EUR 20,000, with home loans accounting for approximately 85% of the loan volume. Households which take out home loans incur an average debt of roughly EUR 40,811 (median: EUR 18,000) through these loans. Factoring in home loans, Austrian households' average financial assets come to just above EUR 35,000 (median: roughly EUR 14,000). In the age group of 30- to 39-year-olds, high borrowing is reflected by low net financial assets (adjusted for consumer and home loans).

Homeowners have higher average net financial assets than households with rental housing, and even after inclusion of home loans, their average net financial assets are only marginally lower than those of households with rental housing – their median financial assets are in fact considerably higher.

2.4 Savings Deposits Are the Main Investment

Savings deposits[7] remain the main investment choice of Austrian households and account for more than 42% of aggregate gross financial assets. Building loan contracts account for an additional 9%. The majority of Austrian households have opted for these two types of investment. 93% of all households own savings deposits, 71% own a building loan contract. Life insurance policies represent another popular investment product. 54% of all Austrian households own a life insurance policy, and 17% of gross financial assets are invested in such policies.[8] 16% of households own stocks, with 8% of gross financial assets placed therein. Bonds account for 6% of gross financial assets, and 11% of households own such debt securities. Also, 11% of all households own mutual fund shares, which represent 5% of gross financial assets. 3% of all households own holdings in

[7] *Savings deposits include passbook savings accounts, savings accounts, savings bonds and premium-aided savings.*

[8] *For technical reasons, the value of the stock of life insurance assets was calculated on the basis of premium payments in this survey, so that the actual value of life insurance assets tends to be underestimated.*

enterprises, which represent 10% of the volume of gross financial assets.

Using a different calculation method,[9] the average share of savings deposits in gross financial assets is approximately 44%, building loan contracts account for 16%, life insurance policies for 20%, stocks for 3%, mutual fund shares for 2% and bonds for 2% of gross financial assets. Holdings on current accounts represent 11% of financial assets, with the share declining sharply as income rises. Households with incomes of below EUR 750 hold nearly a third of their financial wealth on average on their personal accounts; the share drops to 5% for households with incomes of over EUR 3,000. Whereas capital market instruments[10] and holdings in enterprises[11] rise with income. The average share of stocks in gross financial assets rises from 0.3% among households with incomes below EUR 750 and rises to 5.8% among households with incomes above EUR 3,000.

Income is obviously the key factor in investment. As income rises, the share of assets held on current accounts and in savings deposits, including building loan contracts, declines, whereas the weight of capital market instruments rises. The share of capital market instruments in individual household categories also rises in parallel to income. Only 1% of all households with net incomes of less than EUR 750 own stocks, but 33% households with incomes of more than EUR 3,000 own stocks; the pattern is similar for bonds and mutual fund shares.

3% of households have holdings in enterprises; the average net financial assets of this group come to over EUR 330,000 (median: roughly EUR 115,000), which is far higher than the average net financial assets of the total population.

A similar survey was conducted in Vienna in 1990 (Mooslechner, 1997). While the differences between some definitions and delimitations limits comparisons between the two surveys, some changes in Viennese households' investment behavior can nevertheless be discerned: The average share of holdings on current accounts and savings deposits in Viennese households' gross financial assets has declined markedly, whereas the weight of capital market instruments in their portfolios has risen noticeably. Above all, their holdings of stocks have expanded, but higher investment in mutual fund shares is also likely to have been at the heart of the

[9] *The average share of investment product j in gross financial assets is calculated as*

$$Share_j = \frac{\sum_{i=1}^{N} \frac{X_{ij}}{BV_i}}{N}$$

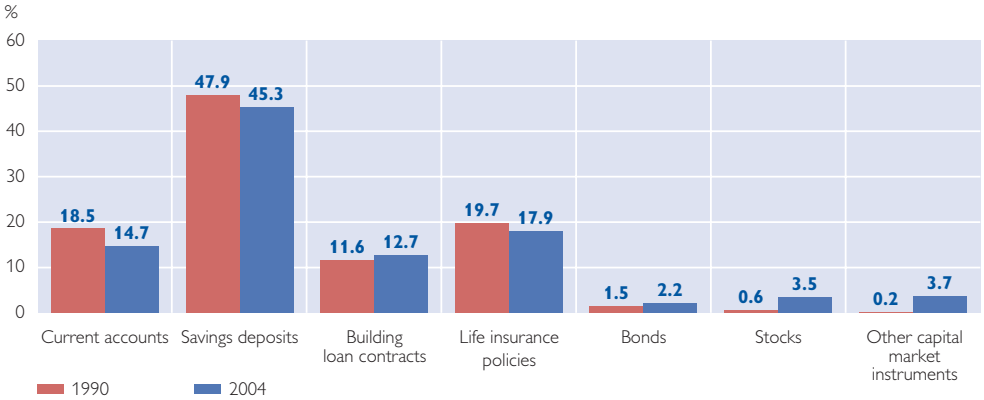
, with i =1,...,N, representing a household in the respective investment category, X_{ij} *representing the amount invested by household i in investment product j and* BV_i *representing the gross financial assets of household i. This calculation method weights all households equally and thus reflects average investment behavior better than other methods. By contrast, the calculation method (*$Share_j = \frac{\sum_{i=1}^{N} X_{ij}}{\sum_{i=1}^{N} BV_i}$*) used in the previous paragraph is better suited to analyzing the allocation of total financial assets among the different investment products.*

[10] *Stocks, bonds and mutual fund shares.*

[11] *The survey questions called for a breakdown by individual or family ownership and stakes in limited liability companies.*

Chart 1

Change in Composition of Gross Financial Assets over Time (Vienna)



Source: Mooslechner (1997), authors' calculations based on a survey conducted by FESSEL-GfK.

Note: As definitions of life insurance products differ, their comparability is limited.

increase in the category other capital market instruments.[12]

3 Cluster Analysis: 13% of All Households Feature a Strong Tendency to Invest in Capital Markets

A cluster analysis[13] was performed directly on the basis of households' investment strategies rather than on the basis of their socioeconomic characteristics. Households are grouped into clusters that can be considered the statistically most homogeneous groups in terms of investment strategies. The aim is to draw conclusions about demographic characteristics on the basis of the financial products[14] these households have chosen to invest in and in this manner to identify possible determinants of the investment decision.

The cluster analysis identifies four clusters; the first cluster may additionally be subdivided into two subclusters (clusters 1a and 1b). Cluster 1 covers "traditional" investors. The financial wealth of households in cluster 1a is limited to deposits, building loan contracts and life insurance policies. The prevalence of building loan contracts and the average share of building loan contracts in gross financial assets are highest in this cluster. Households in cluster 1b invest above all in savings products with a higher return (e.g. a capital savings account, premium-aided savings). Their holdings of capital market instruments are higher than those of cluster 1a households, but the amount invested is fairly low. This cluster also contains some households with high holdings in enterprises.

The households subsumed in cluster 2 are capital market oriented. The average share of capital market instruments in these households' financial assets is around 30%. The households in cluster 3 may be defined as those with a minimum of investment products, as all investment products

[12] *1990: dividend right certificates, mutual fund shares, participation certificates, real estate bonds; 2004: mutual fund shares, holdings in enterprises.*

[13] *The methods used for the cluster analysis are described in the notes.*

[14] *See the notes for the variables/financial products used.*

Table 1

Results of the Cluster Analysis

	Cluster 1	Subcluster 1a	Subcluster 1b	Cluster 2	Cluster 3	Cluster 4
		Traditional investors	Traditional investors who tend to invest in more sophisticated products	Capital market-oriented households	Households with a minimum of investment products (passbook savings account)	Capital market orientation with a lower volume of investment
	%					
Distribution of households	52.7	39.8	12.8	12.6	22.7	12.0
	EUR					
Net financial assets, mean	41,186	32,492	68,141	166,661	18,618	39,940
Net financial assets, median	23,011	19,788	35,701	92,214	6,590	23,070
Consumer and housing loans, mean	19,924	19,050	22,633	28,782	10,983	25,058
	% of households					
Distribution of capital market instruments						
Mutual fund shares	5.2	4.6	6.9	49.9	2.9	14.3
Bonds	5.4	4.4	8.4	51.2	2.9	5.5
Stocks	3.7	2.2	8.6	84.6	4.4	16.6
Holdings in enterprises	2.2	2.6	1.0	6.7	1.1	2.8
Individual saving for retirement						
Personal pension plans	61.1	58.5	69.2	84.4	37.3	62.1

Source: Authors' calculations based on a FESSEL-GfK survey.

are only represented to a small degree. The households in cluster 4 have a low level of assets, but endeavor to diversify their investment. Therefore, in relative terms, their investment in capital market instruments is high.

If the households grouped in these clusters are broken down by socioeconomic characteristics, income and financial assets are above average in cluster 2, where portfolio holdings are strongly diversified. The share of (married) couples is above average in this cluster, and the share of household heads with a university or Fachhochschule degree is far higher than in the other clusters.

Households in cluster 4, the cluster with diversification and a low level of financial wealth, may be considered a younger variant of the households in cluster 2. The heads of these households also have high income and education levels. This cluster comprises an above-average number of young, unmarried household heads, as well as owners of businesses.

The net financial assets of the households in cluster 1a average EUR 32,492. Households with mid-level incomes (EUR 1,350 to EUR 2,250) predominate in this cluster. The shares of graduates of a medium-level technical and vocational school or an apprenticeship and of workers are very high in this cluster. The net financial assets of the households in cluster 1b are twice as high at EUR 68,141. The share of households with fairly high incomes is above average. This cluster features a very broad distribution of financial assets. Civil servants are represented at an above-average rate, whereas the share of owners of businesses and free professionals is low.

At an average of EUR 18,618, net financial assets are lowest in cluster 3. The level of net financial wealth is below the median in nearly 80% of

Table 2

Influence of Socioeconomic Factors on Investment Decisions

	Building loan contract	Stocks	Mutual fund shares	Bonds	Life insurance policies	Capital savings account
Employment of household head						
Occupational status (worker, employee, entrepreneur)						
Gender of household head						
Marital status of household head						
Housing status (owner-occupied versus rental)	***	**	**	*	*	
Education of household head						
Type of employment (private sector/public sector/self-employed)				***		
Household size	***	**				
Age of household head				***	***	**
Household net income	***	***	***			

Source: OeNB.

*Note: Level of significance: * = <0.1; ** = <0.05; *** = <0.001. Shading indicates the interaction between age and household net income.*

the households. 10% of the households have negative net financial wealth. The high share of retired people in this cluster is striking – many of the households in the cluster are headed by older people and widows/widowers. Moreover, the share of self-employed persons is very high in this cluster.

4 Logit Estimates: Income Determines Investment Decisions

The socioeconomic characteristics of households play a key role in their choice of investment products. The question of which of these characterisitics have the biggest impact on households' investment strategy can be analyzed using logit models that estimate the probability of holding a certain investment product as a function of specific household characteristics.

Income is shown to be a decisive and highly significant determinant of households' investment decisions in the case of all investment products.[15] Moreover, for capital savings accounts and bonds, but also for life insurance policies, there is a link to age (which is in turn linked with income); the probability of a household owning these products rises with age, as does income. The housing status is one important determinant for the ownership of a building loan contract. The regression coefficients show that homeowners tend to own such contracts more often than renters do. Moreover, household size has an effect on investment decisions. As expected, the more people there are in a household, the greater the probability is that the household owns a building loan contract.

The housing status also plays a major role in stock and mutual fund share investment. For bonds, the employment status is important: The probability of owning bonds declines for the self-employed, for instance.

[15] *Various criteria were used to assess the goodness of the logit estimates. To calculate classification accuracy, logit coefficients were used to determine the probability with which a household owns a particular investment product. While goodness criteria such as Nagelkerke's R-squared, Cox and Snell's R-squared and the total classification accuracy produce fairly satisfactory results, the classification accuracy of both subgroups (ownership/nonownership) is only moderately satisfactory.*

5 Saving for Retirement: Life Insurance Policies and Savings Deposits Top Other Investment

The pension reforms of recent years were aimed at boosting the importance of making private pension provisions in households' financial planning (individual saving for retirement). Respondents were asked to assess the importance of making private provisions for retirement, to state what measures they had taken and to specify the provisions they had made. Unlike the other questions in the survey, these questions on saving for retirement were addressed directly to the respondent and hence do not apply to the entire household. The answers indicated that more than 80% of the persons questioned consider individual saving for retirement (in addition to the statutory scheme) very important or rather important. The importance of individual saving for retirement declines as the age of the household head increases. By profession, owners of businesses and free professionals see individual saving for retirement as most important.

Nearly 60% of the respondents report having saved for their own retirement. The survey covered all forms of investment the respondents considered saving for retirement, i.e. not just investment specially designed for this purpose (e.g. subsidized personal pension schemes), but also assets such as passbook savings accounts.

Considered by age, the frequency of individual saving for retirement was highest in the group of 30- to 50-year-olds. This is the age cohort that is most heavily affected by the pension reforms and in which most people work. Broken down by occupational status, saving for retirement is most prevalent among owners of businesses. 71% of all civil servants, whose pensions are better secured than those of other professional groups, save for their own retirement. The higher a group's income is, the more likely it is that its members will provide for old age. Higher income enlarges the scope for saving for old age, but also provides more economic incentive to do so. High incomes prior to retirement are often preceded by a steep life-cycle income curve. Thus, a longer contribution period used to calculate pensions has a negative impact on the size of the expected pension. Moreover, households can expect the income replacement ratio for incomes above the earnings cap for pensions to be low. The incidence of individual saving for retirement also rises strongly in parallel with the size of household financial wealth.

Households cite uncertainties about the state pension system as reasons for individual saving for retirement. As their financial assets increase, households set greater store by profitability, probably because they become less dependent on the state pension system.

Logit estimates show that income and age are highly significant for the investment in individual retirement savings, as are the occupational status, the housing status and education. The higher their education level is, the more likely household heads are to save for retirement themselves.

The most frequently cited retirement savings options are life insurance policies, savings and building loan contracts. The type of individual retirement savings is strongly influenced by age. Savings deposits play an increasing role among older household heads, whereas life insurance

policies and building loan contracts become less important. Virtually no household head over 60 years of age opts for investment in state-subsidized pension schemes. Higher-income households invest less in savings deposits; the importance of all other individual retirement savings measures rises in line with income. The rise in investment for retirement is especially pronounced for securities, state-subsidized options and the acquisition of real estate.

A breakdown of individual saving for retirement by clusters shows the share of investing households to be highest in cluster 2 (85%), the group of affluent households with diversified investment. The lowest percentage (37%) of households which have invested in individual retirement savings is observed in cluster 3, which comprises households with a minimum of investment products. This small share may be attributed to the fact that these households have little financial wealth and that this cluster comprises a large share of retired persons.

6 Households' Saving Behavior: Roughly Half of All Households Save Regularly

Households report that the main source of savings is disposable income not required for consumption (relinquishment of consumption). As income and financial assets rise, the role of inheritances increases. 20% of households with very high net financial assets name inheritances as a major source of their savings. By comparison, about 9% of the total population lists inheritances as a source of savings.

More than half of the respondents report that they save regularly or make deposits under a savings plan; 44% save at irregular intervals or put aside whatever income is left at the end of the month. 5% of households are unable to save. The higher households' income and financial wealth are, the more they save on a regular basis. 24% of households with net incomes of below EUR 750 state that they are unable to save; 12% have no savings.

Households' saving capacity varies strongly among clusters. As is to be expected, the affluent households in cluster 2 have the greatest saving capacity; more than 16% of these households state that they are able to save more than EUR 10,000 a year. Only 3% to 6% of the households in the other clusters fall into this category. Households in cluster 3 have the lowest saving capacity. More than 60% of the households in this cluster can save no more than up to EUR 1,000 a year; between 10% and 33% of the households in the other clusters fall into this category. The low saving capacity of cluster 3 households is also reflected in their savings behavior. Some 70% of these households save at irregular intervals or cannot put aside any funds. In the other clusters, the share of regular savers comes to over 50%.

7 Summary and Conclusions

This study presents a first overview of the results of a survey conducted by the OeNB on Austrian households' financial wealth. The survey provides the first microdata on Austrian households' financial position in a number of years. Differences in the size and composition of wealth and debt among households are today considered an important source of information for a number of important economic policy issues. Such issues

include the transmission of monetary policy impulses or the consumption and saving behavior of households as well as changes in investment structures in financial markets triggered by pension system reforms. In this respect, the survey results presented here represent first and foremost a comprehensive data set which may be tapped to help analyze a large range of issues and to compile in-depth analyses on particular aspects.

The OeNB survey results reveals some interesting links: For example, household income is shown to have a dominant influence both on the size of financial wealth and on investment structures. Moreover, factors like education and the occupational status of the household head play a determining role. These factors, in turn, exhibit a connection to household income. Somewhat more than 40% of Austrian households have taken out loans. Examined by the purpose of the loan, housing loans predominate. According to the survey, housing loans account for some 85% of the total volume of loans, and about 70% of the households with debt have taken out a housing loan. The highest level of household debt was found among households headed by persons aged 30 to 39, the reason for indebtedness being the purchase of consumer durables and investment in owner-occupied housing. Consequently, most of the households with negative net financial wealth belong to this category.

Savings deposits and deposits on building loan contracts remain by far the most important investment vehicles of households. 93% of all households have savings deposits; 71% have building loan contracts. These two forms of investment account for an average share of 60% of financial assets. The importance of capital market instruments in household portfolios has risen by comparison to the 1990 survey. Today, 16% of households already state that they own stocks, with stocks representing 7.5% of financial assets. 11% of households own bonds, 11% own mutual fund shares.

Cluster analyses provide evidence of household investment patterns, which range from minimum investment to marked investments in capital markets. The results of logit estimates and cluster analysis demonstrate the prominent influence of net household income on investment decisions.

Pension reforms which promote individual saving for retirement are one of the key influences on households' financial behavior. 80% of the respondents consider individual saving for retirement important, and nearly 60% have taken steps to invest for retirement. The predominant financial instruments of choice are traditional ones such as life insurance policies, savings deposits and building loan contracts. Only a fairly limited number of households have opted for capital market instruments and financial instruments designed especially for saving for retirement. Finally, somewhat more than half of all households indicated that they save on a regular basis; 5% of all households are unable to save.

Overall, the results confirm the usefulness of microdata on household financial assets and debt for analytical purposes. The microdata on investment permit the establishment of an analytical link between the risk undertaken by households and their capacity to absorb adverse price developments, which is determined among other things by the size of income and

financial wealth. Similarly, the microdata on debt allow for a comparison of debt with the assets purchased with the loans that constitute debt. The data also make it possible to assess the influence of interest rate and income shocks on households' capacity to repay loans. Households' different levels of financial wealth and differences in portfolio composition raise expectations that the impact of monetary policy on wealth and hence on consumption and savings also differs markedly among households. Finally, the current promotion of individual saving for retirement by economic policymakers is inducing changes in household behavior, suggesting that such investment will have a major impact on macroeconomic variables and financial markets in the future.

