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Editorial close: November 5, 2007

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

R E P O R T S

Austria's Financial System Continues to Perform Well in a Difficult Environment

Financial Market Turmoil Marginally Dampens Growth Prospects

On the whole, growth in both the industrialized and the emerging market economies was robust in the first three quarters of 2007, despite persistently high oil prices. While the U.S. subprime mortgage market crisis is likely to act as a damper on growth in the fourth quarter, especially in the U.S.A., economic activity is forecast to remain positive in 2008, with protracted turmoil in the financial markets representing the main downside risk. Most Central, Eastern and Southeastern European (CESEE) countries posted substantially higher growth than euro area countries in the first half of 2007 in an ongoing surge of economic catching-up supported by a rise in domestic lending that outpaced deposit growth by a good measure in some countries. However, existing economic imbalances were reinforced in some countries, further aggravating interest rate and exchange rate risk.

Responding to the financial market turbulences, major central banks injected liquidity into the money market at several instances, which helped calm markets. Both swap spreads and risk premia on corporate bonds increased until the turmoil in the markets peaked mid-August, but sank again afterwards. However, by October 2007, only the risk spreads on corporate bonds had declined to below the level predating the crisis. This drop reflected companies' good profit performance. After prices on global stock markets had plummeted at the height of the turbulence, they remained volatile in the following months. The CESEE foreign exchange

markets succeeded in stabilizing again, with the Romanian leu representing an exception.

Real Economy Sectors' Risk Position Remains Good in the Face of Worsening Financing Conditions

Austria experienced a boom in 2007, which is likely to have climaxed judging by the overall European trend. Austrian companies continued to chalk up expanding profits despite the euro's strength and expensive oil. While these bigger profits increased enterprises' internal financing capacity, also the volume of external financing in the capital market and in the form of loans from banks augmented in the first half of 2007. At the same time, higher interest rate levels and higher earnings yields on the Vienna stock exchange worsened equity and debt financing conditions for the Austrian corporate sector. However, good profits ensured that on the whole, the corporate risk position remained favorable, even though the sector's financial assets are becoming exposed to increasingly greater stock price risks and even though external economic conditions are unlikely to underpin corporate risk positions as strongly as in the past.

Households' risk position also remains positive, although rising interest rates have an important impact on this sector, too. The large share of variable rate loans has become a burden on the sector's financial liabilities. Austria's labor market continues to benefit from the favorable economic environment, which in turn has helped improve households' debt-servicing capacity. Although the share

of foreign currency loans declined in the first half of 2007, financial liabilities continue to attract sizeable exchange rate risks. Moreover, the share of assets that are subject to valuation risks due to stock price changes has been rising gradually. It may be expected, though, that most of the households exposed to these market risks are high-income or high-asset households in a position to absorb negative developments linked to these risks.

Ongoing Dynamic Development of the Austrian Banking Sector

The Austrian financial sector also performed very well in 2007 despite the turbulent framework conditions. In particular, the banking sector posted further growth. Both assets and profits augmented, above all because Austrian banks' business in CESEE countries remained dynamic. Austrian banks' CESEE business has already grown to account for 25% of total assets and 42% of consolidated profits before taxes. Additionally, on the basis of the annual result for 2006, Austrian banks made further gains in domestic transactions, in particular in fee-based income. The expected consolidated return on assets of the Austrian banking sector totaled 0.72% for the end of June 2007. The consolidated cost-to-income ratio

amounted to 59%, marking an improvement by nearly 3 percentage points. Austrian banks were hit comparably little by the U.S. real estate crisis, partly because of their strong focus on doing business in CESEE.

The interest margin on domestic activities narrowed further to less than 1% most recently. In the current favorable economic environment, banks continue to assess credit risk positively. Given historically low interest margins, a shift in the credit cycle could well have a negative impact on the profitability of banks' domestic business, however.

Although the declining trend of domestic foreign currency lending has gained a solid foothold, foreign currency loans remain important in Austria as well as some CESEE countries and thus remain a nonnegligible source of risk.

Overall, Austrian banks' risk-bearing capacity remains high. Capital ratios and the results of stress tests that show the banking sector's resilience to shocks has improved from end-2006 confirm this assessment.

Whereas the insurance sector performed well against the backdrop of the positive development of the economy, demand for Austrian investment funds cooled off, which may be partly attributable to heightened interest in structured products.

Global Growth Continues until Mid-2007, but Downside Risks Increase

Industrialized Countries: Markedly Higher Volatility in Financial Markets Dampens Outlook for Growth

Pace of Second-Quarter Growth Varies across Regions

Economic growth stayed robust in the *highly advanced economies* in the first half of 2007. According to the International Monetary Fund (IMF), second-half and 2008 developments in the U.S.A. and in the euro area will be somewhat weaker than forecast in the summer of 2007 as a result of the financial market turmoil. In November 2007, the price of Brent crude oil reached an all-time high of over USD 95 per barrel. Futures markets expect the price of crude oil to diminish gradually to around USD 80 until the end of 2009.

In the *U.S.A.*, the higher growth contribution of net exports and public spending speeded up real GDP growth in the second quarter of 2007 following a very weak first quarter. By contrast, consumer spending augmented only moderately. The downturn in private residential construction slowed, but continued to dampen GDP growth. Consumer price inflation excluding food and energy climbed by 2.2% year on year in October 2007, roughly the same rate

as in the two preceding quarters. However, including food and energy, inflation accelerated sharply from an annual low of 2.0% in August to 3.5% in October.

The long period of rising real estate prices in the *U.S.A.* came to a halt, which, along with rising borrowing costs, precipitated defaults and caused forced sales, particularly among subprime households. The subprime crisis also hit individual financial institutions. Yet the substantial outstanding volume of mortgage credit-based derivatives coupled with uncertainty about which institutions had problem assets backed by securitized mortgage loans in their portfolio, and to what extent, resulted in a general loss of confidence and thus to a spillover of the *U.S.* subprime crisis to financial markets worldwide from mid-July onwards.

In view of weaker consumer spending and the decline in residential investment in the wake of tighter borrowing conditions, *U.S.* economic growth is likely to slow to 1.9% in 2007 and to remain subdued at that rate in 2008, according to IMF forecasts (table 1). The main downside risk is considered to be continued financial market turmoil.

Table 1

IMF Economic Forecasts of April and October 2007

	GDP growth (% , year on year)				Consumer price inflation (% , year on year)			
	2007		2008		2007		2008	
	Apr. 07	Oct. 07	Apr. 07	Oct. 07	Apr. 07	Oct. 07	Apr. 07	Oct. 07
Industrialized countries	2.5	2.5	2.7	2.2	1.8	2.1	2.1	2.0
U.S.A.	2.2	1.9	2.8	1.9	1.9	2.7	2.5	2.3
Euro area	2.3	2.5	2.3	2.1	2.0	2.0	2.0	2.0
Japan	2.3	2.0	1.9	1.7	0.3	0.0	0.8	0.5

Source: IMF (World Economic Outlook).

In the *euro area*, economic growth slackened in the second quarter of 2007, with private consumption resuming its role as the motor of growth after having stalled in the first quarter. Whereas a rising saving rate is acting as a damper on the extent of future consumer spending on the one hand, climbing employment and falling unemployment signal an expansion of consumer spending. After having stayed below 2% for one year, the rate of inflation rose above the 2% mark again in September 2007 and went up further to 2.6% in October. The IMF anticipates more sluggish economic activity until 2008, but the inflation rate is likely to stay at around 2%. In June 2007, the Governing Council of the ECB decided to raise key interest rates, a decision it justified on two counts: the favorable economic climate, and potential risks to price stability. At the beginning of October 2007, the Governing Council dropped its assessment that its monetary policy was still accommodative.

In *Japan*, second-quarter real GDP growth shrank for the first time in three quarters, declining by 0.3% quarter on quarter on account of a marked slowdown in export growth. Growth stimuli came from corporate investment; private consumption was also up. The Bank of Japan still considers the economy to be on track to modest growth that is driven by domestic demand. The IMF sees growth at 1.7% in 2008, marking the eighth year in a row of real GDP growth. Inflation is projected to keep rising marginally in the medium term. As downside risks, forecasters cite a sharp slowdown in the U.S. economy and a detrimental impact of the turmoil in the U.S. mortgage market on

the profitability of the Japanese banking system.

Central Banks Inject Liquidity into Turbulent Financial Markets; Key Interest Rates Cut in the U.S.A., and Kept Unchanged in the Euro Area and the U.K.

Responding to the financial market turbulences, major central banks provided *money markets* with liquidity at several instances from August, which helped calm markets to some extent. The U.S. central bank's policy board, the Federal Open Market Committee (FOMC), cut the discount rate by 0.5 percentage point to 5.75% in August 2007. On September 18, 2007, the FOMC lowered both the discount rate and target for the federal funds rate by 50 basis points each to 5.25% and 4.75%, respectively. These steps marked the first reductions in key interest rates in four years, and were followed on October 31, 2007, by a further 25 basis point cut in the federal funds target rate to 4.50%. The ECB has kept the key interest rate unchanged since June 2007, when it raised the rate on main refinancing operations by 25 basis points to 4.0% – double the rate it had been in December 2005, when the ECB had started to increase interest rates. After raising its Bank Rate by 25 basis points to 5.75% at the beginning of July 2007, the Bank of England held the rate unchanged.

In the U.S. *government bond market*, investors flocked to government bonds as a safe haven in the wake of the U.S. mortgage market crisis, bringing yields on 10-year bonds down from 5.1% at the beginning of July 2007 to 4.3% mid-September. Not until the days immediately preceding the FOMC's decision to raise

key rates on September 18, 2007, did yields recover to reach 4.7% mid-October. Gripped by a further wave of financial market turbulence linked above all to large banks' announcements that they would have to take loan loss provisions, yields slipped back to 4.15% in mid-November. Despite the key interest rate reductions, the yield curve on U.S. bonds with maturities of up to ten years remained inverted. In the euro area, interest rates rose by approximately 25 basis points across all maturity bands, more or less mirroring the rise in key interest rates. Hence, term spreads were virtually unchanged at first, but after the financial market turbulence, they declined markedly especially mid-September and mid-November 2007 and were then considerably below the long-term average. In mid-November 2007, the yield on ten-year euro area government bonds outpaced the corresponding U.S. yield for the first time since April 2004. The results of the Consensus Forecasts indicate that long-term inflation expectations have stayed stable in the euro area and in the U.S.A.

Risk premia on corporate bonds of top-rated debtors (AAA rating) and less highly rated issuers (BBB rating) in the euro area were up by 10 and 40 basis points, respectively, in mid-November on early July 2007 figures. Risk premia have thus remained low in a long-term comparison, which is likely to be a result of excellent corporate profits. *Ten-year swap spreads* in the euro area widened from 23 basis points in early July 2007 to 34 basis points at mid-August, declined somewhat, and then resumed their rise to reach 32 basis points mid-November 2007, about 10 basis points above the level of early July 2007. Hence, the

development of swap spreads paralleled that of AAA corporate bond spreads. However, in the U.S.A., ten-year swap spreads fluctuated even more sharply, enlarging from 59 basis points in early July 2007 to 84 basis points mid-August, narrowing slightly and then rising marginally to 79 basis points in mid-November 2007. This brought U.S. swap spreads 20 basis points higher in November 2007 than in early July 2007, and to a level that remained considerably above the comparable euro area level.

Prices on U.S. *stock markets* plummeted from mid-July, but started to recover a few days before the key rate cut on September 18, 2007; by mid-October, prices had reached a new all-time high. This was followed by a renewed drop in prices to a mid-November level just barely above the lows of mid-August. In the euro area, the Euro STOXX 50 paralleled the fluctuations of the U.S. market. However, both euro area and U.S. earnings yields, which are calculated on the basis of broad stock indices, remain close to their historical average since 1990.

The most recent financial market turbulence also encompassed *foreign exchange market* fluctuations. When the most recent turmoil broke out, the U.S. dollar still managed to gain against the euro, but soon began to lose ground to a level well below the initial one. At the beginning of November 2007, the euro hit an all-time high of USD 1.47 per euro, marking a 15% increase in its value against the U.S. currency within a year. The Japanese yen exhibited especially strong fluctuation on account of the turbulent financial market conditions, which may be attributed above all to carry

trades.¹ Gains against the U.S. dollar and the euro from mid-July 2007 to mid-August 2007 resulting from the unwinding of carry trades were partly reversed until mid-October. Until mid-November 2007, a second wave of gains against the U.S. dollar, but also against the euro, followed. The Japanese currency reached a rate of JPY 110 per U.S. dollar mid-November, a level last seen in fall 2005.

Emerging Markets: Boom Continues, Net Capital Inflows from Abroad to the Private Sector Reach Record Level in 2007

Economic Activity Remains Robust; Current Account Sur- pluses Decline

For the *emerging market economies*,² the IMF forecasts real GDP growth at a strong 8.1% in 2007, the same as in 2006, and an easing to 7.4% growth in 2008, still above the long-term average of 6.5% growth for this country group. Only Africa is expected to exhibit upward momentum in growth compared to 2006 (from 5.6% to 6.5% in 2008), whereas the CESEE countries (excluding Ukraine and Russia) and Latin America are anticipated to post slower growth from 2007, and the CIS countries as well as developing Asia will experience slower growth from 2008. Only developing Asian economies are projected to post current account improvements in 2007 and 2008. The IMF sees inflation in emerging mar-

ket economies quickening from 5.0% to 5.9% in 2007 and subsequently declining to 5.3% in 2008. On the whole, the protracted financial market turmoil emanating from the U.S.A. since July 2007 has barely damaged economic prospects in the region as a whole. At the country level, Mexico and a few Asian countries appear to have suffered most from the fallout of the turbulence. However, caution is in order – especially emerging market economies such as the economies of Central and Southeastern Europe are vulnerable, as their high current account deficits are financed largely by foreign bank loans.

The IMF expects *developing Asia* to keep growing at a torrid pace of 9.8% on the back of growth in the domestic economy and the external sector in 2007 and to lose only some momentum at 8.8% growth in 2008. For China, the IMF raised its forecast for 2007 growth to 11.5%. Chinese consumer price inflation rose from 1% in July 2006 to 6.5% in August 2007. This is the highest rate of inflation in more than a decade, and is markedly higher than the 3% inflation target. The elevated rate has attracted great political attention, as phases of high inflation have historically frequently led to political turbulence. The IMF expects economic growth to come to 10.2% in 2008, reflecting partial success of the authorities' efforts to reduce growth to 9% by tightening monetary and fiscal policy. For India, the IMF sees

¹ In a carry trade, an investor makes use of an arbitrage opportunity by taking out a loan in a country with low short-term interest rates and investing the amount in longer-term financial instruments in countries with higher interest rates. Such transactions exert depreciation pressure on the borrowing currency and appreciation pressure on the investment currency.

² This group does not include the newly industrialized Asian economies (South Korea, Taiwan, Hong Kong and Singapore); the IMF anticipates that growth there will ease from 5.3% in 2006 to 4.9% in 2007 and further to 4.4% in 2008.

growth slowing from 9.7% in 2006 to 8.9% in 2007 and further to 8.4% in 2008.

In *Latin America*, marked regional differences in growth should narrow in 2007, with growth accelerating in Brazil to 4.4% and in Chile to 5.9% and decelerating to between 6% and 8% in Argentina, Colombia, Peru, Venezuela and the Caribbean. However, with the U.S. economy weakening, Mexico is also set to suffer a slowdown from 4.8% to just 2.9%. For the region as a whole, the IMF thus sees real growth receding from 5.5% in 2006 to 5.0% in 2007 and further to 4.3% in 2008 as a result of the ongoing loss of momentum in the rapidly expanding economies; moreover, the IMF sees the current account slipping into deficit in 2008.

The IMF expects growth in *Africa*³ (in particular in *Sub-Saharan Africa*) to climb from 5.6% (5.7%) in 2006 to 6.5% (6.8%) 2008, fueled by the oil-exporting countries Angola and Nigeria. However, even oil-importing countries appear set to grow by about 5% in 2007 and in 2008, like in 2006. Inflation will stay moderate, except in Zimbabwe. As most of the countries in this group have large current account deficits and as the oil-exporting countries will post smaller current account surpluses, the overall current account deficit of the Sub-Saharan countries will widen from 0.3% of GDP in 2006 to 3.0% in 2007 and decline to 1.6% in 2008.

For the *Middle East*, the IMF expects stable growth of 5.9% in 2007 and 2008 to follow growth of 5.6% in 2006; Egypt, an oil importer, is likely to continue growing at a rate substantially above average, about

7%, and to post a slight current account surplus. Despite elevated crude oil prices, the budget and current account surpluses of the oil exporters will decline because of infrastructure and social spending as well as investment in the oil industry.

In *Turkey*, the IMF expects real GDP growth to decelerate further from 6.1% in 2006 to 5.0% in 2007 and to quicken again to 5.3% in 2008. Exports, which have recovered, are the mainstay of growth, whereas the country's restrictive monetary policy course steered since mid-2006 to combat inflation (after depreciation) and weaker credit growth dampens domestic demand. According to the IMF, the current account deficit, which rose to almost 8% of GDP in 2006 despite the weaker lira, will diminish only moderately until 2008.

Boom in FDI Inflows to Private Sector, but Public Sector Net Capital Outflows Remain High

Net capital inflows to the private sector have been at historically high levels in recent years in many emerging market economies and developing countries. The IMF sees net private inflows doubling in 2007. As usual, the bulk of net inflows were related to FDI activities. Additionally, net lending inflows continued to rise sharply as in 2006, whereas total net inflows from portfolio investment are expected to be relatively low, because the private sector in emerging Asia was a net investor in foreign securities. In 2008, total net capital inflows to the private sector in the emerging market economies is likely to decline, given a projected decrease in net credit inflows and net outflows from portfolio investment.

³ This group does not include Libya and Egypt, which are subsumed under the Middle East.

Table 2

**Net Capital Inflows to Emerging Market Economies
and Developing Countries¹**

USD billion

	2003	2004	2005	2006	2007 ²	2008 ²
Net capital inflows to the private sector	168.3	239.4	271.1	220.9	495.4	291.3
By instrument						
Direct investment	164.4	191.5	262.7	258.3	302.2	293.9
Portfolio investment	-11.7	21.1	23.3	-111.9	20.6	-93.1
Other flows (esp. loans)	14.5	25.1	-17.0	73.6	171.0	88.8
By region (country)						
Europe	53.7	75.3	116.1	122.4	140.5	145.5
CIS	18.3	7.6	34.4	58.8	82.4	42.8
Middle East	1.7	-22.1	-24.5	-28.1	-10.6	4.5
Africa	7.0	17.2	26.5	17.3	42.1	45.9
Asia	65.3	146.8	83.3	40.5	157.2	5.1
Latin America and the Caribbean	22.2	14.5	35.3	9.9	83.7	47.5
Net capital inflows to the public sector³	-48.7	-67.2	-146.4	-165.8	-132.1	-141.2
Memorandum item						
Current account balance	227.7	298.3	522.4	691.7	689.9	715.8
Reserve assets ⁴	-359.7	-509.2	-595.3	-754.2	-1085.3	-887.1
of which: held by China	-117.2	-206.3	-207.0	-247.0	-490.0	-410.0

Source: IMF (World Economic Outlook).

¹ This table shows aggregated balance of payments data sets of 131 nonindustrialized countries, including 44 major emerging market economies. Europe = Central, Eastern and Southeastern Europe excluding European CIS countries and including Turkey. Asia = including Hong Kong, Korea, Singapore and Taiwan.

² Forecast.

³ A minus sign indicates net outflows of capital from developing countries to industrialized countries.

⁴ A minus sign indicates an increase.

In all geographic regions except the CIS, *direct investment* remains the dominant type of net inflow to the private sector in emerging market economies in 2007 and 2008. *Net credit inflows* will probably be the most important source of external finance by far in the CIS, and almost on a par with direct investment in CESEE and in emerging Asia. All net credit inflows are to these three regions, whereas the Middle East and Latin America will experience continued net credit outflows. Net inflows of *portfolio investment* are anticipated to be significant only for Africa, as in 2006, and for Latin America; however, each of these inflows are much smaller than net portfolio outflows from Asia.

The only one of these regions with a persistently high *current account deficit*, namely CESEE, is estimated to attract the largest share of net capital inflows to the private sector in 2007

(together with emerging Asia) and 2008, just like in the two previous years. The Middle East is the only region to have posted *net capital outflows* from the private sector for years (investment of petrodollars); it is projected to post net capital inflows to the private sector in 2008. All other regions have been characterized by a combination of *current account surpluses* and net capital inflows to the private sector since 2005, a trend that appears set to continue in 2007 and 2008, with the exception that Africa will slip into a current account deficit.

In all geographic regions, *public sectors* (excluding central banks) recorded *net capital outflows* in 2006 (repayment of foreign debt, investment); the same should hold for 2007 and 2008, except in Africa. Moreover, all regions – especially emerging Asia, which posted the largest current account surplus in absolute figures –

are expected to *increase official reserves* in 2007 and 2008, like they did in 2006.

High Level of Austrian Bank Claims on CESEE Expanded Further

At the end of March 2007, Austrian⁴ banks' claims accounted for nearly 9% of CESEE countries' and Turkey's nominal GDP, putting Austrian banks ahead of all other countries' banks in terms of claims on the region. Austrian banks account for nearly one-fifth of the loan receivables of all banks in the region that report to the BIS.

Austrian banks had the highest claims of all countries' banks on the Czech Republic, Slovakia, Hungary, Romania, Croatia and Ukraine and the second-highest claims on Bulgaria

(after Italy) and Russia (after Germany). More than 30% of the claims of all banks reporting to the BIS in Slovakia, Romania, Croatia and Ukraine are held by Austrian banks; Austrian banks also account for the same high share of loan receivables in the euro area country Slovenia.

Global Nervousness in Financial Markets Affects Eurobonds

Following the turbulence in May and June 2006, Eurobonds recovered and developments on the Eurobond market stayed positive *until June 2007*. The average *yield differential* of emerging market issuers' government bonds denominated in euro and U.S. dollars against benchmark bonds (based on J.P. Morgan's (Euro) EMBI Global) narrowed by about 20 (U.S. dollar) and 10 (euro) basis points,

Table 3

Claims of BIS Reporting Banks on Central, Eastern and Southeastern Europe and Turkey¹

% of GDP of the recipient country

	AT	DE	IT	FR	NL	SE	BE	UK	Europe ²	US	JP
CESEE plus Turkey	8.8	7.0	6.6	4.2	2.7	3.1	3.5	1.6	43.9	2.2	0.7
CESEE EU Member States (excluding the Baltic countries)											
Bulgaria	11.2	4.4	14.5	3.6	1.3	0.0	0.4	0.4	59.9	1.2	0.2
Czech Republic	25.9	5.0	8.5	17.1	2.9	0.0	20.6	2.1	83.6	2.2	0.5
Hungary	22.7	22.2	16.4	4.6	3.8	0.2	11.1	1.3	87.5	2.4	1.0
Poland	3.1	8.5	11.3	2.5	6.0	0.6	3.5	0.5	45.3	2.9	1.1
Romania	24.2	14.3	6.3	10.5	3.9	0.1	0.3	0.3	69.5	1.2	0.1
Slovakia	39.8	4.5	26.2	2.6	6.2	0.1	14.6	0.8	95.3	2.5	0.1
Slovenia	25.4	12.9	7.9	5.6	1.7	0.0	5.8	0.6	61.9	0.9	0.7
Other CESEE countries											
Croatia	60.5	9.3	55.1	16.7	0.4	0.0	0.6	0.9	145.1	0.3	1.0
Ukraine	7.7	2.7	1.1	5.7	2.1	0.3	0.2	0.1	23.3	0.7	0.3
Russia	1.3	3.5	1.3	0.9	1.3	0.3	0.1	0.9	11.3	1.3	0.6
Turkey	0.2	4.0	..	2.9	1.7	0.1	3.3	3.1	22.9	3.6	0.6

Source: BIS, Eurostat, Thomson Financial, national sources and OeNB calculations.

Note: The claims shown here correspond to the "Consolidated foreign claims of reporting banks" published by the BIS (BIS Quarterly Review September 2007, table 9B). For every bank, these include the claims (in all currencies) of both parent and subsidiary companies on borrowers outside the group in the relevant countries. In this consolidated overview, claims of Austrian banks do not include claims of the BA-CA group.

¹ As of end-March 2007.

² In addition to the countries of origin listed individually, "Europe" comprises Denmark, Greece, Ireland, Portugal, Finland, Spain, Switzerland and Norway.

⁴ The BIS consolidated banking statistics does not subsume BA-CA group among Austrian banks, as it is not majority-owned by Austrians.

Table 4

Eurobonds: Spreads to Reference Bonds and Returns by Region

	EMBI Global (USD)						Euro EMBI Global (EUR)					
	Weight in total index in %	Yield spreads in basis points		Total return in %	Rating	Duration	Weight in total index in %	Yield spreads in basis points		Total return in %	Rating	Duration
	Sep. 28, 2007	Sep. 28, 2007	Change since March 31, 2007	Since March 31, 2007	Sep. 28, 2007	Sep. 28, 2007	Sep. 28, 2007	Sep. 28, 2007	Change since March 31, 2007	Since March 31, 2007	Sep. 28, 2007	Sep. 28, 2007
Overall index	100.0	214	44	1.1	BB+	7.13	99.2	72	12	0.2	BBB+	4.92
Africa	2.0	279	-15	3.2	BBB	4.61	3.7	91	25	-0.6	BBB+	5.25
Asia	16.7	178	36	1.9	BB+	6.55	4.6	89	28	0.1	BBB	3.84
Europe	25.1	167	20	2.4	BBB-	6.66	71.7	59	10	0.3	BBB+	5.48
Latin America	53.3	227	54	0.3	BB+	7.76	19.2	117	21	0.0	BBB-	4.76
Middle East	2.9	541	117	-0.7	B-	4.82	..	..	..	..	..	..

Source: Bloomberg, J.P. Morgan, OeNB calculations.

Note: The EMBI Global and Euro EMBI Global indices differ in composition (in terms of currencies, countries covered, instruments, maturities, etc.). Differences in the level and development of yield spreads and returns as well as in other index features can be attributed in part to this different composition and in part to different investor structures. The rating is calculated as the average of Moody's, Standard & Poor's and Fitch's ratings for long-term government foreign currency sovereign debt and is expressed in the rating categories of Standard & Poor's.

respectively, in the second quarter. In particular, the crisis on the U.S. mortgage market triggered a reversal, causing the average yield differential to widen by a total of 44 (U.S. dollar) and 12 (euro) basis points, respectively, from end-March to end-September.

From June to mid-August, the average yield differential of euro-denominated government bonds increased by 40 basis points to the highest level in 12 months, and that of dollar-denominated bonds climbed by 105 basis points to a two-year high. By end-September, spreads had contracted again by 43 (U.S. dollar) and 16 (euro) basis points.

From end-September to mid-October 2007, average yield spreads declined further (by 20 basis points for U.S. dollar government bonds, by 8 basis points for euro government bonds). The differential then rebounded by 47 basis points (U.S. dollar) and 16 basis points (euro) up to mid-November 2007; this up-and-down movement in asset prices was in line with the movements in other segments of the financial market.

The fact that *total* returns were positive for both indices from end-March to mid-September even though yield differentials had widened indicates that the crisis had only limited impact on the emerging markets. The U.S. dollar EMBI Global index showed total returns (not annualized) of 1%, compared to just 0.2% for the Euro EMBI Global. The different development of returns in these two indices may, among other things, be explained by the different development of the benchmark bonds underlying each index.

Unlike in the last reporting periods, the current period showed a discrepancy between the rise in yield differentials and the *development of economic fundamentals* (as measured by *average ratings*) at the overall index level. Even though the number of rating upgrades by the three largest rating agencies for the countries contained in both indices (EMBI Global and Euro EMBI Global) was noticeably lower in the first and second quarters of 2007 than in the same period of 2006, it was nevertheless

higher than the number of rating downgrades. (Among the CESEE countries in the indices, only Poland underwent a rating change, namely an upgrade by Standard & Poor's from BBB+ to A-.) Nonetheless, after the outbreak of the U.S. mortgage crisis, demand for Eurobonds issued by emerging market sovereign debtors ebbed. Assuming that ratings are appropriate, the divergent development of fundamentals and yield differentials may either be interpreted as a contagion-related temporary negative overshooting of market expectation or as a sustained correction of investors' previous excessive risk appetite. (In the third quarter of 2007, upgrades of emerging markets continued, including especially Brazil, China and Peru).

Just like Eurobonds issued by *European emerging markets* (e.g. CESEE EU Member States and candidate countries) typically lag the overall index developments in times of falling yield differentials (meaning that the yield differential declines less and the overall return is lower because these Eurobonds start from a much lower initial level), this negative development had only a limited impact on such European government bonds. The hardest-hit European Eurobonds were those issued by the lowest-rated countries in the group, e.g. Serbia, Ukraine and Russia.

CESEE Markets: International Financial Market Turmoil Triggers Correction of Romanian Leu after a Sharp Rise in the First Half of 2007

Most of the currencies analyzed in this report managed to escape the turmoil fairly unscathed *from end-March to end-September 2007*; some

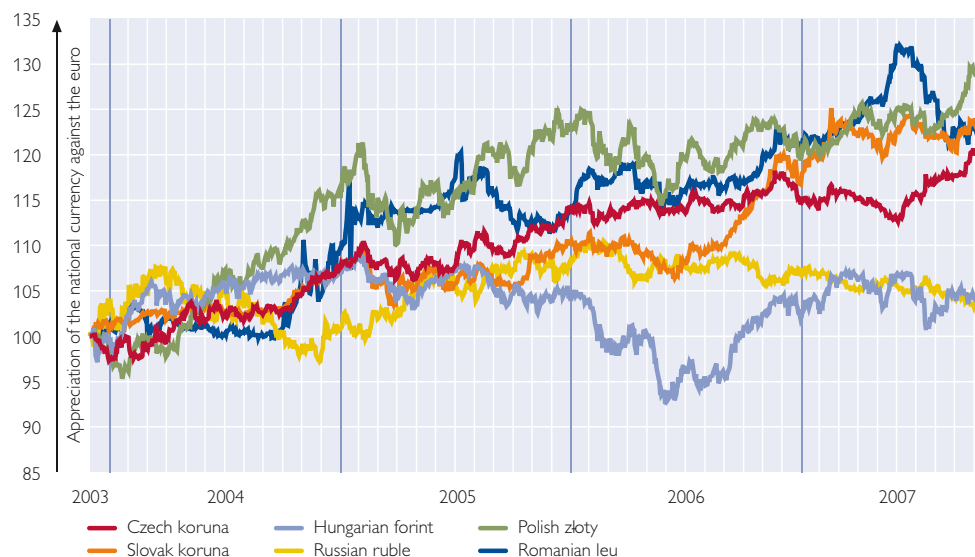
even firmed against the euro. The Polish zloty chalked up the highest gains during this period (+2.5% against the euro). While this currency rose almost as much as in the last reporting period (from end-September 2006 to end-March 2007), the Czech koruna's appreciation quickened from 1.1% to 1.7%. The Croatian kuna, barely hit by the market unrest, advanced by 1.8% from April until end-September 2007 thanks to vibrant tourism; this rise followed a depreciation in the fall and winter months. The Romanian leu managed to firm marginally (+0.3%) overall, but was subject to marked fluctuations during the period. Currencies that lost against the euro during the review period were the Slovak koruna (-1.6%), the Hungarian forint (-1.2%) and the Russian ruble (-2%). The depreciation of the ruble against the euro reflects the underlying basket of reference currencies (USD/EUR), which compels the ruble to partly follow the U.S. dollar's losses against the euro. The Bulgarian lev, which is under a currency board system, remained unperturbed during the turmoil in the financial markets.