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Notes

Survey Design

FESSEL-GfK Institute for Market Research uses multistage stratified clustered address random sampling to conduct representative surveys. The survey was conducted in the summer and fall of 2004 by means of face-to-face and written interviews. A total of 2,556 analyzable data sets were compiled (in Vienna, 1,026 of an original 1,869 addresses and in the provinces 1,530 of 2,408 addresses provided results). Within Austria, households were stratified at the province level, and in Vienna, households were stratified by the 23 political districts. Within the districts, the prospective respondents were selected at random. To make the sample more representative, the households were weighted within the sample. The age, occupation and education of the household head and the size of the household, the presence of children up to 14 years of age and the district were factored into the weighting. The interview partner was the household head or the household member with the most accurate knowledge about the respective household's finances. 87 questions were asked, covering e.g. the sociodemographic characteristics of the households, assets, asset sources, information sources about financial market topics and approaches to financial market issues.

Calculation of Credit Aggregates

Housing credits are loans taken out to buy, restore, construct, adapt or renovate houses or apartments. Loans taken out for other purposes were classified as consumer credits. The households were asked to state the purpose and size of various types of loans (e.g. bank loans, private loans). No distinction by the purpose of a loan was possible in cases in which households took out more than one loan of a particular type for different purposes. In this case, the loans were subsumed under housing loans. Thus, it is likely that the volume of consumer loans is (relatively) understated and the volume of housing loans is (relatively) overstated.

Calculation of the Value of Life Insurance Policies

Households were asked to provide the following information about life insurance policies: the year in which they took out a life insurance policy, the premium amount and the frequency of premium payments. The value of life insurance policies is not known and is difficult to assess, as life insurance policies are not traded in a standardized form like quoted stocks, bonds and mutual fund shares. This approach is considered the best possible approximation; however, the amount invested is highly likely to be understated.

Cluster Analysis

Ward's hierarchical clustering method and the partitioned K-means procedure were used as complements. First, the number of clusters was determined with Ward's hierarchical method; this number was confirmed by means of the K-means algorithm.

With the K-means procedure, the centroid of a cluster represents the respective cluster. The procedure defines this centroid and assigns the remaining households to the cluster to whose center they are closest. A three-stage

iterative algorithm is used. Starting from an initial assignment of the data points to the cluster centroids (in this case from the group mean values of the clusters determined by means of Ward's method), the households are assigned to the cluster centroids in a way that minimizes the sum of squares of distances between the data and the corresponding cluster centroids. In a next step, the cluster centroids are recomputed. This iteration process is terminated once the modification of cluster centers no longer produces changes in the assignment of the classification objects.

The variables used to draw conclusions about demographic characteristics were the holding of passbook savings accounts, savings accounts, capital savings accounts, premium-aided savings, building loan contracts, life insurance policies, bonds, stocks, mutual fund shares and holdings in enterprises.

Logit estimates

The following characteristics were taken into account in the computations as independent category variables:

– Head of household: education level, employment, occupational status, type of employment, gender, marital status, age; and
– Household: housing status, size of household, household net income.

Annex

Table 3

Households' Financial Assets

			Gross financial assets		Consumer loans	Net financial assets (3–4)		Housing loans	Total loans (4+6)	Net financial assets 2 (3–7)	
	1	2	3		4	5		6	7	8	
	Frequency		Mean	Median	Mean	Mean	Median	Mean	Mean	Mean	Median
		%	EUR								
Austria total	**1,430**	**100.0**	**54,666**	**23,579**	**2,876**	**51,790**	**21,855**	**16,758**	**19,634**	**35,032**	**14,135**
Age of household head											
18 to 29	112	7.8	17,217	6,648	1,402	15,816	5,903	12,300	13,701	3,516	1,386
30 to 39	271	19.0	33,971	17,047	4,920	29,050	13,654	25,280	30,201	3,770	3,097
40 tp 49	358	25.0	59,799	35,014	3,749	56,049	34,436	25,725	29,475	30,324	19,787
50 to 59	237	16.6	66,558	36,712	3,101	63,457	35,475	19,156	22,257	44,301	26,155
60 to 69	247	17.3	80,610	29,397	1,600	79,010	28,210	5,448	7,048	73,562	24,848
70 to 79	164	11.5	50,144	17,377	432	49,712	16,756	2,861	3,293	46,851	16,182
80 and over	41	2.8	41,801	16,107	1,906	39,895	14,100	3,976	5,882	35,918	12,740
Occupation of household head											
Self-employed	43	5.0	48,975	14,889	10,762	38,213	11,521	17,360	28,122	20,852	6,928
Entrepreneur	50	5.8	195,101	43,151	5,323	189,778	38,372	26,183	31,506	163,595	18,278
Employee	420	48.4	52,610	27,059	4,011	48,599	24,172	28,015	32,026	20,584	10,935
Public servant	150	17.3	67,468	41,453	3,684	63,784	37,473	22,468	26,152	41,316	24,600
Farmer	19	2.2	35,148	26,722	311	34,838	26,722	9,955	10,266	24,883	10,507
Worker	185	21.3	27,513	17,633	2,974	24,539	15,528	17,862	20,836	6,677	8,475
Jobholders total	868	60.7	57,495	26,319	4,065	53,429	23,585	23,861	27,926	29,568	11,805
Not employed total	562	39.3	50,296	20,453	1,038	49,257	19,392	5,787	6,825	43,471	16,538
Net household income											
Up to EUR 749	76	5.3	6,912	3,775	291	6,621	3,583	2,144	2,435	4,477	2,942
EUR 750 to EUR 1,349	297	20.8	16,082	8,753	1,278	14,804	7,750	6,323	7,602	8,480	6,550
EUR 1,350 to EUR 2,249	506	35.4	43,385	23,341	2,209	41,176	21,415	12,514	14,723	28,662	16,049
EUR 2,250 to EUR 2,999	264	18.5	57,151	37,380	2,172	54,979	36,117	23,212	25,384	31,767	21,493
EUR 3,000 and over	287	20.1	124,814	59,768	7,035	117,779	53,039	32,966	40,001	84,813	38,786
Net financial assets											
Net financial assets ≤ median	715	50.0	10,757	9,175	4,125	6,632	7,198	12,229	16,354	–5,597	4,300
Net financial assets > median	288	20.2	34,096	32,344	1,920	32,176	31,748	21,912	23,832	10,264	27,522
Net financial assets > double the median	289	20.2	68,648	64,400	1,022	67,626	63,942	21,865	22,887	45,761	56,987
Net financial assets > five times the median	138	9.7	295,417	179,628	2,279	293,139	179,446	20,147	22,426	272,992	167,800
Marital status of household head											
Single	249	17.4	34,059	10,798	2,359	31,701	10,203	7,609	9,967	24,092	6,617
Married/partnership	851	59.5	70,395	36,031	3,409	66,986	34,514	22,253	25,662	44,733	22,146
Divorced/separated	173	12.1	29,062	14,325	2,977	26,085	11,268	13,749	16,727	12,335	8,970
Widowed	157	11.0	30,312	13,000	696	29,617	12,761	4,806	5,502	24,811	10,975
Housing status											
Owner-occupied housing	798	55.8	64,119	33,158	2,722	61,398	31,935	26,613	29,335	34,785	18,632
Rental housing	633	44.2	42,744	14,187	3,070	39,674	11,911	4,331	7,401	35,343	10,670
Education level of household head											
Mandatory schooling at most	195	13.6	20,197	8,802	1,050	19,148	7,835	6,460	7,510	12,687	7,139
Apprenticeship, vocational/ technical school	729	51.0	42,360	21,774	2,462	39,899	19,859	15,109	17,570	24,790	13,991
Academic secondaary school, higher-level technical and vocational school	329	23.0	78,503	31,235	3,512	74,990	30,445	23,036	26,548	51,954	19,463
Fachhochschule, university	177	12.4	98,998	45,179	5,411	93,586	41,381	23,209	28,621	70,377	29,387

Source: Authors' calculations based on a FESSEL-GfK survey.

Table 4

Holdings of Savings and Capital Market Instruments

Share of Households with Investments

%

	Passbook Savings Account	Building loan contract	Mutual fund shares	Bonds	Stocks	Holdings in enterprises
Austria total	**85.0**	**70.6**	**11.4**	**10.6**	**15.7**	**2.6**
Age of household head						
18 to 29	69.1	60.3	8.4	5.7	14.8	2.9
30 to 39	82.4	68.2	14.1	6.8	15.2	2.6
40 to 49	87.5	83.6	15.0	11.4	17.5	3.6
50 to 59	87.1	75.3	9.7	12.2	17.2	1.9
60 to 69	86.1	73.6	9.9	14.3	17.2	3.4
70 to 79	87.7	48.4	8.4	12.6	10.5	0.7
80 and over	94.3	44.2	2.8	3.9	6.7	0.0
Occupation of household head						
Self-employed	73.0	59.0	14.0	9.4	20.1	7.4
Entrepreneur	69.1	59.8	20.4	11.3	19.0	28.5
Employee	84.9	77.3	16.0	11.0	19.6	2.2
Public servant	88.4	84.7	15.2	14.0	22.8	3.0
Farmer	95.4	82.2	7.4	10.9	4.1	0.0
Worker	80.4	73.8	6.0	6.1	7.0	0.2
Jobholders total	83.3	76.0	13.7	10.4	17.1	3.6
Not employed total	87.7	62.2	7.9	10.9	13.4	1.0
Net household income						
Up to EUR 749	63.4	39.2	0.3	1.9	1.1	0.0
EUR 750 to EUR 1,349	83.9	54.0	3.5	3.0	5.3	0.2
EUR 1,350 to EUR 2,249	83.9	70.6	8.4	8.9	11.0	2.4
EUR 2,250 to EUR 2,999	90.7	82.4	15.0	13.4	21.9	2.9
EUR 3,000 and over	88.6	85.2	24.5	21.4	32.7	5.8
Net financial assets						
Net financial assets ≤ median	79.0	57.1	3.6	2.3	4.4	0.4
Net financial assets > median	90.7	81.2	9.2	7.3	12.0	3.0
Net financial assets > double the median	91.6	86.6	16.6	15.7	25.9	2.4
Net financial assets > five times the median	90.6	84.8	45.7	50.0	59.8	13.5
Marital status of household head						
single	74.8	58.5	11.3	7.9	12.1	2.8
married/partnership	89.1	79.0	13.6	13.1	19.4	3.2
divorced/separated	79.2	61.8	5.1	6.2	10.7	0.9
widowed	85.3	53.7	6.7	6.7	6.6	0.9
Housing status						
Owner-occupied housing	89.0	78.6	13.1	13.3	19.4	3.0
Rental housing	79.9	60.5	9.3	7.3	10.9	2.1
Education level of household head						
Compulsory education at most	81.3	53.0	3.1	3.4	5.5	0.0
Apprenticeship, vocational/technical school	86.1	71.2	8.4	8.4	12.1	2.1
Academic secondary school, higher-level technical and vocational school	82.7	75.6	16.2	14.1	22.9	3.9
Fachhochschule, university	88.7	78.0	24.3	21.3	28.0	4.8

Source: Authors' calculations based on a FESSEL-GfK survey.

Table 5

Individual Saving for Retirement

% of respondents

	Have you taken steps to save for retirement?				Why are you saving for retirement?[1]		
	yes	no	don't know	total	uncertainty about the state pension system	profitability considerations	other
Austria total	**58.8**	**38.6**	**2.6**	**100**	**69.0**	**29.9**	**11.8**
Age of household head							
18 to 29	45.0	52.0	3.0	100	81.4	15.9	13.9
30 to 39	67.1	29.5	3.4	100	84.7	19.8	5.5
40 to 49	69.3	28.6	2.1	100	78.5	29.4	7.7
50 to 59	61.7	36.5	1.8	100	62.1	30.0	14.3
60 to 69	49.2	48.8	2.0	100	47.0	44.5	18.9
70 to 79	45.1	50.7	4.3	100	49.9	40.5	16.2
80 and over	44.1	52.6	3.4	100	28.0	33.6	39.2
Occupation of household head							
Self-employed	65.8	32.4	1.8	100	73.7	31.6	7.0
Entrepreneur	78.7	20.3	1.0	100	73.6	30.4	10.1
Employee	65.9	31.7	2.4	100	79.0	25.3	10.1
Public servant	70.6	25.9	3.5	100	74.3	33.9	5.6
Farmer	47.4	51.2	1.4	100	78.7	45.0	0.0
Worker	63.3	34.4	2.3	100	80.2	18.8	10.2
Jobholders total	66.5	31.1	2.4	100	77.8	26.5	9.0
Not employed total	46.8	50.3	2.9	100	49.8	37.6	17.5
Net household income							
Up to EUR 749	37.1	58.6	4.3	100	67.8	17.8	21.4
EUR 750 to EUR 1,349	42.1	54.1	3.9	100	65.6	29.6	13.6
EUR 1,350 to EUR 2,249	58.4	39.1	2.5	100	68.6	26.7	12.5
EUR 2,250 to EUR 2,999	66.1	31.3	2.6	100	68.2	32.7	12.6
EUR 3,000 and over	75.7	23.2	1.1	100	71.8	33.6	7.8
Net financial assets							
Net financial assets ≤ median	45.7	50.3	4.0	100	72.8	20.8	14.7
Net financial assets > median	66.2	32.5	1.2	100	73.3	29.3	7.9
Net financial assets > double the median	71.8	26.8	1.4	100	67.0	33.8	10.1
Net financial assets > five times the median	83.5	16.0	0.5	100	54.6	50.2	13.0
Marital status of household head							
single	57.6	40.2	2.3	100	78.9	19.5	11.2
married/partnership	63.8	33.9	2.3	100	68.5	32.2	10.7
divorced/separated	52.7	44.9	2.4	100	74.5	28.5	9.9
widowed	40.0	54.8	5.2	100	42.9	36.6	25.4
Housing status							
Owner-occupied housing	63.6	34.4	2.0	100	68.4	33.7	10.6
Rental housing	52.7	44.0	3.3	100	69.9	24.0	13.5
Education level of household head							
Compulsory education at most	40.2	54.6	5.3	100	71.6	20.5	12.8
Apprenticeship, vocational/technical school	57.9	39.5	2.7	100	69.2	27.7	11.6
Academic secondary school, higher-level technical and vocational school	65.6	32.7	1.7	100	68.1	37.5	10.6
Fachhochschule, university	70.3	28.7	1.0	100	68.4	30.6	12.9

Source: Authors' calculations based on a FESSEL-GfK survey.

Note: These two questions were directly addressed to the respondent (not necessarily the household head).
[1] Multiple answers were possible. The sample consists of the households which have saved for retirement.

How Are Payments Made in Austria?

Results of a Survey on the Structure of Austrian Households' Use of Payment Means in the Context of Monetary Policy Analysis

Peter Mooslechner,
Helmut Stix,
Karin Wagner[1]

This study presents the results of a survey conducted in fall 2005 on the payment habits of Austrian households, comparing its findings with those of similar surveys carried out in 1996 and 2000. The focus is to analyze changes in the use of payment means over time and, on this basis, to assess future trends.

As the analysis in the 2005 survey shows, cash continues to dominate the structure of payment transactions, remaining by far the most important means of payment. Cash payments account for 86% of all direct payment transactions by Austrian households and for 70% of the total payment value. Compared with the previous surveys, however, the share of cash has contracted noticeably whereas the share of payments at point-of-sale (POS) terminals (via debit card payments) has more than doubled in the last five years to 11.5%. Although credit card payments have posted a slight increase, their share in the total volume still remains very low (1.3%). Overall, the results indicate the continuation of cash-card substitution.

From a central banking perspective, assessing future trends in cash demand is a key monetary policy issue. The findings of this study suggest that Austrian households' payment habits will not change abruptly, therefore, any impact on monetary policy can be expected to remain very limited.

JEL classification: E41, E58, D12
Keywords: usage of payment means, demand for money, monetary policy.

1 Introduction

The scale of cashless payments has grown considerably in Austria in recent years. In particular, debit card payments have expanded vigorously. However, it is not clear how cash use has developed recently, in particular against the background of the launch of euro cash. Does cash still have the preeminence it enjoyed in the days of the Austrian schilling, or do Austrians now prefer to make cashless payments? This study attempts to provide an in-depth analysis of the overall picture of developments in Austrian households' payment behavior and, on this basis, to assess future trends. In particular, it examines the possible impact of the growing popularity of cashless payment media on both cash in circulation and monetary policy – a key issue from a central banking perspective as regards the design and effectiveness of monetary policy.

However, available sources of information for the analysis of households' payment behavior still look unsatisfactory. An important source of data for analyzing cash use is most certainly aggregate statistics on the growth of currency in circulation. The euro area has seen a sharp rise in the cash in circulation since 2002; this development, however, has been dominated by exceptional factors associated with the cash changeover. In particular, high, albeit slowing, levels of growth in banknotes and coins in circulation may be related to the (renewed) increase in cash hoardings in Austria and abroad. For this reason, trends in total cash in circulation hardly provide any indication of the development of demand for the

Refereed by:
Malte Krüger, Institute for Economic Policy and Economic Research, University of Karlsruhe.

Research assistance:
Thorsten Odernek.

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amount of cash that is actually or potentially used for transaction purposes.[2]

As the actual amount of currency in circulation in the individual countries of the euro area has been impossible to observe since the introduction of the euro, one has to rely on what is termed the logistical currency in circulation.[3] This measure indicates a decline in Austria. At this juncture, two questions should be examined: In what way can this decline be traced to changes in payment habits, and to what extent is it induced by other aspects (structural factors)?

Other sources of data on Austrian households' payment habits are statistics on payments made with various payment cards (debit cards, credit cards, cards with the Quick e-purse function), as well as data on the technological infrastructure of these forms of payment.[4] However, only indirect information about cash in circulation and cash use are inferable from these data, and nothing can be said about the overall picture describing the use of payment media.

To obtain in-depth information on Austrian households' payment behavior, there consequently remains only one approach: that of statistical surveys. On the basis of such results, it is possible to also draw conclusions on foreign demand and the hoarding of cash.

For central banks, the analysis of both current trends and possible changes in payment habits is crucial in terms of the impact on money demand. Moreover, the economic costs of payment systems are also of direct relevance. Humphrey et al. (2000) put the total costs of all payment activities in the U.S.A. at around 3% of GDP. Gresvik and Owre (2003) assess the costs incurred by Norwegian banks in 2001 at 0.4% of GDP. Finnish studies estimate cash costs alone at 0.1% of GDP (Bank of Finland, 2006).

Against this background, this study presents the results of a survey on Austrian payment habits, which was conducted in fall 2005. In addition to the analysis of the development in the use and dissemination of various payment cards – particularly, debit and Quick e-purse transactions (both in Austria and abroad) in section 2, section 3 presents the survey's key findings relating to the overall picture of Austrian households' payment transactions.[5] Section 4 then takes a closer look at sector-specific differences and sociodemographic characteristics. Finally, section 5 discusses the implications for monetary policy.

2 More Cards – More Payment Terminals – More Cashless Payments

In recent years, cashless payments have burgeoned in Austria. Payment and economic policy debate is largely focused on this specific detail in the

[2] *The amount of cash hoardings is likely to be much higher than the amount of cash held by people for payment transactions (e.g. Stix, 2004a).*

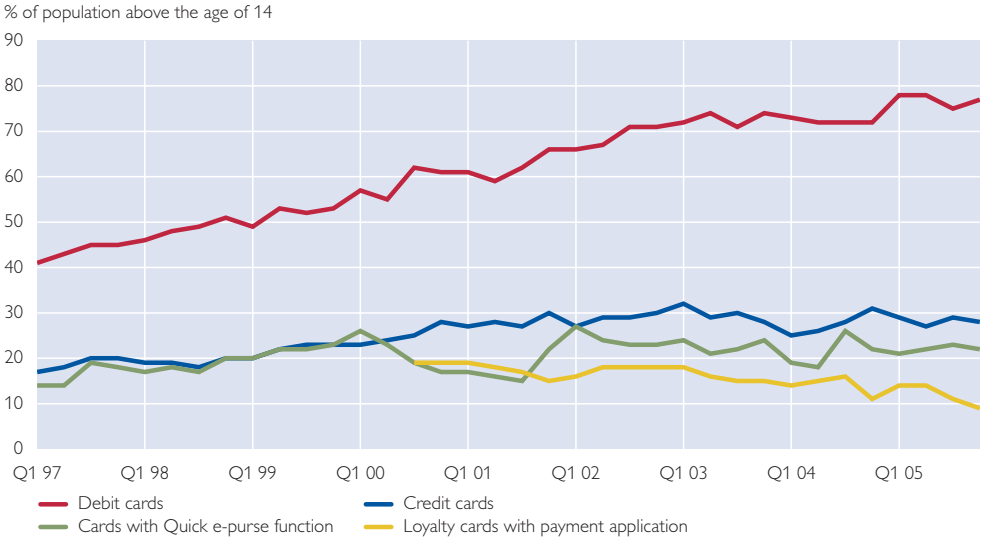
[3] *Logistical cash in circulation is defined as the difference between the value of bank notes issued in Austria and the bank notes removed from circulation in Austria. However, owing to the free circulation of bank notes between EU Member States, many institutional factors such as the sectoral structure of an economy (e.g. tourism) influence this measure of currency in circulation.*

[4] *The terms "debit card" and "Maestro card" are used synonymously below.*

[5] *Quick is the brand name of the most widely used electronic purse in Austria. This electronic purse is enabled on Maestro debit cards. Furthermore, there are Quick-only cards.*

Chart 1

The Diffusion of Payment Cards (Survey Results)



Source: OeNB (Survey on Payment Cards).

overall picture of private payment transactions. The present section examines this aspect and places it in an international context.

2.1 Robust Growth in Debit Card Payments

The dissemination of payment cards has accelerated rapidly in recent years. However, these rates of growth lack significant informative value not least because many persons own several cards with a payment function. What is more, some cardholders are not aware that their card has a specific payment application (e.g. the Quick e-purse function). For this reason, in particular, it seems useful to analyze the dissemination of payment cards not only on the basis of cards issued but also on the basis of survey data. The OeNB has therefore been commissioning regular surveys on the ownership and use of payment cards since 1997.

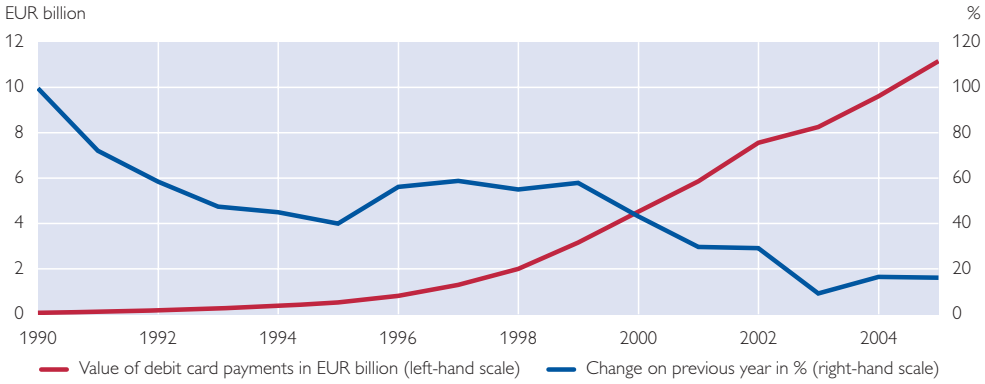
In the fourth quarter of 2005, 78% of Austrians aged 14 and over claimed to own a payment card. 77% said they possessed a debit card (Maestro), 28% owned a credit card and 22% Quick-enabled cards. Only 9% of the population claimed to own a retailer loyalty card with a payment function.

Starting from an initial rate of dissemination of 40% in 1997, debit cards (Maestro) have posted robust growth. Credit card ownership rose almost until 2002 and has since remained largely constant. Retailer loyalty cards with a payment function, however, suffered a decline. Although the diffusion of Quick-enabled cards increased notably at the time of the launch of euro cash, it has since slowed a tad.

Quick-enabled cards most clearly reveal the difference between dissemination based on the number of cards issued and (subjective) dissemination based on survey data. As the Quick e-purse function is an integral feature of almost all debit cards, Quick cards should be as widespread as debit cards. However, the availability of the Quick application is actually known to only a comparatively small part of the population.

Chart 2

Trend in Maestro Payment Values



Source: Europay Austria.

The number of debit card terminals in Austria has surged over the last few years, climbing from 229 in 1989 to more than 82,000 by end-2005. The trend in debit card payment values was similarly impressive. These expanded from EUR 63 million in 1990 to EUR 11.2 billion in 2005 (chart 2).

As regards this payment segment's future development, annual growth in debit card payment values has slowed notably, yet still came to around 16% at last count, clearly outstripping the expansion in total payment transactions, e.g. in terms of retail sales or household spending. Therefore it can be assumed that the market share of this payment instrument will continue to expand in future.

2.2 Quick E-Purse System

From a monetary perspective, the use of electronic money is of particular interest. Although Austria already has several e-purse systems, only the Quick scheme is currently of quantitative importance.

At end-2005, a total of almost 91,500 Quick payment terminals and some 6,000 value load terminals were available to consumers throughout Austria. This wide dissemination is

Table 1

Some Key Quick System Figures

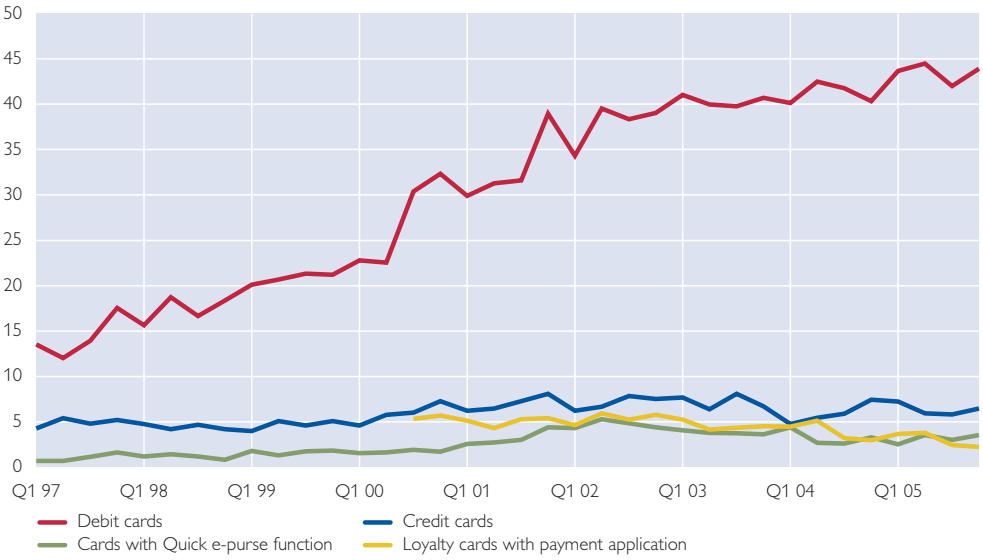
Year-end	Number of Quick payment terminals	Number of Quick value load terminals	Payments		
			Value	Change on previous year	Average
			EUR million	%	EUR
1997	12,756	3,495	5.7	x	13
1998	19,118	4,954	9.2	63	8
1999	29,564	5,225	11.7	27	5
2000	41,585	5,162	15.2	30	5
2001	60,848	5,419	28.5	87	6
2002	74,657	5,775	132.5	365	8
2003	79,806	5,879	116.8	–12	7
2004	86,690	6,452	121.3	4	6
2005	91,495	6,070	133.8	10	6

Source: Europay Austria, authors' calculations.

Chart 3

Frequency of Payment Card Usage:

Payments Made at Least Once a Week



Source: OeNB (Survey on Payment Cards).

Note: This chart shows the share of the Austrian population paying with the relevant card at least once a week. For loyalty cards, data on the frequency of usage were not surveyed before the third quarter of 2000.

above all attributable to Austria's comprehensive infrastructure of debit card payment terminals (frequently also suited for Quick payments) and ATM terminals (for Quick value loads). At end-2005, some 7.1 million cards were issued with a Quick-enabled payment application. From a low level, total Quick payments grew very strongly from EUR 5.7 million in 1997 to EUR 134 million in 2005. What is striking are the high growth rates posted in 2001 and 2002 – the period when euro cash was introduced.

In both 2004 and 2005, the average amounts paid with Quick were around EUR 6. Quick is thus primarily used as a payment system for small and very small amounts.

2.3 Frequency of Card Payments

In addition to the ownership of payment cards, the frequency of card payments is also pertinent to their role in payment transactions. Survey data from the fourth quarter of 2005 present the following picture. Overall, debit cards are used by 87% of their holders, credit cards by 95% and retailer loyalty cards with a payment application (henceforth to be called loyalty cards) by 90%. The Quick scheme lags way behind: only 42% of owners of debit cards with Quick use this function. Compared with the year 2000 survey, almost no change is recorded for either debit card or credit card usage whereas the share of those actually using the Quick function and retailer loyalty cards was down.

At end-2005, some 44% of Austrians paid by debit card at least once a week, 6.5% by credit card and 3.5% by Quick and 2.3% by a loyalty card (chart 3). Debit card usage shows a dynamic upward trend over time. By

contrast, the share of Austrians regularly using loyalty cards has contracted slightly in recent years, with credit card usage remaining constant.[6] As for the Quick scheme, its frequency of usage accelerated prior to the introduction of euro banknotes and coins. Since then, its usage by Austrians has dipped slightly.

2.4 Relatively Few Card Payments in Austria Compared with Other Countries

Despite this partly dynamic trend in card payments, the provision of POS terminals and total value of card payments are still relatively low in Austria, compared with other countries (ECB, 2006).[7]

In terms of the number of POS terminals per inhabitant and the number of payment transactions per inhabitant per year, Austria fell well short of the euro area average for all types of card payments (excluding so-called e-money cards) in 2004. By contrast, the value of payments per inhabitant was slightly above the average (table 2). A country comparison – with, admittedly, somewhat limited informative value due to, in part, different definitions in national statistics – reveals that Austria ranks only tenth among the 12 euro area countries in terms of the number of transactions per inhabitant. By contrast, in Finland, for instance, six times as many card payments are transacted per inhabitant than in Austria. In Ireland, Belgium, Luxembourg, France, Portugal and the Netherlands, card payments are some three to four times more frequent.

By international standards, however, electronic purses seem to be relatively widespread in Austria, outperforming the euro area average for all three indicators reported. In terms of the number of transactions per inhabitant, posting more than twice as many electronic purse transactions than the average number of e-money card transactions in the entire euro area, Austria ranked fourth in 2004 behind Belgium, Luxembourg and the Netherlands among the ten EU Member States for which data were available (ECB, 2006).

3 Survey Results Relating to Austrian Households' Payment Transactions

In light of the robust growth in card payments, the question arises as to the share cashless payments in total payments and to what extent cashless/card payments have substituted cash payments.

The OeNB therefore commissioned a survey on the specific payment habits of Austrian households in the period from September to November 2005.[8] Survey respondents documented in a payment diary over a one-week period all personally transacted expenditures, the relevant payment amount, the means of payment used and the relevant sector in which this payment was transacted. In this part of the survey (payment diary), bank transfers and payment slips were explicitly excluded as forms of payment.

[6] *Credit cards are used by most credit cardholders mainly on a monthly basis or more rarely (based on figures for the fourth quarter of 2005, 72% of credit cardholders, or some 16% of Austrians).*

[7] *Data currently available relate to 2004 and only permit a distinction to be made between e-money cards and other payment cards.*

[8] *The survey was conducted by IFES (Institut für Empirische Sozialforschung).*

Table 2

International Comparison

	Austria	Euro area average
Card payments (except for e-money cards)		
Number of POS terminals per 1 million inhabitants	10,604.63	15,086.98
Number of transactions per inhabitant	20.91	41.48
Value of payments per inhabitant (EUR)	2,536.11	2,318.06
E-money cards		
Number of payment terminals per 1 million inhabitants	10,604.63	2,962.86
Number of transactions per inhabitant	2.68	1.05
Value of payments per inhabitant (EUR)	16.40	6.73

Source: ECB (2006), Europay Austria, authors' calculations.

Note: Some of the data shown here are not available for all the euro area countries, which means that the relevant euro area average can refer to a different number of Member States in the given case. Methodological definitions can vary between Member States, thus limiting the comparability of data (ECB, 2006). The figures for "payments per inhabitant (EUR)" and "number of transactions per inhabitant" for e-money cards are based on authors' calculations.

In two further sections, the survey asked respondents which large value payments (payments in excess of EUR 400, including transfers) and which payments for goods and services ordered online had been transacted within the previous four weeks. Once again, the relevant expenditures, payment medium and sector were recorded.[9]

3.1 Changes in Payment Habits: Analyses over an Almost Ten-Year Period Possible for the First Time

Since comparable surveys were conducted in 1996 (Mooslechner and Wehinger, 1997) and in 2000 (Mooslechner et al., 2002), representative data relating to the payment habits of Austrians are now available for a period of nine years. As a result, it is for the first time possible to analyze longer-term trends and structural changes in the use of payment means over time and also against the backdrop of the launch of the euro.

The analyses of the 2005 survey are based on data relating to 1,204 persons, who transacted 14,075 payments totaling EUR 375,559 within a one-week period.[10] On average, this means about 12 payments per person per week, or some 1.7 transactions per person per day. As expected, this suggests that not all the transactions actually made were captured by the survey. In particular, very small payments (e.g. newspaper purchases) probably tend to be "forgotten" and are therefore underrepresented in the survey. By contrast, the average amount of some EUR 312 (median: EUR 226) per person recorded within a one-week period indicates a very good coverage of payment values in the survey.

In the annex (table 5), a few key figures relating to the sample of the 2005 survey are compared with those of the 2000 and 1996 surveys. This comparison highlights, above all, the stability of the surveys, underlining the fact that there are obviously hardly

[9] *A special contribution relating to the results of internet payments is scheduled for publication in Monetary Policy & the Economy Q3/06.*

[10] *The survey sample comprises men and women aged 14 and over.*

Table 3

Distribution of Recorded Payments

	1996	2000	2005
Minimum	0.3	0.3	0.5
p5	1.3	1.5	2.0
p25 (1st quartile)	5.0	5.3	6.0
Median	11.7	11.8	13.0
p75 (3rd quartile)	25.2	26.3	28.0
p90 (9th decile)	44.9	45.7	50.0
p95	67.1	68.5	72.0
Maximum	3,560.5	1,904.1	3,500.0

Source: Authors' calculations based on an OeNB survey (payment diary).

Note: The table shows the distribution of payments recorded by respondents in 1996, 2000 and 2005. Payments recorded in 1996 and 2000 were adjusted for inflation in line with the HICP to September 2005. "p25", for instance, designates the amount below which 25% of all payments are (e.g. in 2005, 25% of all payments were less than EUR 6).

any major differences between the surveys between the era of the Austrian schilling and that of the euro despite a period of almost a decade.

The analysis of the distribution of payments recorded by the respondents over time provides a similar picture (table 3). The two previous surveys conducted in the era of the Austrian schilling delivered results closely resembling those of the current survey; only the euro-denominated amounts recorded by respondents are slightly higher than the corresponding schilling amounts.[11] Overall, the distribution of payments appears to be very similar for about 75% of the payments. Larger differences emerge only for the (small) share of the highest payment amounts, with the euro amounts particularly for these payments being significantly higher than the corresponding schilling amounts.