In the first half of the review period *from end-March 2007 until the outbreak of global financial market turbulence in July*, the Slovak koruna, the Polish zloty, the Hungarian forint and the Romanian leu resumed their long-term uptrend. The appreciation was particularly marked in the case of the Romanian leu, which surged by 7% between end-March and the beginning of July 2007, and which thus reached the highest level since 2002. In all countries, this appreciation trend was interrupted between early May 2007 (in the case of Slovakia, the beginning of April) and early June

Chart 1

National Exchange Rates against the Euro

Dec. 31, 2003 = 100



Source: Thomson Financial.

Note: Index based on euro per unit of national currency.

2007, when political uncertainty about Turkey and Poland as well as rising interest rates in the U.S.A. and in the euro area caused investors to resort to temporary portfolio shifts.

The U.S. mortgage market crisis affected the analyzed currencies most heavily *between mid-July and mid-August 2007*. The Polish zloty and the Slovak koruna plummeted about 2% against the euro from July 24 to August 17, 2007. However, the Hungarian forint and the Romanian leu were hardest hit – during the same period, they slipped by around 5.4% and 4.2%, respectively. In Hungary, the currency slippage may be pinpointed to the still relatively early stage of economic stabilization – a policy which, while showing initial success, is also hotly debated; in Romania, it may be attributed to the high and still sharply rising current account deficit. Moreover, both countries' foreign exchange markets had a fairly elevated share of short-term

capital. The Hungarian forint and the Polish zloty recovered *from mid-August*, with the gains partly (forint) or even wholly (zloty) offsetting earlier losses, whereas the leu continued to depreciate substantially, as did the Slovak koruna, though to a lesser degree. Overall, the Romanian leu and the Slovak koruna depreciated by over 7% and 2.5%, respectively, against the euro *from mid-July to end-September 2007*. Nevertheless, the exchange rate losses of the currencies analyzed above were clearly smaller than the losses of many other emerging economies' or industrialized countries' currencies. The Brazilian real decreased by 9%, the Thai baht by 7%, and the New Zealand dollar as well as the Icelandic króna lost about 12% against the euro. One currency represented a remarkable exception among the currencies described: The Czech koruna, after depreciating from the beginning of 2007, gained roughly 4% against the euro from

mid-July to end-September 2007 because it had been in great demand as a refinancing currency for carry trades. Investors chose the Czech koruna both for the comparatively low level of interest rates currently prevailing in the Czech Republic (sustained negative differential to the euro area) and the perceived limited exchange rate and interest rate risks. Once investors' propensity to run risks had fallen from mid-July, carry trades were unwound, and the Czech currency posted marked gains.

From the end of September until mid-November 2007, the Czech koruna and the Polish złoty strengthened further against the euro (+3.4% and +2.9%, respectively); the Slovak koruna also began to resume its rise (+2.4%), whereas the Hungarian forint dipped marginally (-1.5%) and the Romanian leu kept declining markedly (-3.3%).

Fundamental Factors with an Impact on Exchange Rate Developments

Economic activity remained vigorous in most CESEE countries in the first half of 2007, partly even accelerating from whole-year 2006 results (in Poland, Slovenia, Slovakia, Bulgaria and Croatia). Growth was especially strong in the first quarter of 2007 (among other things because the mild winter was a boon to construction activity), but lost some momentum in the entire region, except in Bulgaria and Slovakia – in the second quarter. The first-quarter rise in economic growth was especially pronounced in Slovenia, which had introduced the euro on January 1, 2007. Throughout the region, GDP expanded by between almost 6% to over 9% in the first half of 2007. As before, Hungary represented an exception, with

growth slowing further to just 1.9% as a consequence of the government's reform measures.

In all countries but Hungary, *domestic demand* made a substantial contribution to economic growth, as in 2006. In Bulgaria and Romania, the contribution of domestic demand to growth exceeded that of exports to a particularly large extent. In most countries of the region, investment growth outweighed consumer spending as a domestic demand component of growth in the first six months of 2007. At the same time, private consumption augmented more quickly than GDP in the Czech Republic, Bulgaria, and especially Romania. Disregarding developments in Hungary, domestic demand in the region drew primarily on faster real wage growth (Croatia being the exception), on continued powerful and in some countries even stepped-up credit growth, on higher FDI (Czech Republic, Croatia and Slovenia) and on country-specific one-off effects (such as tax policy in Slovenia).

The *contribution of net exports to growth* was negative across the CESEE region in the first half of 2007 except in Slovakia and Hungary, and generally less favorable than in the first half and in the full year of 2006 except in Croatia (lower negative contribution to growth than last year) and Slovakia (larger positive contribution to growth). The reason for the latter was that export growth remained stable in Slovakia and diminished only slightly in Croatia, whereas import growth decreased in both countries. In combination with a less rapid slowdown in import growth or even faster import growth (Hungary), the drop in export growth in most other countries (except Slovenia) paralleling the slowdown of import growth in the

euro area reduced the contribution of net exports to growth. In particular, the large negative contribution of net exports GDP mounted further in Bulgaria and Romania. In Slovenia, export growth mounted, but so did import growth. As a result, the contribution of net exports to growth worsened in this country as well.

In conformity with the positive growth contribution of net exports in Slovakia, the deficit on the *goods and services balance* shrank from just under 5% to 1% of GDP in Slovakia compared to the first half of 2006. The Hungarian goods and services balance switched to a surplus of 2% of GDP. Even though net exports made a small negative contribution to growth, the surplus of goods and services more than doubled to 4.9% of GDP in the Czech Republic. In Bulgaria and Romania, however, the very high deficits on goods and services were the main reason for the current account gap in the first half of 2007. The partly high and rising external deficits must be seen in the context of the booming economy and strong investment demand. Especially in Bulgaria and Romania, though, vigorous consumer demand is likely to have contributed to boost import growth.

As a percentage of GDP, the deficit on the *combined current and capital accounts* was lower year on year in the first half of 2007 in the Czech Republic (1.1%), Slovakia (4.1%, just over half the comparable 2006 figure), Hungary (5.8%) and Croatia (18.9%). With a near-doubling of its deficit to 2.9% of GDP, Poland, long the country with the lowest deficit among the countries analyzed, lost this position. In Slovenia, the combined deficit expanded to 3.4% of GDP, and it augmented even more in Bulgaria and Romania, where the deficits climbed

from high levels in the first half of 2006 (16% and nearly 11% of GDP, respectively) to 22.4% and 16.2% of GDP, respectively. Although net FDI inflows (including intracompany loans) declined from the first half of 2006, they remained the key source of finance for the current account gap in most of the countries analyzed. In the first half of 2007, the remaining gap was not insignificant in the three countries with exceptionally high current account deficits, namely Bulgaria, Croatia and Romania. Moreover, in Slovenia, this gap was still large, and in Hungary, it had grown large. In the latter two countries, the extensive gap may be explained by net FDI outflows mainly due to direct investment of these countries abroad.

The Hungarian forint and the Romanian leu continued to exhibit large *short-term interest rate differentials relative to the euro area*. However, the differential remained on a marginal downtrend in Hungary and a pronounced downtrend in Romania. The downtrend in both countries is attributable to the central banks' key interest rate cuts, in addition to rising interest rates in the euro area. The key rate cuts represented presumably a reaction to falling inflation, to strong appreciation pressure and, in Hungary, to a weakening of credit growth. Whereas the moderate rise in the short-term interest rate differential appears to have somewhat supported the appreciation of the Polish zloty, the differential generally remained stable at a low level in Slovakia, apart from a brief interlude in August 2007, when it reversed in the wake of the rise in euro area interbank interest rates.

Slovakia and, above all, Croatia executed large-scale *foreign exchange intervention operations* to influence

exchange rate dynamics during the review period. In April 2007, Národná banka Slovenska intervened with a purchase of over EUR 700 million after the Slovak koruna had traded 6% higher than the center of the parity. As a reaction to the appreciation of the Croatian kuna since the beginning of April 2007 and continued appreciation pressure, Hrvatska narodna banka intervened three times, most recently on October 1, 2007, with its most sizeable intervention ever. The currency had come under pressure in the course of the unexpectedly animated demand for stocks of the telecommunications company T-HT (purchases totaling over EUR 350 million).

Banks' net external asset position deteriorated in Poland, Slovakia, Romania and Bulgaria in the first half of 2007. In Poland and Bulgaria, the positive net external asset position contracted, and the negative position in Slovakia and Romania widened, developments which are likely to have contributed to the firming of the Polish, Slovak and Romanian currencies in the first half of 2007.

The main *risk factors* for the CESEE countries lie in a slowdown in GDP growth in the euro area and in a worsening of external financing conditions. If capital becomes more expensive in the longer run, and if foreign investors assess the risks of individual countries in the region as permanently higher, inflows of foreign capital could be dampened or even a (sudden) capital outflow could set in, which would have a negative impact on exchange rates. That would affect above all countries which have elevated current account deficits and where FDI inflows are insufficient to cover external financing needs, compelling them to depend on possibly

volatile portfolio investment and rising loan liabilities. Though foreign parent companies (of banks or non-financial corporations) have extended the bulk of credit outstanding, noticeable reductions in inflows (or even net outflows) of portfolio and cross-border loans represent a risk factor for these countries' currencies. Therefore, to support the economic catching-up of these countries, it is crucial to limit or to roll back deficits caused by disproportionately high domestic demand and in particular consumer spending growth. Moreover, ensuring that the economic climate is fundamentally attractive for direct investment inflows represents an important economic policy task.

Yield Spreads of National Currency-Denominated Government Bonds Widen Marginally

The yield spreads of ten-year local currency-denominated government bonds against euro area benchmark bonds in the four CESEE countries analyzed here (Poland, Slovakia, the Czech Republic and Hungary) had reached a 12-month low in the last period (end-September 2006 to end-March 2007) and continued to sink for some time in Hungary and Poland. Spreads contracted from 260 basis points *from the end of March 2007* to about 200 basis points *mid-July 2007* in Hungary and from 115 basis points to 85 basis points at the beginning of June 2007 in Poland, followed by a rise to 105 basis points in mid-July. Conversely, in Slovakia, spreads lost another 10 basis points until mid-April 2007, but then increased from nearly zero to 20 basis points mid-July. In the Czech Republic, the uptrend of yield differentials

started as early as mid-February, with markets anticipating the tightening of monetary policy. Until the end of March, spreads reversed from –35 to +5 basis points and continued to widen to 15 basis points mid-July 2007.

In the third quarter, investors' risk appetite declined as a result of the U.S. mortgage market crisis, which was reflected in a widening (albeit to a limited extent) of the spreads of the government bonds analyzed here. During the period of strongest turbulence *from mid-July through mid-September 2007*, spreads enlarged in all four countries (Hungary: +70, Poland: +60, Slovakia and Czech Republic: +30 to +40 basis points). Only in Hungary was the broadening of yield spreads, and – given the relatively strong depreciation of the forint against the euro – the loss in euro terms larger during the two-month period than the emerging market average (in terms of J.P. Morgan's Government Bond Index – Emerging Markets Broad, GBI-EM Broad). *Mid-September 2007*, yield spreads in the Czech Republic were at the same level as in early 2006, and in Slovakia and Poland at the level of fall 2006; in Hungary they were at the March 2007 level. Subsequently, *until end-September* yield spreads decreased in all four countries and on the emerging markets average (Hungary: –40, Poland: –30, Slovakia and the Czech Republic: –20, GBI-EM Broad: –25 basis points).

Thus, compared with the beginning of the review period, until end-September 2007, spreads rose moderately in Poland, Slovakia and the Czech Republic (by about 15 to 20 basis points). Although Hungary temporarily reacted most intensely to

the U.S. subprime mortgage crisis, at end-September 2007, its yield spread was about 30 basis points below the end-March level, so that Hungary still exhibited the largest differential to the euro area (roughly 230 basis points). Poland, Slovakia and the Czech Republic followed, with spreads of 135, 40, and 25 basis points, respectively.

Yield spreads contracted by 5 to 10 basis points in all four countries *from end-September to mid-October 2007*, but rose by 20 to 30 basis points (and thus less than the emerging market average) until mid-November. This fluctuation echoed the movements in the international financial markets.

Fundamental Factors with an Impact on Yield Developments

Apart from the summer months, in which the yield gap was substantially influenced by negative market reactions to the situation in the U.S.A., the development of the yield differential corresponded to the *inflation differential against the euro area* (as measured by the HICP) in the Czech Republic, Poland and Hungary. The Czech and Polish inflation differential to the euro area became positive at +0.9 percentage points and +0.4 percentage points, respectively, after having stood at –0.8 percentage points and –0.5 percentage points in November and December, 2006, respectively. In Hungary, the positive inflation differential to the euro area sank from 7.1 percentage points in March 2007 to 5.4 percentage points in August 2007, whereas in Slovakia, the differential switched from +0.2 percentage points in March 2007 to –0.5 percentage points in August 2007. In parallel, euro area inflation eased from 1.9% to 1.7% during the same period. In the

Czech Republic, private consumption growth has already come to be slightly higher than GDP growth, unlike in all other countries analyzed, where private consumption does not appear to be exerting strong demand-side inflationary pressure yet. However, the development of the output gap and pressure on the labor market in Poland, the Czech Republic and Slovakia could have an inflationary impact (in the medium term).

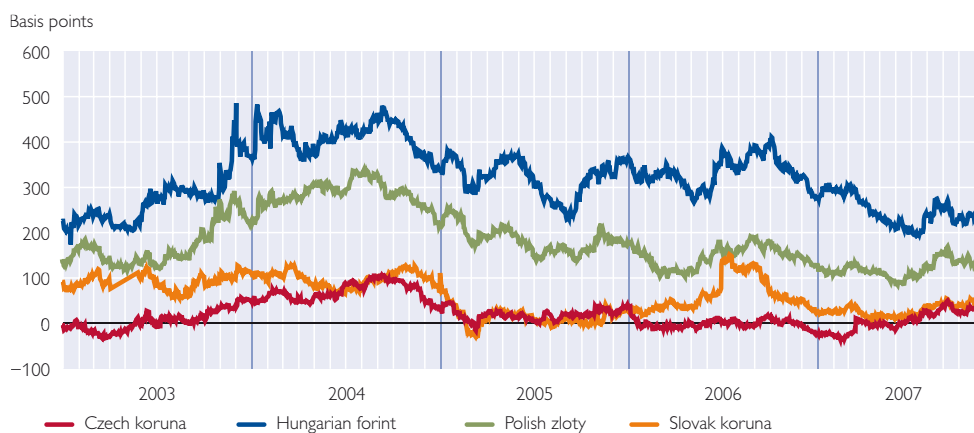
With the exception of the first three weeks of August, in which euro area money market rates skyrocketed as a result of general caution on the interbank market, the development of *differentials between short-term money market rates in the four countries under review and those in the euro area* largely corresponded to the development of long-term yield spreads from March to September 2007 (lower negative differential in the Czech Republic, larger positive differential in Poland and continued decline in the positive differential in Hungary).

In Hungary, *budget developments* continued to support the reduction in long-term yield differentials. In Poland, the Czech Republic and Slovakia, the development of the budget outturn and budget plans for 2008 are unlikely to have considerably influenced yield differentials either positively or negatively.

Even if the impact of the recent financial turmoil on these four countries was limited and even if the largely stability-oriented economic policies helped to shield them from unfavorable external developments, the as yet fragile global financial environment – which involves as yet uncertainty about the effects of the recent turbulence and requires risks to be reassessed – represents the biggest *risks to yield developments*. Additionally, yield developments will depend on how strictly the countries adhere to their fiscal consolidation plans (or take additional measures, if necessary) and whether public sector wage policy is differentiated and prudent.

Chart 2

Spreads of Ten-Year Government Bonds against Euro Area Benchmark Bonds



Source: Bloomberg.

Financing Conditions Have Tightened for the Real Economy Sectors

Profits Strengthen Corporate Finances

Output Growth Is Past its Cyclical Peak

The Austrian economy experienced a period of robust expansion in 2007, as reflected by real GDP growth of roughly 3.4%. Output growth is, however, likely to have passed its cyclical peak. In the first half of 2007, export growth decelerated somewhat, given the recent economic slowdown in the euro area, but remained strong thanks to the continued high demand in CESEE markets. Investment activity broadly mirrored export developments and also accelerated strongly – but likewise at a reduced pace – in the face of high capacity utilization and healthy profits.

After having grown robustly in recent years, corporate profitability continued to improve despite the appreciation of the euro and despite high crude oil prices. Sales fared well in this favorable economic environment, and unit labor costs continued to develop moderately.

Amid the cyclical upswing the number of corporate insolvencies – typically a lagging indicator – decreased by 3.7% in the first three quarters of 2007 compared with the corresponding 2006 value. The number of no asset cases declined in particular, while the number of newly opened insolvency proceedings increased somewhat. The estimated default liabilities equaled the corresponding 2006 volumes in nominal

terms. Default liabilities sank to 0.64% of the corporate sector's total liabilities (according to the national accounts) in the third quarter of 2007.

Continued Strong Corporate Demand for External Financing above all from Capital Markets

The continued good availability of internal financing notwithstanding, corporate demand for external financing increased by 30% to EUR 18.3 billion in the first half of 2007 compared to the same period of 2006.

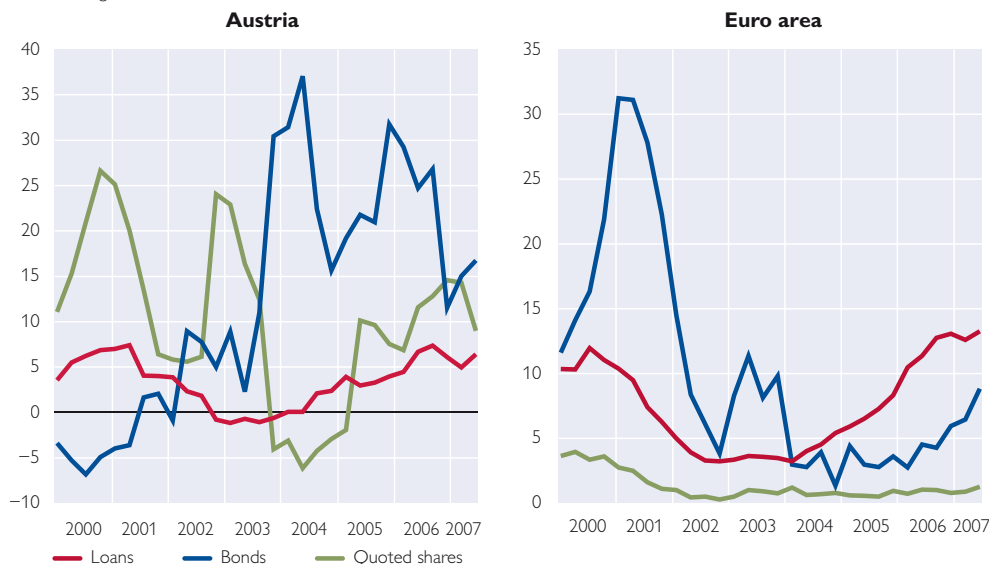
Loans accounted for close to one-fourth of this sum, having grown at an annual rate of 6.4% in the second quarter of 2007.¹ Corporate loan growth has, in fact, not accelerated further since fall 2006 despite growing investment activity, and continually lagged euro area developments. The balance of new loans was denominated in euro, while the outstanding volume of foreign currency loans shrank further. The share of variable rate loans in the volume of new loans, which has typically been high in international comparisons, climbed to more than 96%.

According to the Austrian results of the Eurosystem bank lending survey, in the first three quarters of 2007, corporate demand for loans was motivated mainly by the need to fund mergers and acquisitions or to finance corporate restructuring. Fixed investment constituted another key motive for borrowing. At the

¹ According to MFI balance sheet statistics. By analogy to the method employed by the ECB, the outstanding volume of bank lending is calculated as the percentage change against the previous year on the basis of changes in transactions, i.e. adjusted for reclassifications, revaluations, exchange rate and other nontransaction changes.

Key Elements of External Corporate Finance

Annual changes in %



Source: OeNB, EZB.

same time, the issuance of debt securities reduced enterprises' demand for bank loans.

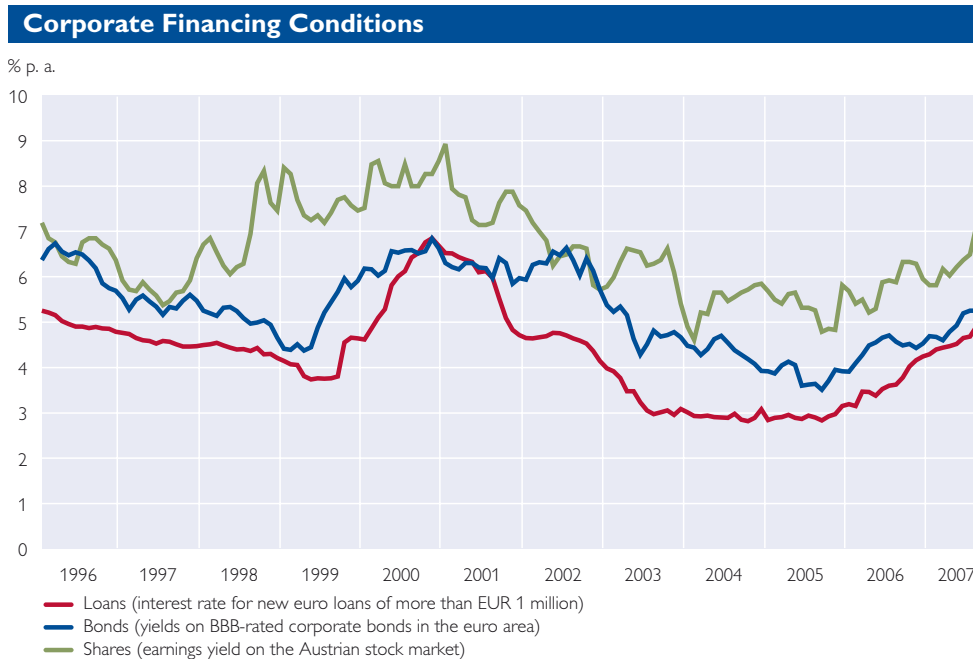
Bond issuance continued to expand at a lively pace in Austria in the first half of 2007, thus contributing more than 10% of external finance in that period. According to securities issues statistics, the outstanding volume of corporate bonds increased by as much as 15.3% year on year.² Construction and real estate companies were the biggest issuers. All in all, about 30 companies issued bonds in the first eight months of 2007, with fixed rate bonds accounting for 80% of the issuing volume and variable rate bonds for the remainder. The share of euro-denominated issues was broadly similar to the fixed rate share, while most other issues were made in Swiss francs.

New issues on the Vienna stock exchange by nonfinancial corporations totaled roughly EUR 6.2 billion according to securities issues statistics. This figure includes new listings representing about EUR 1 billion as well as a number of capital increases. On balance, funds raised through listed stocks contributed close to 30% of external corporate finance in the first six months of 2007. As before, the capital market was tapped above all by real estate companies.³ In addition, a number of industrial and services companies issued stocks at the Vienna exchange. Stocks are typically issued by large companies, but to cater specifically to small and medium-sized enterprises (SMEs) with lower capital needs, the Vienna stock exchange launched a new "mid market" segment in June 2007. This seg-

² Also based on the ECB method (see footnote 1).

³ For more information on the development of real estate stocks, see the box entitled "The U.S. Subprime Crisis: Causes and Effects" in the section "Dynamic Performance of Austrian Financial Intermediaries despite Turbulent Framework Conditions."

Chart 4



ment reported two issues in the third quarter of the year.

Reflecting high issuing volumes and an uptrend in share prices that lasted until summer 2007, the market capitalization of nonfinancial corporations listed at Wiener Börse climbed by more than EUR 15 billion to EUR 99 billion (approximately 37% of GDP) in the first half of 2007.⁴ Following the recent turmoil in global financial markets, stock prices lost ground also at the Vienna exchange in the subsequent months.

Including OTC equities, close to 40% of nonfinancial corporations' external financing volume was thus in the form of equity in the first half of 2007. As a result, equity continued to correspond to approximately 44% of total corporate liabilities.

Tighter Financing Conditions

The financing conditions for Austrian companies tightened in the first three quarters of 2007, both for borrowing funds and for issuing equity capital.

The Austrian Traded Index (ATX) continued its ascent in the first half of 2007 and climbed by around 9%. In spite of this uptrend, share prices at the Vienna stock exchange were not able to keep pace with the development of the profits of listed companies. Throughout the summer months of 2007 share prices declined in line with international developments. As a result the earnings yield⁵ rose visibly in the course of 2007, which implies that the cost of tapping the stock market increased.

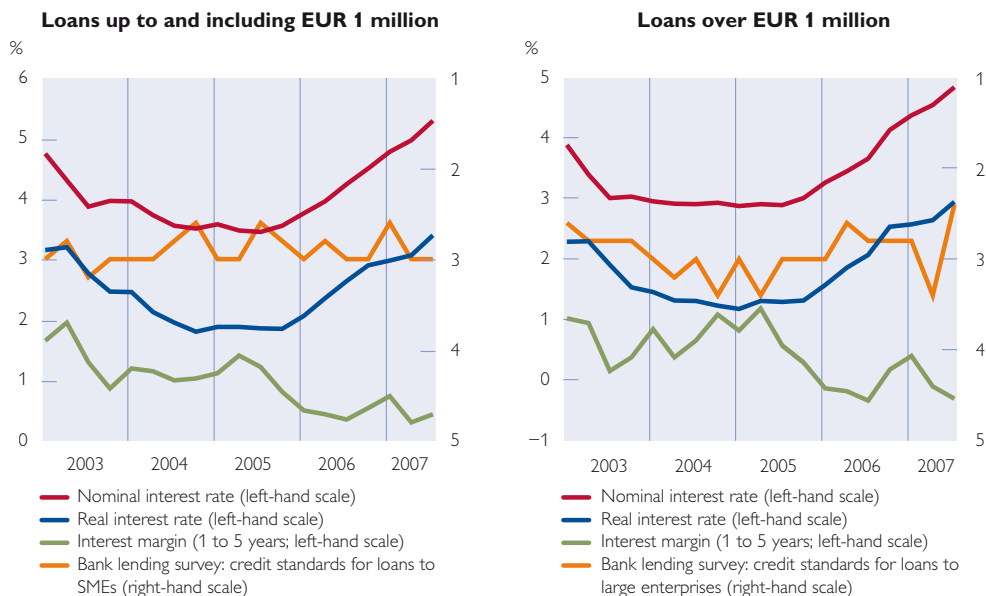
The yields of corporate bonds on the euro bond market climbed in the

⁴ The market capitalization of all stocks listed on Wiener Börse AG (including financial corporations) came to almost 62% of GDP at the end of June 2007.

⁵ The earnings yield is the inverse of the price-to-earnings ratio.

Chart 5

Conditions for Corporate Loans



Source: OeNB, ECB.

Note: Right-hand scale ranging from 1 (tightened considerably) to 5 (eased considerably).

Real interest rate: nominal interest rate less the OeNB's HICP forecast for the year following the forecast date.

Interest margin: interest charged for loans with a maturity from 1 to 5 years less three-year swap rate.

Bank lending survey credit standards: changes in the credit standards for loans to enterprises over the last three months.

first half of 2007 and remained relatively stable thereafter. Since the onset of the financial market turmoil, short-term rates have been on the rise, in turn causing the yield curve to flatten. The risk premiums on corporate bonds relative to government bonds of comparable maturity rose considerably following the subprime crisis but thereafter reverted to the precrisis level.⁶ The concomitant decline in the yield of government bonds offset most of this rise, however.

Terms and conditions for loans worsened in the course of 2007. Interest rates on loans to enterprises have been going up since the end of 2005, reflecting key rate increases by the ECB as well as money market rate

rises in the third quarter of 2007 – money market rates, the benchmark for variable rate loans, rose visibly during the crisis of confidence in international markets. At the same time, risk premiums for corporate loans hardly changed until very recently, as is evidenced by the development of the differential between corporate loan interest rates and swap rates with corresponding maturities (as an indicator of interest rates for largely risk-free assets) in 2007.⁷

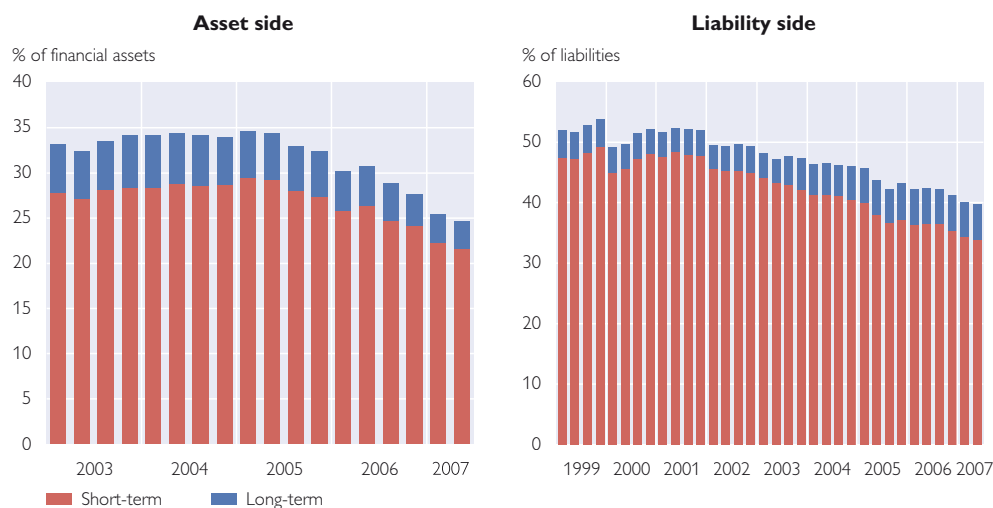
This evidence is broadly in line with the Austrian results of the Eurosystem's bank lending survey. According to this survey, banks reported to have tightened, on balance, the margin on average loans for four quar-

⁶ The indicator we use here is the development of BBB euro area bonds, as the bond market has grown to be highly integrated in the euro area. No separate data series are available for Austria.