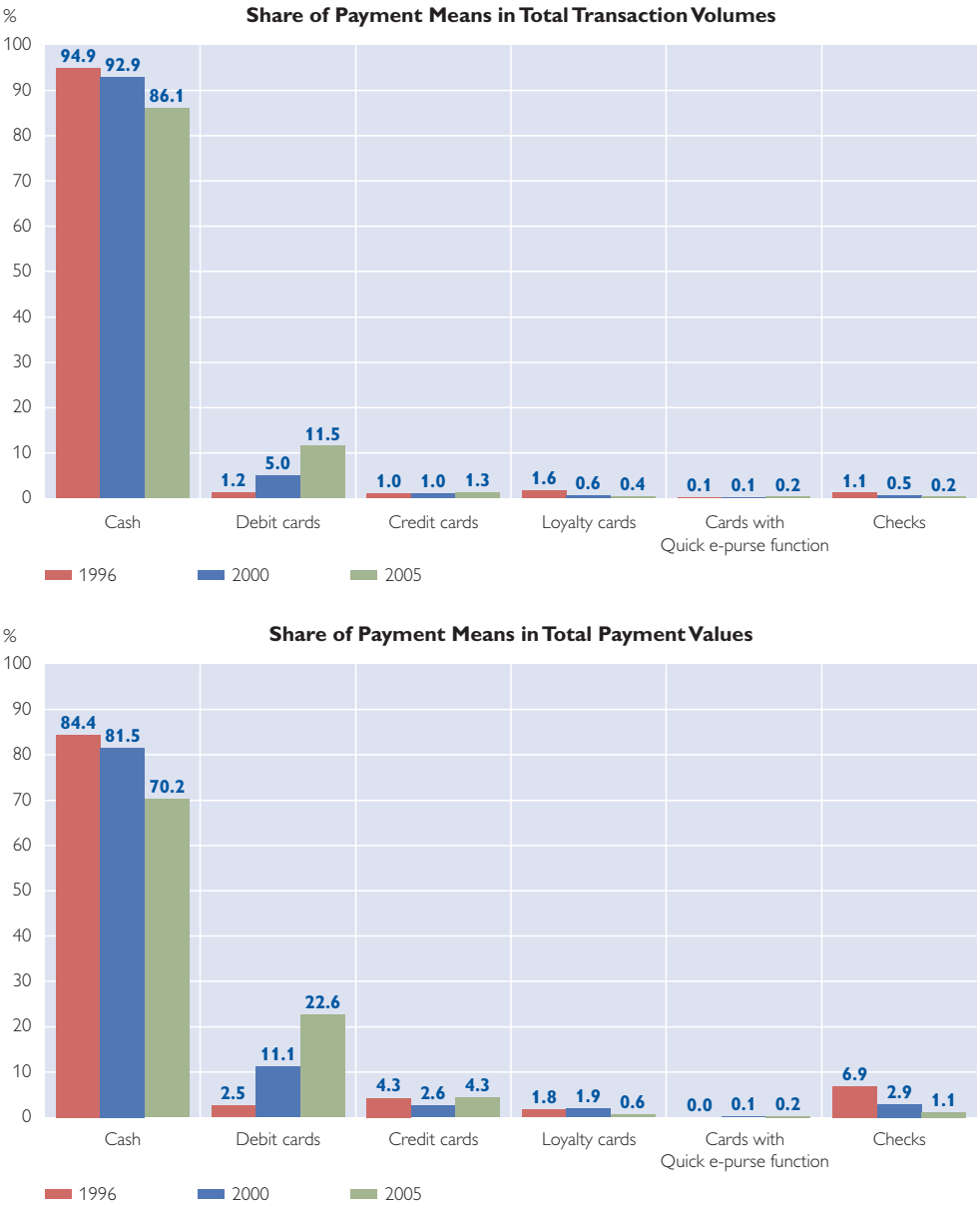
For payment methods for which population data relating to the number of transactions and payment values are available (debit cards, Quick), the average payment amounts can be compared with the sample values from the survey as a countercheck. For instance, the average POS terminal payment which has been determined from the survey data is EUR 49, while the value calculated from actual debit card payment data in 2005 comes to EUR 50. For Quick payments, an average amount of EUR 21 is calculated from the survey data whereas the actual average value for Quick payments is around EUR 6. If, however, only Quick payments made at POS terminals were analyzed for comparative purposes, the result is an actual average payment amount of EUR 19. This suggests that the sample tends not to capture all smaller Quick payments (e.g. at Quick-only terminals like coffee dispensers). In this regard, the findings for Quick reported below are therefore likely to be biased.[12] Given this evidence, it is also likely that small cash payment amounts are also underrepresented.

[11] *The payments of the 1996 and 2000 surveys were adjusted for inflation in line with the HICP to September 2005. This applies to all the calculations and comparisons below.*

[12] *An approximate extrapolation of the sample's Quick transactions onto the population also reveals that the sample has not captured all the Quick transactions. By contrast, debit card payments may tend to be overrepresented. It is possible that debit card payments and Quick payments that were made with the same card were subject to a mix-up.*

Chart 4

Use of Payment Means



Source: Authors' calculations based on an OeNB survey (payment diary).

Note: This chart shows the shares of various payment means in total payment volumes/total payment values that were recorded by respondents within a one-week period (payment diary). For the Loyalty card and Cards with Quick e-purse function categories, it should be borne in mind that their related data were grouped under different categories in the 1996 survey (in which the categories "Unattributed" and "Chip cards" were assigned to "Loyalty" and "Quick cards", respectively).

3.2 Cash Clearly Remains Dominant Payment Means, Albeit in Steep Decline as a Share of Total Payment Value

This section examines in greater detail the structure of payments made by respondents within a one-week period (payment diary). This section of the survey explicitly excludes bank transfers and payments made by payment slips.

Cash continues to dominate the structure of these payment transactions: overall, 86% of all payments

were settled by cash. Whereas the cash share of total transactions is slightly down (albeit from a high level), debit card transactions grew to 12%, i.e. more than double their share compared with 2000. As for credit cards, their share of around 1.3% remains steady in the period under observation (nine years). It is also notable that check payments are still significant, albeit to a very small extent.

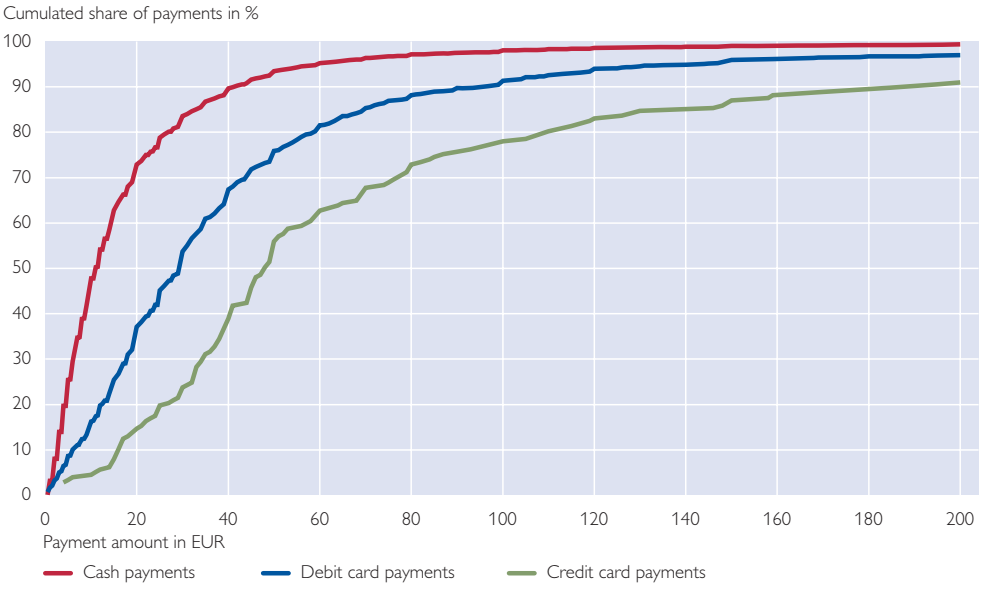
In terms of the total value of payment transactions recorded, the cash share has since 1996 substantially declined by some 15 percentage points to a current level of 70%. It is striking that the cash share has particularly strongly contracted by 11 percentage points since 2000. It is also worth highlighting that within the space of five years the debit card share soared (in terms of payment amounts) by 20 percentage points to 23% in 2005. Since 2000, credit cards have also posted a modest advance, doubling their share to 4.3%. In addition, this survey shows that although the share of Quick payments has expanded (doubling since 2000 in terms of number of payments and amount), it is likely that not all such transactions were captured by the sample, as previously mentioned. Owing to their small number of transactions, all other payment means are of minor importance.

Chart 4 illustrates this development over time: a contraction in the share of cash payments contrasts with robust growth in the share of debit card payments and by modest growth in the credit card share since 2000.

What amounts are settled by which payment means? Is there a correlation between the amount of payment and the means of payment used? This is only a small selection of questions that can be examined and answered in greater detail on the ba-

Chart 5

Distribution of Payment Amounts in 2005



Source: Authors' calculations based on an OeNB survey (payment diary).

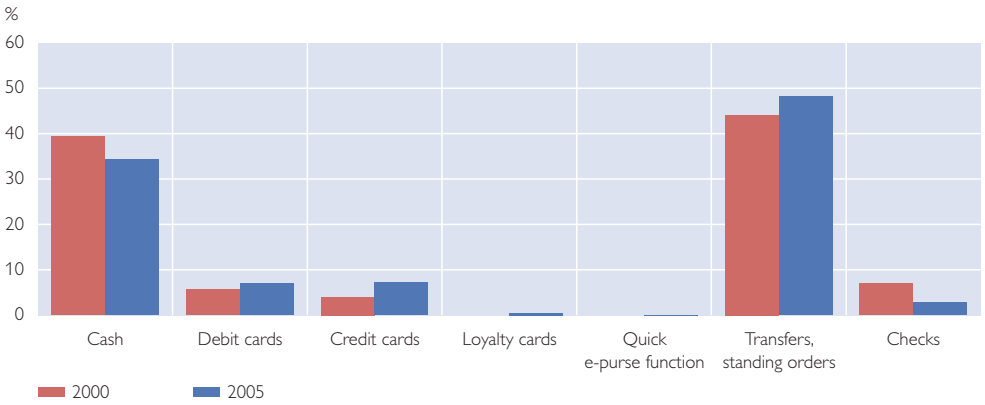
Note: The chart shows the cumulated distribution of total payment transactions that were recorded by respondents within a one-week period (payment diary). For instance, 90% of all payments are below EUR 40. Payments starting from EUR 200 are excluded for the purposes of better graphical display. Figures for 1996 and 2000 were adjusted for inflation.

sis of the survey data. Chart 5 shows that cash is largely used for small-value payments – 50% of all cash payments are below EUR 11; 90% of all cash payments are less than EUR 40. The flatter curve for debit card transactions signifies that the amounts of debit card payments tend to be higher than their cash payment counterparts. Only 67% of these payments are less than EUR 40. The value of credit card payments, on the other hand, is on average higher than that of debit card payments, with only 40% being below EUR 40. The varying "flatness" of the cumulated distributions highlights the fact that, for low-value payments, cash is still largely used whereas credit cards are used only for higher amounts – 50% of all credit card transactions were made for payment amounts starting from EUR 48.

The survey also questioned households about large-value payments made in the previous four weeks. Even if comparability with previous surveys is somewhat limited (in 2000, large-value payments were defined as amounts in excess of ATS 5,000 (EUR 363.36), whereas in 2005 they were categorized as starting from EUR 400) and assuming that the survey did not capture all such transactions (in particular, regular transfers for housing costs, energy and the like), a similar development is also evident for large-value payment data (chart 6): a contraction in the share of both cash and check payments, and increases in the share of debit card, credit card and transfer payments. Whereas credit cards and transfers made the strongest advances in expanding their share in this segment, debit card payments for large amounts did not grow as fast as payments recorded in the payment diary.

Chart 6

Breakdown of Total Payment Value by Payment Medium



Source: Authors' calculations based on an OeNB survey (large-value payments).

Note: This chart shows the share of various payment means in total large-value payment transactions (2005 survey: in excess of EUR 400).

4 A Closer Look at Payments: Structural Characteristics and Trends

4.1 Distinct Sectoral Differences in the Usage of Payment Means

Respondents' payment diaries also include the type of shop or sector in which the payment was made. Of the total number of transactions, 50% are accounted for by just two sectors (food: 32.7%; hotels and restaurants: 16.8%). A further three sectors enjoy *significant* shares: newspaper and tobacco shops (8.8%), pharmacies/drugstores (7.4%) and gas stations (5.7%). All other sectors had shares of less than 5%.

The data reveal distinct sector-related differences as regards the form of payment. At more than 98%, the share of cash transactions is particularly high at restaurants/hotels and at newspaper and tobacco shops, as it is at florists, where the share of cash transactions is 95%. Cash shares are the lowest (less than 60%) at furniture stores and when settling housing-related costs. At any rate, about a third of payments for furniture and/or home fabrics as well as electrical equipment as recorded in the payment diaries are made by debit cards. Credit card payments account for 25% of vacation travel, 8% of furniture purchases and 6.2% of clothing and fabric purchases.[13]

How has this picture changed since 2000? Across all sectors, the decline in cash payments is pronounced for transaction amounts recorded in the payment diaries over time (chart 7), primarily due to the rise in debit card payments. In food stores, cash payments are down significantly whereas debit card payments have jumped from 1% in 1996 to 20% in 2005. In the last five years, furthermore, debit card payments have posted robust growth in electrical equipment retailing (more than doubling its share to 34%), clothing and fabric stores (from 24% to 39%) and gas stations (from 17% to 29%).[14] In general, the expansion of POS terminals in these sectors is likely to have significantly contributed to the declining cash share.

4.2 Analysis by Sociodemographic Characteristics Highlights Decline in Cash Use

The analysis of payment media usage by various sociodemographic characteristics also clearly reveals the aforementioned decline in cash use over time. Chart 8 illustrates some interesting trends in this respect:[15]

The higher people's income, the more inclined they are to pay other than by cash (i.e. the lower the share of cash payments as a percentage of total expenditures).[16] The decline in

[13] *For further details, see table 6 in the annex. It presents the share of the payment media used as a percentage of the total payment value in the relevant sector.*

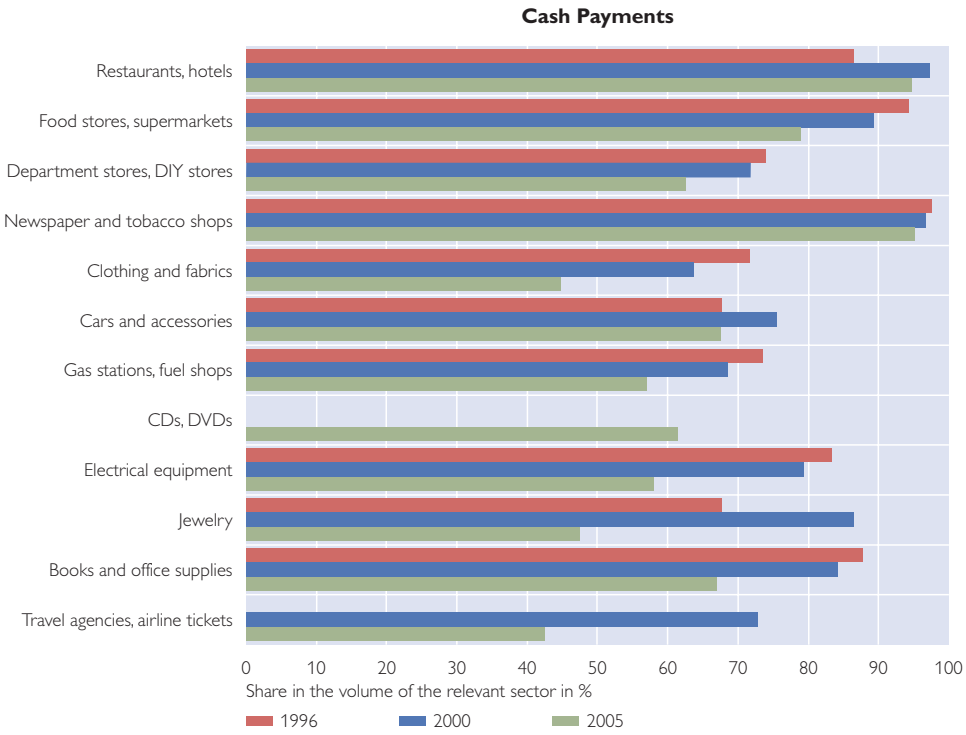
[14] *A sector-related analysis of payment diary data does not make sense for the following forms of payment: loyalty cards, Quick cards and checks due to their small number of transactions (see annex, table 6).*

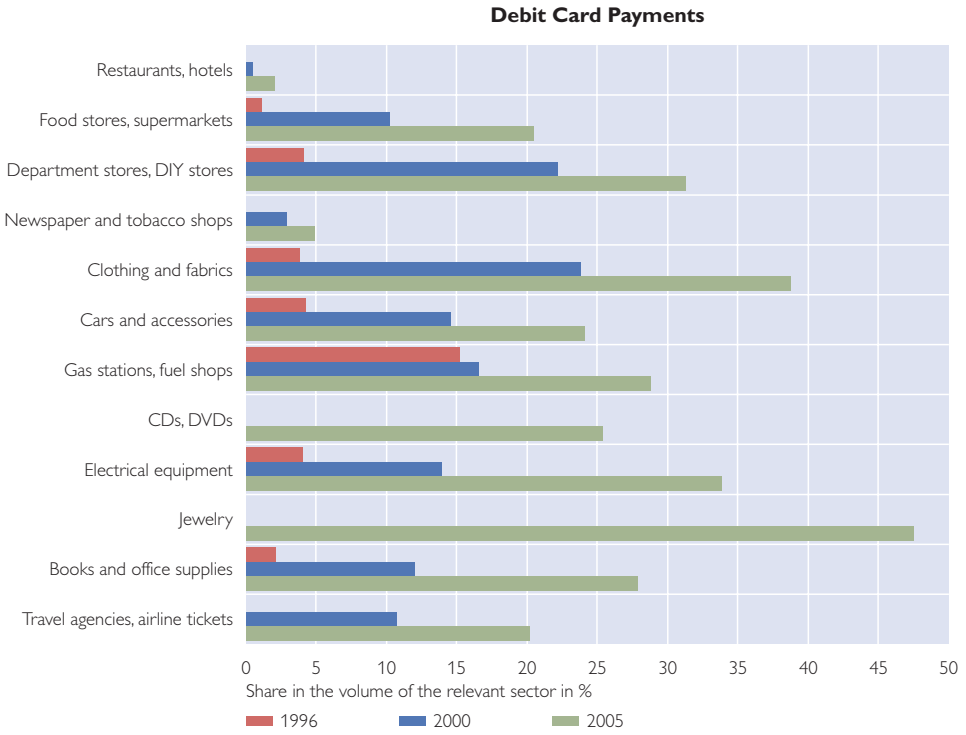
[15] *The figures shown are based on persons who are debit cardholders. This ensures that the results are comparable, as debit card ownership itself is also related to sociodemographic factors.*

[16] *As regards the cash shares calculated here, the average of the individual cash shares of respondents belonging to the same group is used (i.e. for every respondent, the individual cash share was determined and then the average calculated across his entire group). These shares are not comparable with those from charts 4 and 5, for which the shares were calculated in an aggregated manner (sum of cash payments of all respondents, divided by total expenditures).*

Chart 7

Change in Payment Structure in Selected Sectors



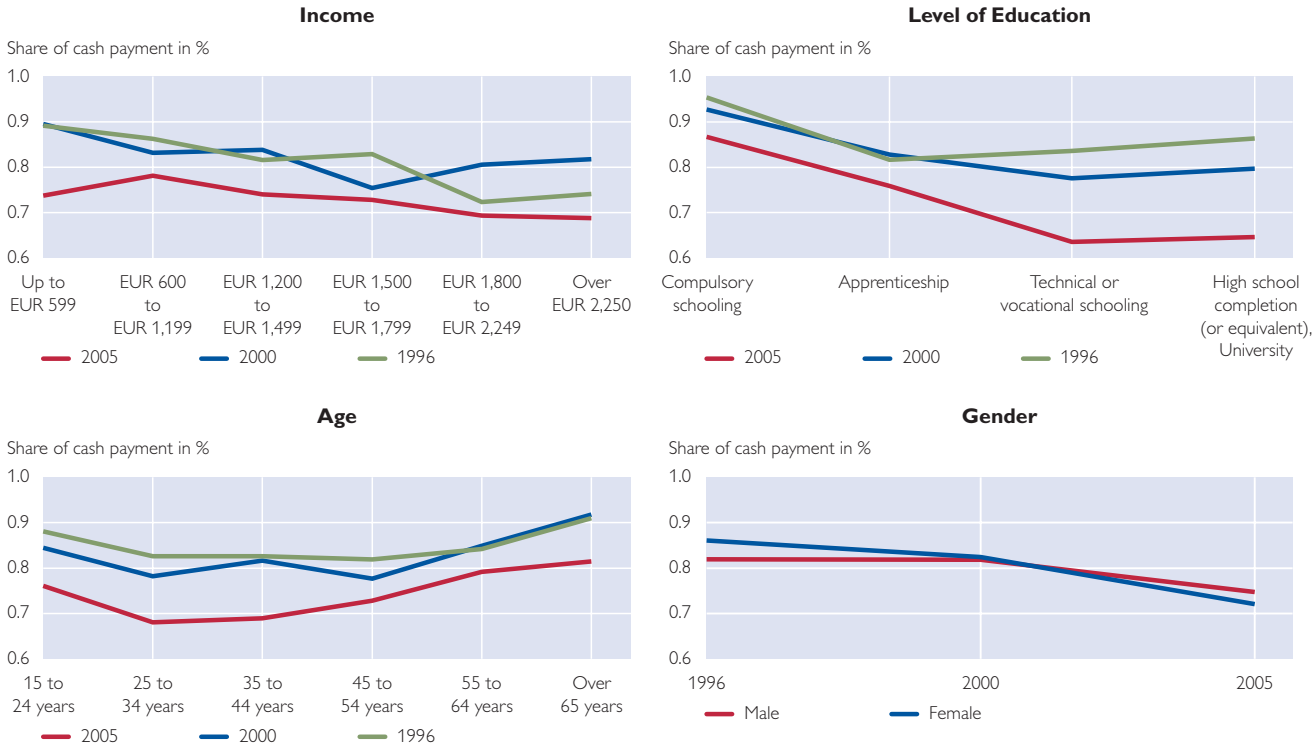


Source: Authors' calculations based on an OeNB survey (payment diary).