⁷ The interest margin reflects not only credit risk, but also the specific competitive situation of the Austrian loan market, which, while not influencing risk adjustment as such, does have an impact on the volume of risk adjustment.

Chart 6

Exposure of the Corporate Sector to Interest Rate Risks



Source: OeNB.

ters in a row, before slightly easing the margin in the third quarter of 2007. Similarly, the margins on riskier loans were not eased in 2007 until the third quarter. At the same time, the survey indicated only a slight net tightening of credit standards for loans to enterprises in the first three quarters of 2007; this applies both to loans to larger enterprises and to loans to SMEs. The crisis of confidence in financial markets had only minor repercussions on the credit standards Austrian banks apply to the approval of loans or credit lines.

Lower Exposure to Interest Rate Risks

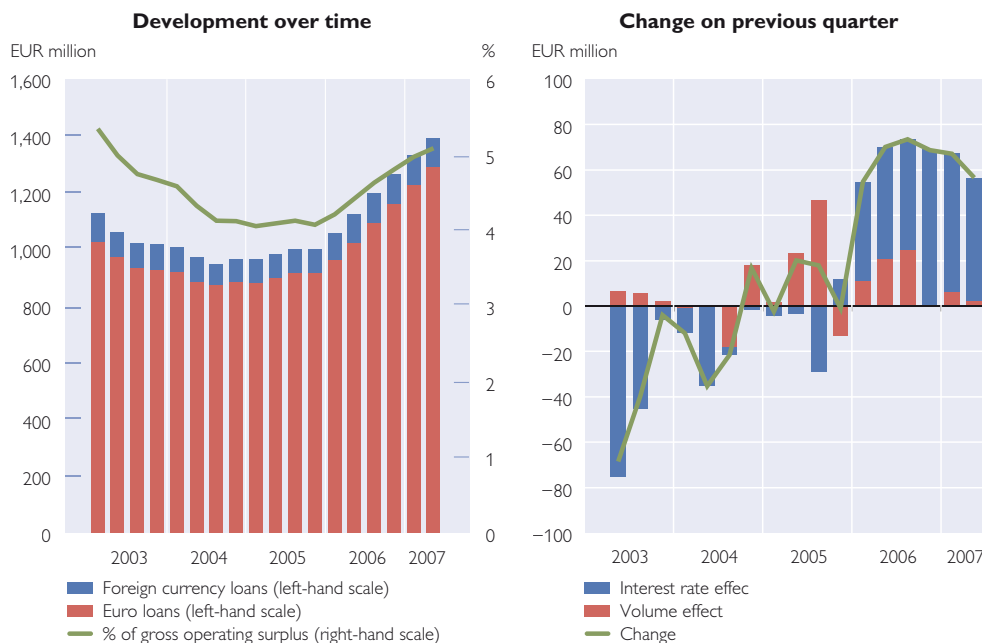
The corporate sector's exposure to interest rate risks declined considerably in the past two years (chart 6).⁸ With regard to the corporate sector's assets, the most recent quarters saw an increase in the share of deposits,

which account for more than two-thirds of companies' interest-bearing assets, and a decrease in the shares of direct equity and mutual fund holdings.

On the liability side, the corporate sector's exposure to interest rate risk has also declined perceptibly in recent years, despite the recent dynamic growth of corporate lending. This decline was related above all to the rising significance of equity in corporates' financing structure. The share of debt securities in total corporate liabilities shrank from 46% in 2005 to 40% in 2007. This decline reflects above all a contraction of liabilities with short-term interest rate risks (loans with an initial fixation period of interest rates up to one year and variable income bonds). In comparison, the share of fixed income bonds, which are subject to long-term interest rate risks, was very stable in

⁸ Interest rate changes affect current interest income and expenses as well as the secondary-market rates of fixed-income bonds. In this section, we look only into effects on interest payments; for the effects of interest rate changes on securities prices, readers are referred to the section on securities price risks. For an explanation of the exposure indicators used here, see the article by Beer and Waschiczek on page 104 in this issue.

Interest expense on corporate loans



Source: OeNB, Eurostat.

Note: Interest expense on euro loans: euro loans to nonfinancial corporations according to MFI balance sheet statistics multiplied by the corresponding interest rates on outstanding amounts according to MFI interest rate statistics.

Interest expense on foreign currency loans: foreign currency loans to nonfinancial corporations according to MFI balance sheet statistics multiplied by the corresponding interest rates on U.S. dollar, Japanese yen and Swiss franc loans to households and nonfinancial corporations according to MFI interest rate statistics.

the past few quarters. In absolute figures, liabilities that are subject to interest rate risks were two-and-a-half times the size of the corresponding asset volume in mid-2007.

Despite the declining share of loans in corporate liabilities, interest expense on bank loans continued to rise in the first half of 2007 (chart 7, left-hand panel). To obtain an indication of the development of the interest rate burden on companies over time, we multiplied the outstanding loan volume with the applicable interest rates taken from interest rate statistics.⁹ It should be noted that this exercise reflects interest payments

only, no noninterest rate charges. Chart 7 (right-hand panel) shows that the rise in interest expense in recent quarters can basically be attributed to the higher interest rate level. This development was reinforced by the high and rising share of variable rate loans.

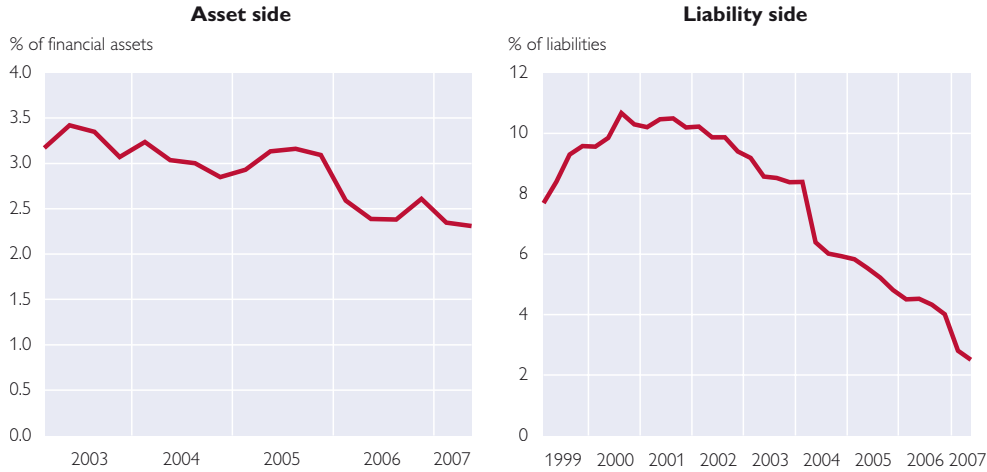
Lower Exchange Rate Risks

In recent years, the corporate sector's exposure to exchange rate risks has shrunk markedly on both sides of the balance sheet. As is evident from chart 8, the foreign currency share was very low on the asset side in recent years (excluding direct holdings

⁹ The interest rates for new business (both corporate and household) were used to determine interest on foreign currency loans, as the interest rate statistics do not contain any data on outstanding amounts of foreign currency loans. As the lion's share of foreign currency loans is at variable rates, which are adjusted periodically, the inaccuracy of this method is not likely to be very large.

Chart 8

Exposure of the Corporate Sector to Exchange Rate Risks



Source: OeNB.

of bonds and stocks, for which no data are available), and has continued to fall most recently.

On the liability side, companies have reduced their exchange rate risk substantially in recent years. The share of foreign currency loans in corporate loans came to 8.9% at the end of September 2007, which is just half as much as three years earlier. Moreover, the share of foreign currency-denominated corporate bonds has also fallen markedly in recent years. In mid-2007 foreign currency-denominated liabilities accounted for

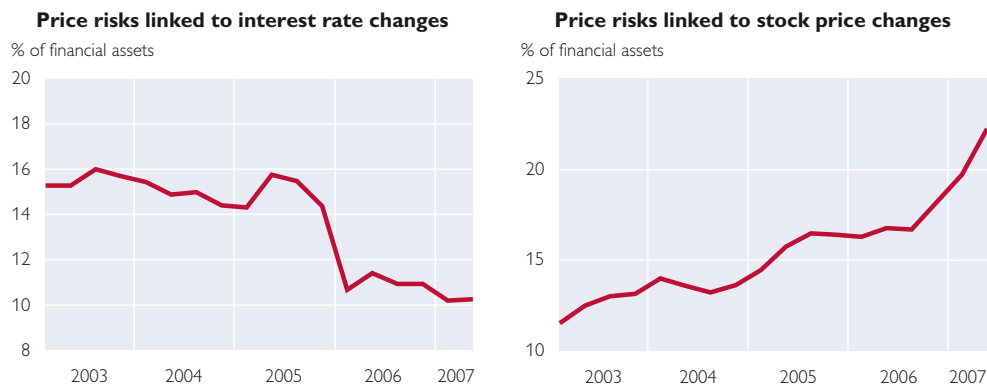
just 2.5% of overall corporate liabilities.

Corporate Financial Assets Increasingly Subject to Stock Price Risks

Price risks as a result of stock price changes have become considerably more important in recent years in companies' financial investment portfolios, whereas interest rate-related price changes have lost significance. The share of bonds (held directly or through mutual fund shares) dropped from close to 16% in mid-2005 to

Chart 9

Exposure of the Corporate Sector to Price Risks



Source: OeNB.

about 10% in mid-2007, while the share of stocks in portfolios (again held directly or through mutual fund shares) has risen continually since 2003 and surpassed the share of interest rate-dependent assets in the third quarter of 2005. To some extent, this rise reflects the higher market value of corporates' stock holdings, following stock price gains in recent years.

Conclusion: Higher Risks for Corporate Finances

On balance, the risk position of the Austrian corporate sector remained favorable. Profits have risen until recently, enhancing not only companies' internal financing capacity but also their debt-servicing capacity, enabling them to absorb the impact of higher interest rates on debt servicing. Another factor that comes into play here is the fact that the debt burden of the corporate sector in relation to its gross operating surplus declined from mid-2005 and did not rebound until mid-2007. Moreover, as mentioned above, companies have cut their exchange rate risk exposure substantially. This generally favorable risk perspective has also been mirrored by the decline in insolvencies until the third quarter of 2007.

At the same time, corporate finances have become subject to a higher degree of risk. While the relative dependence of corporate finances on interest rate developments continued to decline in 2007, the high share of variable rate loans has increased interest rate sensitivity. Corporate financial assets may be subject to lower interest rate and exchange rate risks, but their exposure to stock price risks has increased – something that is indeed relevant in an environment of continued investor uncertainty and

heightened stock price volatility. A massive price setback would trigger valuation losses and might even adversely affect the financial position of companies.

Finally, external economic conditions are unlikely to positively influence corporate risk positions to the same extent as they did in the past. Amid the financial market turmoil, the downside risks of the growth forecast have risen markedly. According to the OeNB's latest economic outlook, the Austrian economy will lose considerable momentum in 2008, and this may have a dampening effect on companies' profit outlook. Last but not least, the euro's strength and higher commodity prices might be an additional burden on companies.

Risk Position of Households has Deteriorated

External Economic Conditions Remain Favorable

The favorable economic environment continued to have a positive impact on the Austrian labor market. Labor growth was high, even though it declined in the first half of 2007, and contributed to a rise in household income. At the same time, per capita real income did not increase much. The rising need for private pension provision and uncertainty about future income paths contributed to a rise in the saving rate.

High Financial Investment by Households

Compared with recent years, Austrian households invested relatively heavily in financial assets in the first half of 2007. Deposits accounted for a disproportionately high share of financial investment, whereas net new investment in capital market in-

struments was relatively low, as in the second half of 2006. The share of bonds¹⁰ in financial investment was disproportionately high in comparison with recent years, while the share of stocks declined in net terms.

Exposure to Exchange Rate Risks Remains Stable

Investment in marketable instruments is subject to valuation risks stemming from both stock price changes (stocks and equity funds) and interest rate changes (bonds and fixed income funds). Marketable instruments accounted for approximately 29% of households' financial assets in the first half 2007. Within this category, households were holding mostly mutual fund shares (42%), followed by bonds (30%) and quoted shares (28%).

Of course, any indirect investment households have made through pension funds, severance funds and insurance plans is also subject to valuation risk. In mid-2007 approximately 14% of households' financial assets were life insurance reserves, approximately 3% pension fund reserves and less than 1% severance fund reserves. On balance, these types of investment, thus, do not increase households' valuation risk exposure substantially. Considering both direct and indirect investment, a total of 32% of households' financial assets were subject to valuation risk in mid-2007; thereof, 20% were subject to valuation risks stemming from interest rate changes, and 12% to valuation risks stemming from stock price changes. However, in the case of in-

direct investments, households are not carrying all of the valuation risk themselves; part of the risk is transferred to the intermediaries involved through the minimum guarantees the latter provide. In addition, unlike most households, financial intermediaries can implement professional risk management programs.¹¹ Furthermore, investment in life insurance plans and pension funds is typically undertaken on the basis of long-term contracts, which is why these funds are not readily accessible within short time frames, or only at a cost. Consequently, the short-term volatility of e.g. stock prices should not trigger major valuation effects; at the same time, however, funds locked into retirement savings and the like cannot be readily reallocated to pay down debts. This may be a disadvantage especially in the event of unexpected financial setbacks or rising interest rates. Life insurance contracts, finally, that come in the form of unit-linked policies often ultimately serve as repayment vehicles for foreign currency loans. Market developments that adversely affect the value of the life insurance policies therefore impact the debt servicing ability of the households concerned.

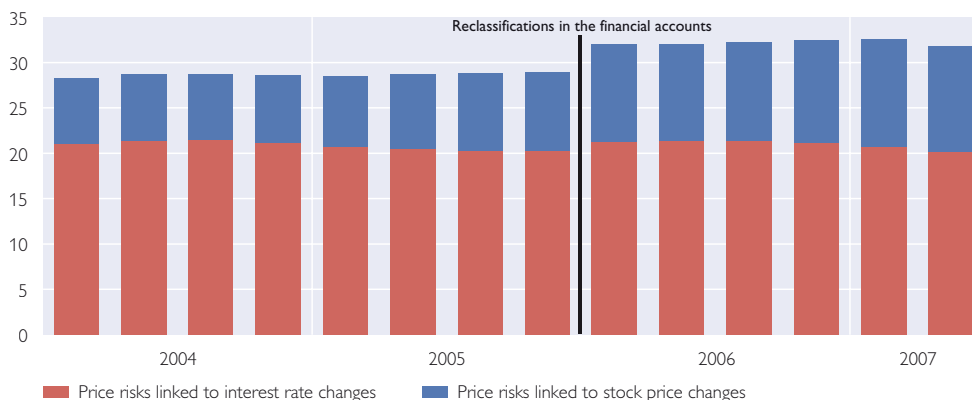
The shift in risk exposure from price risks stemming from interest rate changes to price risks stemming from stock price changes observed in recent years also continued in the first half of 2007. Since early 2004 the ratio of assets subject to valuation risks stemming from interest rate changes to assets subject to valuation risks stemming from stock price

¹⁰ Bonds also include structured products.

¹¹ See also Fessler, P., M. Schürz, K. Wagner and B. Weber. 2007. *Financial Capability of Austrian Households*. In: *Monetary Policy & the Economy Q3/07*. OeNB. 50–67.

Exposure of the Household Sector to Price Risks

Assets subject to price risks in % of total assets



Source: OeNB.

changes has dropped from 250% to 175%.¹²

In the first two quarters of 2007, bond investors incurred relatively high valuation losses on account of rising interest rates. The interest rate increases also had a negative impact on the performance of fixed income funds. Investors in stocks, in contrast, achieved fairly high valuation gains in the first half of 2007, thanks to rising stock prices. However, the first-half figures do not yet reflect the financial market turmoil of the summer of 2007.

When assessing the significance of valuation risks from a financial stability perspective, one must take into account that only a minority of households actually invests directly in financial instruments that are subject to price risks – namely above all

households in the upper income and wealth deciles,¹³ in other words, households which should be in a position to absorb potential price losses.

Diversification

The risks inherent in securities investment may be reduced by diversification strategies. In this respect, the geographical reach of equity investment by Austrian households is rather limited. Austrian stocks account for more than 70% of all investment in stocks. Moreover, the degree of dispersion among individual issuers and industries is low. At the end of 2006, the top ten instruments absorbed 64% of Austrian households' investment in stocks. A particularly high share of funds went into real estate stocks.¹⁴

¹² The higher share of assets subject to price risks stemming from stock price changes may, in part, be attributed to reclassifications in the financial accounts (see OeNB. 2007. *Austrian Financial Accounts 2006. Analysis of Current Financial Accounts Data. Special issue of Statistiken June 07*). The ensuing effect should add up to no more than 4 percentage points.

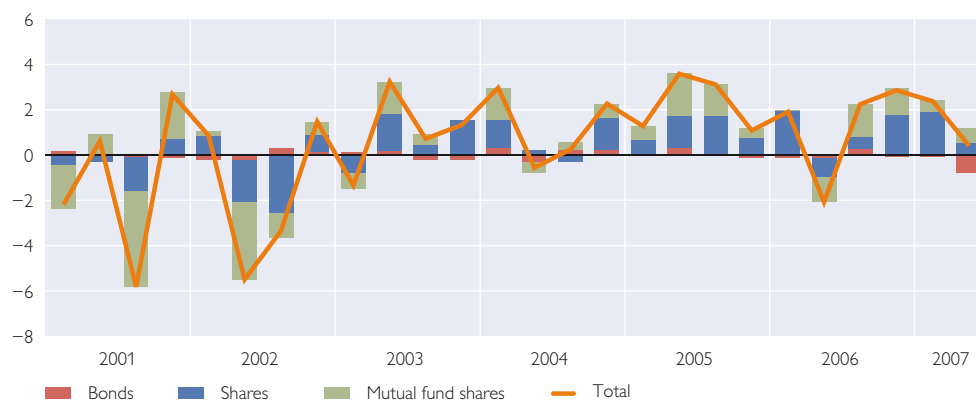
¹³ Compare Beer, C., P. Mooslechner, M. Schürz and K. Wagner, 2006. *Austrian Households' Financial Wealth: An Analysis Based on Microeconomic Data*. In: *Monetary Policy & the Economy Q2/06*. OeNB. 94–110.

¹⁴ See Andreasch, M., S. Jilg and G. Sedlacek. 2007. *Eigentümerstruktur inländischer börsennotierter Unternehmen 2006*. In: *Statistiken – Daten & Analysen. Q4/07* OeNB. 40–47.

Chart 11

Valuation Gains and Losses in the Financial Assets of Households

% of assets invested in capital market instruments



Source: OeNB.

Indirect investments through mutual funds, which account for approximately 11% of households' financial assets, increase diversification. Mutual fund portfolios usually cover a wider range of companies than direct investments by households, at the same time including fewer Austrian companies. Thus, while direct investments are highly concentrated, indirect investments are widely diversified.

Interest Rate Risk

Changes in interest rates affect the interest income on assets and interest expense on liabilities i.e. interest receivable on deposits and bonds on the asset side of the balance sheet, and interest to be paid on loans on the liability side of the balance sheet. Whether a change in the interest rate level affects interest income and expense also depends on the periods of rate fixation. The following analysis therefore distinguishes between short-term interest rate risk (interest rates locked in for periods of up to one year) and long-term interest rate risk.¹⁵

Higher Interest Rate Income

At the end of the second quarter of 2007, approximately 42% of households' financial assets were subject to short-term interest rate risk, and approximately 26% to long-term interest rate risk. The high incidence of interest rate risk may be attributed to the high share of deposits in households' financial investment (44%).

Existing savings deposits carried an interest rate of 1.9% in September 2007, which is 0.5 percentage points higher than in September 2006. Households' interest income from deposits increased as a result of both stronger investment in deposits and higher interest rates.

Little New Borrowing

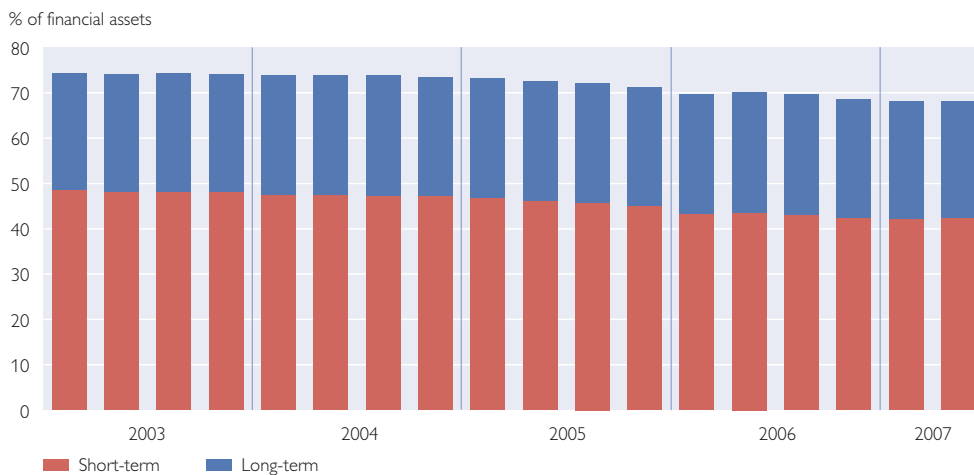
In the first half of 2007 the share of variable rate euro loans reached 83% in the new consumer loan business and 55% in the new housing loan business. Foreign currency loans tend to carry variable interest rates. The current high levels are broadly unchanged from recent years.

Loan growth was relatively weak in the first half of 2007. According to

¹⁵ This assessment does not include risk-reducing effects of guarantees (such as guarantee bonds).

Chart 12

Exposure of the Household Sector to Interest Rate Risks



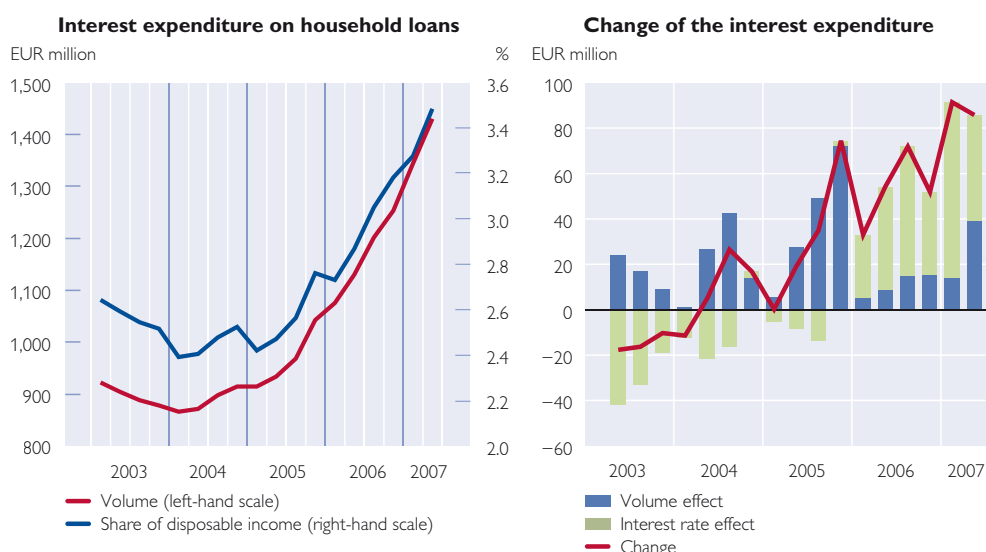
Source: OeNB.

financial accounts statistics, households' liabilities to banks and other lenders rose by 4.0% year on year, with housing loans increasing by 5.0% but consumer and other loans by just 2.5%. The latter may reflect the lower growth rate of consumer demand.

To some extent, the low share of new loans can be attributed to the rise in lending interest rates. In the first three quarters of 2007, the real interest rate¹⁶ for housing loans rose by 0.5 percentage points to 2.89%, and the real interest rate for consumer loans increased by 0.55 per-

Chart 13

Interest Expense on Household Loans

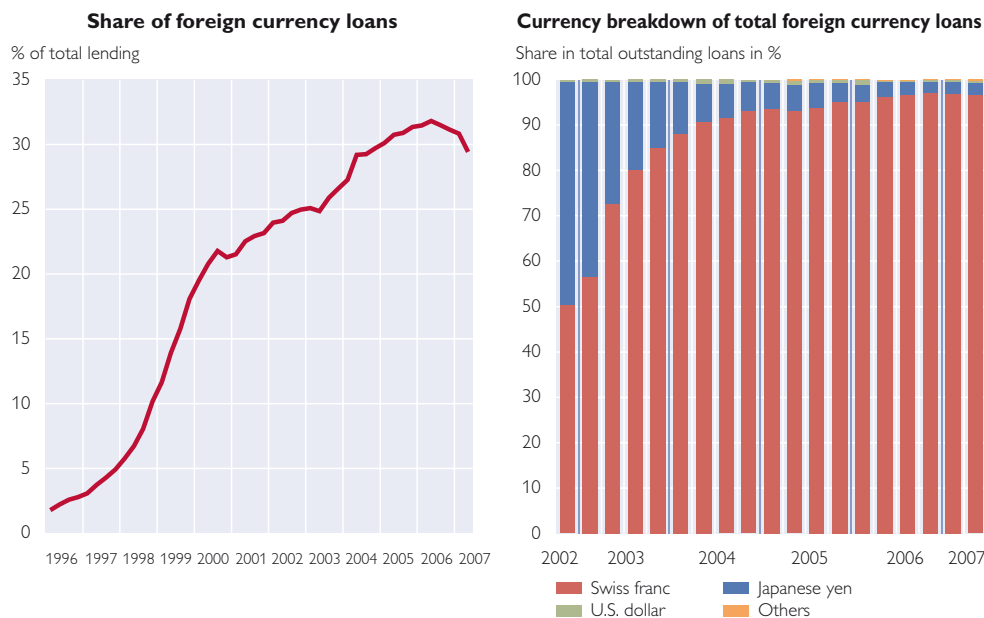


Source: OeNB.

¹⁶ The real interest rate is calculated as the nominal interest rate less the OeNB's HICP forecast for the year following the forecast date.

Chart 14

Foreign Currency Loans to Households



Source: OeNB.

centage points to 4.52%. Those increases were basically made to pass on recent key rate hikes adopted by the Governing Council of the ECB; apart from that, banks left their credit standards broadly unchanged, according to the Eurosystem's latest bank lending survey. This is also true for the third quarter of 2007, i.e. the period following the credit market turmoil triggered by the subprime loan crisis in the United States. In the third quarter, banks tightened their credit standards for consumer loans somewhat while even easing their credit standards for housing loans.

Increased Interest Expense

Because interest rates on loans rose further, as did debt volumes, the increase of interest expenses on household loans observed since early 2004

continued in the first half of 2007. Given the high share of short-term interest rate risk, the interest rate increases started to drive up interest rate expenses fairly soon. In mid-2007 interest expense¹⁷ totaled 3.5% of households' disposable income according to the national accounts, which is 0.6 percentage points higher than the corresponding 2006 value. Almost three quarters of the higher interest expense may be attributed to the rise in interest rates.

However, interest expense is expressed by relation to the total disposable income of all households – including households that have not taken out any loans. A household survey conducted by the OeNB in 2004 indicates that some 40% of all households have taken out a loan. As those households tend to be higher-income

¹⁷ Interest expense for household loans is calculated as the product of the volume of loans by maturity and purpose, and of the respective interest rate. Disposable income also covers the income of nonprofit institutions serving households.

households, the share of interest expenses in their disposable income can be expected to come to about 7.5%.

In interpreting interest expense it is important to note that the underlying figures are merely an approximation of households' debt burden. On the one hand, the estimates disregard additional costs of borrowing (other than interest rate charges) as well as subsidies, which play an important role especially for housing loans. On the other hand, the estimates cover only interest payments, not repayments of principal.

Based on interest expenses reported at mid-2007, a 100 basis point rise of loan interest rates would drive up the share of disposable income spent on interest expenses by 0.68 percentage points.¹⁸

Exchange Rate Risk

At the end of the first half of 2007, around 4.5% of the financial assets of Austrian households were exposed to exchange rate risks. As direct investment in stocks and bonds is highly concentrated on Austrian and euro area instruments, exchange rate risks are generally low in this segment. In the mutual fund segment, in contrast, 25% of retail fund assets were invested in non-euro-denominated instruments according to mutual fund statistics. Even though investments in mutual funds do increase exchange rate risks, they also add to the geographical diversification of portfolios, which alleviates risks in turn.

Small Decline in Foreign Currency Loans

Households' exchange rate risk from borrowing declined somewhat in the

first two quarters of 2007. In total, 29.4% of all loans were foreign currency loans (which corresponds to a drop by 1.7 percentage points), and over 95% of all foreign currency loans were denominated in Swiss francs. The shrinking share of foreign currency loans may reflect the declining positive interest rate differential that loans in Swiss francs retain over euro-denominated loans. At the same time, households may have become more sensitive to risks as well. Yet on balance the share of foreign currency loans remains high, which means that the exchange rate risk underlying household loans is not negligible.

About one-fifth of the entire interest expense for loans was for foreign currency loans in mid-2007. Compared with 2006, the interest expense for foreign currency loans thus rose by around 40% on account of the rising interest rate level. Because of the appreciation of the euro against the Swiss franc, households achieved – unrealized – high valuation gains in the first half of 2007 of around 2% of the amount of foreign currency loans outstanding.

Based on the interest expenses reported at the end of the second quarter of 2007, a 10% appreciation of the currencies in which the outstanding foreign currency loans are denominated would drive up the interest rate burden by 0.07 percentage points. When interpreting the relatively low impact of exchange rate changes, one must bear in mind that this indicator only takes account of interest payments and neglects the rise in liabilities resulting from the higher euro equivalent.