Note: This chart shows the share of both cash payments and debit card payments in total payments of the relevant sector. The data are based on payments recorded by respondents within a one-week period (payment diary). A few sectors were recategorized in the 1996 and 2000 surveys.

Chart 8

Cash Use by Sociodemographic Characteristics



Source: Authors' calculations based on an OeNB survey (payment diary).

Note: These charts show the share of cash in total payments. For reasons of comparability, these charts refer to debit cardholders only.

the cash share is even more dramatic depending on respondents' level of education: while it is 87% for respondents with compulsory school leaving certificates, it is only 65% for high school and university graduates. Moreover, there are also pronounced differences in this contraction depending on the level of education. Compared with 1996, the decline is 11 percentage points for high school and university graduates, yet amounts to just 8 percentage points for those with compulsory school leaving certificates.

A life cycle analysis reveals that the share of cash payments is at its highest among younger people and older people. People up to the age of 25 settle 76% of their payments in cash. This share then falls to less than 70% for people up to the age of 45. As people grow older, their payments are apparently again increasingly settled in cash: over 65-year olds transact 81% of their expenditures in cash. Even here, however, the decline in cash use and the growing importance of cashless payment media – across all age groups – is plain to see.

Are there any gender-related differences in the payment habits of men and women? If so, how have these developed? In 1996, men processed 82% and women 86% of their payments in cash; in 2002, however, the cash share of both sexes was identical (82%). Interestingly, in 2005 women "overtook" men in reducing their share of cash payments. While men settled 75% of their expenditures in cash, women only settled 72% thereof by this means.

Table 4

Share of Payment Means by Payment Amount in 2005

%

	Cash	Debit cards	Credit cards	Cards with Quick e-purse function	Checks	Loyalty cards	Internet payments
Up to EUR 5	95.2	3.9	0.3	0.4	0.0	0.1	0.0
EUR 5 to EUR 10	95.5	3.9	0.1	0.1	0.0	0.2	0.2
EUR 10 to EUR 25	87.6	11.0	0.6	0.2	0.1	0.2	0.3
EUR 25 to EUR 50	74.5	21.0	2.7	0.3	0.3	0.9	0.3
EUR 50 to EUR 100	63.3	29.4	4.7	0.2	0.6	1.4	0.3
EUR 100 to EUR 500	53.7	31.9	8.2	0.2	3.4	0.3	2.2
Over EUR 500	54.7	30.7	9.8	0.0	1.7	0.0	3.1

Source: Authors' calculations based on an OeNB survey (payment diary).

Note: This table summarizes the share of the relevant payment means in total payments in specific amount segments (e.g. cash accounted for 95.2% of total payments below EUR 5). The row sum is approximately 100% (discrepancies from rounding).

4.3 Contraction of Cash Share Benefits Debit Card Payments

A breakdown of payment behavior by payment amount shows a direct correlation between the amount and the means of payment used (table 4). The overwhelming share of small-value payments (recorded in the payment diary) is made in cash, whereas for higher amounts, the cash payment share shrinks significantly. For instance, the share of cash payments is 95% for payments less than EUR 5 but only about 54% for payments in excess of EUR 100. However, it is astonishing that even for high amounts the share of cash still remains above 50%.

Of all cashless payment options, debit card payments are the most important, representing overall the second most-used means of payment (after cash) for all payment amount categories. For payment amounts starting from EUR 50, the share of debit card payments is some 30%. Credit card payments are quantitatively significant for amounts in excess of EUR 50. Its share then rises steadily in line with the payment amount (44% of the total credit card payment amount are made for amounts between EUR 100 and EUR 500). For payments in excess of EUR 500, the share of credit card payments is about 10%.

For other payment means, there are only relatively few observations, therefore these figures should be interpreted with caution. The statistics for Quick payments provide a picture that fits into the pattern that has emerged so far, however: the Quick e-purse function is used mainly for small-value payments and their share tends to shrink in line with the amount of the payment transaction.[17]

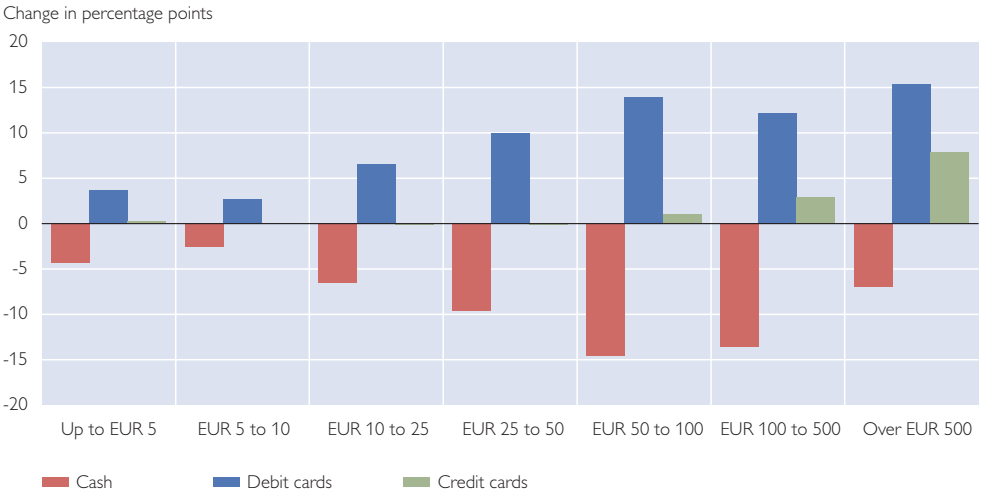
As previously shown, debit cards have become more important relative to cash payments. Chart 9 summarizes the changes in the shares of payment means from 2000 to 2005, thereby identifying the payment amount segment in which these changes emerged. Specifically, this chart presents these changes in terms of percentage points for cash payments as well as for debit and credit card payments. For instance, the share of cash payments for amounts less than EUR 5 was 99.5% in 2000

[17] *Although, once again, it should be qualified that small-value transactions are likely to be underrepresented in the survey.*

Chart 9

Change in Usage of Payment Means by Payment Amount

2000 to 2005



Source: Authors' calculations based on an OeNB survey (payment diary).

Note: This chart shows the change in the share of the relevant payment means in percentage points for different payment amounts from 2000 to 2005. In 2000, for instance, cash for amounts of up to EUR 5 accounted for a share of 99.48%. In 2005, however, this share contracted by 4.32 percentage points to 95.15% (this value is represented in the chart). Payments recorded in the 2000 survey were adjusted for inflation in line with the HICP to September 2005.

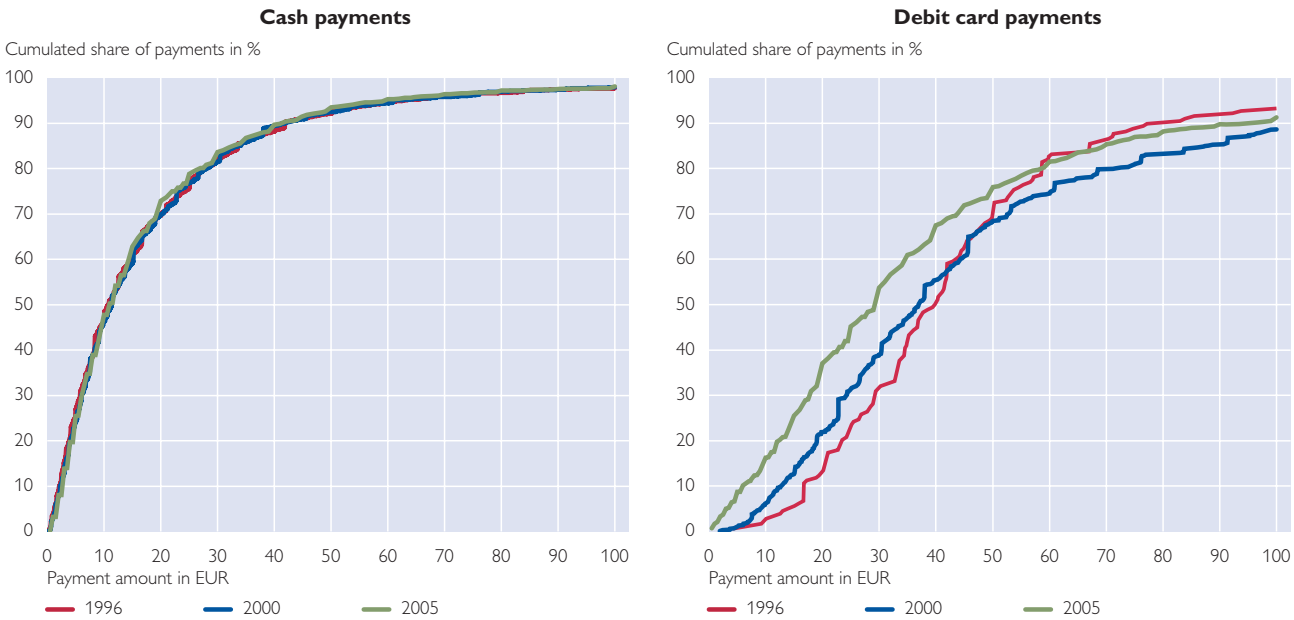
and 95.2% in 2005. The change in percentage points is therefore –4.3. At the same time, the share of debit card payments rose by almost the same extent whereas the share of credit card payments for amounts less than EUR 5 did not change significantly. For amounts up to EUR 100, two things hold true in general. The share of cash decreases as payment amounts rise and, second, this decline almost exactly mirrors in reverse increases in the share of debit card payments. The share of credit card payments expands notably only for amounts in excess of EUR 100, mostly at the expense of check payments (not shown in chart 9).

In addition, the cumulated distributions of both cash and debit card payments for 1996, 2000 and 2005 (chart 10) reflect which share of the respective payments lies below a certain amount. Unlike table 4 and chart 9, this chart illustrates to what extent the payment amounts for specific payment means have changed over time. The chart on the left represents the distribution of cash payments, showing that about 50% of cash payments in 2005 were below EUR 13, and 90% of cash payments were below EUR 40. It is surprising that the distribution has not changed much over time. For instance, cash payments did not change in terms of their amount structure: in 2005, cash payments of EUR 5 or EUR 100 were made as frequently as in 1996.

The graph on the right contains the same data relating to debit card payments, for which the curve shifts strongly to the left from 1996 to 2005. This signifies that the amounts of debit card payments have tended to shrink since 1996, and that currently the amounts which consumers are paid by debit card are becoming smaller and smaller. In 1996, for example, the share of debit card payments less than EUR 25 was only 24%, by 2005 this share had risen to

Chart 10

Distribution of Cash and Debit Card Payment Amounts over Time



Source: Authors' calculations based on an OeNB survey (payment diary).

Note: This chart shows the trend in cumulated distributions in 1996, 2000 and 2005, as well as the trend in cash and debit card payment transactions. The data are based on payments recorded by respondents within a one-week period (payment diary). For instance, 90% of all cash payments are less than EUR 40. Payments from EUR 100 are excluded for the purposes of better representativeness. The figures in the 1996 and 2000 surveys were adjusted for inflation.

42%. As Austrians are gradually using debit card payments for smaller amounts, they are in general apparently more willing to make debit card payments at POS terminals. As previously shown, this substitution effect in the small-value payment segment took place primarily at the expense of cash. Furthermore, the steady shift in the distribution over time suggests that this trend reflects a structural change in habits and will therefore continue over the next few years.

5 Only a Moderate Impact on Cash Demand

A relatively pronounced shift from cash to cashless payments will have an impact on cash demand. Specifically, estimates about the development of the amount of cash which is actually used for transactions made in Austria are inferable from the survey data.[18]

Demand for this cash is strongly influenced by three factors.[19] First, by the amount of total payments (value) – the higher the payment value, the higher cash demand. Second, by the share of payments that is settled in cash and, third, by the transaction elasticity of money demand. The latter determines the percentage increase of cash demand if payment amounts rise by 1%. Stix (2004a) presents estimates for Aus-

[18] *This is of interest given that, since the launch of the euro, it has not been feasible to measure currency in circulation at national level. If the trend in the demand for transaction cash can be estimated, then the trend in the total cash in circulation can be roughly extrapolated on the basis of the estimated share of cash circulating abroad, hoarded in Austria and/or used in the informal sector.*

[19] *For the sake of simplicity, the following assumes constant interest rates. Any changes in cash demand will therefore not depend on interest rates.*

tria and finds that the transaction elasticity of money demand is in the range of 0.5. This means that a 1% increase in payment values will generate roughly half as high an increase in the demand for cash. Similar values were estimated for other countries; moreover, this parameter is likely to remain relatively constant over time (Knell and Stix, 2006). The following will therefore assume that this value did not change from 1996 to 2005.

It follows from this that any changes in money demand can be attributed to changes in the first two factors. The demand for cash decreases if, with the cash share remaining constant, transaction amounts contract or, with constant transaction amounts, the share of cash payments declines. This implies that the demand for cash can also decrease as transaction sums increase, especially if payment habits change and if more transactions are settled by cashless payments. Whether, in short, the change in cash demand is positive or negative depends on the change in both payment values and the share of cash payments.[20] The trend in retail sales and consumer spending can be used to approximate the change in the relevant aggregate transaction amounts. Survey data are used to calculate the change in the share of cash payments.[21] It should be underlined that the change in cash holding thus calculated is attributable purely to changes in *payment habits*. Any changes in cash demand triggered by *cash withdrawal habits* (e.g. by making greater use of ATMs) are not included.[22] Furthermore, the demand for cash refers to only that of households and not to the cash demand of enterprises.

The decline in optimal cash holding levels is not difficult to determine if payment volumes remain constant. This amounts to 50% of the change in the share of cash payments. Since the share of cash payments shrank by some 16% from 1996 to 2005, an average household held 8% less cash in 2005 than in 1996 (assuming that its payment volumes have not changed since 1996).

A further question concerns the development of cash holdings, allowing for the fact that both prices and the real value of transactions have increased since 1996. This question is relevant for analyzing both the nominal and real currency in circulation.

From 1996 to 2005, nominal retail sales advanced by 15.7%. By contrast, nominal household consumption expenditures grew by 29.4%. Since these values diverge significantly and it is not clear a priori which value better represents the actual trend in payment amounts, the following calculations are carried out for both variables.

The calculations show that, depending on the assumed growth in total payments, nominal cash demand fell by some 2% (based on assumed retail sales growth) or rose by 3% (based on assumed growth in consumption expenditures) from 1996 to 2005. Interestingly, nominal cash demand grew in both scenarios from 1996 to 2000 although the share of cash payments was already on the

[20] *See Markose and Loke (2003) for the influence of card payments on optimal levels of cash holdings.*

[21] *It is also assumed that the share of transfers and payments made by payment slips remained more or less constant.*

[22] *The consequences of cash withdrawal habits are discussed in Stix (2004a).*

wane (sales growth was stronger than the contraction, which was triggered by the declining share of cash payments). From 2000 to 2005, however, nominal cash demand weakened in both scenarios. This decline comes in a period in which cash in circulation contracted considerably in the course of the introduction of euro cash.

These calculations can also be carried out using real variables, i.e. by including actual changes in the price level. In this instance, real cash demand decreased by between 3% and 8% from 1996 to 2005 (depending on the assumed trend in payment volumes).

As an alternative to a pure year-on-year comparison, one could ask the question as to how high cash demand would have been in 2005 if payment habits had not changed since 1996. In this case, the calculations show that both real and nominal cash demand would have been 10% higher in 2005.

Despite these fairly significant effects, it should be qualified that the cash that is used by households for transaction purposes only comprises a relatively small part of total cash in circulation (Stix, 2004b). In purely quantitative terms, most cash is hoarded, used in the shadow economy or held abroad.[23] Accordingly, changes in the amount of cash in circulation is dominated by changes in these components. Since these demand components are, moreover, not particularly influenced by payment cards, the impact of the use of payment cards on total cash demand is currently not likely to be excessi vely significant in quantitative terms. However, the trend toward cashless payments is likely to have accelerated the decline in cash demand observed in the course of the launch of euro banknotes and coins.[24]

In addition to the impact on cash demand, the increased use of cashless payment means can generate a number of other effects.[25] For instance, it could boost the interest rate elasticity of money demand – if interest rates rise, the demand for cash is reduced and more payment means that may generate interest income (e.g. debit cards, credit cards) are used. However, this effect is not likely to be very significant either, especially as cash is not only used primarily due to interest rates considerations but also due to other criteria.