¹⁸ Fixation periods and potential changes in borrowing behavior are not considered.

Conclusion: Risk Position of Households Worsened Somewhat

The risk position of households remained robust, even though the slight tightening of financing conditions contributed to a slight worsening of the risk position.

The high share of variable rate loans implies a relatively rapid pass-through of interest rate changes to interest expense, which has in fact risen gradually since mid-2004. This rise was, however, offset partly by higher interest income from deposits and bonds. Moreover, favorable conditions in the labor market have had a positive effect on households' ability to meet their loan liabilities. Although the share of foreign currency loans is declining, the underlying exchange rate risks remain high. Moreover,

even if all foreign currency loans were to be converted into euro loans, there would still be the performance risk of the repayment vehicle. Yet in an international comparison the degree of indebtedness is low, and the volume of outstanding debt is highly concentrated in the segment of high-income or wealthy households.¹⁹

On the asset side, the share of assets that are subject to valuation risks due to stock price changes has been rising slowly but gradually in recent years. The overall share of such assets continues to be low, however. Moreover, those households that have invested directly in stocks are typically high-income households that are in a position to absorb potential price setbacks such as those in the summer of 2007.

¹⁹ See Beer, C. and M. Schürz. 2007. *Characteristics of Household Debt in Austria. Does Household Debt Pose a Threat to Financial Stability?* In: *Monetary Policy & the Economy Q2/07*. OeNB. 58–79.

Austrian Financial Intermediaries Develop Dynamically Despite Turbulent Environment

Banks' Total Assets and Profits Grow Again Owing to Investments in Central, Eastern and Southeastern Europe

Total Asset Growth Picks Up Considerably Again

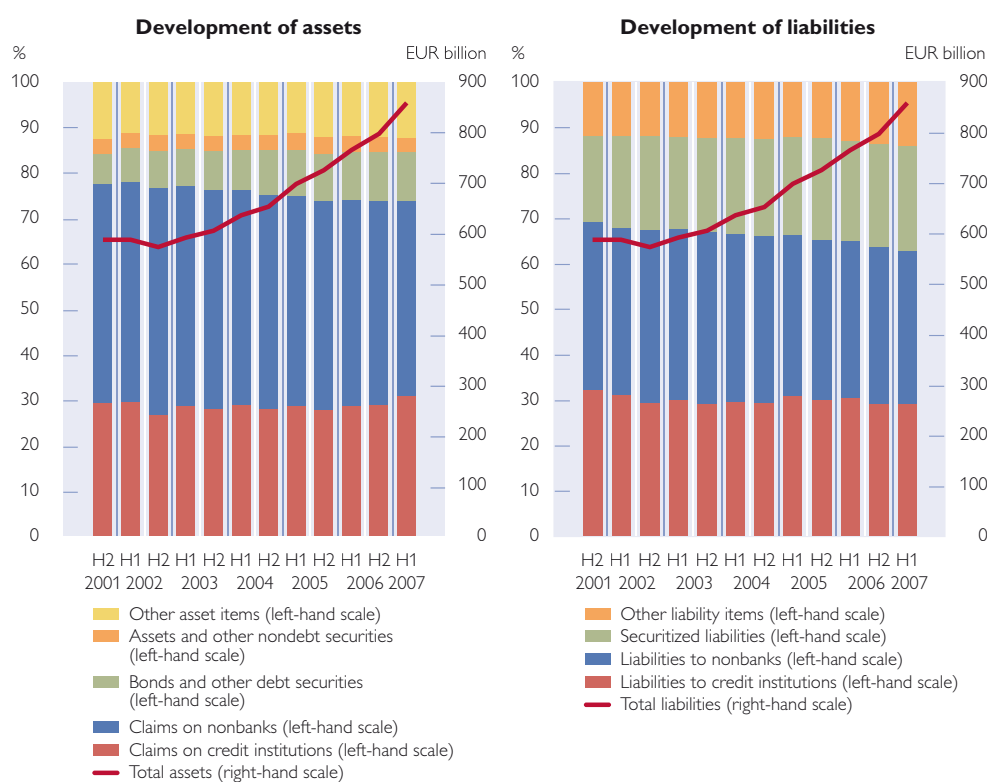
Based on unconsolidated total assets, the Austrian banking sector experienced very strong growth in the first six months of 2007. As in the past, this expansion was fueled by dynamic external business and came to +12.3% (year on year) as at end-June 2007 – the largest rise recorded since 1985.

As a result, unconsolidated total assets amounted to EUR 859 billion, with Austria's five largest banks¹ accounting for around 44% of this sum. Consolidated total assets that notably also cover banks CESEE subsidiaries exceeded the EUR 1,000 billion mark at end-March 2007 and reached around EUR 1,037 billion at end-June 2007, corresponding to year-on-year growth of 18.7%.²

In June 2007, external assets rose by 25.6% (year on year) to EUR 340 billion, i.e. 39.6% of total assets, while external liabilities accounted

Chart 15

Balance Sheet Structure of the Austrian Banking Sector (Unconsolidated)



Source: OeNB.

¹ Bank Austria Creditanstalt AG (BA-CA), Erste Bank der oesterreichischen Sparkassen AG (Erste Bank), Raiffeisen Zentralbank Österreich AG (RZB), Bank für Arbeit und Wirtschaft und Österreichische Postsparkasse AG (BAWAG P.S.K.) and Österreichische Volksbanken AG (ÖVAG).

² The consolidated data may be slightly distorted because of the application of different accounting standards.

for 32.1% of total liabilities. On the asset side, claims on foreign nonbanks climbed by 18.8% against the previous year, whereas claims on foreign banks saw above-average growth of 32.8%. On the liability side, the increase was lower, but also in this case, for example, liabilities to foreign banks and nonbanks rose by 4.7% and 27.0%, respectively.

In contrast, domestic business growth continued to weaken. Thus, claims on domestic nonbanks only augmented by 2.4% against the previous year, while they had still mounted by 6.8% in June 2006. On the liabilities side, liabilities to domestic banks rose by 10.6%. Deposits by domestic nonbanks grew 6.6%. Domestic issues recorded a significant increase of +35.3% against the previous year that was mainly spurred by bond issues.

Special off-balance sheet transactions (derivatives business) rose by 10.8% to around EUR 1,840 billion in the first half of 2007.³ Their volume remained roughly twice that of unconsolidated total assets.

After a longer period of consolidation in the Austrian banking network, the number of bank outlets did not change in the first half of 2007.⁴ In parallel, the number of bank employees started to rise again in Austria in mid-2006 and reached 66,702 at end-June 2007, 1.3% higher than in mid-2006.

Dynamic International Business Boosts Profits Substantially

Austrian banks' heavy investment in CESEE results in high growth rates of consolidated operating profits.⁵ In the first six months of 2007, they amounted to EUR 5.7 billion, which corresponds to an annual increase of 28.0%. It is remarkable that, in spite of the high increase in total assets, consolidated operating profit margins⁶ continued to rise to 1.12% – as compared with 1.04% in the first half of 2006. In the same period, the consolidated cost-to-income ratio significantly decreased by 2.9 percentage points to 58.8% within the past 12 months, because consolidated operating income (+18.9%) grew more than consolidated operating cost (+13.3%).

Against the backdrop of fast credit expansion, the key income driver was again interest income with its high margins in CESEE. It increased by slightly less than EUR 1.5 billion (+21.0%) year on year and, therefore, accounted for more than two-thirds of total growth. Fee income augmented almost as strongly: it rose by almost 18.7% and contributed around 28.6% to total growth. In contrast, trading income and other income “only” went up by 9.4% and 6.1%, respectively.

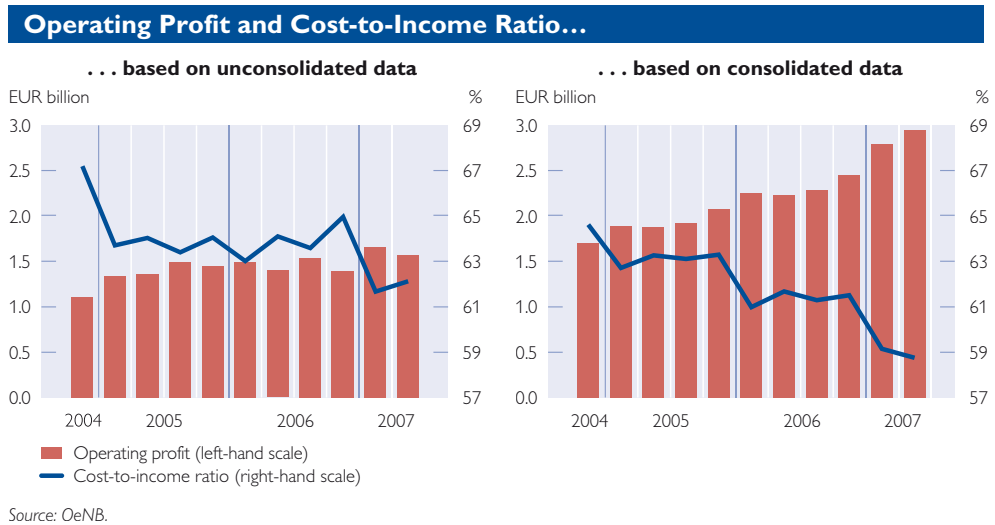
³ As the reported data is based on nominal values, it is not possible to make a clear statement about the riskiness of the derivatives business.

⁴ The decrease in the number of branch offices was offset by the establishment of new head offices.

⁵ The use of different accounting standards may marginally distort the consolidated data.

⁶ Operating profit relative to total assets (consolidated).

Chart 16



On the expenditure side, staff costs climbed by 15.0% against the previous year outpacing administrative expense growth (+11.8%). Announced measures to improve efficiency abroad, however, could result in cost savings in the future. Around 28.8% of operating profit went to credit risk provisions, which were higher than in the previous year. After one-time effects caused by restructuring within the UniCredit group in previous periods – in particular, proceeds from the sale of individual subsidiaries – consolidated profit increased by 10.1% year on year. In June 2007, the consolidated return on assets (ROA) and consolidated return on equity (ROE) came to 0.72% and 14.6%, respectively.

Domestic Business Generates Higher Profits

Unconsolidated profits, which may serve as a rough indicator of domestic business, climbed noticeably in the first half of 2007 after a weaker performance in the previous year. At end-June 2007, for example, unconsolidated operating profit increased by around 11.6%, close to the growth

rates recorded in 2005. Moreover, domestic banks were able to improve their efficiency slightly in the first half of 2007. This was reflected by a reduction in the cost-to-income ratio to 62.1% at end-June 2007 from 64.1% in the previous year. The improvement resulted from a stronger rise of operating income (+5.8%) over operating expenses (+2.5%) in a comparison of the first half of 2007 with the first half of 2006.

A closer look reveals that net interest income enlarged by 0.2%, almost the same as in the previous year. This result is attributable to a further narrowing of the interest margin to below the 1% mark for the first time, bringing the margin to 0.95% in the first half of 2007, which certainly is indicative of the strong competition in this field. The growth rates of interest expenses and interest income remained high because interest rates in the euro area were on the rise. The share of net interest income in total income continued to decline to slightly below 42%. Unconsolidated net fee income again developed dynamically. In a year-on-year comparison, it grew by almost 13.1% to

nearly EUR 2.5 billion. As a result, the share of fee income in total income progressed to 28.8%. Year on year, income from securities and participating interests increased by 15.7% and, after slowing in the previous year, returned to the growth rates of 2005. Financial operations decreased, which was mainly caused by a reduction in trading in foreign exchange, currency and precious metals as well as in other financial operations.

Staff costs only augmented by 1.1% after an 8.5% rise in the previous year. Administrative expenses saw an above-average increase (+5.5%).

In spite of the high profitability of their international business, banks should not overlook the need to further strengthen the profitability of their domestic business and, in particular, the contribution of interest income to profits. The further narrowing of the interest margin is evidence of increasing competition in the domestic market and intensified activities of direct banks.

Declining Growth in Household Lending

Since the third quarter of 2006, growth in lending to domestic households and corporations has slowed down. Thus, lending of all Austrian banks reached an annual growth rate of 4.1% at the end of June 2007, which was less than the 5.7% rate recorded at the end of June 2006. This deceleration is mainly attributable to households and may also be related to the rise in interest rates and expected further increases in the future. Credit growth sank particularly strongly at the five largest banks; however, these banks generally follow a more volatile growth path.

Chart 17

Growth in Claims on Domestic Households and Nonfinancial Corporations



Source: OeNB.

An analysis of lending developments by banking sector shows a strong 14.6% growth of lending by state mortgage banks in the second quarter of 2007. By contrast, lending by joint stock banks and savings banks developed very slowly and, with annual growth rates of 1.6% and 2.0%, respectively, they recorded the lowest increase of all sectors with the exception of special purpose banks. Building and loan associations stepped up lending growth from 2.0% at end-June 2006 to 5.0% at end-June 2007, benefiting both from the decline in foreign currency loans and from the implicit interest rate cap that appears attractive in times of rising interest rates.

Share of Foreign Currency Loans Declines Further

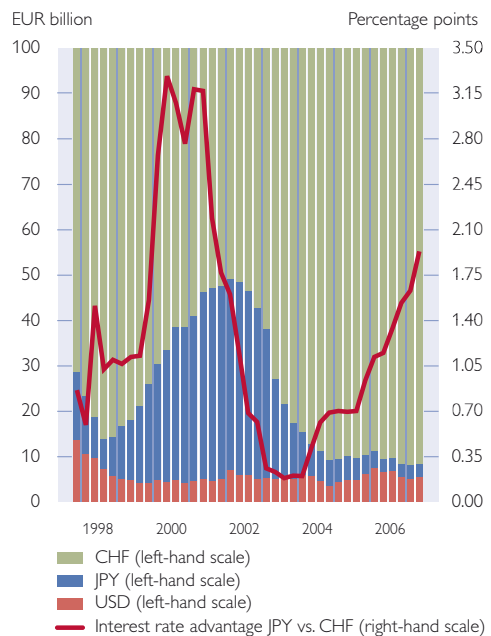
The share of foreign currency loans continued its steady downward trend also in the first half of 2007. While 19.7% of all loans to domestic non-banks were denominated in foreign currencies in mid-2006, this percentage stood at around 17.3% at end-

June 2007. The volume decreased from EUR 54.1 billion to EUR 48.5 billion. For the first time since 1996, the share of foreign currency loans in lending to nonfinancial corporations dropped below 10% (8.9% as at end-June 2007), whereas the reduction of the share of foreign currency loans to households – roughly 29% – is less dynamic.

The Swiss franc accounted for an almost unchanged share of around 90% of all foreign currency loans. Despite the growing interest rate disadvantage of the Swiss franc in comparison with the Japanese yen in recent quarters, yen-denominated loans did not rise. Only some 3% of foreign currency loans were denominated in Japanese yen, 5.4% in U.S. dollars. A significant increase, however, was recorded for Czech crown loans. Although they only account for 1% of all foreign currency loans and reached a volume of around EUR 0.5 billion at end-June 2007, enormous growth rates were achieved, in particular by lending to households, in the past few months. This was certainly caused by the low interest rate level in comparison with euro rates (from mid-2006 to mid-2007, the Czech key interest rate ranged from 2.50% to 2.75%). Nevertheless, these loans involve a considerable exchange rate risk. Moreover, the Czech key interest rate has increased to 3.25% by now.

At end-June 2007, around 78% of all foreign currency loans to households and nonfinancial corporations were bullet loans. Out of these, 76.3% were backed by repayment vehicles. In comparison thereto, 27.2% of euro-denominated borrowing of

Chart 18
Foreign Currency Lending by Austrian Banks – Shares of Currencies



Source: OeNB; three-month interbank interest rates according to Bloomberg.

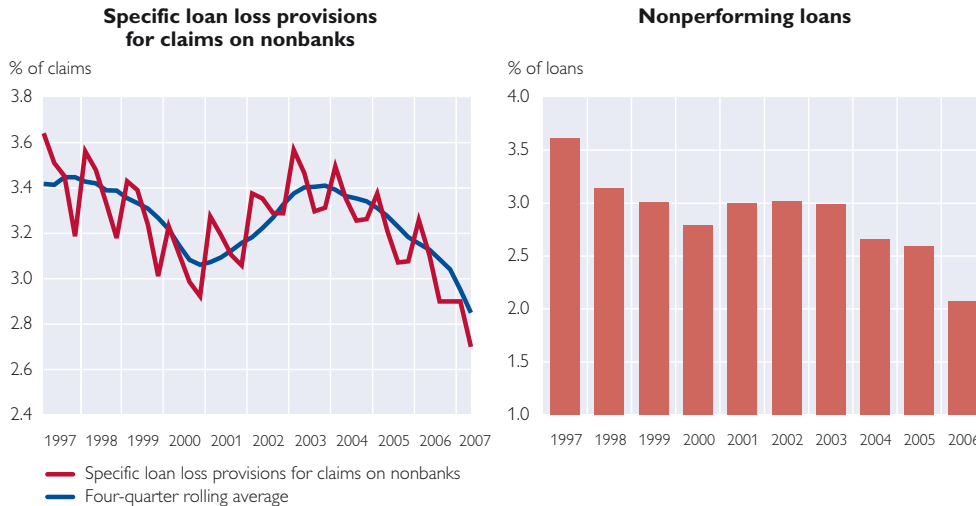
households and nonfinancial corporations were bullet loans, 10% of which were backed by repayment vehicles. The share of foreign currency bullet loans taken out by households (84.6%) was significantly higher than the one for corporations (57.3%). For the use of repayment vehicles, the difference was even bigger. While the use of repayment vehicles applied to 85.5% of foreign currency bullet loans to households, it only applied to 33.7% of such loans to corporations. In particular, the majority of foreign currency loans to households is affected by an additional risk caused by fluctuations in the return of the repayment vehicle.⁷

As the share of foreign currency lending to households is still high by international standards, the OeNB

⁷ Since the beginning of 2007, the OeNB has been collecting new statistical data that include information on loans to be fully repaid at maturity and on the use of repayment vehicles.

Chart 19

Credit Quality



Source: OeNB.

and the Financial Market Authority (FMA) jointly updated the information folder on risks involved in foreign currency loans that is available from Austrian banks in order to further raise awareness of the risks of this financing instrument.

Credit Quality Hits Historical Peak

Since 2003, credit quality has considerably improved according to the assessments made by external auditors within the framework of prudential reports. Data on nonperforming loans available from annual prudential reports show that the share of (at least partly) provisioned nonperforming loans in total lending decreased sharply – from 3.0% in 2003 to 2.1% in 2006 – for the aggregated unconsolidated Austrian banking system.

The development of specific loan loss provisions also shows that credit quality has improved in the past four years. At the end of June 2007, for example, specific loan loss provisions

of the entire Austrian banking sector amounted to 2.7% of claims on nonbanks, i.e. 0.8 percentage points less than in mid-2003. In line with the trend in the euro area,⁸ specific loan loss provisions also indicated an improvement of credit quality in 2007.

According to the most recent data available, both the share of nonperforming loans in total lending and the share of specific loan loss provisions in claims on nonbanks reached the lowest level since 1997, while the seasonal increase in specific loan loss provisions that was observed in previous years did not occur in the first quarter of 2007. The strong rise in credit quality may be traced to sound economic growth on the one hand and to the first effects of Basel II, i.e. better risk management, on the other hand. At any rate, the continuous increase of the key interest rate from 2005 to date has not affected the positive development of credit quality so far.

⁸ European Central Bank Financial Stability Review, p. 118, June 2007.

The U.S. Subprime Crisis: Causes and Effects

In an environment of rising real estate prices, mortgage loans were increasingly also granted to subprime borrowers in the U.S.A. in recent years. This subprime market probably accounts for roughly 15% to 25% of the entire U.S. mortgage lending market. In this market segment, the interest rates were usually fixed at a very low level in the first two to three years (teaser rates), but subsequently were adjusted to current market rates. Because of this adjustment and the rising interest rate level in the U.S.A., interest payments soared. In many cases, repayment of the principal also started at that time – after a few “interest-only” years. Moreover, the development of real estate prices that had stagnated for more than one year and recently even went down¹ made refinancing more difficult.

The problems of subprime borrowers in the U.S.A. disrupted global financial markets because of the securitization of these loans. U.S. subprime mortgage loans are repackaged and sold to investors in the form of asset-backed securities. The respective investors receive payment flows related to the securitized loans (interest and principal payments) in line with the credit rating of the individual security tranches. These securities are mainly bought by investment companies, insurance companies, pension funds and banks worldwide. In addition, special-purpose vehicles, such as conduits or structured investment vehicles, are set up; these use asset-backed commercial papers for short-term refinancing and buy securities with long maturities that, inter alia, are backed by U.S. subprime mortgage loans. To reduce the refinancing risk of these entities, banks issue guarantees to ensure their liquidity if the demand for asset-backed commercial papers should be insufficient.

At the end of February and in early March 2007, the news that bad debts rose significantly in this loan segment triggered short-term turbulence in international financial markets. When the rating agencies partly massively downgraded their risk assessments for many of these tranches in spring, uncertainty increased strongly in this market. In the summer months of 2007, crisis events at individual European banks, the liquidation of several hedge funds and the suspended redemption of shares in some funds related to the money market resulted in a crisis of confidence in the financial markets, especially in the interbank market. This crisis was fueled by uncertainty about the distribution and concentration of credit risks as well as about still unrealized losses and hidden accounting losses for these financial instruments. Difficulties also emerged in the valuation of these financial instruments. Moreover, there was general uncertainty about the extent of banks' financing obligations to special purpose vehicles.

The intensified search for yields in the past years resulted in the lowering of usual market standards especially for high-risk investments and in insufficient attention being paid to the relationship between risk and returns. The reassessment of risks and the related adjustment of risk premiums was linked with elevated uncertainty and a rise in price volatility in the financial markets. The risk appetite of market participants dwindled perceptibly, as reflected in particular by the very low demand for commercial paper backed by mortgage loans and for securitized leveraged buyout loans.

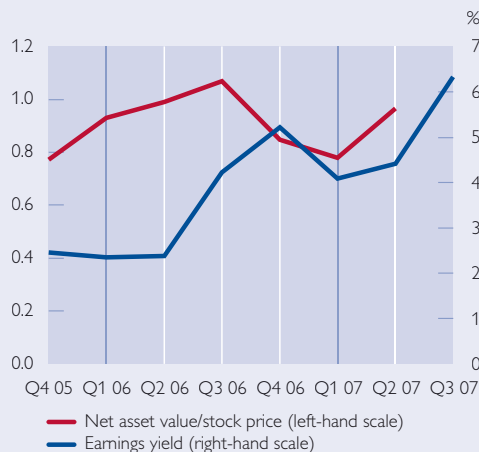
With regard to the impact of the U.S. subprime crisis on the Austrian banking sector, a survey among major banks carried out by the OeNB showed that these banks' exposure is relatively low and predominately falls into the highest rating classes. The OeNB expects that banks can cover potential losses by excess own funds. Major Austrian banks are probably also exposed only little to the U.S. mortgage market because they primarily pursue a strategy of expansion in Central, Eastern and Southeastern Europe.

¹ The National Association of Home Builders (NAHB's) composite housing market index recently hit the lowest level since 1991.

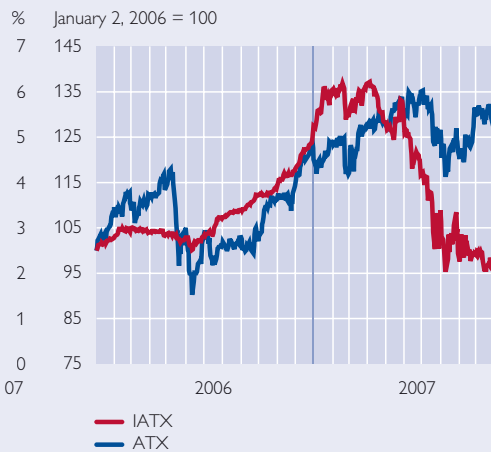
In the second half of 2006, the IATX (Austrian real estate securities index) outperformed the overall market. In the wake of the turbulence in international financial markets triggered by the U.S. subprime crisis, the Austrian real estate securities market also witnessed price losses. Positive impulses had come from the favorable economic development and the resulting demand for real estate especially in Eastern Europe. The stock prices of several real estate corporations included in the IATX² even peaked in spring 2007. However, prices have dropped considerably since April 2007; in mid-November 2007, the IATX fell to the level observed in the summer of 2003. Several factors contributed to this decrease. After a few – in part massive – capital increases, the stock prices of some real estate corporations were above their net asset value.³ This situation was compounded by the international mortgage crisis. Even though Austrian real estate corporations invest mainly in Europe (in particular in Austria and CESEE) and hardly in the U.S. real estate market, stock prices nevertheless plummeted by up to 40% until the fall of 2007. Moreover, the domestic real estate securities market was affected by turbulence at a single real estate company. Issues related to the transparency of trading and regulations in the Viennese stock market were discussed in this context. At the editorial close, the net asset value of some real estate corporations was higher than their market value. The price slump of domestic real estate stocks after end-June 2007 was probably caused, for the most part, by lower investor confidence in the market for real estate stocks. The volatility of future price developments will depend considerably on the extent to which the CESEE real estate markets will be influenced by the uncertainty in the U.S. real estate market.

Development of the Austrian Market for Real Estate Stocks

Indicators on the market for real estate stocks



IATX and ATX



Source: OeNB calculations based on the quarterly, semiannual and annual reports of the real estate corporations included in the IATX real estate index, Wiener Börse.

Overall, the most recent events may essentially be considered a necessary and ongoing process to reassess risk. The increased uncertainty in the financial markets associated with this process calls for strong vigilance of market participants, central banks and supervisory authorities and greater transparency of financial market transactions.

² Composition of the IATX (shares as at November 20, 2007): CA Immo International AG (5.0%), CA Immobilien Anlagen AG (19.8%), Conwert Immobilien Invest AG (18.4%), Eco Business-Immobilien AG (5.0%), Immoeast AG (20.1%), Immofinanz AG (18.0%), Sparkassen Immobilien AG (11.1%), Warimpex Finanz- und Beteiligungs-AG (2.7%). Market capitalization of domestic real estate stocks totaled EUR 15.3 billion in October 2007 (EUR 16.4 billion in August 2007). This brings the share of real estate stocks in the total capitalization of the Vienna stock exchange to 10.5%.

³ The net asset value (NAV) per share, i.e. its inherent value, is an indicator of the value of the real estate held by a corporation. It is calculated using the market value of real estate (including undisclosed reserves) plus other assets minus interest-bearing and non-interest-bearing liabilities.

Further Decrease in Interest Rate Risk in the Banking Book

Market risk joins credit risk as a key risk category for banks. Market risk results from fluctuations in risk factors, such as interest rates, stock prices or exchange rates, that may reduce the value of on- and off-balance sheet items. Therefore, specific capital requirements apply to the securities trading book that is particularly exposed to market risks. Further market risks arise for banks in the form of interest rate risk in the banking book and foreign currency risk from open foreign exchange positions.

In mid-2007, 28 banks operating in Austria were subject to the regulatory capital requirements related to running a large securities trading book. The first half of 2007 was characterized by a partly considerable increase in capital requirements for covering the risk inherent in interest rate and equity positions. These capital requirements increased from EUR 737 million at the beginning of the year to EUR 980 million in mid-2007 for interest rate instruments and from EUR 101 million to EUR 212 million for equity positions. Part of the rise is, however, attributable to the transition to the new reporting requirements within the framework of Basel II because mutual fund shares now also have to be assigned to the underlying risk categories. In relation to credit risk, at any rate, the market

risk inherent in trading book positions still accounts for a low share of the total risk borne by Austrian banks.

The refinancing of assets by means of liabilities with different maturities results in a maturity transformation that may enable banks to generate structural profit contributions, but also involves an additional interest rate risk. Since mid-2004, the euro area has seen a continuous flattening of the yield curve that reduced the structural profit potential resulting from a positive maturity transformation. In this environment, the banks operating in Austria also reduced the interest rate risk in the banking book in the first half of 2007.⁹ Thus, the asset-weighted average of the Basel ratio for interest rate risk¹⁰ of all banks further decreased from its historical low of 5.6% at the beginning of 2007 to 5.2% in mid-2007 (three years earlier, this indicator had still stood at 7.5%). This development is driven by major banks: the five largest banks recorded a decline in their asset-weighted average of the Basel ratio for interest rate risk from 4.3% to 3.2% in the first six months of 2007.

The foreign currency risk arising from open foreign exchange positions moderately increased in the first half of 2007. The related regulatory capital requirement rose from EUR 75 million at the beginning of the year to EUR 89 million in mid-2007.

⁹ This analysis is based on supervisory data from the interest rate risk statistics that takes account of all interest rate-sensitive on- and off-balance sheet positions as well as non-interest-rate-sensitive on-balance sheet positions whose performance is assessed on the basis of market interest rates.

¹⁰ This ratio is calculated separately for each bank. It indicates the loss potential resulting from an interest rate shock relative to the bank's eligible capital. The interest rate shock is defined as a parallel 200 basis point shift in the yield curves of all currencies.

OeNB and FMA Guidelines on Managing Interest Rate Risk in the Banking Book

The Oesterreichische Nationalbank (OeNB) and the Financial Market Authority (FMA) are working on adding guidelines on managing interest rate risk in the banking book to their guidelines series on Basel II.

The selective acceptance and transformation of interest rate risks forms an essential element of the earnings and risk situation of banks. Given the changed framework, the introduction of effective systems for containing and controlling interest rate risk is a business necessity for all banks. The guidelines on managing interest rate risk in the banking book are to assist banks in designing the strategies and procedures required to identify, control and monitor interest rate risks. By way of introduction, the guidelines provide a detailed outline of the supervisory background (integration of interest rate risk in the banking book into the new regulations according to Basel II). The new supervisory framework reflects the growing importance given to the interest rate risk in the banking book in the context of bankwide risk management. For the first time, this source of risk is explicitly listed among the general duties of diligence in Article 39 para 2b no 8 of the Austrian Banking Act (Bankwesengesetz). Pursuant to Article 69 para 3 of the Banking Act, the supervisory review and evaluation process also has to cover the interest rate risk in the banking book. The supervisory approach to outlier banks, i.e. banks with an elevated interest rate risk, is discussed in a separate chapter.

To be effective, risk control requires that risks be correctly identified and quantified as accurately as possible. Therefore, one chapter critically appraises the procedures applied in practice to control interest rate risk. Although methods based on earnings and economic values yield identical results for the entire period studied, they may result in different management stimuli in individual subperiods. Therefore, it is all the more important to adopt an integral approach taking account of performance indicators based on both economic values and earnings. The second part of the guidelines focuses on presenting and explaining the individual process steps of integral interest rate book management (definition of the risk strategy, cash flow modeling for transactions with unreliable payment flows, risk/return analysis, management measures and ex-post analysis). In parallel, it explains in detail the qualitative and quantitative requirements for interest rate risk management (asset/liability management).

Sound Liquidity Situation of Austrian Banks

In early August 2007 the euro money market was marked by great uncertainty. There was a significant rise not only in the short-term money market interest rate of the euro area (EONIA) and the corresponding bid-ask spread, but also in the interest rate differential between the secured (EUREPO) and unsecured (EURIBOR) three-month money market (chart 20). The ECB responded to the changed market situation by conducting several quick tenders that supplied the market with additional central bank money in the short

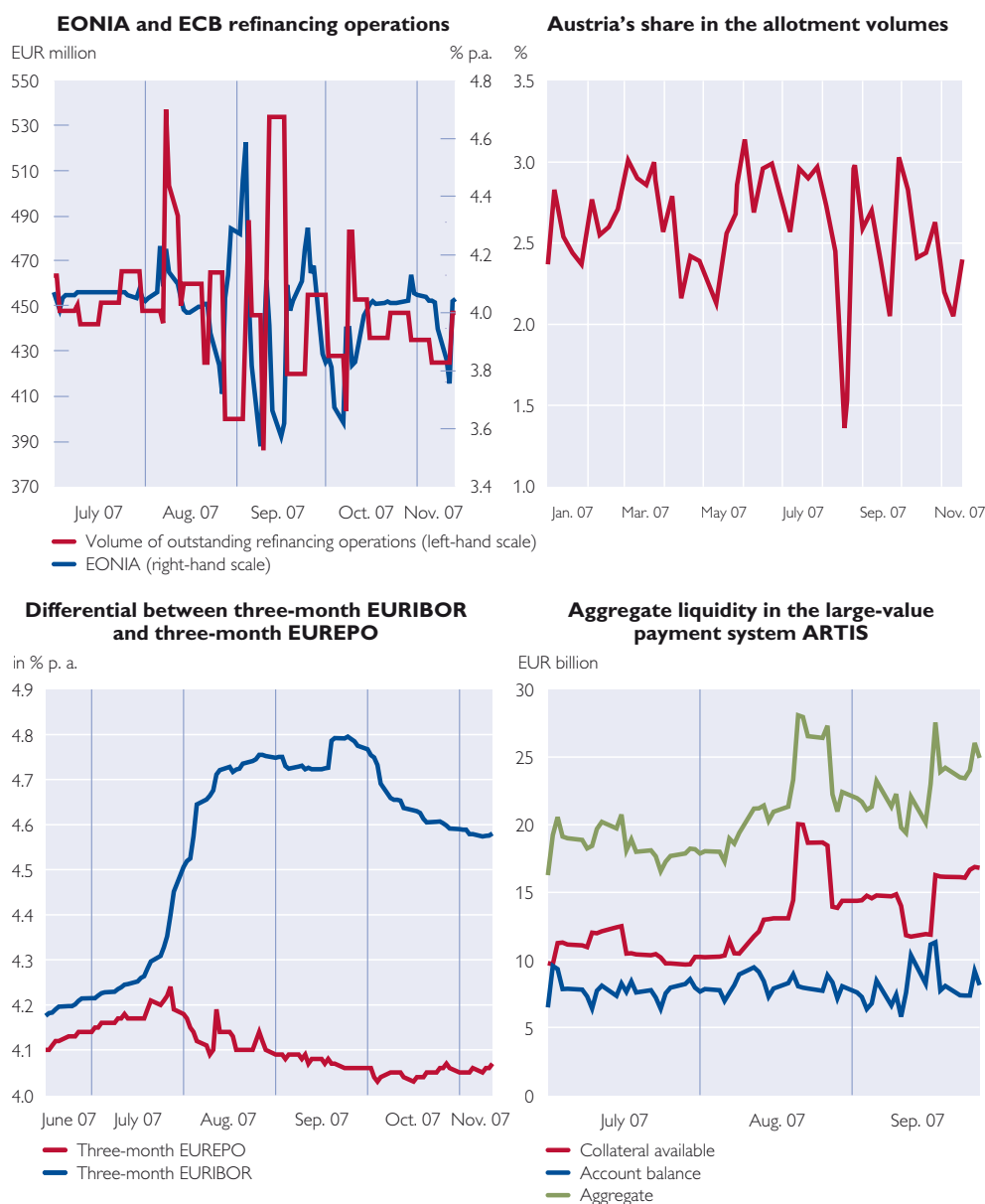
term. On August 9, 2007, it allotted around EUR 94 million (overnight maturity, i.e. from one banking day to the next) to bidding banks, bringing the volume of outstanding refinancing operations to around EUR 537 billion. On the following days, the ECB executed three further quick tenders (overnight maturity) with decreasing amounts. The ECB largely withdrew this additional liquidity again until August 15, 2007, so that the volume of outstanding refinancing operations decreased to EUR 460 billion. In addition, it provided liquidity through three long-term refinancing transactions. As a result,

the situation on the short-term money market calmed down slightly. On the three-month money market, however, the widening spread between the secured and unsecured interbank segment reflected ongoing uncertainty. When, in early September 2007, the short-term money market interest rate again rose sharply, the ECB injected around EUR 42 billion

into the market on September 6, 2007, and withdrew EUR 60 billion from the market on September 11, 2007. On September 19, the volume of outstanding refinancing operations reached a level that was below the average from July 1 to August 8, 2007. Nevertheless, in the second half of September 2007, the short-term money market interest rate and

Chart 20

Development of the Liquidity Situation During the U.S. Subprime Crisis



Source: OeNB, Bloomberg.

the corresponding bid-ask spread were marked by higher volatility than before the subprime crisis. Likewise, the high interest rate differential between the secured and the unsecured segments of the money market persisted. The Austrian share in the Eurosystem's outstanding main refinancing operations decreased slightly on average and strongly in some periods in the course of the subprime crisis. Moreover, the volumes allotted in the quick tenders (the volume-weighted average of the Austrian share in the allotments only amounted to around 1%) were significantly below the average Austrian share in the main refinancing operations (2.6%) recorded since the beginning of 2007. The participating Austrian banks also showed reserved bidding behavior, which confirms the assessment that their liquidity situation is sound. Aggregate liquidity in the Austrian

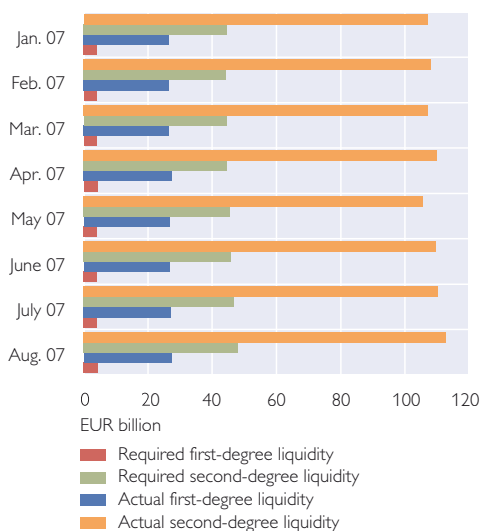
large-value payment system ARTIS even rose in August and subsequently remained at a higher level. This implies that the aggregate liquidity situation of Austrian banks was very robust even during the period of elevated uncertainty on the euro money market.

Article 25 of the Austrian Banking Act lays down the supervisory liquidity requirements for Austrian banks.¹¹ From January to August 2007, the average target value for aggregated liquid resources of the first degree was approximately EUR 4.1 billion, while the actual value reached some EUR 26.9 billion (chart 21). The average target value of aggregated liquid resources of the second degree amounted to EUR 45.5 billion during that period. The relevant liquidity reported by the banks averaged EUR 108.8 billion.

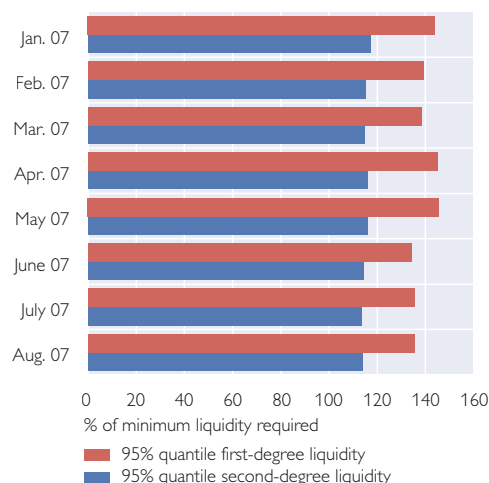
Chart 21

Liquidity Situation of Austrian Credit Institutions

Aggregated actual liquidity relative to aggregated target liquidity



95% quantiles of liquidity held



Source: OeNB.

¹¹ The liquidity ratio relates liquid euro assets to the corresponding euro liabilities. Article 25 of the Austrian Banking Act and the Fourth Liquidity Regulation of the Austrian Federal Minister of Finance (4. Liquiditätsverordnung des BMF, Federal Law Gazette II No. 14/1999) define a minimum ratio of 2.5% for liquid resources of the first degree (cash ratio) and 20% for liquid resources of the second degree (quick ratio).

The Single Euro Payments Area to Be Implemented Shortly

After the introduction of euro notes and coins in 2002, cashless payments are now to be harmonized gradually in the Single Euro Payments Area (SEPA) project. This self-regulation initiative of the European Payments Council (EPC)¹² was initiated and is strongly supported by the European Commission and the Eurosystem. By 2010, all technical, economic and legal barriers to cashless euro payments are to be dismantled. Consumers, enterprises and public agencies will then be able to make cashless euro payments within the SEPA area¹³ as efficiently and safely as they can at the domestic level today and, if they wish to do so, by means of a single account and a single payment card. In this context, new framework conditions are being developed for the three SEPA payment instruments – credit transfers, direct debits and cards. While the legal basis for SEPA was already created by the adoption of the Payment Services Directive (PSD) at the European level, the EPC is now making intensive efforts to implement common technical standards for the three SEPA payment instruments. In a first step, SEPA credit transfers are to be introduced in January 2008; by 2010, the “critical mass” of electronic payments is to be processed in line with SEPA.

The Austrian payments sector is currently preparing intensively for SEPA, as well. Its continued dynamic growth is reflected not only by transaction volumes, but also in particular by the steady expansion of the product range in the field of card payments. In addition, the first half of 2007 saw significant rises both in the volume and value of transactions processed by the OeNB-operated large-value payment system ARTIS/TARGET¹⁴ (around +6.6% and +8.9%, respectively) and the international payment systems used by Austrian banks (around +9.2% and +13.3%, respectively). In a semi-annual comparison, however, the highest rises were recorded by securities settlement systems with an increase of about +42.7% in volume and of around +81.8% in value.

In the first half of 2007, a total of seven system disturbances¹⁵ was reported for the payment and securities settlement systems overseen by the OeNB, which is considerably less than in the second half of 2006 (37 system disturbances). Access to TARGET was interrupted three times, and temporary disruptions occurred in one card payment system, one electronic money system and in the access of an Austrian bank to an international payment system. None of these disturbances had a negative impact on the Austrian financial system.

¹² The EPC is the umbrella organization of the European banking industry. Its membership currently extends to around 67 banks and banking associations from 27 countries.

¹³ The SEPA area includes all EU and EEA countries.

¹⁴ ARTIS: Austrian Real-Time Interbank Settlement; TARGET: Trans-European Automated Real-time Gross settlement Express Transfer.

¹⁵ A system disturbance is defined as the unavailability of the payment system for more than 30 minutes during business hours or within the last 30 minutes before settlement cut-off.

Security in E-Banking

E-banking offers several benefits for banks and their customers, such as more efficient and thus more cost-effective transaction processing. In addition to these advantages, however, they also involve potential risks both for customers (in particular the risk of financial loss) and banks (e.g. reputational and operational risks). The e-banking systems offered by banks today almost exclusively use the Internet as a communication medium.¹ This can be seen as the main source of risks in e-banking.

E-banking systems that require a user code and password for login as well as simple, payment data-independent transaction numbers (TANs) to authorize money transfers are still widespread. These systems are also called one-factor authentication methods, as they are based on the single factor "a shared secret between a computer and a person." However, hackers can easily find out this shared secret by relatively simple means, such as the well-known phishing e-mails or keyloggers, and can be used without time limit.

To improve security in e-banking, banks frequently also support two-factor authentication methods. They require that the end user have a device and additionally know secret information to successfully authorize a transaction. In such a system, a briefly valid authorization parameter for confirming transactions is typically either transmitted by the bank through a separate channel (e.g. as an SMS) or generated by an additional device (TAN generator) that is independent of the end-user's PC and therefore cannot be compromised by hackers. If such methods are used, attacks need to be much more complex and have to be performed in real time so that the stolen authentication parameters can be used.

Two-factor authentication processes that link the authentication data and the related transaction data on the end-user side provide the most security. Examples are electronic signatures and TAN generators that use transaction data. To safeguard the sustained trust of the population in these systems and electronic payment media in general, banks must continuously adapt the security procedures applied in their e-banking systems to the state of the art and, in parallel, customers also have to increasingly use these enhanced processes in their transactions.

¹ This primarily applies to solutions in retail banking. In the corporate customer segment, however, it is to be expected, too, that banks will sooner or later abandon dial-in solutions (i.e. transaction data are not transferred to the bank over the Internet, but through direct modem connections).

Exposure of Austrian Banks to Central, Eastern and Southeastern Europe Rises Further

CESEE countries continued to gain importance for the Austrian banking sector in the first half of 2007. The development was dominated by further acquisitions and the restructuring of BA-CA, which was reflected for the first time in the reporting

data.¹⁶ According to the business segment reports of the six Austrian banks most active in the region,¹⁷ this market already accounted for 24.5% of consolidated total assets (18.6% in 2006) and even 41.7% (34.5% in 2006) of the consolidated pretax profit of all Austrian banks at end-June 2007.

¹⁶ Bank BPH (PL) was sold, whereas Bulbank (BG), Živnostenská banka (CZ), Zagrebačka banka (HR), UniCredit (LV), UniCredit (RO), IMB (RU) and UniCredit (SK) were acquired.

¹⁷ Bank Austria Creditanstalt AG, Erste Bank der oesterreichischen Sparkassen AG, Raiffeisen Zentralbank Österreich AG, Bank für Arbeit und Wirtschaft und Österreichische Postsparkasse AG, Österreichische Volksbanken AG and Hypo Alpe-Adria International.

A total of 12 Austrian banks (+1 compared to the previous year) with 69 fully consolidated subsidiaries (+7) operated in 16 countries of this market at the end of June 2007. The number of acquisitions, however, was higher than the net increase in subsidiary banks, as the restructuring of the CESEE business of the UniCredit Group included both sales and mergers in some countries.

Out of these 69 fully consolidated subsidiaries, 31 are situated in the EU Member States that joined in 2004¹⁸ and seven in the EU Member States that joined in 2007. Significant changes resulted, on the one hand, from the transfer of the Polish Bank BPH from BA-CA to the new parent company UniCredit and, on the other hand, from the addition of two major banks in Bulgaria and Romania because of the takeover of the Romanian BCR by Erste Bank and the Bulgarian UniCredit subsidiary by BA-CA, which was also mirrored in the development of aggregated total assets and profits.

Outside the EU, Austrian banks own 23 subsidiary banks in South-eastern European countries and 8 in the Commonwealth of Independent States.¹⁸ Especially in the latter region, the transfer of the Russian International Moscow Bank to BA-CA, part of UniCredit's restructuring, and two takeovers by Erste Bank and ÖVAG in Ukraine, led to major changes. The aggregated data for Southeastern Europe also reflect the

takeover of the Croatian Zagrebačka banka by BA-CA.

Disregarding their direct cross-border loans to the relevant countries, the 12 Austrian banks together held around 13.0% of the total CESEE banking market and, excluding Russia and Turkey, even about 23.3% as at June 30, 2007. Based on unconsolidated data, the Czech Republic is the most important local market (9 subsidiary banks of 6 Austrian parent companies) with aggregated total assets of EUR 46.2 billion corresponding to a 37.4% market share, followed by Croatia (8 subsidiaries of 7 parents) with aggregated total assets of EUR 28.1 billion (64.7% market share), Romania (5 subsidiaries of 5 parents) with aggregated total assets of slightly more than EUR 25 billion as well as Slovakia (6 subsidiaries of 6 parents) and Hungary (8 subsidiaries of 6 parents) with aggregated total assets of just less than EUR 25 billion (chart 22).

Because of the acquisitions mentioned above, a detailed analysis of total assets and operating profits only makes sense to a limited extent for the reference period from the end of June 2006 to the end of June 2007 as organic growth is masked by acquisitions more than in the past. However, it can be stated that the aggregated total assets of all CESEE subsidiaries jumped from EUR 143.0 billion to EUR 201.4 billion and that the share of subsidiaries in the EU Member States from 2004 fell from more than

¹⁸ For the purposes of this analysis, the regions only take account of those countries where Austrian banks hold fully consolidated subsidiaries:

EU Member States from 2004 (*NMS-2004*) covered in this report: Latvia (LV), Poland (PL), Slovakia (SK), Slovenia (SI), Czech Republic (CZ) and Hungary (HU).

EU Member States from 2007 (*NMS-2007*): Bulgaria (BG) and Romania (RO).

Other Southeastern European countries (*SEE*): Albania (AL), Bosnia and Herzegovina (BA), Croatia (HR), Montenegro (ME) and Serbia (RS).

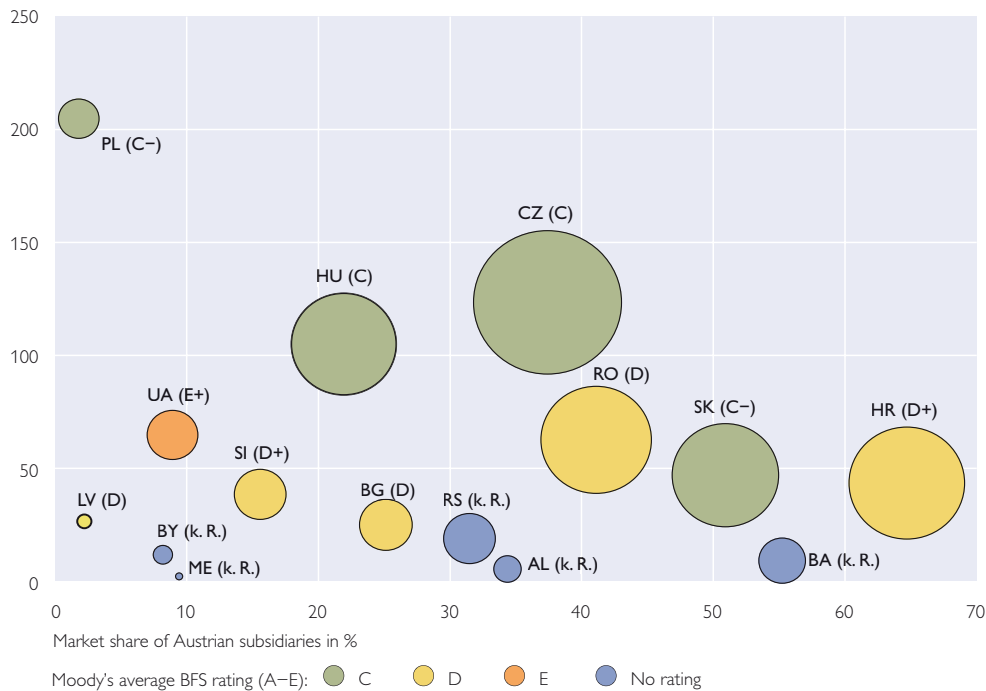
Countries of the Commonwealth of Independent States (*CIS*): Russia (RU), Ukraine (UA) and Belarus (BY).

Chart 22

Market Share of Austrian Subsidiaries in Central, Eastern and Southeastern European Countries

As at June 30, 2007

Aggregated national total assets of banks in EUR billion



Source: OeNB, NCBs, Moody's.

Note: The chart shows the individual countries according to the Austrian subsidiaries' market share (x-axis) and the aggregated total assets of the national banking industry (y-axis). The size of the circle corresponds to the total exposure of Austrian banks to the respective country. The country color code corresponds to Moody's average bank financial strength (BFS) rating. Because the Russian banking sector is so large (around EUR 496 billion as at end-June 2007), the chart does not show Russia, where Austrian subsidiaries held a market share of around 3.6% at the end of the second quarter of 2007.

two-thirds to slightly more than 50%. On the other hand, the share of subsidiaries banks in both Bulgaria and Romania, which joined the EU during the observation period, doubled to more than 15% in the reference period. Hence, aggregating the total assets of the subsidiaries in the two regions shows that around two-thirds of the Austrian CESEE subsidiaries are still located in the EU (chart 23).

The shift in the importance of individual regions becomes even more obvious when we look at operating profits. They also soared from EUR 1.56 billion to EUR 2.21 billion and, while the share of the subsidiaries in the EU Member States from 2004 fell

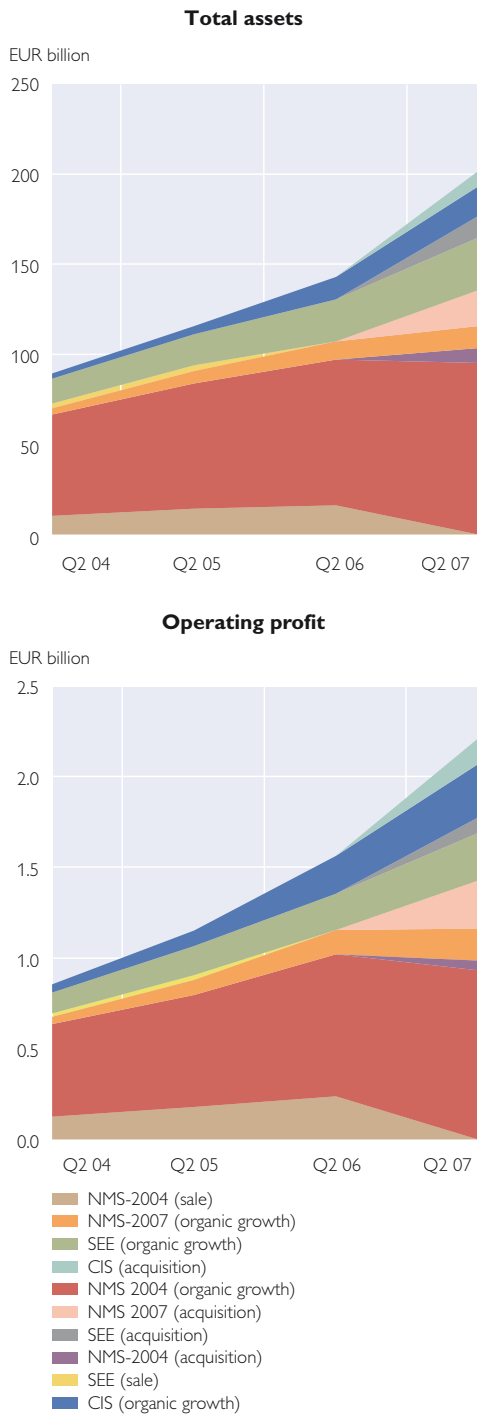
to around 45%, the share of the subsidiaries banks in both Bulgaria and Romania and in the CIS climbed to about 20% in the reference period (chart 23).

From end-June 2006 to end-June 2007, the development of indirect (i.e. via subsidiary banks) credit exposure of Austrian banks to CESEE nonbanks shows a similar picture. Indirect lending increased by a total of 51.1% to EUR 120 billion during the period, and the share of the EU Member States from 2004 decreased from almost two-thirds to slightly less than 50%, whereas the share of Bulgaria and Romania almost tripled to more than 15%. This threefold increase

Chart 23

Austrian Subsidiaries in Central, Eastern and Southeastern Europe

As at June 30, 2007



Source: OeNB.

even applies to credit volumes. Moreover, indirect loans given out by subsidiaries in CIS countries doubled (chart 24).

Direct credits developed quite differently: they only rose by 16.3% to about EUR 45 billion in 2006 and were less influenced by acquisitions and restructuring efforts (chart 24). Bulgaria and Romania represented the only exception with a growth rate of 62.1% – this did not come unexpectedly, given these countries' low initial levels and their accession to the EU. Local acquisitions might provide another explanation, as more than 25% of direct lending goes to affiliated companies in all regions with the exception of the CIS.

Stress tests are carried out to assess the capacity of the Austrian banks to bear the credit risk resulting from their CESEE activities.¹⁹ The analyses show improved capital adequacy levels. The (consolidated) capital adequacy ratio of Austrian banks amounted to 12.6% in the second quarter of 2007 and decreased by 1.1 percentage points to 11.5% in the calculated crisis scenario. Looking at the six largest Austrian banks at the aggregate level, the stress tests shows a 1.3 percentage point reduction of their capital adequacy ratio from 11.6%. The resulting capital adequacy ratio of 10.3% is, however, considerably higher than the regulatory minimum requirement of 8%. Nevertheless, banks with a particularly high exposure to Central, Eastern and Southeastern Europe need to take due account of the growth of their total assets in maintaining adequate capital levels in the medium and long term.

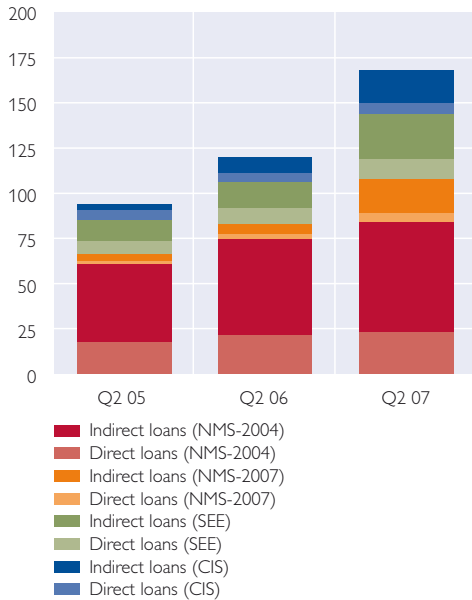
¹⁹ For details on the methodology and scenarios used, see Boss, M., G. Krenn, C. Pühr and M. Schwaiger. 2007. *Stress Testing the Exposure of Austrian Banks in Central and Eastern Europe*. In: OeNB. *Financial Stability Report 13*. 115–134.

Chart 24

Credit Exposure to Central, Eastern and Southeastern European Countries

As at June 30, 2007

EUR billion



Source: OeNB.

Note: Direct loans are loans granted by banks in Austria to borrowers in other countries, while indirect loans are loans granted by Austrian subsidiaries abroad.

In summary, despite their lively investment activities in the east and southeast of Europe, Austrian banks still hold well above two-thirds of their subsidiaries' aggregated total assets within the EU thanks to the latest enlargement round, so that especially institutional and legal risks are limited. However, both the macro-economic and political risks of the region have to be monitored closely also in the future, not least with a view to the most recent acquisitions of Austrian banks.²⁰ In most countries, the risk management of banks faces the considerable challenge of preventing a buildup of hidden credit risks, for example because of rising and, in some cases, already rather high external imbalances as well as sustained rapid growth of lending, including in particular foreign currency loans.

Banking Sectors in Central, Eastern and Southeastern Europe: Strong Credit Growth and Largely Stable Performance

In mid-2007, year-on-year growth of domestic credits to private nonbanks in percent of GDP¹ remained unchanged at 13% to 19% in Slovenia and Croatia and, for the first time since early 2005, was again very high in Bulgaria; in the remaining countries, it ranged from 5% (Hungary) to 9% (Romania). Against the end of 2006, it rose especially in Slovenia and Bulgaria. In addition, in euro terms, the increase in domestic lending in relation to GDP reached double-digit rates also in Slovakia, Poland, Romania and Hungary (11% to 13%) in mid-2007. In most countries, households and corporations made roughly equal contributions to domestic credit growth, with a slightly higher share of households in Poland and a markedly higher share of enterprises in Slovenia and Bulgaria. In parallel, cross-border loans to private nonbanks (excluding intracompany loans and trade credits) also increased year on year; at 9% and 8% of GDP (in euro terms), this rise remained particularly high in Bulgaria and Croatia, respectively, followed by Hungary, where growth accelerated to about 4%. Short-term loans accounted for almost half the increase in Bulgaria and for one-third in Hungary. Overall credit growth (domestic and cross-border) in

¹ Measured as the share of the nominal change in outstanding loans compared with the same quarter of the previous year in percent of GDP of the respective four quarters.

²⁰ The takeover of two Ukrainian banks – Bank Prestige (by Erste Bank) and Elektron Bank (by ÖVAG) – are already reflected in the data reported, while BA-CA's purchases of ATF Bank in Kazakhstan and Ukrsofsbank in Ukraine that were announced in mid-2007 are not included yet.

percent of GDP was strongest by far in Bulgaria and Croatia at 28% and 20%, respectively, followed by Hungary (and probably Romania). Especially in Bulgaria and Romania, the surge in lending is likely to be linked to the current account imbalance. In the case of Bulgaria, the most recent strong rise in domestic credit suggests that the (administrative) borrowing constraints that ended at the beginning of 2007 had a dampening effect over a longer period of time even if transactions designed to evade these constraints are considered, particularly since the parallel most recent high growth of cross-border loans seems to indicate that the volume of such evading transactions was not particularly high in the past.

With the exception of Slovakia, the annual increase of domestic loans to private non-banks exceeded the rise in deposits by private nonbanks in all eight countries, in particular in Slovenia, in mid-2007. In parallel, banks' net external asset position deteriorated in Bulgaria, Poland and Romania (reflecting borrowing for funding domestic credit growth). In mid-2007, banks in Bulgaria and Poland nevertheless had a relatively balanced net external asset position, while it stood at -8% to -14% of GDP in the other countries except the Czech Republic (net external claims amounting to 11% of GDP).