The OeNB survey also asked debit card holders for their views on the reasons to prefer cash to cashless payment: 46% of debit card holders claimed that cash allowed them to keep better track of their finances, 44% claimed that they used cash from force of habit, 32% expect to spend less money by making cash payments and a quite remarkable 29% of debit card holders said that cash payments were a more practical and swifter form of transaction. In short, the motives "controlling one's own finances" and "habit" appear to play an important role in opting to make cash payments. These findings tally closely with those presented by Penz et al. (2004), who highlight people's feared loss of control when making card payments as an important reason for

[23] *See also Drehmann et al. (2002).*

[24] *In addition, it should be borne in mind that cash as a share of the monetary aggregates M3 and M1 – that are crucial from a monetary perspective – accounts for only around 7% and 15% thereof, respectively.*

[25] *See, for instance, Stix (2002), as well as Schmitz and Wood (2006).*

choosing between either cash or cashless payment media. This, in turn, clearly limits the importance of considerations about growing interest rate elasticity.[26]

6 Summary and Conclusions

This paper provides an overview of a survey on Austrian households' payment habits, which was commissioned by the OeNB in fall 2005. The analysis of these data, especially comparisons with similar surveys conducted in 1996 and 2000, reveal interesting changes in payment habits since the mid-1990s.

The share of cash payments continues to dominate the structure of direct payment transactions. In 2005, a remarkable 86% of all direct payment transactions (excluding transfers and payment slips) were still processed in cash. Whereas the cash share is down only slightly (albeit still from a high level), debit card transactions posted robust growth to 12%, or doubled its share compared with 2000. At 1.3%, the share of credit card payments has remained almost constant in the last nine years. In terms of the total value of payment transactions recorded, the contraction of the cash share to 70% proved somewhat more substantial. In this regard, it is particularly worth highlighting the comparatively sharp decline by 11 percentage points since 2000. What is striking is the robust growth in debit cards' payment amounts to a share of 23%. Credit cards grew in importance, doubling their share since 2000, although their share of total payments still remains small. In addition, the decline in cash use was also evident for large-value payments (in excess of EUR 400). Credit cards and transfers made the strongest advances in expanding their share in this segment.

A closer analysis of the survey data should answer questions as regards how payments are made, by whom they are made and what the purpose of payment is. It shows that there are sector-related differences for the payment means used and also confirms that there is a decline in cash across all sectors. In food stores, the sharp contraction in the cash share benefits debit card payments. Furthermore, debit cards have grown in importance as a payment option in electrical equipment retailing, clothing and fabric stores and at gas stations. Credit cards are used to pay 25% of vacation trips. Moreover, they are increasingly used to pay for furniture, clothes and fabrics.

In addition, sociodemographic characteristics are shown to be crucial determinants for the choice between cash or cashless payment. For instance, the cash share (share of cash payments as a percentage of total expenditures) declines as income grows. The differences in education have an even more marked impact on Austrians' payment habits. For Austrian high school and university graduates, the cash payment share is not only the lowest but has also shrunk the most. Furthermore, a life cycle analysis reveals that, above all, younger and older people process a high percentage of their payments in cash. In general, the growing use of

[26] *Penz et al. (2004) examine, above all, people's association with the Quick e-purse function. However, their findings also show that "even established non-cash payment options such as credit and ATM cards were perceived as more abstract than handling cash" (p. 785).*

cashless payment means is observable for all the aforementioned characteristics in all categories over time.

What does the shift from cash to cashless payment means signify for cash demand? First, a greater propensity to make cashless payments has led to a marked decline in cash demand for transaction balances. Had payment habits not changed since 1996, cash demand would have been some 10% higher in 2005. However, as cash holdings used for direct transactions only make up a relatively small part of total cash in circulation, the impact of the change in payment habits on total cash in circulation is not very significant. The effect of the change in cash withdrawal habits (e.g. more frequent ATM withdrawals) on cash demand, on the other hand, is likely to have a stronger impact than the change in payment habits.

Second, the findings relating to changes in shares between various payment means show that cash shares have declined in all amount segments. This was almost exactly mirrored in reverse by growth in the share of debit card payments, in particular in the payment amount segment starting from EUR 25. At the same time, in terms of amount, debit card payments have been tending to get smaller since 1996. If this trend continues, cash will probably be further squeezed in the small-value segment. Likewise, the finding that younger people account for a far smaller cash share than older people suggests that the share of cash payments will continue to shrink over the next few years.

However, it is not easy to estimate the extent to which the share of cash as a percentage of total payments will contract. This will depend not least on how rapidly the range of cashless payment options will grow and how actively consumers will make use thereof. In terms of actual user behavior, the findings suggest that payment habits only change very slowly in reality. When asked why they would prefer cash to card payments, 44% of debit card holders claim to use cash from force of habit. Also, respondents attach great importance to the fact that cash allows them to control their spending better: 46% say that cash payments enable them to keep better track of their spending, 32% cite as a reason their belief that they spend less when making cash payments.

In conclusion, we can therefore observe that cash, as expected, has become less important as a means of payment and will continue to do so in future. However, it is currently still by far the most important payment means, irrespective of sociodemographic characteristics or payment amounts. As a result, the anticipated future contraction in the cash share of total payments will not significantly erode the dominant position of cash as a means of payment. As in the past, moreover, changes in payment habits will not emerge overnight. From a monetary policy perspective, therefore, the impact of structural changes on Austrian households' payment habits can be expected to remain minor in the medium term.

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Annex

Table 5

Some Key Figures For Sample Comparability

	1996	2000	2005
Number of transactions	14,247	14,805	14,075
Transactions per person per week	11.1	12.3	11.7
= *Transactions per day*	1.6	1.8	1.7
Median of the number of transactions	12	12	11
= *Median of transactions per day*	1.7	1.7	1.6
Mode of number of transactions	13	10	9
	EUR		
Payment amount	319,760	341,562	375,559
(a) Total volume per person per week	240.2	283.7	311.9
(b) Median of the payment amount per week	203.5	222.7	226.0
= *Median of the payment amount per day*	29.1	31.8	32.3
	%		
Growth rate of (a)	×	18.1	10.0
Growth rate of (b)	×	9.4	1.5
Retail sales growth rate, nominal	×	×	3.3
Consumption expenditures growth rate, nominal	×	14.0	16.0

Source: Authors' calculations based on an OeNB survey (payment diary), Statistics Austria.

Note: This table presents an overview of some statistical key figures obtained from the surveys. The data are based on payments recorded by respondents (payment diary) in the 1996, 2000 and 2005 surveys. The mode of the number of transactions in 1996 is bigger, as up to 15 individual transactions per day were recorded in 1996, compared with a maximum of ten payment transactions per day recorded in 2000 and 2005.

Table 6

Payment Structure by Sector in 2005

%

	Share of sector	Cash	Debit cards	Credit cards	Loyalty cards	Quick e-purse function	Checks	Internet payments
		Shares of payment means in total payment value						
Restaurants, hotels	**9.4**	94.7	2.0	3.3	0.0	0.0	0.0	0.0
Food stores, supermarkets	**25.0**	78.8	20.4	0.4	0.1	0.3	0.0	0.0
Department stores and DIY stores	**4.9**	62.5	31.2	3.4	0.5	0.2	1.6	0.5
Household appliances, glass and metal goods	**1.9**	85.1	14.6	0.0	0.0	0.0	0.3	0.0
Newspaper and tobacco shops	**3.8**	95.1	4.9	0.0	0.0	0.0	0.0	0.0
Clothing and fabrics	**6.9**	44.7	38.7	15.6	0.0	0.8	0.1	0.0
Shoes and leather goods	**2.8**	67.7	26.6	5.7	0.0	0.0	0.0	0.0
Pharmacies, drugstores, cosmetics stores	**5.5**	81.9	14.5	2.9	0.0	0.7	0.0	0.0
Furniture and home fabrics	**3.0**	22.6	62.8	14.6	0.0	0.0	0.0	0.0
Cars and accessories	**4.3**	67.5	24.1	1.4	0.0	0.0	7.0	0.0
Gas stations and fuel shops	**7.9**	57.0	28.8	8.5	5.3	0.2	0.0	0.2
Transport (public transport tickets, toll etc.) and communications	**1.6**	62.2	26.1	7.7	0.1	0.4	3.2	0.4
CDs, DVDs and sound storage media	**1.0**	61.4	25.3	2.7	0.0	0.0	0.0	10.6
Electrical equipment, computer (incl. software and accessories)	**2.7**	58.1	33.8	6.3	0.3	0.2	1.0	0.4
Opticians, photo shops	**1.4**	62.4	35.8	1.6	0.0	0.0	0.0	0.2
Watches and jewelry	**0.3**	47.4	47.5	0.0	0.8	0.0	4.4	0.0
Books, paper, office supplies	**2.2**	66.9	27.9	3.3	0.0	0.0	0.0	1.9
Toys, sporting goods and musical instruments	**1.0**	47.0	38.3	5.1	3.8	0.0	0.0	5.8
Florists	**1.2**	93.1	5.6	0.4	0.0	0.0	0.0	0.9
Art, entertainment, sport	**3.3**	84.8	9.8	3.3	0.0	0.0	0.6	1.6
Housing costs (rent, running costs, repairs)	**5.4**	45.5	33.1	0.4	1.3	0.0	10.1	9.6
Vacations, travel agencies, airline tickets	**1.6**	42.5	20.1	35.1	0.0	0.0	2.3	0.0
Other	**2.2**	86.6	5.5	0.7	0.0	0.0	1.7	5.5
No response	**0.6**	87.7	11.5	0.8	0.0	0.0	0.0	0.0
Total	**x**	70.2	22.6	4.3	0.6	0.2	1.1	1.0
Number of transactions	**x**	11,663	1,558	176	51	32	30	37

Source: Authors' calculations based on an OeNB survey (payment diary).

Note: This table shows the share of the payment means used in the total payment value in the relevant sector. The data are based on the payments (payment diary) recorded by respondents within a one-week period. Many sectors were recategorized in 1996 and 2000. The share of the sector corresponds to the value of the transactions made in the relevant sector as a share in the total payment value.

Highlights

Globalization: Opportunities and Challenges for the World, Europe and Austria Summary of the 34th Economics Conference

Jürgen Janger,
Markus Knell,
Wolfgang Pointner

The 34th Economics Conference of the Oesterreichische Nationalbank (OeNB), which was held on May 22 and 23, 2006, dealt with globalization and the opportunities and challenges involved for the world, Europe and Austria. The objective of the conference was to examine the short- and long- term economic and social effects of globalization from different angles and to provide a constructive, empirically oriented contribution to the globalization debate, which at times tends to be controversial and emotional. Among the speakers and discussants were high-ranking representatives from central banks and international organizations, academics, economists, and politicians.

JEL classification: F15, F42, F43
Keywords: globalization, economic integration, economic policy.

Globophoria or Globophobia?

In his opening remarks, *Klaus Liebscher*, governor of the OeNB, expressed his conviction that globalization, all in all, has increased prosperity in Austria, Europe and the world. Austria, especially, has benefited from globalization in general, and from the opening-up of Eastern Europe in particular. The continuous rise in the export share of GDP and the trend toward a surplus in the Austrian current account that started a few years ago are proof of these globalization benefits. To a large extent, these developments can be attributed to the success of Austrian businesses exporting to Central and Eastern European countries. At the same time, Liebscher emphasized that necessary structural changes had to be supported at the economic policy level. In particular, he referred to the importance of political measures taken in education, stressing that they involved a growing degree of forethought. Future job requirements and qualifications need to be anticipated in due time, and flexible forms of education must be offered. Such measures can also help bridge the gap between the "globophoria" prevalent in professional circles and the "globophobia" that large parts of the population adhere to. Concluding, Governor Liebscher pointed out that in an age of globalization, a stability-oriented, predictable and transparent monetary policy gained ever more importance: A stable macroeconomic environment is an essential prerequisite for a country to fully exploit the advantages of a dynamic economy and for facilitating structural change. Liebscher stressed that the creation of the Monetary Union and the successful introduction of the euro were important steps, not only for the European integration process, but also for positioning Europe in a globalized world.

Upswing in Europe Would Also Help Global Economy

Rodrigo de Rato y Figaredo, Managing Director of the International Monetary Fund, talked about the interrelation of globalization and economic growth, focusing mainly on the European situation. Apart from high and volatile oil prices, Rodrigo de Rato considered growing global imbalances the primary current risk for the global economy. For several years, the United States has been facing a significant current account deficit, while oil exporting countries and the

emerging Asian economies have had just as large current account surpluses. Even if the European economies have more or less balanced current accounts, they must still keep an eye on global imbalances, as expected adjustments might result in changes in exchange rates or falling exports. Moreover, Europe has its own share of economic problems – in particular, weak economic growth and underemployment – which require comprehensive solutions and reforms. By implementing growth-promoting measures, Europe could support its own economy, as well as the world economy. According to Rodrigo de Rato, reforms should be taken on the product markets, labor markets, in the financial sector, and at the fiscal policy level. Product market reforms would boost productivity by encouraging competition, enforcing a more efficient use of resources, and triggering innovation. In the financial sector, a stronger degree of financial market integration could enhance competition, thus reducing capital costs and improving monetary policy transmission. Concerning labor market reforms, de Rato particularly underlined the negative role of low legal retirement age levels, employment protection regulations, and suboptimal unemployment benefit systems. According to Rodrigo de Rato, both justice and logic require looking for creative solutions to the problem of unemployment in Europe. In fiscal policies, a sustainable approach is needed to achieve nearly balanced budgets by 2010 at the latest. Finally, de Rato stressed that a coordinated international effort had to be made to eliminate global imbalances in growth and demand. He repeatedly laid out his conviction that Europe could play an important role in this adjustment process if it strengthened domestic growth and demand through successful reforms.

National Financial Institutions Retain Importance

Malcolm Knight, General Manager of the Bank for International Settlements, analyzed the interaction of globalization and financial markets. A key question in his speech was whether national financial institutions were still of relevance in a globalized economy. Malcom Knight presented several examples to demonstrate that central organizational elements of an economy such as the legal system or accounting and disclosure principles affect the long-term growth perspectives of an economy. One of the reasons why there is a persistently high degree of "home bias" in the globalized financial world (i.e. investors tend to hold more domestic financial assets in their portfolios than an efficient allocation would suggest) lies in the role economic institutions play in providing structured economic incentives. In the face of high agency costs and uncertainties about the enforcement of contracts, the mere removal of capital controls does not automatically induce a surge in cross-border capital flows. Malcolm Knight concluded by saying that national and international institutions would retain a strong influence on the future integration of global financial markets.

Euro Contributes to Global Financial Market Integration

Otmar Issing, Member of the Executive Board of the European Central Bank, discussed the role the euro plays in a globalized world. He started out by saying that the creation of the Economic and Monetary Union could

really be seen as part of the globalization process. In a world of free capital movements, a system based on fixed exchange rates is constantly exposed to speculative attacks. Issing then turned to the increasing amount of cross-border financial transactions, which may heighten the exposure of the financial system as a whole to common shocks. On the other hand, financial market integration can also reduce the risks inherent to a global economy by causing stronger diversification. Data on portfolio reallocations from 1997 to 2001 indicate that the observed changes indeed show increasing international diversification trends. At the same time, Issing pointed out that there was still a substantial degree of "home bias" at the international level, both on the equity and the debt instrument markets. While the degree of "home bias" is declining only at a slow pace internationally, it has decreased significantly in the euro area since 1997. This underscores the positive influence the Monetary Union has had on financial market integration. In conclusion, Professor Issing emphasized that in spite of all the shocks that have occurred since 1999, the European Central Bank has been able to hold inflation expectations at a stable level and to guarantee price stability. According to Issing, both this internal stability and the higher degree of international portfolio diversification in the wake of globalization have contributed to protecting the euro area from possible speculative attacks. At the same time, changes on the product and labor markets are needed to help European countries fully exploit the opportunities of globalization.

After Issing's speech, *Josef Christl*, Executive Director of the OeNB, presented the Klaus Liebscher Award for academic papers on the topics of Monetary Union and European integration. *Ingrid Thurnher* from the Austrian Broadcasting Corporation moderated the presentation. This year the award went to *Petra Geraats*, University of Cambridge, for her paper on optimal communication strategies for central banks and to *Marek Jarocinski*, University of Pompeu Fabra, Barcelona, for his analysis of the effects of monetary policies in the new EU Member States.

The Real Danger Is Provincialism, not Globalization

Austrian Federal Chancellor *Wolfgang Schüssel* pointed out that globalization was happening, whether we approved of it or not. At the same time he made clear that by taking the right measures (investments in research and development as well as in education), one could fully benefit from all the opportunities globalization offered. Europe is currently experiencing "globalization on the small scale," where new Member States undergo a rapid catching-up process. This process has created a win-win situation, especially for Austria. According to Schüssel, the real danger Europe is facing is provincialism rather than globalization. The reasons why large parts of Europe have not been able to exploit their growth potentials for years are related to the following factors: tight restrictions on labor markets, a lack of innovation and research, an economic environment that is not business-friendly enough, a not fully developed common market and insufficient economic policy coordination among the individual Member States. However, the Lisbon agenda tries to deal with many of these problems. At the end of his speech, Schüssel discussed the future

of the Constitutional Treaty and the need for establishing a common European energy policy.

Globalization from a Historical Perspective: Parallels to the 19th Century

Alan M. Taylor, London Business School, set a foundation for the discussion on the rising degree of globalization since the 1980s, in particular on the capital markets. He compared today's integration process with the economic integration that took place between 1870 and 1913 and drew the following conclusion: The increasing degree of integration that we observe today already took place to a similar extent a century ago. It was the Great Depression and the two World Wars that reduced integration to a minimum. Thus, what we see is a U-shaped pattern. As opposed to a century ago, foreign direct investment today mainly takes place between developed countries. Theoretically, however, capital should flow into countries where the employed capital is low compared to available labor and where returns are accordingly high (Lucas paradox). To some extent this phenomenon can be attributed to the historical role of the United Kingdom as a colonial power, which compensated for prevalent institutional differences that would otherwise have inhibited cross-border investment between poor and rich countries in the 19th century. Another reason lies in the level of total factor productivity, which still allows for a profitable employment of capital in developed countries. Since the financial crises of the 1990s another special trend has become evident: capital flowing from developing countries into OECD countries. This movement can be explained by the desire to build up foreign currency reserves to prevent future currency crises. At this point, Taylor drew his second conclusion from the historical comparison. Globalized capital markets have a constraining effect on national economic policies because they have to consider the so-called trilemma: Fixed exchange rates combined with open capital markets do not allow for monetary policy autonomy. Either the exchange rate floats freely or capital controls inhibit international interest arbitrage. All currency crises stem from the refusal to accept these restrains.