In mid-2007, the share of foreign currency loans in outstanding lending to businesses and households came to 65% (including loans indexed to foreign currencies) in Croatia, around 50% in Bulgaria, Romania and Hungary, 20% to 25% in Slovakia and Poland, and 5% to 10% in the Czech Republic and (after the introduction of the euro) in Slovenia. Against the end of 2006, this share again decreased markedly in Croatia (-7 percentage points) and went down moderately also in Poland (-2 percentage points), whereas it rose by 1.5 to 3.5 percentage points in Hungary and – after a decline in 2006 – also in Slovakia as well as in Bulgaria. Data adjusted for price and exchange rate changes show a very similar picture, except in Romania, where adjusted data also show a rise in the share of foreign currency loans. In Hungary and Romania, the increase in this share is almost exclusively attributable to the growth of foreign currency loans to households. The share of foreign currency loans in outstanding lending to households amounted to 73% in Croatia, 43% to 48% in Romania and Hungary, 30% in Poland and 20% in Bulgaria in mid-2007. Thus, this share was considerably lower for loans to households than for loans to enterprises, especially in Bulgaria, but also in Slovakia and the Czech Republic. In Croatia and Poland, the strong decline in the share of foreign currency loans may have been underpinned in particular by measures taken by their respective central banks, e.g. the assignment of higher risk weights for foreign currency loans to unhedged borrowers and the introduction of more comprehensive reporting requirements. The main cause of the rising share of foreign currency loans recorded in Hungary and Romania was probably the relatively large interest differential compared with loans denominated in the national currencies. Some borrowers might also have been motivated by the appreciation of the forint and the leu in the first half of 2007. A high share of foreign currency lending constitutes a risk to financial stability, as unfavorably developing exchange rates together with increasing foreign interest rates could have a negative effect on borrowers' solvency, particularly since households and small and medium-sized enterprises (SMEs) might not be appropriately hedged against such risks. However, even if households and SMEs are able to service their foreign currency-denominated debt properly, they may cut back spending in other areas, thus contributing to a slowdown in economic growth and, subsequently, a growing volume of nonperforming loans. The potentially negative impacts of the share of foreign currency loans could be further aggravated if currencies other than the euro account for a significant share of total domestic foreign currency loans to enterprises and households, as for example in Poland (69%) and Hungary (62%) or even Croatia (27%).

In the first half of 2007, the profitability of CESEE banks in terms of return on equity (ROE) after tax amounted to almost 28% in Poland and around 20% in Hungary, the Czech Republic and Bulgaria, while it stood at about 12% in Romania and Croatia and even significantly decreased against the first half of 2006. In terms of profit after tax as

a percentage of total assets (return on assets – ROA), Poland again achieved the highest profitability (2.1%), while Bulgaria ranked last (1.1%). For this ratio, the only major change – a decline by 0.3 percentage points – occurred in Romania, where the rise in noninterest income was offset by increasing operating costs and a higher need for loan loss provisioning. Declining earnings were compensated by lower net loan loss provisions in Hungary (despite a marked reduction in economic growth), while in Bulgaria, decreased earnings and higher net loan loss provisions were counteracted by reduced expenditure. In mid-2007, the capital adequacy ratio ranged from 11.6% in Hungary to 15.0% in Romania; against end-2006, it only declined in Poland (–0.8 percentage points) and in Romania (–3.1 percentage points). Especially in Romania, this reflects the high growth rate of loans to businesses and households. In mid-2007, the share of nonperforming loans in total loans ranged from 2% to 3.5% in most countries and was clearly higher only in Poland (6.3%) and in Romania (7.9%). Against end-2006, this share diminished especially in the Czech Republic (–0.6 percentage points) and in Poland (–1 percentage point). It is interesting to note that the share of nonperforming loans did not rise in Hungary despite slower economic growth. In countries with fast credit growth, however, there is a general risk that these shares depict too positive a picture of portfolio quality.

Nominal Return on Equity (after Tax)

%						
	2003	2004	2005	2006	H1 06	H1 07
Bulgaria	14.8	16.6	18.0	19.7	18.1	20.6
Croatia	14.5	16.1	15.6	12.4	14.7	12.0
Poland	5.5	17.4	24.0	27.2	28.0	27.6
Romania	17.7	17.7	15.1	11.6	14.2	12.5
Slovakia	10.5	12.3	13.4	17.6	16.4	16.6
Slovenia	11.9	12.5	12.7	15.1	..	..
Czech Republic	17.8	18.1	18.4	17.1	19.2	18.7
Hungary	17.2	22.5	21.7	21.4	23.1	21.3

Net Interest Income

% of average bank assets						
	2003	2004	2005	2006	H1 06	H1 07
Bulgaria	4.7	4.9	4.6	4.2	4.3	4.3
Croatia	3.3	3.0	2.9	2.7	2.8	2.6
Poland	3.1	3.2	3.1	3.2	3.2	3.3
Romania	4.7	4.8	3.5	3.3	3.2	3.1
Slovakia	2.9	2.9	2.2	2.4	2.2	2.5
Slovenia	3.1	2.6	2.4	2.2	..	..
Czech Republic	2.2	2.3	2.2	2.3	2.2	2.3
Hungary	3.9	4.0	3.9	3.6	3.7	3.3

Operating Costs

% of average bank assets

	2003	2004	2005	2006	H1 06	H1 07
Bulgaria	4.5	4.2	3.7	3.4	3.5	2.9
Croatia	2.6	2.3	2.2	2.1	2.1	2.0
Poland	3.9	3.7	3.7	3.3	3.3	3.1
Romania	6.9	6.1	5.4	5.0	5.0	7.0
Slovakia	2.6	2.4	2.1	2.1	2.0	2.1
Slovenia	2.8	2.6	2.2	2.2	..	..
Czech Republic	2.2	2.2	2.1	2.1	1.9	1.9
Hungary	3.4	3.0	2.9	2.7	2.6	2.6

Net Change in Loan Loss Provisions

% of average bank assets

	2003	2004	2005	2006	H1 06	H1 07
Bulgaria	0.3	0.7	0.8	0.4	0.4	0.7
Croatia	0.3	0.3	0.2	0.2	0.2	0.3
Poland	0.9	0.4	0.2	0.3	0.2	0.2
Romania	0.6	0.7	0.5	0.6	0.3	0.5
Slovakia	-0.5	0.2	-0.1	0.2	0.1	0.1
Slovenia	0.7	0.6	0.5	0.4	..	..
Czech Republic	-1.0	-0.1	0.0	0.1	0.0	0.1
Hungary	0.7	0.6	0.5	0.8	0.7	0.5

Source: NCBs.

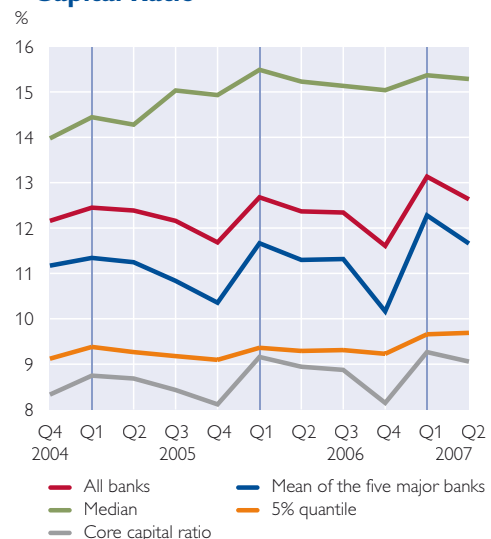
Note: Data are not comparable between countries. Intra-year data are annualized linearly.

Improved Capital Ratio Resulting from High Profits in 2006

The capital ratio that relates the capital of a bank to its risk-weighted assets – the assessment base²¹ – is a key indicator for evaluating the risk-bearing capacity of banks. After the (consolidated) capital ratio for all Austrian banks showed a slight downward trend in the course of 2006 and came to 11.5% in the fourth quarter of 2006, it rose markedly to 13.1% in the first quarter of 2007 and amounted to 12.6% in mid-2007 (chart 25).

Chart 25

Austrian Banks' Consolidated Capital Ratio



Source: OeNB.

²¹ As new legal regulations on capital requirements became effective at the beginning of 2007, banks now directly report the regulatory capital requirement for credit risk pursuant to Articles 22a to 22h of the Austrian Banking Act instead of providing information on risk-weighted assets. Based on the regulatory minimum capital ratio of 8%, the risk-weighted assets and the assessment base can be obtained by multiplying the capital requirement for credit risk by the factor 12.5.

The marked rise of the total capital ratio recorded at the beginning of 2007 is primarily attributable to the high retained earnings of the large banks for 2006. Retained earnings of one year are always recorded in capital in the first quarter of the following year, which explains the seasonal fluctuation of the capital ratio visible in chart 25. Thus, the aggregated capital ratio of the five major Austrian banks rose from 10.2% in the fourth quarter of 2006 to 12.3% in the first quarter of 2007. Although it slightly decreased to 11.7% in the second quarter, it still was 0.4 percentage points higher than in the same period of the previous year. In contrast, the median capital ratio of all Austrian banks rose – though from a significantly higher level – by a mere 0.4 percentage points in the first and 0.3 percentage points in the second quarter of 2007 to 15.4% and 15.3%, respectively. The improved capital adequacy of Austrian banks is also reflected by the core capital ratio, which relates core capital to the assessment base: it increased from 8.1% in the fourth quarter of 2006 to 9.1% in the second quarter of 2007.

To sum up, the capital ratio of Austrian banks in general and of the major banks in particular clearly improved in the first half of 2007 against the previous year and at any rate can be considered to be sound.

Austrian Banking Sector's Resilience to Shocks Remains Good

As in several previous issues of the OeNB's Financial Stability Report, the results of the stress tests calculated on the basis of the Systemic Risk Monitor (SRM) are presented in aggregated form for the entire Austrian banking system.²² Because of the new reporting regulations that became effective in the beginning of 2007, it was possible for the first time to take full account of both equity price risk and interest rate risk.²³ Table 5 shows the results of a baseline scenario without a crisis and four crisis scenarios on the basis of the risk exposure of Austrian banks in the second quarter of 2007. The table displays the mean value adjusted for credit risk provisioning and the related 95% quantile of the loss distribution for the risk categories studied in the SRM.²⁴ For credit risk, contagion risk in the interbank market and total risk, a negative value means that existing corresponding loan loss provisions exceed the mean value or the 95% quantile of the related loss distribution. In the case of market risk, no risk provisions were taken into consideration, so that a negative value indicates an expected profit as a percentage of eligible capital in the mean or in the 95% quantile.

²² For details on the methodology underlying the SRM, see Boss, M., G. Krenn, C. Pühr and M. Summer. 2006. *Systemic Risk Monitor: A Model for Systemic Risk Analysis and Stress Testing of Banking Systems*. In: OeNB. *Financial Stability Report 11*. 83–95.

²³ While the equity price risk could only be considered for the asset side in the past, banks now report net positions with regard to the most important stock indices. For interest rate risk, banks with a large trading book, too, now report interest rate-sensitive positions in their trading books within the framework of the interest rate risk statistics used by the SRM.

²⁴ See notes to table 5.

Table 5

Results of Selected SRM Stress Tests Based on Monte Carlo Simulations for June 2007

	Total risk		Credit risk		Market risk		Contagion risk	
	Mean	95% quantile	Mean	95% quantile	Mean	95% quantile	Mean	95% quantile
Simulation without crisis scenario	-1.4	2.1	-1.3	1.4	-0.2	1.7	0.2	1.4
Doubling of domestic borrowers' default probability	-0.5	2.7	-0.5	2.0	-0.2	1.7	0.2	1.4
Rise in euro area interest rates by 120 basis points	0.7	3.8	-1.3	1.4	1.8	3.0	0.2	1.4
Decline in domestic stock prices by 30%	-1.2	2.6	-1.4	1.3	0.0	2.7	0.2	1.4
Decline in foreign stock prices by 35%	0.5	4.4	-1.3	1.4	1.6	4.3	0.2	1.4

Source: OeNB.

Note: Values denote the mean and the 95% quantile of the loss distribution in the relevant risk category relative to eligible capital for the third quarter of 2007. Loss from credit risk was adjusted for provisions related to claims on domestic and foreign nonbanks as well as on foreign banks; loss from contagion risk in the Austrian interbank market – which corresponds to the credit risk vis-à-vis domestic banks – was adjusted for provisions related to claims on domestic banks. Correspondingly, total risk was adjusted for total loss provisions.

In the baseline scenario, the mean values of the loss distribution for all risk categories excluding contagion risk in the interbank market are adequately covered by existing risk provisions and, in the case of market risk, a profit can be expected. Even if domestic borrowers' default probability should double, existing loan loss provisions surpass the expected mean total loss. In contrast, a stronger impact results from an increase in euro area interest rates by 120 basis points and from a 35% decline of foreign stock prices. The average total loss exceeds loss provisions by 0.7% and 0.5%, respectively, of eligible capital due to the expected losses caused by market risk. A decrease in domestic stock prices by 30%, however, shows only minor effects. At any rate, credit risk is adequately covered by existing risk provisions in all scenarios. None of the crisis scenarios shows any consequences for the contagion risk in the interbank market. The results based on the data of June 2007 slightly deteriorated in comparison with the previous half-year, but this is probably

mainly caused by the full consideration of the interest rate and equity price risk rather than an actual increase in the risk exposure of Austrian banks.

The stress test for indirect credit risk of foreign currency loans yields a reduction of the (consolidated) capital ratio by 0.17 percentage points for the Swiss franc and 0.02 percentage points for the Japanese yen.

Overall, the results obtained on the basis of the data for mid-2007 again indicate that the shock resilience of the Austrian banking system is satisfactory.

Market Indicators Reflect Higher Uncertainty

Market indicators, including both the development of stock prices and ratings, can be used to complement supervisory reporting. In addition to long-term deposit ratings, particularly Moody's bank financial strength ratings (BFSR) is drawn upon.

Since the introduction of the Joint Default Analysis methodology by Moody's in early 2007 that led to

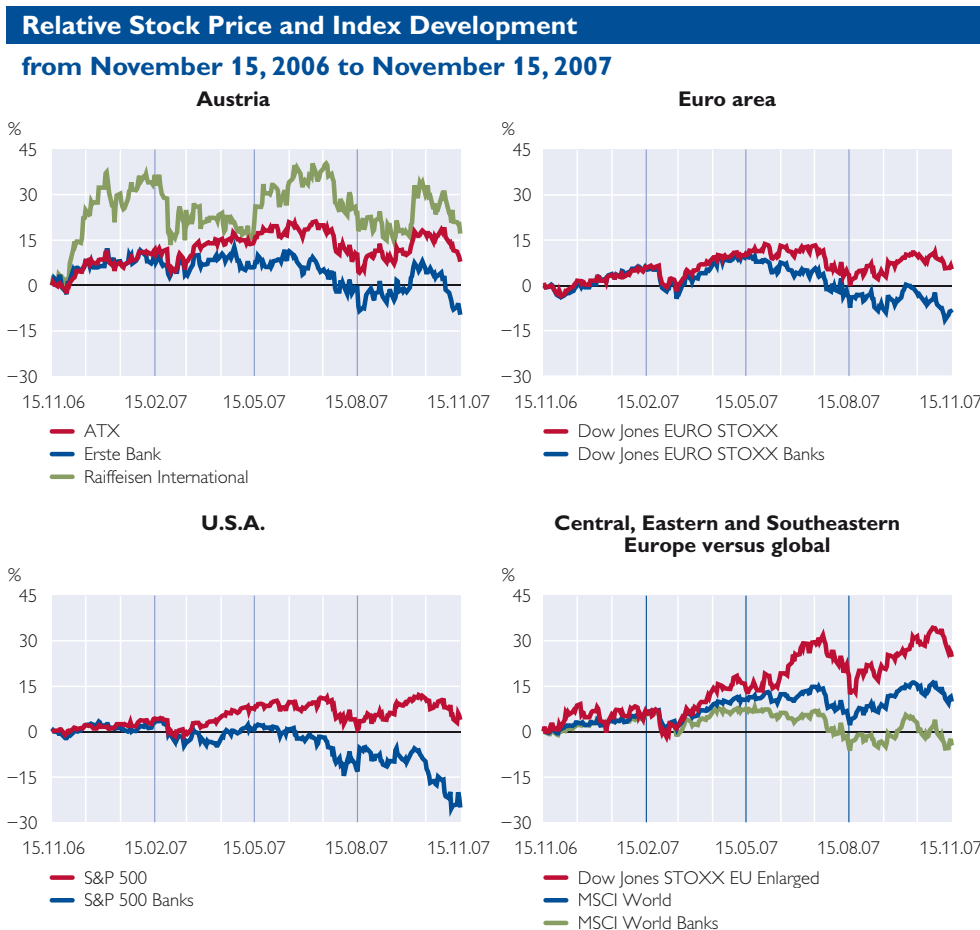
changes in ratings for almost all Austrian banks,²⁵ there has been merely one rating change. After the completion of the takeover of BAWAG P.S.K. by the U.S. investment fund Cerberus, the bank's rating for long-term liabilities was lowered one notch from A3 to Baa1, reflecting the phasing out of the state guarantee. However, the bank's BFSR was upgraded two notches from E+ to D. The reasons given by Moody's were the emerging improvements both in risk culture and corporate governance. Moreover, the rating outlook of Hypo Alpe-Adria-Bank was changed from

stable to positive in May 2007 on news about plans for a takeover by Bayerische Landesbank.

Financial Stock Prices under Pressure Both Worldwide and in Austria

BA-CA changed from the prime segment to the standard market auction segment and, therefore, is no longer included in the ATX Prime. As a result, the share of banks in the total market capitalization of the ATX Prime decreased from more than one-third at the end of March 2007 to around one-quarter at the end

Chart 26



Source: Bloomberg.

²⁵ See *Financial Stability Report 13 of June 2007*.

of September 2007. This segment change took place on April 2, 2007 in response to UniCredit's decision to repurchase BA-CA's remaining free float of stock under a squeeze-out.

In absolute terms, the market capitalization of the two listed banks (Erste Bank and Raiffeisen International) declined by EUR 1.9 billion to EUR 31.5 billion from end-March to end-September 2007. The entire ATX Prime hardly fared better in the period under review. This development reflects the higher uncertainty in the wake of the U.S. subprime crisis.²⁶

First signs of the crisis already surfaced in the international stock markets in the form of a strong decline in stock prices in February 2007. In this environment of elevated uncertainty – also caused by banks' exposure in the structured credit market – bank and financial stocks came under stronger pressure than the overall market. In an international comparison, Austrian bank stocks hardly performed better than the entire sector, which is surprising, not least because of the relatively moderate reaction in Central, Eastern and Southeastern Europe (chart 26).

**Nonbank Financial
Intermediaries Less Dynamic
Insurance Sector Performs
Favorably – Financial Market
Turmoil Leads to Increased
Uncertainty**

**Austrian Insurance Companies'
Business Situation and Profitability
Improve**

Against the backdrop of a favorable real economic and financial environment, European insurance companies

continued on their positive course in the first half of 2007. Overall profitability went up despite the fact that in some parts of Europe winter storms and floods drove up insurance payments. Profitability has become somewhat less dependent on investment results, as insurers increasingly use more risk-adequate pricing strategies and focus on underwriting new business that generates higher profits. The issuing of hybrid and subordinated capital combined with higher profitability has increased the overall risk-bearing capacity of the European insurance sector. In light of this development and thanks to improved risk management systems, the prospects for European insurance companies remain altogether positive, even though uncertainties about financial risks (as observed in July and August 2007) have augmented. The outlook for the reinsurance and credit insurance sectors, in particular, is characterized by a high degree of uncertainty given the U.S. subprime crisis.

On the whole, the Austrian insurance sector also performed well in the first half of 2007. Booming unit-linked life insurance plans and subsidized personal pension schemes played a substantial role in sustaining demand in the life insurance sector. With insurance policies of this kind, the insured person bears the investment risk; if the insured parties are not sufficiently informed on the related risks, however, the insurer faces a higher reputational risk. In reaction to the higher interest level in the first half of 2007 and to favorable investment results, some insurance companies raised their bonus payments for conventional life insurance contracts.

²⁶ See box "The U.S. Subprime Crisis: Causes and Effects" in this section.

Winter storms early in the year and floods in early summer have impacted insurance companies' claim payments in 2007 so far. Some insurance companies continued to profit from their expansion to CESEE countries.

In the first half of 2007, Austrian insurance companies' total assets²⁷ expanded by EUR 3.1 billion to EUR 85.6 billion; in June 2007, the annual growth rate stood at 6.6% and was thus clearly below the comparable figure for 2006 (9.4%). The trend toward investing in foreign assets, equity securities and other securities continued – a development that can be deemed positive from the point of view of diversification. Asset-backed securities accounted for 2.6% of the overall portfolio, which came to EUR 78.7 billion; some 99% of these asset-backed securities have an investment grade rating. The Financial Market Authority (FMA) carried out a survey on the exposure of Austrian insurance companies and pension funds to the U.S. subprime market and concluded in its press release of August 29, 2007, that the U.S. subprime crisis has hardly had direct effects on the Austrian insurance sector.

The market indicators of both the European and the Austrian insurance sector reflect increased uncertainties about the sector's future performance. These uncertainties may in part be attributable to fears that insurance companies might have hidden liabilities with respect to their exposure vis-à-vis the U.S. subprime market that are not clearly deducible from their balance sheets. In the same vein,

fears of future financial crises may come into play. Although the rating outlook for the large Austrian insurance companies remained unchanged at the end of October 2007, insurance companies' shares listed in the prime market segment at Wiener Börse posted price losses over the period from May to end-October 2007. Compared with the MSCI Europe Insurance Index, Austrian insurers' stock prices developed less favorably in the period under review; the markup bonus was thus slightly reduced. These developments might also be attributable to the overall rise in risk aversion observed with investors.

Aside from shocks in the financial markets and the higher frequency of major claims events, inadequate risk pricing in the face of tough competition, continued lower long-term interest rates and the underestimation of longevity risk pose threats to the profitability and stability of the life insurance sector.

Risk of Contagion Remains Low

Year on year, the total exposure of insurance companies to domestic banks went down by 5.4% to EUR 11.0 billion (12.9% of total assets) in June 2007. Insurance companies' investments with domestic credit institutions thus decreased to 1.1% of Austrian banks' consolidated total assets. Owing to the positive business and profit performance and the moderate level of exposure, the risk of contagion between the banking and insurance sectors is still low.

²⁷ Excluding reinsurance business; based on quarterly reports (OeNB insurance statistics).

Weak Demand for Austrian Mutual Fund Shares

Given the altogether favorable capital market environment, the European mutual funds market continued its positive performance in the first half of 2007. The assets under management²⁸ of European mutual funds went up by 9.1% to EUR 8,236 billion in the first half of the reporting year, mainly on the back of price gains. Net inflows of funds, which came to EUR 190 billion, declined by some EUR 50 billion year on year. Investors' reduced risk appetite led to comparatively high inflows in the segment of money market funds, while inflows in the equity funds segment were rather low.

In the face of the U.S. subprime crisis, customer confidence in the international financial markets deteriorated at a surprisingly swift pace in July and August 2007. Higher volatility and the reduction of liquidity – amid great valuation uncertainty – observed in many segments of the structured credit market also had effects on mutual funds. In particular near money market funds, which generally are not very volatile, recorded substantial price losses (by their standards) and in some cases even had to temporarily suspend the repurchase of shares. Only few mutual funds operated by Austrian investment companies have invested directly or indirectly in structured financial instruments. However, fixed income funds focused on structured financial instruments recorded a sudden and dramatic fall in net asset values, follow-

ing years of gradual price increases. Of the about 7,600 (domestic and foreign) mutual funds registered for operation in Austria, four have been temporarily suspended. One of these four funds had been set up by an Austrian investment company.

According to the OeNB's mutual fund statistics, the assets held by Austrian mutual funds (including fund-of-fund investments) grew by 3.2% to EUR 174.3 billion in the first half of 2007 – again at a rate that is clearly below the European average. This rise is exclusively attributable to price gains, as outflows from distributions were higher than new investment. Aside from rising interest rates, which had a negative impact in particular on fixed income funds – the most important category of funds in the Austrian mutual funds market – the increasing popularity of structured products as well as higher uncertainty among investors might have contributed to this weak performance. According to figures published by the Austrian Association of Investment Fund Management Companies (VÖIG), even the volume of the Austrian mutual funds market decreased in July and August 2007. The capital-weighted average total performance of all Austrian mutual funds stood at 2.4% in the first half of 2007. With losses coming to 0.2%, fixed income funds registered the weakest performance; equity funds, by contrast, recorded price gains of 7.8%. Gaining 2.4%, real estate funds performed averagely in the first half of 2007.

²⁸ Here, mutual funds comprise undertakings for collective investment in transferable securities (UCITS) and non-UCITS.

Performance Varies for Pension Funds

In the second quarter of 2007, 6 multi-employer occupational pension funds and 13 single-employer occupational pension funds were operating in Austria. At end-2006, multi-employer occupational pension funds employed 282 persons (single-employer occupational pension funds: 8). The aggregated total assets of investment and risk-sharing groups came to EUR 12.7 billion at end-2006 and climbed to EUR 13 billion in the second quarter of 2007. At the end of 2006, multi-employer occupational pension funds accounted for around 77% of investment and risk-sharing groups' aggregated total assets. In this context, investment was mostly outsourced. About 92.7% of assets, for instance, were held in the form of mutual fund shares. The share of foreign currency investment came to 4.6%, up from a rather low level of below 3% registered in the second quarter of 2006. The number of prospective beneficiaries climbed to 470,936 at the end of 2006, while that of pensioners reached 54,014. 82.6% of all beneficiaries (prospective beneficiaries and pensioners) were assigned to a defined contribution system, while the remaining 17.4% were assigned to a defined

benefits system.²⁹ Around 28% of aggregate premium reserves are backed by a minimum return guarantee.³⁰ For 22 percentage points of the remaining 72% of premium reserves, employers are obliged to make unlimited supplementary contributions. Altogether, therefore, prospective beneficiaries and pensioners exclusively bear the investment risk for around 50% of premium reserves. The market for pension funds in Austria is highly concentrated. In 2006, the three largest providers in the market had a market share of 60% of contributions, 66% of all beneficiaries, 69% of investment and risk-sharing groups' assets and 84% of contracts with enterprises.

The remuneration for covering operating expenses, which is borne by the beneficiaries, came to around EUR 64.4 million in 2006³¹ and thus corresponded to around 9.9% of investment and risk-sharing groups' investment performance (EUR 652.7 million), to 7.2% of contributions (EUR 895.1 million) or to 0.5% of investment and risk-sharing groups' total assets (EUR 12.7 billion). Operating profits came to EUR 28.2 million (i.e. around 43.8% of the remuneration for covering operating expenses).³² On the basis of operating profits, return on equity was

²⁹ Source: *Fachverband der Pensionskassen (Austrian occupational pension fund association)*. The Austrian occupational pension fund association has made a wider range of data available on its website at www.pensionskassen.at and has thus helped increase market transparency.

³⁰ Source: *Aggregated balance sheet of Austrian pension funds (according to FMA data)*.

³¹ Source: *Aggregated balance sheet of Austrian pension funds (according to FMA data)*.

³² As of the business year 2007, those investment and risk-sharing groups that have opted out of the minimum return guarantee no longer allocate funds to building up a minimum yield reserve. Their accounts shall be credited with the amount retained as allocation to the minimum yield reserve for 2006. Given these adjustments, the ratio of adjusted operating profits to the remuneration for covering operating expenses is about 26%.

16.9%.³³ For multi-employer occupational pension funds, return on equity was slightly higher at 18.2%. In the second quarter of 2007, euro-denominated bonds (including cash and long-term loans) accounted for 55% of pension funds' investments, euro area stocks for around 25% and non-euro area stocks for approximately 16.7%. Non-euro area bonds made up 1.3% of pension funds' investments and real estate investments just below 2%. In the first three quarters of 2007, pension funds achieved an average return on investment of 3% (in nominal terms).³⁴ During the three years from the third quarter of 2004 to the third quarter of 2007, multi-employer occupational pension funds earned a return on investment of 7.3% per annum (in nominal terms), while the comparable figure for single-employer occupational pension funds was 9.1% per annum. At 3.5%, the volatility measure of multi-employer occupational pension funds was lower than that of the single-em-

ployer pension funds (4.4%). Single-employer occupational pension funds invested more funds in stocks than multi-employer ones (around 48% compared with around 38%). Since the beginning of 1998, single-employer occupational pension funds have been outperforming multi-employer occupational pension plans by more than 20 percentage points. In this period, the former achieved a yield of 6.1% per annum, while the latter recorded a yield of 4.7% per annum (both in nominal terms). The difference between the highest (27.7%) and the lowest (21.1%) nominal return on investment posted by multi-employer occupational pension funds from 2004 to 2006 is 6.6 percentage points.³⁵ The differing returns on investment are not solely attributable to the quality of asset management, but may also result from variations in the risk preferences of investment and risk-sharing groups and from the decision to opt out of the minimum return guarantee.

³³ Equity is defined as in the Federal Act on the Establishment, Administration and Supervision of Pensionskassen, Annex 1, Form A, liabilities, item A. The minimum yield reserve as well as the funds retained from the assets of investment and risk-sharing groups as transfers to the minimum yield reserve increase both the denominator and the numerator of return on equity. If this share of the allocation for the minimum return guarantee (inclusive of taxes) were to be subtracted from operating profits and the result were to be put in relation to equity (less the respective share in the minimum yield reserve), the resulting return on equity would be 11.8% (12.4% for multi-employer occupational pension funds).

³⁴ Source: Oesterreichische Kontrollbank (OeKB).

³⁵ Source: Austrian occupational pension fund association (compounded annual performance based on OeKB performance data).

SPECIAL TOPICS

Determinants of Bank Interest Margins in Central and Eastern Europe

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Banks' interest margins are among the most important indicators of the cost of financial intermediation. This paper investigates the determinants of banks' interest margins in Central and Eastern Europe (CEE). Given the run-up to EU entry and EU membership itself, dynamics in the banking sector in CEE have developed rather differently than in other emerging market economies. We document that, in contrast to the literature, foreign ownership has a positive effect on interest margins, whereas state ownership proves to be irrelevant. Banks' pricing of loans and deposits, however, is risk-adjusted in CEE – we detect positive risk premia for both interest and credit risk. However, our data provide some evidence for moral hazard behavior. Moreover, the decreasing interest margins in the region during the first half of the current decade seem to be caused by a decrease in operating costs as well as an increase of efficiency levels and rapid financial deepening.