Caution Is Required When Opening Poor Countries' Capital Markets

Based on the trilemma and the Lucas paradox, Taylor analyzed that the costs and risks of opening capital markets are high for poor countries, while the benefits are low, as cross-border investments continue to be made predominantly between developed countries. A universally valid recommendation for opening capital markets can therefore not be applied to poor countries. However, emerging economies like China face low risks when opening their capital markets and can profit from international investment flows. An empirical overview of capital controls confirms that individual countries do take these considerations into account: Poor countries continue to maintain relatively strict capital controls. Countries whose development has progressed further consider opening their capital markets. In conclusion, Taylor voiced his hope that all countries would sooner or later improve the quality of their institutions. In his opinion, the globalization process will continue. After all, a setback as

great as that caused by the two World Wars and the Great Depression of the 1930s is unlikely. Turning specifically to Europe, Taylor suggested reallocating agricultural subsidies toward universities. Taylor's calculations show that these means would suffice to finance 25 European universities of the same quality as the University of Harvard. Accordingly, he called for progress in the current Doha Round negotiations on the liberalization of world trade.

Weak European Growth not Caused by Globalization, but Proactive Economic Policy Stance Needed

Apart from Alan Taylor, the following discussants participated in the subsequent panel discussion: *Karl Aiginger*, Director of the Austrian Institute of Economic Research, *Christian de Boissieu*, President of the Economic Analysis Council advising the French Prime Minister, *Heiner Flassbeck*, Acting Director of the Division on Globalization and Development Strategies at UNCTAD, and *Dennis Snower*, President of the Kiel Institute for World Economics.

Aiginger presented a survey of globalization, discussing its costs and benefits, its effects on the world economy and the role globalization has played for Austria. In his opinion, globalization is a necessary but not a sufficient prerequisite for economic growth. Economic growth also requires political and macroeconomic stability, investment in research and development (R&D), human capital, lifelong learning, infrastructure, and a reliable legal system. Globalization even renders economic policies for growth and employment more important than they have been before. In order to cope with the more rapid changes and to create a win-win situation, a proactive approach that focuses on enhancing positive externalities and reduces subsidies to declining sectors must be taken. Preventing globalization, however, leads to a lose-lose situation. Developed countries are unlikely to experience disadvantages from globalization, although it is possible. Nevertheless, such disadvantages may occur before advantages do, and they may affect groups of society holding more political power than those benefiting from globalization. Poorer countries are more likely to experience negative effects from globalization. These can, however, be compensated for with the help of international organizations and appropriate national economic policies. Globalization cannot be blamed for slow economic growth in Europe. So far, Europe has performed well and has, for instance, maintained its share in the global export market.

De Boissieu claimed that Europe needed supply-side structural reforms to adapt to the globalization process. According to De Boissieu, demographic perspectives should be improved through consistent immigration policies, and labor supply should be increased by raising the effective retirement age and reducing youth unemployment. Instead of deflating wages, policymakers should accelerate productivity growth. The Lisbon agenda provides the appropriate tool. In De Boissieu's opinion, striving to reach the target R&D rate is extremely important, and so is promoting growth of smaller businesses. Simply relying on the market is not enough. The United States has conducted successful interventions as well, such as the passage of the Small Business Act in 1953. Finally, De Boissieu said that financial ser-

vices in Europe had to be integrated further, and that, when it came to reforming the labor market, one might want to refer to Scandinavia (buzzword "flexicurity").

Flassbeck similarly opposed wage deflation as a means of influencing the real exchange rate. In his eyes, wage deflation is an overreaction to globalization and constitutes an erroneous economic policy. He said it was a paradox that countries like the United Kingdom and the United States, holding large current account deficits, effectively suffered from globalization to a much stronger extent than countries like Germany, having vast current account surpluses, while the public perceived the exact opposite. According to Flassbeck, Germany should make better use of its productivity growth to encourage consumption. Finally, Flassbeck called for an international exchange rate system that would bring a country's wage costs in line with its productivity and would thus prevent current erroneous trends such as developing countries stockpiling foreign exchange reserves. He stated that trade policies of any kind were ineffective without monetary stability.

Snower declared changes in the international division of labor to be the most important phenomenon arising from globalization. Whether this process produces winners or losers depends on two conditions: First, on whether workers from different countries complement each other or compete with one another and second, on how easily disadvantages of globalization can be evaded (e.g. by providing incentives and support for switching from stagnating into growing sectors). Like Aiginger, Snower claimed that national economic policies played an important role in coping with globalization. Measures that prevent rather than facilitate adjustment simply cause even more people to be opposed to globalization, as they are worse off because the respective political measures inhibit them from adapting. According to Snower, Europe as a whole is not struggling with problems, but France, Germany and Italy are. He said that protectionism was not the answer, as relative advantages should not be determined by governments but by the market. Our natural and human desire for financial security should be satisfied with the help of rather than at the expense of flexibility.

Karl-Heinz Grasser, the Austrian Federal Minister of Finance, talked about topical budgetary and financial issues related to the current Austrian EU presidency. He said that Austria had been able to improve the atmosphere and to reinforce the degree of optimism within the European Union. Globalization should be seen as an opportunity. Grasser generally approves of the Lisbon process. He hopes that the national reform programs will indeed facilitate implementing the Lisbon aims. Key issues are growth and employment, the reduction of unemployment and of administrative costs, and stability-oriented fiscal policies. Countries should use the economic upswing for structural reforms and budget consolidations. Austria should consequently continue on its reform path, as well. Grasser said the Austrian government was convinced of the effectiveness of increased flexibility, deregulation and privatization. Stronger competition and competitiveness were needed to maintain social standards. According to Grasser, some of the Austrian government's concrete aims for the end of 2007 are cutting the amount of

time required to start a business to a week and reducing the time needed for an unemployed school graduate to find a job or a training position to a maximum of six months.

Economic Policy Challenges through Global Integration

Robert Holzmann from the World Bank started his speech on "Globalization, Integration, Demography, and Austria" by observing that the number of people living on less than a dollar a day had receded considerably over the past years and, according to World Bank projections, would continue to do so. This reduction of poverty can also be attributed to the growth-promoting effects of globalization. Globalization mainly affects trade in goods and services, the integration of financial markets, migration, and communication and information flows. It creates losers, as well as winners. How the profits of the increased international division of labor are distributed mainly depends on the respective country's national policies. Holzmann stressed that globalization did not inevitably lead to an erosion of labor market and social standards. Maintaining them for reasons of efficiency may also be in the interest of businesses.

With the participation of new states in the world market, effective global labor supply has doubled since 1990. Accordingly, there is a heightened relative scarcity of the factor "capital." Holzmann identifies workers in states that have only recently opened their economies to globalization and capital owners as the beneficiaries of this situation. He believes that workers in less developed countries that have been participating in the world market for some years, such as Mexico or Turkey, find themselves hit with a "double whammy." They have established a specific role for themselves in the international division of labor, producing labor-intensive goods with low technical input, and are now exposed to competitors from new world-market participants with even lower wage levels, which prevents them from continuing their growth strategy.

Holzmann sees integration problems mainly at a European, and not so much at an Austrian level, as Austria has clearly benefited from both its accession to the European Union and from the last round of enlargement. According to Holzmann, the European Union, however, has not been able to fully exploit its opportunities, as the lack of a common dimension of the Lisbon agenda demonstrates.

The World Bank's demographic projections show that, presuming there is no immigration, labor supply in Austria will significantly decrease until 2050. Holzmann added that a surge in the labor force participation rate in Austria to the currently highest level within the European Union, a rise in female labor force participation to male levels, and a significant working life prolongation could more than compensate for the decline in labor supply.

To prepare for the predicted challenges in the best possible way, Holzmann recommends setting up strategies in three areas: in education, where universities and colleges should increasingly be financed through private means and lifelong learning should be promoted more; in the health sector, where older people's employability should be extended; and in the selection of business fields, which determines domestic businesses' competitive advantages. Holzmann suggests that the social part-

ners, who in his opinion have not acted proactively in Austria during the last few years, have an important role to play in all these areas.

Making Globalization Fair – Austria's Main Economic Policy Goal

In the following panel discussion, which was chaired by *Josef Christl*, the Austrian Federal Minister of Economics and Labor *Martin Bartenstein* explained that globalization was determined above all by the interplay of technical progress (in particular in the information and communication sector), the liberalization of world trade, and the "enormous addendum" of China and India participating in world trade. Austria, being a small, open economy, has so far been able to benefit from globalization and has significantly heightened its share of exported goods in GPD. This surge cannot merely be attributed to Austria's successful integration within Europe; in many cases, Austrian exports to other European states are used to produce goods for global markets. According to Bartenstein, social welfare systems do not inhibit global competition but are, on the contrary, a prerequisite for a country to successfully participate in globalization. In this respect Bartenstein considers Austria to be on a level with the Scandinavian countries, combining a high degree of social security with the necessary extent of flexibility on the labor market.

Rudolf Hundstorfer, Acting President of the Austrian Trade Union Federation, explained that the unions did not aim at reversing the globalization process, but that they wanted to make globalization fair. He identified strengthening domestic demand as one of the major tasks. Only if the government actively intervened could growth rates be raised sufficiently to reduce unemployment. He believes that existing working-time models provide export-oriented businesses with the flexibility they need and that the unions have always been willing to compromise in this respect. Nevertheless, in this context Hundstorfer clearly rejected abolishing overtime pay.

Christoph Leitl, President of the Austrian Federal Economic Chamber underlined the high share of exports in Austrian GDP and the consequent importance of being competitive on an international scale. He suggested rendering working hours more flexible by calculating them on an annual basis to increase Austria's international competitiveness. Leitl claimed that high social and environmental standards could not be maintained in the long run if growth levels were low. European companies are unable to beat competitors from emerging economies when it comes to producing at low cost. Yet, focusing on advanced technologies in production is not enough, as countries like India or Brazil have already obtained prominent positions in this market segment. Therefore, implementing innovations as quickly as possible is ever more important, and so is introducing further reforms in education and on the labor market. Leitl's demand for European monetary policymakers to also take into account other aims apart from price stability in the decision-making process was countered by Christl with the remark that guaranteeing price stability was the best possible growth promoter.

Maria Kubitschek, Head of the Economic Policy Division of the Chamber of Labor in Vienna, argued that the reason why many people were op-

posed to globalization was that social standards often deteriorated in the face of stronger international integration. Even though businesses have become more competitive, the unemployment rate has not fallen. The surge in exports has hardly created any additional jobs. Rather, it was "bought" at the expense of low increases in real wages in spite of rising productivity. This, in turn, weakens domestic demand. On top of that, higher unemployment causes precautionary saving, which also reduces private consumption. A decreasing wage share in GDP and simultaneously rising profits indicate who the Austrian winners and losers of globalization are. Kubitschek thus called for providing relief for lower-income households, for enforcing government investment, and for containing international tax competition.

Markus Beyrer, Secretary General of the Federation of Austrian Industry, considers Austria a clear winner in the globalization process. Only companies that have adapted to the international environment successfully can afford to raise wages. Furthermore, the labor market posts record employment. However, this only slowly reduces unemployment levels, as other special factors come into play, such as unemployed Germans entering the Austrian labor market or the larger number of women working. Successful exports by Austrian industry have created jobs, not only within leading export-oriented companies, but also with their domestic suppliers. In Beyrer's opinion there is sufficient working-hour flexibility in Austria. However, the negative attitude toward globalization or the European Union could turn into a negative business location factor.

According to *Bernhard Felderer*, Director of the Institute for Advanced Studies, globalization has resulted from falling transport and information costs, and not so much from decisions taken at the political level. It is possible to reject this process, but not without accepting significant welfare losses. The fact that technology is imitated and trademark laws are ignored in certain emerging economies puts European businesses at a disadvantage. Competitive advantages at wage cost level will recede in all regions. Some major Eastern European cities have already significantly adapted their wage and price levels to Austrian standards. Southern China has already achieved full employment. On a medium- and long-term basis, the scarcity of labor in Southern China will cause wage increases. Felderer attributes the decline in the Austrian wage share of GDP to high investments that companies made in the past which now result in high profits.

The following discussion, which was held in front of an actively participating audience, concentrated on labor market effects of globalization. *Helmut Frisch*, Technical University of Vienna, pointed out that a rising number of young people did not finish school and thus raised structural unemployment levels. Christoph Leitl strongly endorsed Robert Holzmann's suggestion to make training programs a part of collective wage agreements.

Strategies for Growth and Employment in Austria

Christian Beer,
Jürgen Janger,
Alfred Stiglbauer

On March 3, 2006, the Oesterreichische Nationalbank (OeNB) hosted a one-day workshop on "Strategies for Growth and Employment in Austria." The workshop's objective was to propose concrete measures for the promotion of growth and employment in Austria. In the introductory session, Andreas Wörgötter (OECD) spoke about growth-promoting reforms in Austria, while Jürgen Janger (OeNB) addressed the National Reform Programs under the Lisbon Strategy. Karl Aiginger (Austrian Institute of Economic Research – WIFO) commented on both presentations and outlined his views on growth policy. Michael Böheim (WIFO) suggested implementing a growth-oriented competition policy, particularly in the field of public utilities, in the service sector and in the liberal professions. Iain Paterson (Institute for Advanced Studies – IHS) pointed out that the liberal professions are highly regulated in Austria. Ludger Wößmann (ifo Institute for Economic Research) and David Audretsch (Max Planck Institute of Economics) emphasized the significance of the secondary and tertiary education systems for growth and employment. The final workshop session on maximizing employment potential included an overview of labor market developments in Austria by Helmut Hofer (IHS), a talk on how to increase female employment by Gudrun Biffl (WIFO) as well as a presentation on the employment of older workers by Alfred Stiglbauer (OeNB).

JEL classification: E24, H50, O40
Keywords: growth policies, employment policies, competition policies, education, economic reforms

Growth Strategies from an International Perspective

The workshop started with contributions that examined Austria's growth policy from an international angle. The first speaker, *Andreas Wörgötter (OECD)* – who has co-authored the OECD's Economic Surveys of Austria for several years – emphasized that Austria is not criticized a priori for adopting a special position with regard to economic policy in some respects, as the country shows a very sound overall economic performance. He referred to the concrete recommendations contained in the Economic Surveys as well as in various specific OECD publications.

According to Wörgötter, Austria with its sound economic indicators is probably not in the market for any radical economic policy reforms in the near future and even in the medium term. Austria could fare better, however, if it continued searching for solutions with a constant willingness to embrace reform. Austria's gross domestic product (GDP) per capita in purchasing power parities is almost as high as U.S. GDP; in terms of labor productivity, however, Austria is significantly lagging behind the U.S.A. Given the high national debt, fiscal policy is also relatively unsatisfactory according to Wörgötter. Setting up limited liability companies should be facilitated and childcare benefits (*Kindergeld*) should be replaced by benefits in kind, i.e. a childcare voucher scheme (*Betreuungsscheck*). Wörgötter also pointed to the necessity of improving the school system and competition policy, of facilitating the access to risk capital and advancing research promotion. And finally, he called for further improvements in public sector efficiency and for a reform of the fiscal sharing plan.

Jürgen Janger (OeNB) developed a set of ideas for Austria's economic policy on the basis of the National Reform Programs that have to be

drawn up in the course of the reformed Lisbon Process. The programs of selected countries in a similar situation as Austria contain many suggestions regarding the form and content of economic policy, in particular for pursuing a more proactive competition policy, improving the quality and quantity of education and training systems, promoting employment, increasing public sector efficiency as well as promoting the foundation of new companies. Janger suggested modeling Austria's economic policy on the forward-looking, interdisciplinary and target-oriented programs of other countries. In the second part of his presentation, Janger raised the question whether the National Reform Programs actually generate additional benefits or merely serve the purpose of reporting. He found that the reform programs could indeed form the basis for a medium-term growth strategy, if they became better known to the public, if measures were described in greater detail and if an official institution published and evaluated the implementation progress (see Janger, in this publication).

Karl Aiginger (WIFO) discussed the fact that Europe is lagging behind the U.S.A. in terms of growth. Economic policy strategies should aim at creating an equilibrium between liberalization/deregulation (e.g. domestic market, flexibility), stabilization (e.g. price stability, deficit reduction) and acceleration of growth (e.g. research, education and training). According to Aiginger, Austria's economic growth needs to climb to approximately 3% in order to reduce unemployment and nonwage labor costs as well as to cut public debt. This goal could be achieved by adopting employment strategies on a regional, national and European level. Moderate growth, as it is currently forecast for Austria, would keep the unemployment rate on a more or less steady level.

Aiginger considered research and location policy as well as growth-promoting monetary and fiscal policy as starting points for achieving higher growth. In addition, he advocated increasing labor market flexibility in a fair manner, promoting higher qualification at all levels and implementing a specific strategy for the low-wage sector. According to Aiginger, detailed recommendations on growth and employment policies in Austria are being drawn up as part of the WIFO's White Book project.

Role of Product Markets

The second workshop session dealt with the regulation of product and service markets. *Michael Böheim (WIFO)* addressed the question whether it is possible to raise the growth potential in Austria by furthering market integration and increasing the intensity of competition. He outlined the theoretical foundations of a growth-oriented competition policy in a literature overview. The positive impact on innovation, efficiency and growth by increasing competition is only observed up to a certain level of market concentration. A negative impact, however, becomes obvious only if the intensity of competition is very high.

Given the energy markets' structural problems (e.g. electricity price structure as a market entry barrier) and high market concentration, Böheim considered these markets the biggest challenge for competition policy in Austria. A further increase in market concentration may even jeopardize the benefits resulting from the

electricity market's liberalization. He believes that it is generally possible to increase economic growth by stepping up competition. To this end, however, the deregulation and liberalization of the energy markets has to be combined with a more proactive competition policy. Böheim pointed to another problem that has to be solved: The Austrian provinces are the owners of energy utilities and at the same time also the legislative bodies which influence the framework conditions for liberalization as well as the supervisory authorities in charge of unbundling. Böheim maintained that a legal unbundling without compromise is necessary to increase the intensity of competition, as non-discriminatory access to the electricity infrastructure is indispensable for a competitive, liberalized electricity market. In addition, Böheim is skeptical about any utility company mergers with the intention of creating national "champions."

Furthermore, Böheim pointed to persistently existing barriers for setting up companies and called for the thorough elimination of all national regulations that do not serve the purpose of ensuring the required quality levels. Any efforts to change the framework conditions for competition should become an integral part of a coherent competition policy.

Harald Badinger (Vienna University of Economics and Business Administration) emphasized the significance of foreign trade for increasing productivity. He argued that, while Austria is undoubtedly an open economy, remaining trade barriers in some industries should be lifted and the export ambitions of small and medium-sized enterprises should be supported. In the field of manufacturing, competition has intensified drastically since the 1990s and the domestic market has been functioning smoothly. In the service sector, however, the domestic market has not yet been fully realized according to Badinger. This shows that de jure liberalization does not necessarily lead to de facto liberalization, which hinges upon the design of legal provisions and on a proactive competition policy.

Iain Paterson (IHS) talked about the regulation of liberal professions, stating that the theoretical basis to justify regulation is asymmetric information between suppliers and clients. As a result of this information asymmetry, clients cannot assess the quality of the service, which may be either too low or too high (thus possibly causing prices to be higher than necessary). Regulation can, however, also decrease welfare according to Paterson (e.g. rent seeking in case of self-regulation, less competition through advertising bans).

Paterson presented the results of a survey comparing the degree of regulation in liberal professions in the EU Member States on the basis of market entry barriers (e.g. required qualifications) and market behavior (e.g. regulation of prices and advertising options). The example of lawyers and notaries shows that Austria is a highly regulated country. As regards the economic repercussions of the regulation of liberal professions, the survey results showed some interesting correlations. While the number of practicing lawyers and notaries and the sector's total turnover was found to be lower in highly regulated countries, the turnover per company was higher. Productivity (i.e. turnover per employee) turned out to be negatively correlated with the level of regulation. According to Paterson, excessive regulation of the liberal pro-

fessions leads to lower employment and welfare.

Economics of Education – How Education Impacts on Growth

The third workshop session dealt with the empirical findings of economics of education as regards the correlation of education and growth. In his introduction, *Ludger Wößmann (ifo Institute for Economic Research, Munich)* pointed out that it is the quality of education rather than its duration that has an influence on economic growth, and that simply increasing the resources does not necessarily improve this quality. In order to attain a higher quality level of school education, an institutional environment is required which provides incentives for administrators and teachers to promote the students' performance. Wößmann presented empirical findings based on the data of three large-scale international school studies to describe such an institutional environment in greater detail.

The findings suggest that school autonomy in conjunction with standardized external final examinations plays a particularly important role in enhancing the quality of education. School autonomy permits the schools to apply teaching methods that increase the quality of education, while external final examinations provide a benchmark to ensure that the available resources are used in the best possible manner. School autonomy without standardized external examinations, however, leads to lower levels of student performance.

Wößmann maintained that publicly funded but privately administered schools can also help raise the quality of education, as they create additional options and, subsequently, provide incentives for innovation. He also touched upon the possible positive effects of a sound preschool system and performance-related teacher salaries as well as the possible negative impact on students' performance when they have to choose a particular school type at an early age.

According to *Ferdinand Eder (University of Salzburg)*, Austria's school system has taken a few steps toward the best practice examples Wößmann mentioned, but it still has a long way to go.

David Audretsch (Max Planck Institute of Economics) raised the question whether an entrepreneurial economy needs entrepreneurial universities. In the past, economic policy focused on monetary and fiscal policies as well as on large corporations. A reorientation took place in recent years, however, and knowledge spillovers from entrepreneurial universities have become ever more important. Audretsch pointed out that merely increasing the investments in research and development at universities is not enough; this knowledge must ultimately lead to the development of marketable products. As an example of how to increase the spillovers from university research, Audretsch cited the Bayh-Dole Act (1980) adopted in the U.S.A., which gave universities the right to market their research results, thus increasing the spillovers from university research and creating favorable effects on growth and employment. Audretsch maintained that an entrepreneurial society is of key importance in increasing economic growth; therefore, he argued, the old university model does not make sense any more – nowadays universities simply have to be entrepreneurship-oriented. Universities should not only

engage in academic research, but also play an important role in the changeover to an entrepreneurial society.

Hans Pechar (University of Klagenfurt) highlighted the differences between higher education institutions in the U.S.A. and in Europe. Contrary to European universities, which are funded by the government and private sponsors, U.S. colleges have to prove their usefulness. With the economy being increasingly based on knowledge, this approach may well become a selection advantage. As regards Austrian universities, Pechar doubted whether the introduction of lump sum budgets and performance contracts has actually made decision-making more transparent. Furthermore, he criticized the still existing division of staff into junior faculty (*Mittelbau*, i.e. university teachers, researchers and assistant professors) on the one hand, and full professors on the other hand, which is not conducive to continual career development. He advocated the creation of a European area of higher education and research to raise competitiveness through the promotion of mobility and cooperation.

Maximizing Employment Potential

The final session addressed structural problems of Austria's labor market and the Lisbon objective of a higher employment rate. In his presentation, *Helmut Hofer (IHS)* discussed labor market developments in Austria and the associated policy challenges against the backdrop of the OECD's and the European Commission's economic policy recommendations. Structural unemployment in Austria seems to have climbed over the past decade, but it still remains on a comparatively low level. Hofer noted that the observed growth in employment concerned exclusively female employment; most of these jobs, however, were part-time. Male employment, by contrast, has been stagnating. Both the OECD (Jobs Strategy) and the European Commission (European Employment Strategy, Lisbon Process) have given similar reform recommendations which aim at increasing labor market adaptability and innovative strength.

Hofer emphasized two aspects in particular, namely the skill structure of employees and the cyclical fluctuations of labor supply. He pointed out that the rise in unemployment over the past decade is almost entirely attributable to the increase in unemployment of low-skilled persons who have only completed compulsory education. This fact constitutes a particular challenge for economic policy. Given the high sensitivity of labor supply to economic activity in the past, minor cyclical fluctuations used to cause changes in unemployment rates; this effect has, however, weakened over the past few years. Among others, this development is probably ascribable to the declining cyclicality of job migration and the better integration of women into the labor market these days as well as to the expansion of a proactive labor market policy. According to Hofer, labor market policy needs to focus on the school system and especially on persons with low qualifications in the next few years, as the latter will continue to face difficulty on the labor market. He called for lowering nonwage labor costs for these problem groups, promoting career development and lifelong learning particularly in aging societies as well as creating stronger incentives for women to participate in the labor market. Furthermore,

Hofer recommended taking measures in the field of unemployment insurance to reduce the large proportion of those employed in seasonal industries. He also advocated more flexible wages at company level and more flexible work schedules.

Gudrun Biffl (WIFO) addressed measures for increasing female employment in Austria. Raising the female employment rate in the EU to 60% is an explicit objective of the Lisbon Strategy. While the labor market participation of working-age men varies relatively little in an international comparison, the female employment rate varies greatly. Biffl argued that the level of female employment depends on the social organization of work. In countries with high female labor force participation, home production has to a large extent shifted to market production. Compared with other European countries, Austria ranks above average in the field of female labor market participation, but growth rates are comparatively low. This is to some extent attributable to the relatively small size of the Austrian service sector. Biffl maintained that the gender pay gap has hardly become smaller, that a sectoral segmentation by gender continues to be prevalent and that old role models are still strongly rooted in the education system.

Compared with other countries, Austrian women tend to stay away from the labor market for quite a long time after childbirth, and their children are usually cared for at home rather than being entrusted to childcare facilities. The introduction of the childcare benefit system seems to have aggravated the situation. Biffl made a number of concrete suggestions for promoting female labor market participation. They include replacing transfer payments with benefits in kind in the fields of childcare and care for the elderly, establishing information platforms and childcare associations (especially in rural areas) as well as aligning the working hours for women and men.

In his presentation on early retirement in Austria, *Alfred Stiglbauer (OeNB)* talked about the labor force participation of older workers, which is extremely low by international standards. At 29%, Austria has the lowest employment rate of employees aged 55–64 in the EU-15. Stiglbauer refused to consider the process of population aging as a crisis scenario only. Instead, it is the result of a demographic transition process, which entails sinking birth rates, declining infant mortality and rising life expectancy. The youngest societies worldwide (in terms of average age) are also the poorest. Raising the employment rate and extending the time in active employment vis-à-vis the time in retirement is crucial for demographic reasons, in particular with a view to the pension insurance system. In Austria, the retirement age has declined and the age at which people enter the labor market has risen over the past few decades. The budgetary projections recently published by the EU's Economic Policy Committee show that expenditure for public pensions, measured as a percentage of GDP, does not necessarily increase, provided that the aspired employment rate of older workers is achieved.

In the past, a number of options was available for employees to take early retirement. Stiglbauer welcomed the fact that most of these options were eliminated in the course of the pension reforms of 2000, 2003 and 2004. Given the numerous transitional provisions, the employment

rate of older workers will hardly increase over the next few years. According to Stiglbauer, early retirement should not only be seen as a labor supply problem. He underscored the importance of ensuring the employability of older workers by placing emphasis on staff training and continued education, among other things. Furthermore, he recommended reconsidering the steep age-income profiles in some sectors and closely monitoring the situation of older workers in the labor market over the next few years.

Panel Discussion: Strategies for Growth and Employment

A panel discussion concluded the workshop. *Silvia Angelo (Chamber of Labor Vienna)* called for investments in infrastructure and education as well as for a tax reform reducing the tax burden on medium and especially low incomes. Furthermore, she advocated the expansion of childcare facilities to promote the reconciliation of work and family life. Angelo argued that fiscal policy discussions at a European level, which focus primarily on ways to cut costs, are not conducive to a quick economic recovery.

Peter Part (Federal Ministry of Finance) emphasized the significance of sound public finances. The relevant report of the Economic Policy Committee defines three requirements: First, budgets must focus on expenses which help increase total factor productivity (e.g. education and infrastructure). Second, these reallocated resources have to be used as efficiently and effectively as possible, and third, any such efforts have to be incorporated in a coherent economic and fiscal policy. Part maintained that countries with medium-term budget planning and target-oriented budgeting have been successful in promoting growth and employment over the past few years. He considered the introduction of the new medium-term budget framework legislation in Austria an important step by the government to promote growth and employment.

Verena Farré Capdevila (Federal Ministry of Economics and Labour) argued that election cycles and other aspects related to political economy were the root causes of the insufficient implementation of the National Reform Programs and the big differences in their contents.

Ralf Kronberger (Austrian Federal Economic Chamber) advocated reforming the fiscal sharing plan but regarded further fiscal decentralization not necessary. He criticized that the draft of Austria's new medium-term budget planning does not specify the underlying macroeconomic assumptions and that it does not determine the spending path, which could therefore be set too high. Kronberger argued that an empirical evaluation of the corporate tax reform should take into account not only demand effects but also supply effects. Finally, he recommended carrying out empirical trade analyses in many sectors to learn more about the effects of trade on growth.

Martin Zagler (Vienna University of Economics and Business Administration) spoke in favor of a broad agenda for promoting innovation. This agenda includes promoting competition, allocating more resources to highly specialized tertiary education institutions, eliminating distorting effects in the tax system, amending the *Gewerbeordnung* (Trade Code regulating small business and trade), eliminating barriers to setting up companies, reforming the bankruptcy law,

establishing business centers in universities to market ideas, pursuing a stable interest rate policy as well as promoting long-term employment contracts for young employees. Given the high returns to tertiary education, students could be increasingly required to contribute to its funding.

In view of the strong signals of an upturn, *Karl Pichelmann (European Commission)* called for accelerating the implementation of the Lisbon Agenda to increase employment and productivity on the one hand, and on the other hand to proactively tackle the challenges posed by globalization.

The contributions summarized here will be published in the OeNB Workshop series in fall 2006.

Notes

Abbreviations

ARTIS	Austrian Real Time Interbank Settlement (the Austrian RTGS system)
A-SIT	Secure Information Technology Center – Austria
ASVG	Allgemeines Sozialversicherungsgesetz – General Social Security Act
A-Trust	A-Trust Gesellschaft für Sicherheitssysteme im elektronischen Datenverkehr GmbH
ATX	Austrian Traded Index
BCBS	Basel Committee on Banking Supervision (BIS)
BIC	Bank Identifier Code
BIS	Bank for International Settlements
BOP	balance of payments
BSC	Banking Supervision Committee (ESCB)
CACs	collective action clauses
CEBS	Committee of European Banking Supervisors (EU)
CEE	Central and Eastern Europe
CEECs	Central and Eastern European countries
CESR	Committee of European Securities Regulators
CIS	Commonwealth of Independent States
CPI	consumer price index
EBA	Euro Banking Association
EBRD	European Bank for Reconstruction and Development
EC	European Community
ECB	European Central Bank
Ecofin	Council of Economic and Finance Ministers (EU)
EEA	European Economic Area
EFC	Economic and Financial Committee (EU)
EIB	European Investment Bank
EMS	European Monetary System
EMU	Economic and Monetary Union
EONIA	Euro OverNight Index Average
ERM II	Exchange Rate Mechanism II (EU)
ERP	European Recovery Program
ESA	European System of Accounts
ESAF	Enhanced Structural Adjustment Facility (IMF)
ESCB	European System of Central Banks
ESRI	Economic and Social Research Institute
EU	European Union
EURIBOR	Euro Interbank Offered Rate
Eurostat	Statistical Office of the European Communities
FATF	Financial Action Task Force on Money Laundering
Fed	Federal Reserve System
FMA	Financial Market Authority (for Austria)
FOMC	Federal Open Market Committee (U.S.A.)
FSAP	Financial Sector Assessment Program (IMF)
FWF	Fonds zur Förderung der wirtschaftlichen Forschung – Austrian Science Fund
GAB	General Arrangements to Borrow
GATS	General Agreement on Trade in Services
GDP	gross domestic product
GNP	gross national product
GSA	GELDSERVICE AUSTRIA Logistik für Wertgestionierung und Transportkoordination GmbH (Austrian cash services company)
HICP	Harmonized Index of Consumer Prices
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
IHS	Institut für Höhere Studien und Wissenschaftliche Forschung – Institute for Advanced Studies, Vienna
IIF	Institute of International Finance
IIP	international investment position
IMF	International Monetary Fund
ISO	International Organization for Standardization
IWI	Industriewissenschaftliches Institut – Austrian Institute for Industrial Research
JVI	Joint Vienna Institute
LIBOR	London Interbank Offered Rate
M3	broad monetary aggregate M3
MFI	monetary financial institution
MRO	main refinancing operation
MoU	memorandum of understanding
NACE	Statistical Classification of Economic Activities in the European Community
NCB	national central bank
OeBS	Oesterreichische Banknoten- und Sicherheitsdruck GmbH – Austrian Banknote and Security Printing Works
OECD	Organisation for Economic Co-operation and Development
OeKB	Oesterreichische Kontrollbank (Austria's main financial and information service provider for the export industry and the capital market)
OeNB	Oesterreichische Nationalbank (Austria's central bank)
OPEC	Organization of the Petroleum Exporting Countries
ÖBFA	Austrian Federal Financing Agency
ÖNACE	Austrian Statistical Classification of Economic Activities
POS	point of sale
PRGF	Poverty Reduction and Growth Facility (IMF)
RTGS	Real-Time Gross Settlement
SDR	Special Drawing Right (IMF)
SDRM	Sovereign Debt Restructuring Mechanism (IMF)
SEPA	Single Euro Payments Area
SPF	Survey of Professional Forecasters
STEP2	Straight-Through Euro Processing system offered by the Euro Banking Association
STUZZA	Studiengesellschaft für Zusammenarbeit im Zahlungsverkehr G.m.b.H. – Austrian Research Association for Payment Cooperation
S.W.I.F.T.	Society for Worldwide Interbank Financial Telecommunication
TARGET	Trans-European Automated Real-time Gross settlement Express Transfer
Treaty	refers to the Treaty establishing the European Community
UNCTAD	United Nations Conference on Trade and Development
UNO	United Nations Organization
VaR	Value at Risk
WBI	Wiener Börse Index
WEF	World Economic Forum
WIFO	Österreichisches Institut für Wirtschaftsforschung – Austrian Institute of Economic Research
WIIW	Wiener Institut für internationale Wirtschaftsvergleiche – The Vienna Institute for International Economic Studies
WKO	Wirtschaftskammer Österreich – Austrian Federal Economic Chamber
WTO	World Trade Organization

Legend

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

Discrepancies may arise from rounding.

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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.

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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 and financial 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 Section. 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 current publications, studies or working papers as well as events (conferences, lectures and workshops).

For further details see *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 and Eastern European countries (CEECs) as well as Southeastern European (SEE) 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 available in English only.

Working Papers

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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 represents an important 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, most of them in English.

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*

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* has been published since 2003 as a review of the OeNB's intellectual capital and its use in the OeNB's business processes and services. The report provides an integrated view of the strategically important management of human, relational, structural and innovation capital; it clarifies the relationships between different types of capital and describes various determinants that influence the OeNB's intellectual capital. The findings of the report serve to assess the consistency of the OeNB's intellectual capital with its knowledge-based strategic orientation.

Adresses of the Oesterreichische Nationalbank

	Postal address	Telephone	Telex
Head Office			
Otto-Wagner-Platz 3 AT 1090 Vienna *Internet: www.oenb.at*	PO Box 61 AT 1011 Vienna	(+43-1) 404 20-0 Fax: (+43-1) 404 20-2398	(1) 114669 natbk (1) 114778 natbk
Branch Offices			
Western Austria Branch Office			
Innsbruck			
Adamgasse 2 AT 6020 Innsbruck	Adamgasse 2 AT 6020 Innsbruck	(+43-512) 594 73-0 Fax: (+43-512) 594 73-99	
Southern Austria Branch Office			
Graz			
Brockmanngasse 84 AT 8018 Graz	PO Box 8 AT 8018 Graz	(+43-316) 81 81 81-0 Fax: (+43-316) 81 81 81-99	
Klagenfurt			
10.-Oktober-Straße 13 AT 9020 Klagenfurt	10.-Oktober-Straße 13 AT 9020 Klagenfurt	(+43-463) 576 88-0 Fax: (+43-463) 576 88-99	
Northern Austria Branch Office			
Linz			
Coulinstraße 28 AT 4021 Linz	PO Box 346 AT 4021 Linz	(+43-732) 65 26 11-0 Fax: (+43-732) 65 26 11-99	
Salzburg			
Franz-Josef-Straße 18 AT 5027 Salzburg	PO Box 18 AT 5027 Salzburg	(+43-662) 87 12 01-0 Fax: (+43-662) 87 12 01-99	
Representative Offices			
Oesterreichische Nationalbank London Representative Office Gracechurch Street 48, 5th floor **GB EC3V 0EJ London**		(+44-20) 7623-6446 Fax: (+44-20) 7623-6447	
Oesterreichische Nationalbank New York Representative Office 745 Fifth Avenue, Suite 2005 **US 10151 New York**		(+1-212) 888-2334 (+1-212) 888-2335 Fax: (+1-212) 888-2515	(212) 422509 natb ny
Permanent Representation of Austria to the EU Avenue de Cortenbergh 30 **BE 1040 Brussels**		(+32-2) 285 48-41, 42, 43 Fax: (+32-2) 285 48-48	
Permanent Representation of Austria to the OECD Rue Albéric-Magnard 3 **FR 75116 Paris**		(+33-1) 53 92 23-39 (+33-1) 53 92 23-44 Fax: (+33-1) 45 24 42-49	