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1 Introduction

The participation in, or proximity of, EU integration has led to a process of rapid financial deepening all across Central and Eastern Europe (CEE). The massive entry of foreign banks into the region's banking markets has played a catalytic role in this respect, providing both a transfer of know-how and financial resources. This process has not only affected the macroeconomic performance of Central and Eastern European countries (CEECs) but also changed the microeconomics of banking in the region. Whereas a number of CEECs were struggling with open or latent banking crises in the early phase of the transition process, ever since the formal opening of membership negotiations with a number of countries in the late 1990ies² large parts of CEE

have witnessed wide-ranging banking sector reforms that have strengthened the institutional set-up of banking systems as well as banks' operating performance.

In this paper, we focus on the determinants of banks' interest margins against the background of the transition process of the CEECs in the run-up to EU membership. We analyze a sample of banks from ten CEE Member States plus Croatia from 2000 to 2005.³ In fact, interest margins in CEE are still well above the levels observed e.g. in the EU-15, although they have been on the decline over the last years (see e.g. Walko and Reininger, 2004). With banks playing a decisive role in the intermediation of funds for CEE economies, the price of financial intermediation, namely banks' net

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² In 1998, the EU formally launched accession negotiations with five CEE applicant countries – the Czech Republic, Estonia, Hungary, Poland and Slovenia. In late 1999, the European Commission recommended opening negotiations with Romania, the Slovak Republic, Latvia, Lithuania and Bulgaria. Membership negotiations with all countries except Bulgaria and Romania were finalized by 2002. While eight CEE countries joined the EU in the 2004 enlargement round, Romania and Bulgaria followed in 2007.

³ In our sample, we also consider Croatia, which applied for EU membership in 2003 and was granted the status of a formal candidate country by the European Council in mid-2004.

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interest margins, is of double interest. On the one hand, the low cost of financial intermediation is desirable from a social welfare perspective. On the other hand, however, this only holds true if risk-shifting problems can be successfully prevented and if banks price credit and interest rate risks in an adequate manner.

By looking at the determinants of interest margins, this paper intends to address both of these issues. We investigate whether interest margins fluctuate alongside banks' exposure, most notably to credit and interest rate risks. Furthermore, we examine which environmental effects or characteristics of the banking system in a given country contribute to reducing the costs of financial intermediation epitomized by lower interest margins. A number of idiosyncrasies of individual CEECs are important in this respect: Micco et al. (2007) e.g. showed that banks' operating performance is connected to their ownership structure. CEE has undergone a rapid change in terms of bank ownership structure. Whereas in 2000 state ownership – though already diminishing – still was of considerable importance in some countries, Poland and Slovenia were the only two countries where the share of state ownership in the banking sector surpassed 10% in 2005. Adding to that, the region's banking sector is largely dominated by the presence of large foreign (mostly EU-15) banking groups. This was already true in 2000, as foreign banks began to enter the CEE market in the late 1990s by way of acquiring banks in the process of privatization or establishing greenfield operations (see e.g. Boss et al., 2007); it is even more true in 2005. In addition, the development of interest margins might also depend on the

different stages of the rapidly progressing financial deepening process, not least because different stages of financial deepening can be used as a – although crude – proxy for the development of the banking sector with respect to technological changes and risk management know-how (see e.g. Borovicka, 2007).

The choice of our data set (CEE banks from 2000 to 2005) raises the question whether, and to what extent, this period in the CEECs' transition process differed from the early transition period in the 1990s and what differences exist in comparison with the same period in other emerging market economies. In this respect, the CEECs' membership in the EU is likely to give the CEE transition process a somewhat idiosyncratic dynamics. The immediate post-transition period in CEE was characterized, inter alia, by widespread (open or latent) banking crises. By contrast, the subsequent opening-up of banking markets by means of large-scale privatization coupled with foreign entries restored confidence in the banking sector and set the stage for rapid financial deepening (see e.g. Havrylchuk and Jurzyk, 2006). Furthermore, the period from 2000 to 2005 is characterized by the immediate consequences of EU integration. Most notably, the participation in, or proximity of, EU integration has sped up wide-ranging reforms in the economic and financial systems of the CEECs on the basis of existing core sets of legislation. Thus there are good reasons to believe that earlier results on the determinants of interest margins for either the immediate post-transition period in CEE or other emerging markets are not representative for the run-up period to EU membership. To the best of our

knowledge, there is no paper that addresses the dynamics of banks' interest margins in CEE during the later stage of transition.

In analyzing the dynamics of interest margin in CEE, we intend to shed some light on three specific questions:

1. *To what extent do bank interest margins fluctuate alongside banks risk exposure?*

We would expect CEE bank interest margins to be positively related to both credit risk and interest rate risk, which would reflect the risk-adjusted pricing of both loans and bank debt (see e.g. Maudos and Fernández de Guevara, 2004). The strength of this relationship may, however, depend on bank characteristics, e.g. bank capitalization. In this regard we might see moral hazard behavior of thinly capitalized banks, with these banks responding less to changes in credit/interest rate risks. The extent to which a bank's earnings base is diversified is another issue that could possibly impact interest margins (see e.g. Elsas et al., 2006, or Stiroh, 2004).

2. *Does a bank's ownership model impact its interest margins?*

Regarding the role of the ownership model in financial sector dynamics, we focus on two aspects. One is state vs. private ownership, the other foreign vs. domestic ownership. State ownership is usually associated with lower profitability, as banks are used as a "means for economic policy," although implicit or explicit state guarantees could also lower their refinancing costs. Regarding foreign vs. domestic ownership, a number of reasons exist why the

operating performance of foreign banks may differ from that of their local counterparts. One of these reasons is differences in risk management techniques, another is efficiency gaps (see e.g. Bonin et al., 2005). An additional difference could be the customer base of foreign banks, as foreign banks' market entries could e.g. have been motivated by the expansion of their domestic clients abroad. An additional factor is that foreign ownership in CEE is mostly equivalent to ownership by a foreign bank. This may again have an influence on interest margins through potentially lower refinancing costs of subsidiary banks as they have access to internal capital markets and/or benefit from implicit guarantees from their parent institutions (see e.g. BIS, 2006).

3. *To what extent are bank interest margins affected by environmental factors?*

Interest margins may of course also be the result of changing environmental conditions. These can e.g. relate to GDP growth, progress in the process of financial deepening and/or the liberalization of the economic system of a given country. Given the fact that interest margins are considerably lower in the EU-15 than in the CEE Member States (e.g. ECB, 2006), one might, for example, hypothesize that progress in terms of financial deepening is a viable means to lower the cost of financial intermediation.

Our results show that in contrast to the literature, foreign ownership has a positive effect on interest margins and, in contrast to studies on other emerging markets, state ownership

has no significant impact. Our results reveal positive risk premia for interest and credit risk indicating a risk adjustment in the pricing of bank loans and deposits. Moral hazard, however, seems to be an issue with CEE banks. Moreover, we document a tradeoff with noninterest revenues and interest margins revealing some importance of income source diversification.

The major drivers of interest margin reductions in CEE banking have been a substantial decrease in operating costs, higher efficiency and the fast transformation process of economic environments combined with rapid financial deepening in the region.

The following 2nd section describes the underlying theoretical model and section 3 specifies the empirical application. Section 4 presents our results and section 5 concludes.

2 Determinants of Banks' Interest Margins

This paper builds on a microeconomic dealership model in the line of Ho and Saunders (1981). From a modeling perspective, we apply the Maudos and Fernández de Guevara (2004) model of interest margins.⁴ Intuitively, their model works in the fol-

lowing way: Banks are risk-averse agents that take deposits and grant loans. Demand for both loans and deposits arrives randomly, with the probability of arrival depending on the interest margins the bank charges and the elasticity of loan demand/deposit supply. The random character of deposit supply and loan demand exposes them to interest rate risk. The bank also faces credit risk. A risk-averse agent will demand higher margins for both interest rate and credit risks. In addition, Maudos and Fernández de Guevara (2004) argue that operating costs, which may e.g. vary with product differentiation, impact interest margins. Even in the absence of any kind of risk, banks will have to cover their operating costs, which are a function of deposits taken and loans granted.⁵ The model further predicts interest margins to be an increasing function of the average size of banks' operations because more risk is concentrated in a single customer. Interest margins are also predicted to be a decreasing function of the degree of competition in a banking market.

To sum up, the theoretical model of Maudos and Fernández de Guevara (2004) lists the following determinants of a bank's interest margin: its

⁴ The original Ho and Saunders (1981) model has been extended to include different kinds of loans and deposits (Allen, 1988), the volatility of money market interest rates (McShane and Sharpe, 1985), credit risk (Angbazo, 1997) and operating costs (Maudos and Fernández de Guevara, 2004). Empirically different variants of the model have been applied to the U.S. banking market (e.g. Angbazo, 1997), to a number of EU-15 banking markets (Saunders and Schuhmacher, 2000, Maudos and Fernández de Guevara, 2004, or Liebeg and Schwaiger, 2007). Drakos (2003) has been the first to apply the Ho and Saunders (1981) model to CEE banks. He focused on the early period of transition (i.e. from 1993 to 1999), a period marked by banking crises in many CEECs.

⁵ As in a perfectly competitive environment the prices are set by the market, which simply results in the exit of banks with high expenses, some doubts about this argument may be justified. Higher operating costs may, however, also generate product differentiation due to higher service and/or higher marketing expenses and may therefore enable a bank to charge higher interest rates for loans and offer lower interest rates for deposits. In this respect, Fries and Taci (2005) e.g. argue that banks in transition are moving from the defensive restructuring of banking operations (cost cutting) to operating strategies based on service improvements and innovation, which require a higher level of spending.

degree of *risk aversion*, the *competitive structure* of the banking market, *interest rate risks*, *credit risks*, the *interaction* between credit and interest rate risks, the bank's *operating costs* and the *average size* of a bank's operations.

In the literature, the interest margin explained by these factors is referred to as the “pure” or model-based interest margin. From an empirical point of view, a number of other factors reflecting market imperfections, bank-specific components or macroeconomic influences might lead to deviations from these “pure” interest margins. The *payment of implicit interest* in the form of loan- or deposit-related commissions obviously has to be considered in this context (Saunders and Schumacher, 2000). The *quality of management* (Angbazo, 1997) may also have an effect on empirical interest margins. Moreover, Stiroh (2004) documents interplay between noninterest and interest revenues that could hinge on *income diversification*. *General economic conditions* (Bikker and Hu, 2002) could also have an influence in this context. With respect to CEE, the aforementioned widespread presence of foreign banks as well as the

diminishing role of state ownership makes the *ownership structure* of banks an issue, too (Drakos, 2003). In an empirical model of bank interest margins, these factors will also have to be captured.⁶

Thus, the observed interest margin of bank *i* in country *j* at time *t*, IRM_{ijt} , is given by:

$$IRM_{ijt} = f[PIM_{ijt}(\bullet), X_{ijt}, Y_{jt}]$$

where PIM_{ijt} is the pure interest margin, X_{ijt} is a vector of bank-specific control variables, and Y_{jt} is a vector of industry-specific and macrocontrol variables.

3 Empirical Model

In order to capture unobserved cross section-specific effects, we estimate a fixed effects model using the within-group estimator for our dealership model. The fixed effects specification is preferred vis-à-vis both a random effects model⁷ and first differencing.⁸ As a Pesaran (2004) test indicates the presence of cross-sectional dependence in our sample, we display standard errors robust to cross-sectional correlation following Driscoll and Kraay (1998). The empirical specification thus takes the form⁹

⁶ The distinction between an empirically observed interest margin and a pure interest margin that induces the need for control variables is common to dealership models in the line of Ho and Saunders (1981). See also Angbazo (1997), Saunders and Schumacher (2000) or Maudos and Fernández de Guevara (2004).

⁷ A Hausmann specification test rejects the hypothesis of a random effects model adequately modeling individual effects. The p-values for the respective Hausmann tests are displayed for each model specification that is estimated (see tables 2 and 3).

⁸ For large *N* and small *T* (as in our sample), the choice between a fixed effects vs. a first differencing model depends on the efficiency of the respective estimators, which is determined by the serial correlation of errors. Following Wooldridge (2002), we perform a test for serial correlation in the idiosyncratic errors using the first differencing approach. The test rejects the null hypothesis of no autocorrelation in differenced errors, indicating that the fixed effects model is more efficient than first differencing. The p-value of the test statistic is again provided for every specification in tables 2 and 3.

⁹ As several papers indicate the persistence of bank profits over time (e.g. Athanoglou et al., 2005, and Goddard et al., 2005) we also performed a dynamic panel data approach, using the one-step GMM-estimator by Arellano and Bond (1991), which introduces common time effects to capture the potential influence of cross-section dependencies. The lagged interest rate margin variable was, however, found to be insignificant. Furthermore, to make sure nonstationarity does not affect our data, we performed the panel data unit root test according to Maddala and Wu (1999), resulting in the rejection of the null hypothesis of nonstationarity. The respective test statistics can be obtained from the authors upon request.

$$IRM_{ijt} = const + \sum_{k=1}^K \alpha_k PIM_{kijt} + \sum_{l=1}^L \beta_l X_{lijt} + \sum_{m=1}^M \gamma_m Y_{mijt} + u_{ijt}$$

and $u_{ijt} = \mu_{ij} + v_{ijt}$, where IRM_{ijt} is the interest margin of bank i in country j in year t , α_k are the K coefficients of the variables determining the pure interest margin PIM_{ijt} , β_l are the L coefficients of the bank-specific control variables and γ_m are the M coefficients of the industry-specific and macro-control variables that are constant over all banks in a given year and country j . u_{ijt} consists of the individual effect μ_{ij} and the residual term v_{ijt} .¹⁰

Empirically, the interest margin is measured as net interest income (interest income net of interest expenses) in relation to total assets. The determinants of the “pure” interest margin as proposed by the model are proxied by the following variables:

Risk aversion is captured by the equity-to-total assets ratio – the higher the ratio, the higher is a bank’s risk aversion. *Interest rate risk* is captured by the standard deviation (within a year) of daily interbank money market rates, whereas *credit risk* is measured by the ratio of customer loans to total assets, with the ratio of loan loss provisions to net income (risk/earnings ratio) being used to check for the robustness of results.

The interaction of credit risks and interest risks is covered by introducing an interaction term between the interest rate risk and the respective credit risk specifications. *Operating costs* are computed as the relation of operating expenses to total assets. *The average size of operations* is captured by the log of total customer loans. The *competitive structure* of the market is captured by the concentration ratio of the five largest banks in any banking market.¹¹

A number of environmental variables and bank characteristics are used to account for empirical deviations from pure interest margins. Following Angbazo (1997), Saunders and Schumacher (2000) and Maudos and Fernández de Guevara (2004), the *payment of implicit interest rates* is measured by the ratio of the difference between noninterest expense minus other (i.e. noninterest) operating income to total assets. The quality of management is proxied by the cost-to-income ratio, the *importance of noninterest revenues* is calculated by the ratio of noninterest revenues to total assets, with the ratio of non-interest revenues to total revenues

¹⁰ Given the presence of large differences in the size of individual banks, heteroskedasticity could be a problem in our sample. We control for this by using a robust estimator of the variance-covariance matrix of the parameter estimates.

¹¹ The use of a market concentration ratio as a right-hand side variable of course implicitly assumes that market concentration is exogenous to the change in banks’ interest margins. To make sure that our parameter estimates are not distorted by the endogeneity of the concentration variable (which would lead to inconsistent parameter estimates), we perform a test for the exogeneity of the concentration ratio following Wooldridge (2002), confirming the hypothesis of strict exogeneity of our competition variable. Results can be obtained from the authors upon request.

being used in a robustness check.¹² The change in *economic conditions* is proxied by the real GDP growth rate in a given year for each country as well as by the Index of Economic Freedom which is provided by the Heritage Foundation and covers the business environment side of economic conditions. *GDP per capita* is intended to measure the different stages of the economic convergence process and can thus to some extent also be used to proxy the development of the banking sector with respect to technological change. We use the relationship of total banking assets to GDP for robustness purposes in this respect.

Regarding *ownership structure*, we use a dummy for state ownership for every bank in every year. This dummy assumes a value of 1 if state ownership is above 50% (we use the 25% threshold to check for robustness of results) and 0 otherwise. Foreign ownership is captured by the share of foreign ownership in a given bank at a given point in time. To see whether results are stable to an alternative definition of variables, we also use a foreign ownership dummy which is 1 in case the largest shareholder is a foreign company and 0 otherwise. To analyze the impact of foreign entries on domestic banks, we use the overall share of foreign-owned assets in

banks' total assets of a country in a given year.

The use of foreign ownership as a right-hand side variable implicitly assumes its exogeneity. In our case, this is equivalent to the assumption that foreign bank presence at any time t is determined by market or bank characteristics of time $t-1$. As this assumption seems to be quite restrictive, we perform a test for the exogeneity of foreign ownership according to Wooldridge (2002), which confirms the strict exogeneity of foreign ownership. This result is in line with the findings of Claessens et al. (2001) and Havrylychik and Jurzyk (2006). Claessens et al. (2001) document that (in contrast to e.g. a low-cost environment, low taxes etc.) the net interest margin is insignificant for a foreign bank's decision to enter a market. Havrylychik and Jurzyk (2006) show that the higher profitability of foreign banks is acquired rather than "inherited."

In the following, after briefly discussing our data, we will estimate a reference model and subject it to a number of robustness checks based on alternative variable definitions.

3.1 Data

Our data on banks' balance sheets and profit and loss accounts stem from Bureau van Dijk's Bankscope

¹² The definition of the variables that measure the payment of implicit interest rates and the importance of noninterest revenues may raise concerns of multicollinearity, as do the definitions of the variable measuring the quality of management and operating costs. To check for multicollinearity, we computed variance inflation factors (VIFs) for all independent variables based on a pooled ordinary least squares (OLS) regression. VIFs are obtained by regressing an explanatory variable i on all other independent variables. As a rule of thumb, VIFs greater than 10 would indicate a problem of multicollinearity (Gujarati, 1995). In case of our reference model, VIFs range from 1.23 to 5.17, which means that multicollinearity does not seem to be a problem. In addition, we computed pairwise correlations between these variables, which were also rather small (not above 0.4). Moreover, we checked for the stability of parameter estimates when omitting individual variables. The empirical results in section 4 proved to be insensitive toward leaving out these variables one by one. Trading off the potential problem that could arise by omitting variables with their potential collinearity, we decided to include all variables in the model.

database. This database comprises 402 banks from 11 CEECs (the total of 10 CEECs that joined the EU in 2004 and 2007, respectively,¹³ plus Croatia, which was officially granted candidate country status in 2004). The time span observed is six years (2000–2005). As there is no complete set of data available for a number of variables used, our sample is reduced to an unbalanced panel of 247 banks and 930 observations, for which we constructed a time series based on the ownership information available for each bank from the Bankscope database. Interbank rates are taken from Bloomberg, GDP per capita and real GDP growth from Eurostat and the source of the Index of Economic Freedom is the Heritage Foundation.

Table 1 shows the evolution of our variables for the median bank for the years 2000 to 2005. Following a common trend also observed in Western European countries (e.g. Liebeg and Schwaiger 2007), the interest margin (*IRM*) decreased from 3.5% in 2000 to 2.7% in 2005. During the same period operating costs (*OPEXPRATIO*) decreased markedly – from 4.7% to 3.2%. So did cost-to-income ratios (*CIR*, from 63.2% to 47.8%), noninterest revenues (*NON-INTREV*, from 2.3% to 1.8%) and implicit interest payments (*IIP*, from 1.4% to 0.4%), thereby indicating

substantial gains in CEE banks' efficiency. The evolution of interest risks (*STDIBR*) is rather volatile over the period under observation, but was lower in 2005 than at the beginning of the decade. Our proxy for credit risks (*KK*) increased during the sample period, whereas risk aversion (*RISKAV*) declined slightly. Concentration (*CR5*), which stood at 71% in 2005, did not vary to a large degree over time. GDP growth (*GDPGROWTH*) was within a range from 4.2% to 5.3%. The Index of Economic Freedom (*FREEDOM*) did not change substantially, whereas intermediation depth (*INTERM*) increased rapidly from 38% of GDP to 88%.

With respect to the ownership variables used in our model, the median share of foreign ownership (*FOREIGNSHARE*) increased noticeably from 45% in 2000 to 85.5% in 2005, depicting the change in banking ownership structure during the observation period. The share of banks that had a dominant foreign owner (*LARGESTFOREIGN*) paralleled this development, growing from 54.1% (i.e. 46 banks) to 67.8% (120 banks) from 2000 to 2005. State ownership was found to play a minor and decreasing role in CEE banking markets: 5.7% of all banks had the state as majority shareholder in 2005, down from 8.2% in 2000.

¹³ Bulgaria, the Czech Republic, Estonia, Latvia, Lithuania, Hungary, Poland, Romania, Slovenia and Slovakia. Given the regional focus of this study, we exclude Malta and Cyprus.

Table 1

Descriptive Statistics		2000	2001	2002	2003	2004	2005
Symbol	Definition of sample medians ¹						
IRM (%)	Ratio of net interest income to total assets	3.447	3.219	3.325	3.143	2.896	2.688
OPEXPRTATIO (%)	Ratio of operating costs to total assets	4.716	3.900	3.953	3.710	3.502	3.239
RISKAV%	Debt-to-equity ratio	9.834	10.053	10.066	10.153	9.732	9.272
STDIBR	Standard deviation of interbank rates per country	0.860	0.963	0.810	1.332	0.619	0.584
CIR (%)	Cost-to-income ratio	63.230	55.641	55.637	52.877	49.789	47.760
CROSSIBR	Interaction between LLPR and STDIBR	4.150	5.642	4.753	2.092	2.073	1.546
NONINTREV (%)	Ratio of noninterest revenues to total assets	2.283	1.971	1.905	1.789	1.820	1.789
IIP (%)	Ratio of operating expenses minus noninterest income to total assets	1.439	0.910	0.865	0.797	0.498	0.366
CR5	Market share of five largest banks per country	71.000	70.000	71.000	70.000	67.000	71.000
HHIASSETS	Herfindahl index by country, calculated on the basis of total assets	0.143	0.145	0.135	0.133	0.135	0.154
SIZE	Log of total customer loans	12.017	12.166	12.162	12.157	12.396	12.985
GDPGROWTH (%)	Annual growth of real GDP	4.200	4.300	4.600	4.300	5.300	4.300
INTERM (%)	Ratio of a country's total banking assets to nominal GDP	37.635	69.464	62.156	71.873	77.327	87.596
GDPPERCAPITA	GDP per capita (EUR thousand)	9.404	9.604	9.975	10.209	11.060	11.550
FREEDOM	Index of Economic Freedom according to the Heritage Foundation (0=lowest; 100=highest)	62.964	60.072	64.336	61.536	62.217	62.446
KK (%)	Ratio of customer loans to total assets	41.742	44.933	49.635	55.024	53.711	54.893
CROSSKK	Interaction between LLPR and KK	0.425	0.538	0.455	0.410	0.331	0.303
NONINTREV2 (%)	Ratio of noninterest revenues to total income	40.733	38.239	36.666	37.304	37.690	41.109
FOREIGNSHARE	Share of foreign ownership for each bank (%)	45.000	50.465	70.835	65.830	75.000	85.520
LARGESTFOREIGN	Dummy (1 if largest owner is foreign), % of total observations if dummy is 1	54.118	54.237	60.667	61.257	64.115	67.797
STATE50	Dummy (1 if state owns more than 50%), % of total observations if dummy is 1	8.235	11.017	7.333	7.330	7.656	5.650
STATE25	Dummy (1 if state owns more than 25%), % of total observations if dummy is 1	8.235	11.017	8.000	7.850	8.134	6.215
	Number of observations in a given year	85	118	150	191	209	177

Source: Bankscope, Bloomberg, Heritage Foundation, Eurostat.

¹ Median by bank or country (depending on definition of variable).

4 Results

Table 2 shows the results of our reference model and table 3 presents the results on the hypothesis of moral hazard behavior. Econometrically, a Hausmann test and a test for serial correlation in residuals according to Wooldridge (2002) confirm the use of a fixed effects model rather than a random effects model or first differencing.

4.1 Reference Model

Coming back to our reference model, we will start by summing up the main results first and then further elabo-

rate on the issue of banks' risk-taking and ownership.

In our model, most determinants of pure interest margins have the predicted sign of influence and are significant. Operating costs have a positive significant influence, as do risk aversion, credit risk, interest rate risk and the degree of concentration. When looking at the sensitivity of the interest margin with respect to these determinants, it becomes apparent that credit risk is by far the most important driving force. A 10% increase in credit risk would lead to an interest margin increase of 15.5 basis

Table 2

**Determinants of CEE Banks' Interest Margins from 2000 to 2005
(Reference Model)**

Dependent variable: Net interest margin (IRM)				
	Coefficient	Standard error	p-value	
OEXPRATIO	0.21326	0.03011	0.000	
RISKAV	0.03792	0.00842	0.000	
KK	0.02835	0.00301	0.000	
STDIBR	0.00202	0.00053	0.000	
CIR	-0.02607	0.00173	0.000	
CROSSKK	-0.00151	0.00051	0.004	
NONINTREV	-0.25351	0.02428	0.000	
IIP	0.44977	0.03893	0.000	
CR5	0.00403	0.00179	0.025	
SIZE	-0.00042	0.00082	0.607	
GDPGROWTH	0.0003	0.00023	0.018	
GDPPERCAPITA	-9.60e-07	3.71e-07	0.001	
FOREIGNSHARE	0.00203	0.00079	0.011	
FREEDOM	-0.00015	0.00014	0.284	
STAT50	0.00221	0.00135	0.102	
_CONS	0.04005	0.01327	0.003	
Number of observations	930			
Number of groups	247			
Hausmann test	0.0000			
Test for serial correlation ¹	0.0001			
R-squared	0.6124			

Source: own estimations.

¹ Wald test for serial correlation in the idiosyncratic errors of a linear panel data model according to Wooldridge (2002).

points, whereas an increase in interest rate risk of the same magnitude would only entail a rise by 1.2 basis points.¹⁴ Moreover, operating costs also have a sizeable impact on interest margins, as a 10% change in operating costs will lead to an interest margin reduction by 6.9 basis points. By contrast, bank size does not have any significant influence. Lower costs, lower risk aversion, lower credit and interest rate risks as well as more competition therefore induce lower interest margins.

Concerning the bank-specific variables of the interest margin model, the cost-to-income ratio and noninterest revenues have negative and significant coefficients, which indicates that a higher degree of efficiency results in higher interest mar-

gins. We find that a 10% increase in efficiency increases interest margins by 12.5 basis points and a 10% increase in noninterest revenues causes interest margins to drop by 4.5 basis points. Implicit interest payments also have the expected positive and significant influence: The more services are given away “for free” (which means that they are not covered by other operating income), the higher the net interest margin (NIM) has to be. However, the effect is comparatively small, with the change in interest margins amounting to only 1.6 basis points for a 10% change in implicit interest rate payments.

As regards the effect of banks' ownership model on interest margins, we find that foreign ownership has a significant, yet small, positive

¹⁴ All sensitivities listed in section 4 have been evaluated at sample medians for 2005 as depicted in table 2.

impact on interest margins – a 10% increase in the share of ownership increases interest margins by only 1.7 basis points. State ownership, by contrast, has no significant impact.

With respect to the country-specific environmental variables, the Index of Economic Freedom has the predicted negative sign, but is insignificant. So is GDP growth. GDP per capita, however, which can serve as an indication for the progress made in the transition process, does have a significant negative effect on interest margins. Although the coefficient is small, a sensitivity analysis shows that a 10% increase in GDP per capita induces a sizeable decrease in interest margins to the tune of 11.1 basis points.

To check for the robustness of our results, we also estimated five robustness models using alternative variable definitions. Model (1) uses the Herfindahl Index as a proxy for credit risk. Model (2) is estimated with a new variable for noninterest revenues, namely their share in total income. Models (3) and (5) use different variable definitions for capturing the influence of foreign/state ownership. LARGESTFOREIGN is a dummy which assumes a value of 1 if the largest shareholder is a foreign shareholder and 0 otherwise (as opposed to using the share of foreign ownership to proxy for foreign ownership in the reference model), and STATE25 is a dummy which takes the value of 1 if state ownership is above 25% (as opposed to 50% in the refer-

ence model) and 0 otherwise. Model (4) uses intermediation depth (the ratio of a country's banking assets to its nominal GDP) as an alternative to GDP per capita, which is used in the reference model.¹⁵

With several minor exceptions, the results of our reference model¹⁶ are by and large confirmed by the robustness checks. One of these exceptions concerns the sign of the Herfindahl Index, which is significantly negative. In this regard the concentration ratio of the five largest banks turns out to be insignificant in some models. This suggests that CEE banking markets seem to be all but perfectly competitive. Some other variables change slightly in their significance in comparison with the reference model: State ownership is moderately significant in two of the five robustness models and GDP growth becomes significant once intermediation depth is used instead of GDP per capita to capture economic development.

An interesting aspect concerns the influence of intermediation depth on interest margins. Apparently, the higher developed a country's banking market is in terms of size relative to GDP, the lower banks' interest margins. A 10% increase in intermediation depth causes interest margins to drop by 4.0 basis points. Given that intermediation ratios in CEE are still way behind euro area averages (some 284% in the euro area, as opposed to a median of 86% for the CEECs in our sample; for euro area data see e.g.

¹⁵ The use of loan loss provisions as a credit risk proxy would also have made for a natural robustness check. But since loan loss provisioning ratios are rather low in a rapidly growing market (see e.g. OeNB, 2007), we consider their ability to proxy credit risk rather limited and therefore did not use them as a credit risk proxy. Furthermore, loan loss provisions are affected by a number of other factors besides credit risks, especially earnings management, which makes them a sometimes misleading measure of credit risk.

¹⁶ The accompanying table can be obtained from the authors upon request.

Table 3

Risk Shifting – Subsamples Split along the 25% Quantile of the Tier 1 Ratio

Dependent variable: Net interest margin (IRM)		
	Thinly capitalized banks	Remaining banks
	Coefficient	Coefficient
OPEXPRATIO	0.20894***	0.22456***
RISKAV	0.13608***	0.03178**
KK	0.01840***	0.02697***
STDIBR	-0.00073	0.00195***
CIR	-0.01449***	-0.02984***
CROSSKK	0.00295***	-0.00135***
NONINTREV	-0.18468***	-0.28014***
IIP	0.39554***	0.47723***
CR5	0.00190	-0.00202
SIZE	-0.00273*	-0.00086
GDPGROWTH	0.00009	0.00015
GDPPERCAPITA	-7.05e-07***	-4.88e-07
FOREIGNSHARE	0.00297***	0.00277**
FREEDOM	-0.00027*	-0.00013
STATE50	-0.00013	0.00173
_CONS	0.06695***	0.04822***
Number of observations	246	684
Number of groups	96	206
R-squared	0.7861	0.5995
Test for serial correlation ¹	0.0001	0.0001
Hausmann test	0.0001	0.0000

Source: own estimations.

Note: ***, **, * indicate significance at 1%, 5%, 10% level.

¹ Wald test for serial correlation in the idiosyncratic errors of a linear panel data model according to Wooldridge (2002).

Rossi et al., 2007), we can expect that margins in CEE will decline significantly in the future, as the depth of financial intermediation approaches euro area levels.

All in all, the robustness checks performed underpin the confidence we had in our estimation results. However, a number of caveats need to be considered when interpreting our results. One of them certainly is the choice of empirical proxies for variables. Due to data restrictions, especially the proxies for credit and interest rate risk are rather crude and perhaps do not fully cover all aspects of these risk categories. The same applies to our proxy for competition. However, it is difficult to come up with stable estimates of another widely used proxy for competition, i.e. the Lerner index, as there were

not enough data points available for a number of countries.

4.2 Risk-Taking

Our results indicate that the pricing for loans and deposits is risk adjusted – both credit and interest rate risk have a significant influence on interest margins. Moreover, noninterest revenues and interest margins seem to interact. Our results show a trade-off between these two income categories. As already suggested in the introduction, this tradeoff could be seen as evidence for the hypothesis that besides credit and interest rate risk, diversification effects in banks' income sources influence their pricing of loans and deposits. Alternatively, this tradeoff could be attributable to cross-selling opportunities – banks are willing to accept lower in-

terest margins as the establishment of a client relationship enables them to profit from noninterest revenues.

Although our results appear to be in line with expectations, moral hazard behavior could still be hidden underneath these results. To check for moral hazard behavior, we follow an approach commonly used in the literature (e.g. Berger and DeYoung, 1997) and split our sample in two along banks' equity-to-asset ratios. We chose the 25% quantile to separate our sample. If moral hazard is indeed present, we expect the interest margins of thinly capitalized banks to be less sensitive to both interest rate and credit risks. Table 3 shows the estimation results of both subsamples.

These results indeed provide some foundation for the moral hazard hypothesis: In fact, we do note that for thinly capitalized banks the interest rate risk is insignificant for the setting of interest margins. Furthermore, the credit risk coefficient is smaller for thinly capitalized banks than for their counterparts. Therefore, the interest margins of thinly capitalized banks are less sensitive toward both credit and interest rate risk than the interest margins of their counterparts with higher equity ratios. Thinly capitalized banks also seem to be less sensitive toward income diversification. As current loan loss provision levels in CEE are rather low – inter alia because of the rapid growth of credit portfolios (e.g. Boss et al., 2007) – the fact that those banks that have a lower equity base are also those which apparently provide for a lower cushion in the form of interest margins gives reason for concern. The sensitivities for credit

and interest rate risk of thinly capitalized banks and their counterparts differs by about 5 basis points for a 10% increase in both risk factors and is thus limited.

4.3 Ownership

In our case, foreign ownership has a positive influence on banks' interest margins. This finding is e.g. in contrast to Claessens et al. (2001) and Micco et al. (2007) for a broad sample of transition countries and to Drakos (2003) for a sample of CEE banks in the early stage of transition.¹⁷ One reason for this difference is the fact that foreign ownership could have a positive effect on banks' refinancing costs (e.g. BIS, 2006). Average financial strength ratings for banks in CEE, for instance, are considerably lower than in EU-15 countries, where most of these banks' parent banks are headquartered (e.g. Moody's, 2007). What makes CEE special in this respect is the fact that foreign ownership is considerably more common than in other transition economies. In this respect, it is worthwhile considering that most of the foreign banking groups active in the region earn a significant portion of their income in these countries. The Italian UniCredit Group, Austria's Erste Bank and Raiffeisen International or the Belgian KBC Group are cases in point. The widespread presence of foreign ownership in CEE, however, reduces the risk of "cut and run" strategies in times of crisis, as these banks would run a considerable reputation risk when letting an individual subsidiary fail in case of a crisis. Thus the implicit guarantee by foreign parent banks is perhaps more credible in

¹⁷ See also Uiboupin (2004 and 2005).

CEE than in other developing markets – a fact which, in turn, would explain lower refinancing costs. More sophisticated risk management techniques implemented during the transfer of know-how that goes along with foreign ownership could be another reason why foreign-owned banks are charged less for their debt than their domestically owned counterparts. Our data indeed reveal that costs for debt capital are indeed lower for foreign-owned banks than for their domestic counterparts. If a bank's largest shareholder comes from abroad, the average cost of debt capital is 2.76%, whereas it is 2.94% for banks with a domestic owner as the largest shareholder. It may be argued that in a perfectly competitive market foreign banks would use their comparatively lower refinancing costs to enter into price competition for bank loans. As the partly contradicting evidence on competition (as measured by a concentration ratio and by the Herfindahl index) shows, the CEE banking market seems to be characterized by imperfect competition. Thus it may not come as a surprise to see that lower refinancing costs are not passed on fully to customers. Another reason for this phenomenon could be the rapid expansion of the CEE banking market itself which offers significant growth opportunities to banks without forcing them to claim market shares from their competitors.

In contrast to Drakos (2003), our results on the influence of a bank's ownership model on its interest margins reveal, furthermore, that state ownership has no significant influence on interest margins. Lower interest margins of state-owned banks are usually explained by the promotion of other than pure business motives. Micco et al. (2007) e.g. show

that the effect of state ownership is particularly pronounced during election years. It may, however, be argued that in later stages of economic development and/or in countries with a low share of state ownership, state banks cease to play a development role in the economy and tend to mimic the behavior of private banks. The rapid process of economic convergence of the CEECs in our sample over the past few years would thus explain why our results for CEE differ from those of Drakos (2003) who studied the early transition period. Our results are compatible to Micco et al. (2007) who found that ownership is only relevant for the banking sectors in transition economies but not for those in industrialized countries.

5 Summary

In this paper we apply a microeconomic dealership model of interest margins supplemented by information on ownership and economic environment to banks in CEE in the late transition period from 2000 to 2005. The most important features of this period are the widespread dominance of foreign banks (mostly from the “old” EU Member States), the shrinking importance of state ownership and the adoption of the legal and economic standards of the EU. Because of these factors, our case study on CEE banking markets during the period from 2000 to 2005 yields results that are rather different from those of studies on other emerging banking markets the early transition period in CEE, which was marked by widespread banking crises.

Our results show that credit risk is by far the most important driver of interest margins in CEE banking, whereas interest rate risk has only a

minor impact. The major reasons for the observed reduction in interest margins are a higher degree of efficiency, lower operating costs and a higher weight of noninterest income in a bank's earnings. Lower risk aversion, higher competition and lower implicit interest payments are additional microeconomic determinants that have a significant, albeit smaller, influence on reducing interest margins.

With respect to banks' risk-taking, we document a risk adjustment in banks' margins for both interest rate and credit risk which reveals positive premia for both risk categories. Moreover, we document a tradeoff between noninterest revenues and interest margins that reveals that income source diversification is of some importance for bank's pricing policies. However, we also found some evidence for the assumption that thinly capitalized banks react to credit and interest rate risks in a less sensitive manner than their counterparts, which indicates the existence of moral hazard behavior. Its impact on margins is limited, however.

In contrast to the literature, foreign bank ownership has a positive

effect on interest margins. We attribute this observation to the fact that refinancing for banks owned by foreign companies (mostly banks) is cheaper than for their domestic counterparts since subsidiaries have access to the internal capital market of the banking group they belong to and profit from implicit guarantees by the parent institution.

In contrast to the findings available on other emerging economies, state ownership has no influence on interest margins in the countries and period under observation, which confirms the view that state-owned banks tend to mimic commercial banks in later stages of economic development.

Our estimations also confirm the assumption that interest margins are lower the more developed an economy is. GDP per capita or, alternatively, intermediation depth both have a considerable and statistically significant negative impact on banks' interest margins. Thus, the expected continuation of the financial deepening process in CEE is assumed to contribute to a further downward alignment of CEE banks' interest margins to EU-15 levels in the medium term.

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Banking in Belarus – On a Trajectory of its Own?

Stephan Barisitz¹

This study analyzes the functions and development of the Belarusian banking system in recent years, with a special focus on the current situation, which is characterized by a sharp deterioration of the country's terms of trade in early 2007. Since the mid-1990s, the "Belarusian economic model" has consisted of a mixture of market elements with rigorous state interventionism and outright remnants of the centrally planned economy. About three-quarters of the country's economy and four-fifths of its banking sector remain state owned. Thanks to a surprisingly favorable industrial legacy and to very advantageous terms of trade including outside subsidies in recent years, the "model" has delivered impressive growth and has slashed poverty. Credit institutions – particularly the largest ones – serve as instruments to carry out directed lending to finance fixed investment projects in various areas targeted by the state. From time to time, the authorities step in and bail out the most troubled players. The only major foreign acquisition in the sector to date was the purchase of Priorbank (the fourth-largest credit institution) by Raiffeisen Zentralbank Österreich AG (of Austria) in 2002. Most recently (since 2004) Belarusian banks appear to have joined, to some degree, the credit boom reigning in all of the country's neighbors. The external shock of early 2007 (Russia's sharp increase of energy prices) threatens to erode the quality of credits and to put pressure on the Belarusian ruble, thereby undermining the stability of the sector. The authorities have so far reacted by soliciting external financial assistance and by trying to attract FDI by selling some key enterprises – including some medium-sized banks – to foreigners, mostly Russians.

JEL classification: G21, P34

Keywords: banking, Belarus, credit boom, FDI, financial crisis, hybrid economy, state interventionism, terms-of-trade shock, transition

1 Introduction

Surrounded by countries with strongly expanding or booming banking sectors and situated on the borders of the European Union and the Russian Federation, Belarus, its economy and banking system clearly arouse interest. This interest is heightened by the fact that Belarus has so far been following an economic strategy and carrying out economic policies that strongly differ from those of all of its neighbors. To the lasting surprise of many, the "Belarusian economic model" so far seems to have been quite successful – in terms of

raising the economic well-being of the population, achieving near full employment and reducing poverty to the lowest level in the Commonwealth of Independent States (CIS). The banking sector appears to have played a particular role in the implementation of the model, a role that may have brought credit institutions some advantages but that also saddled them with heavy economic burdens and opportunity costs.

The purpose of this study is to analyze the functions and development of the Belarusian banking system in recent years, with a special focus on

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the current situation, which is characterized by a sharp deterioration of the country's terms of trade in early 2007 and consequent uncertainties. As far as possible, the evolution of legal foundations and banking supervision, banks' major sources of assets, liabilities, earnings and related changes, banking crises, recapitalizations, state interventions and control, renationalizations, the role of foreign-owned banks and FDI will be discussed. The study is organized as follows: Section 2 attempts to shed some light on the country-specific economic framework in Belarus and on the driving forces of Belarusian growth. Section 3 focuses on the Belarusian banking system, its role and its development since the turn of the millennium. Section 4 gives a brief account of the January 2007 energy deal with Russia and highlights the impact it has had so far (August 2007) on the Belarusian economy and banking sector. Initial economic policy reactions of the authorities are also outlined. Section 5 gives a short and medium-term outlook of likely future developments in the economic and banking sphere.

2 Some Elements of the “Belarusian Economic Model” and Driving Forces of Expansion

Under the Soviet system, Belarus had been the “industrial assembly plant” of the USSR, affording the population of the resource-poor republic a relatively high standard of living. As an independent state, Belarus initially embarked on the road of reform, like other CIS members. But in the mid-1990s, a change of political regime

triggered an about-face, featuring an increasingly authoritarian state once again reinforcing its power over the economy. From a reluctant reformer Belarus became a retractor of reforms. This made itself felt in an explosion of regulations, the proliferation of price controls, relicensing campaigns of economic entities, the stalling and rollback of privatization, and the multiplication of compulsory state orders. Even where privatization was not rolled back, the introduction of a generously interpreted “golden share” rule guaranteed the state substantial influence in former state-owned enterprises and banks, including those that had been 100% privatized. Thereby, elements of central planning were reintroduced into the Belarusian economy (Barisitz, 2007, p. 64).

This policy “model” – combining a hybrid economy with authoritarian rule – has remained largely unchanged and has seen some impressive growth in recent years. Annual average GDP growth from 2001 to 2006 according to official statistics came to 7.8% (table 1); according to IMF estimates it was about 6%.² But the nature and quality of this growth are highly questionable, given that it appears to have been forced to a considerable degree by the authorities (Lallemand, 2006, p. 71). The country has benefited from substantial energy price subsidies coming from Russia and from favorable barter deals with its big neighbor to the East.

Looking more closely, the main drivers of Belarusian growth can be identified as the following (Bakanova and Freinkman, 2006, pp. 224–226; IMF, 2006, pp. 5–9):

² In the assessment of the IMF, Belarusian annual GDP growth measured according to international standards would be about 1 to 2 percentage points lower than published by the authorities (IMF, 2004, p. 5).

Internal factors

- Belarus inherited several unique USSR economic assets in the manufacturing sector (e.g. in the automobile and tractor industries)³ which proved to be more competitive on the Russian market than other former USSR industries. Moreover, Belarus inherited significant capacities in oil refining and chemical industries (including fertilizers), which confirmed their competitiveness on European and world markets.
- In contrast to many large manufacturing plants in Russia and other CIS countries, enterprises in Belarus tended to lose a smaller share of their original productive capacity during the period of early transition. This was due to lower incidence of asset stripping and capital flight in Belarus, because of slow privatization and the reinforcement of administrative controls.
- In recent years, the monetary and fiscal authorities were successful in achieving a degree of macrostabilization (including exchange rate stability vis-à-vis the U.S. dollar and the Russian ruble), which strengthened confidence and supported remonetization and dedollarization.

External factors

- Since the Soviet collapse, the Belarusian economy has benefited from privileged access to underpriced Russian energy deliveries. Due to continuing special politi-

cal relations with Russia, this access has been maintained even in comparison to other CIS countries, many of whom have had to sustain hefty price increases in recent years. While privileged relations and access persist until today, Belarus itself has most recently (early 2007) had to accept a sizable reduction of price subsidies.⁴

- In addition to this framework of low energy input prices, Belarus has in recent years benefited from an environment of strongly rising and very high world market oil and commodity prices. This situation has enabled it to attract huge windfall trade gains that have then been redistributed through various channels, in which the budget and state-owned banks play a major role.
- Since the turn of the millennium, Belarus has profited from the acceleration of growth in its major trading partner, Russia, as well as in other partner countries.

Over the course of time, the internal factors – except the successful macroeconomic management in recent years – have become less important, while the external factors, notably the widening gap between continually underpriced energy purchases from Russia and booming energy product export prices on European and world markets, have gained importance in explaining Belarus' growth performance. However, in recent years Belarusian growth, while impressive, has no longer been excep-

³ According to information provided by the recently established National Investment Agency, Belarus boasts 30% of world output of heavy trucks and 6% of global tractor production.

⁴ While the gas prices that Gazprom charged Western European countries remained at the average level of USD 250 per 1,000m³ in 2006 and 2007, the gas price charged to Belarus rose from USD 46 to USD 100 per 1,000m³ in early 2007 (Astrov and Christie, 2007, p. 13).

tional in the regional context and compared to other CIS countries. Moreover, a substantial share of industrial production is reported to pile up in warehouses and go unsold (Lallemand, 2006, p. 73). The price gap between energy imports and energy-intensive exports is estimated to have yielded trading gains of about 12% of GDP (or around EUR 3 billion) for Belarus in 2005 (IMF, 2006, p. 5) and has probably produced gains of about the same dimension in 2006.

These large gains have been redistributed through various budgetary and nonbudgetary channels, boosting domestic demand, particularly household consumption and investment. About a quarter of the terms-of-trade gains enter the budget in the form of taxes on the consumption and export of imported energy, as well as the profits of energy companies. This fiscal windfall feeds budgetary subsidies to state-owned firms and banks, and supports budgetary investment. The remaining gains are redistributed through two main channels: First, economy-wide mandated wage adjustments, which, while contributing to raising household demand, cut into companies' earnings and may compromise their competitiveness. Second, redistribution takes place through large-scale recommended (directed) bank lending funded by increasing deposits that reflect higher enterprise profits (mostly those of exporters) and rising household income. Recommended lending is used to fi-

nance state-targeted fixed investment, which raises questions about the viability of the produced capital stock. Finally, redistribution is also carried out by holding domestic energy prices below full cost recovery levels (IMF, 2006, p. 6).

Sustainability of Belarusian growth depends on the durability of its driving forces. Given the predominance of state-directed capital formation and the low level of private and foreign direct investment, and given the fact that domestic and foreign competition has strengthened on the key Russian market in recent years, the competitive position of Belarusian manufacturing enterprises, including its flagship companies, has deteriorated or is under pressure. On the other hand, the competitiveness of Belarusian oil processing and chemical industries continues to be bolstered by the energy price gap, which has, however, been painfully cut by the deal with Russia in early 2007 and will probably erode further in the coming years (see also subsection 3.3 and section 4). This may be the most serious threat to the sustainability of the "Belarusian model." The threat is compounded by economic rigidities and backwardness that have accumulated as a result of the chronically low level of FDI coming into the country, which sets Belarus apart from all of its neighbors and heightens the vulnerability of the macroeconomic gains achieved recently.⁵

⁵ According to official sources, Belarus spends two to three times more raw materials and energy resources per unit of output than Western industrialized countries (Ministry of Foreign Affairs and Ministry of Economy of Republic of Belarus, 2007, p. 2).

Table 1

Belarus: Macroeconomic Indicators (2000 to 2006)

	2000	2001	2002	2003	2004	2005	2006 ¹
GDP growth (real, %)	5.8	4.7	5.1	6.9	11.4	9.3	9.9
CPI inflation (year-end, %)	107.5	46.2	34.8	25.4	14.4	8.0	6.6
Change of annual average exchange rate (BYR/EUR, %) ²	-150.5	-72.1	-34.0	-37.7	-14.4	+0.1	-0.4
Change of annual average exchange rate (BYR/USD, %) ²	-216.9	-58.5	-28.8	-14.5	-5.3	+0.3	+0.4
General government balance (% of GDP)	-0.1	-1.9	-2.1	-1.7	0.0	-0.7	0.5
Current account balance (% of GDP)	-3.2	-3.3	-2.2	-2.4	-5.2	1.7	-4.1
Foreign direct investment (net, % of GDP)	1.1	0.8	3.1	0.9	0.7	1.0	1.0
Gross reserves (excluding gold, % of GDP)	3.3	3.1	2.8	2.6	3.0	3.8	2.9
Gross foreign debt (% of GDP)	12.1	20.3	22.3	23.1	21.5	17.2	18.6

Source: NBRB, EBRD, IMF.

Note: Annual average exchange rates in 2006: BYR/EUR: 2,691.9, BYR/USD: 2,144.6.

¹ Preliminary data.

² A minus sign corresponds to depreciation, a plus sign to appreciation.

3 The Belarusian Banking System – Its Functions and Development

3.1 Reemergence of a State-Centered Banking System in the 1990s

As opposed to the situation in other Central, Eastern and Southeastern European (CESEE) countries, the Belarusian banking system has remained majority state-owned. Due to initial privatization and the appearance of privately-owned banks, up to the mid-1990s the share of state-owned banks in total banking assets had declined to around 55% and the total number of banks had surpassed 40. However, subsequent recentralization of state authority coupled with renationalizations and preferential treatment of state-owned credit institutions contributed to the resurgence of the latter: State-owned banks' share in total assets grew to about two-thirds in 2000 and continued to grow (table 2).

Five major state-owned banks constitute the descendants of the former Soviet specialized credit institutions on the territory of the republic, and one-and-a-half decades after the

collapse of the USSR, they still dominate Belarusian banking. These five banks are: Belarusbank (formerly called Sberbank of Belarus, renamed in 1995 after merging with a much smaller credit institution; specialization on household deposits, financing of budgetary programs and housing loans), Belagroprombank (focused on the supply of credits to agriculture), Belpromstroibank (provides loans to industry), Belinvestbank (formed in September 2001 by the merger of the former Belbiznesbank with Belorusskiy Bank Razvitiya, supplies loans to light industry and trade) and Belvneshekonombank (specialized in foreign trade). Particularly the first two (Belarusbank and Belagroprombank), which are also the largest (table 3), are still predominantly considered to be nonprofit enterprises with social obligations to contribute to the development of the national economy.

While legislation in the early 1990s had suggested a degree of (formal) independence for the central bank, Natsionalny Bank Respubliki Belarus (NBRB), a presidential decree of 1998 effectively rescinded this

independence by vesting the president of the republic with the authority to remove the chairperson of the NBRB and to suspend or revoke any decisions of the NBRB (Barisitz, 2000, p. 88). In the mid-1990s, obligatory state orders and directed credits allocated by state-owned banks according to the authorities' instructions proliferated and increasingly emerged as dominant components of the economic system. In 1995 the central bank established the Fund for the Insurance of Deposits of Natural Persons.⁶ After reaching a trough, bank lending increased again in the second half of the 1990s, particularly loans to agriculture and housing construction. Given that necessary funds related to these quasi-fiscal duties had to be taken from deposits and were not always supplemented by the authorities, and given that directed credits frequently turned nonperforming, banks' financial situation deteriorated over the years and loan portfolios became impaired. Although the authorities have intervened from time to time and injected new capital into some of the most troubled credit institutions and continue to do so, the sector has remained insufficiently capitalized – and thus captive to the state. This pattern of activities and state of affairs basically persists today.

The Russian crisis of August 1998 and the devaluation of the Russian ruble caused Belarusian exports to its eastern neighbor to plummet and temporarily jeopardized Russian economic support. The authorities in Minsk reacted by sharply devaluing the Belarusian ruble in turn⁷ and by stepping up administrative guidance of the economy. While this helped counter contractionary tendencies and (partly) restored Belarusian competitiveness, the controls could not prevent a spiraling of inflation. The macroeconomic difficulties caused many loans, particularly foreign currency-denominated ones, to become nonperforming. In early 1999, three major credit institutions, accounting for almost 60% of the sector's assets, became technically bankrupt or found themselves at the brink of insolvency. After a World Bank mission had judged the Belarusian banking system to be extremely fragile and at the edge of systemic disruption, the NBRB started in mid-1999 to implement recapitalization plans for some of the biggest insolvent banks. Some other banks were put into conservatorship, one institution was liquidated. By December 2000, the total number of banks had fallen to 31 (table 2).

⁶ All accounts of natural persons up to a limit of USD 1,000 per person are guaranteed.

⁷ The Belarusian exchange rate regime has traditionally been a managed float which featured multiple exchange rates in the past. After exchange rate unification in 2000, the NBRB committed to a dual "adjustable peg" – to the U.S. dollar as well as to the Russian ruble. De facto, this difficult task has been dealt with by observing a relatively narrow crawling band to the American currency while resorting to a wide one with regard to the Russian currency. In mid-August 2007, the authorities announced that as from early 2008, the sole peg of the Belarusian currency would be the U.S. dollar (see below).

Table 2

Belarus: Banking Sector-Related Indicators (2000 to 2006)

	2000	2001	2002	2003	2004	2005	2006 ¹
Number of banks (of which foreign-owned, year-end)	31 (6)	29 (9)	28 (12)	30 (17)	32 (19)	30 (18)	30 (18)
Broad money (M3, year-end, % of GDP)	17.7	15.2	15.1	16.9	17.8	19.3	22.1
Degree of financial intermediation (bank assets/GDP, %)	27.5	25.5	25.7	28.9	30.8	32.2	37.9
Share of state-owned banks in total banking assets (%)	66.0	53.2	61.9	61.6	70.2	75.2	79.0
Share of foreign-owned banks in total banking assets (%)	4.3	7.5	8.1	20.4	19.9	16.2	14.7
Share of domestic privately-owned banks in banking assets (%)	29.7	39.3	30.0	18.0	9.9	8.6	6.3
Deposit rate (average, one-year deposits, % p.a.)	37.6	34.2	26.9	17.4	12.7	9.2	7.7
Lending rate (average, one year loans, % p.a.)	67.7	47.0	36.9	24.0	16.9	11.4	8.8
Deposits (volume of deposits/GDP, %, year-end)	14.3	11.9	12.1	13.6	14.9	16.0	18.4
Credit (credit volume/GDP, %, year-end)	18.6	15.9	14.0	15.3	18.4	19.6	24.8
Share of nonperforming loans in total loans (year-end, %)	15.2	11.9	8.3	3.7	2.8	1.9	1.2
Return on equity (ROE, %)	8.3	5.6	6.5	8.4	7.8	6.8	9.6
Return on assets (ROA, %)	1.1	0.8	1.0	1.6	1.5	1.3	1.7
Capital adequacy (capital/risk-weighted assets, %)	24.4	20.7	24.2	26.0	25.2	26.7	24.4

Source: NBRB, EBRD, IMF, Raiffeisen Zentralbank.

¹ Preliminary data.

Memorandum item: Euro area (2004, %): banking assets/GDP: 202, deposits/GDP: 89.9, loans/GDP: 110.6, foreign-owned banks/total banking assets: 21.7.

3.2 Entrenchment in a Favorable, but Vulnerable, Environment since the Turn of the Millennium

3.2.1 Crisis-Induced Reforms and Backsliding

Following the plunge of the Belarusian ruble and the skyrocketing of inflation in the wake of the Russian crisis, the NBRB managed to steadily reduce consumer price inflation (the CPI) from 108% in 2000 to 7% in 2006 (year on year). Macroeconomic tightening, but also the strengthening of price controls, and growing money demand, contributed to this achievement. A new Banking Code was adopted in 2000, strengthening the framework for prudential regulations, and in particular streamlining rules for provisioning. The Banking Code also confirmed a special state guarantee of the full amount of natural per-

sons' deposits with majority state-owned credit institutions – which reflects a competitive advantage over rival banks that only benefit from the above-mentioned limited deposit insurance coverage. In the difficult situation immediately after the Russian crisis, the authorities showed increased interest in reaching an arrangement with the IMF. The authorities unified the hitherto multiple exchange rates in September 2000 and tightened fiscal policies. An IMF staff-monitored program, which was to lay a track record to precede a possible Stand-By Arrangement, was agreed upon and carried out in April–September 2001. It brought important progress in monetary tightening, price liberalization and deregulation, and it even suspended directed credits.

But, given some intermittent fiscal slippage and the policy of strong economy-wide wage adjustments, expounded by the president in 2001, the program veered off track and was not renewed. Some backsliding ensued: price controls proliferated again, and directed credits reemerged on a large scale. No serious enterprise privatization initiatives have materialized in recent years, apart from the sale of the government's stake in the oil refinery Slavneft to a Russian investor in 2002. About three-quarters of GDP continues to be produced in state-owned enterprises. While some key firms continue to deliver good results, also on export markets, a large part of the real sector suffers from inefficient and energy-intensive production methods, low technological levels and considerable wear-and-tear and aging of capital stock. FDI continues to be very modest and is negligible from countries other than Russia. Ambitious wage targets, a lack of restructuring and the fact that about half of industry and two-thirds of agriculture registered losses in 2004 call into question the quality of banking assets.

3.2.2 Rent-Based Structural Conservatism and Incipient Change

The Belarusian banking sector has been one of the major instruments of redistribution of the energy windfall rents that gradually accumulated as a result of the improvement of the terms of trade since the turn of the millennium. Still, given the combination of coercion and high risk exposure and experience (see above), the sector remains underdeveloped and fragile. Total assets came to 38% of

GDP at end-2006. At this point, there were 30 banks, 18 of which were majority foreign-owned (mainly by Russian investors). But, with one exception, foreign-owned banks have remained relatively small. The exception is Priorbank, a credit institution founded in 1989⁸ and the fourth-largest Belarusian bank as of end-2006. Following a presidential decree of May 2002 that approved plans to sell state shares in all banks excluding the four largest state-owned ones, 61% of Priorbank was purchased by RZB (of Austria) in December 2002. That was the only important bank privatization to date (table 3).

Priorbank and the four large state-owned banks – the savings institution Belarusbank (by far the largest credit institution of the country), Belagroprombank (the second-largest), Belpromstroibank and Belinvestbank – as well as Belvneshekonombank (in which the state's share was reduced to less than 50% of capital) are “authorized banks,” which means that they are officially authorized to and required to carry out state programs (Minuk et al., 2005, pp. 197–198). The latter feature campaigns to finance housing construction, collective farming, heavy industrial concerns and other “priority” activities. Given the commanding size of Belarusbank (with over 40% of total banking assets and 60% of total household deposits), the sector is very highly concentrated. State-owned credit institutions' share in total banking assets slightly declined from 66% at end-2000 to 62% at end-2003, before strongly expanding to 79% at end-2006. Foreign-owned banks' share grew from 4% in 2000 to 20% in

⁸ Priorbank had been established by Belpromstroibank and a number of enterprises.

2003, before receding to 15% in 2006 (table 2). Accordingly, domestically-owned private banks were reduced to a small share.

Until recently, the four large state-owned credit institutions did not stray far from the specific business sectors they were assigned to service in Soviet times. After the liquidity and solvency crisis of 1999 had required exceptionally big emergency injections of funds in the framework of a recapitalization program involving a number of large credit institutions, the situation calmed down again and familiar practices seem to have resumed. Like in previous years, state-owned banks have often been compelled to lend without adequately measuring and pricing risk. Unwarranted visits and inspections of credit institutions by the tax police, other control bodies and state organs remain integral components of the banking landscape.

Since 2003, the president of the republic and the government have “recommended” quantitative lending targets to state-owned banks for favored projects, regions and branches. The authorities have strongly influenced banks’ interest rate decisions by “proposing” rate caps on lending to large firms or squarely “suggesting” appropriate deposit and loan rates. In 2004, banks were “requested” to restructure overdue loans to food processing companies and to come up with money to cover accumulating wage and energy arrears. This de facto continuation of directed lending practices painfully cuts into banks’ liquidity and slashes their profitability; the latter features among the lowest in CESEE. In exchange for

these “services,” the NBRB intermittently provides liquidity support to troubled institutions, and the authorities continue to intervene on an occasional basis to stave off the collapse of particularly fragile players and to keep the sector afloat.⁹ In the long run, once windfall resources evaporate, this strategy appears unsustainable.

Many Belarusian banks tend to mask their weak financial situation by inadequate accounting and asset classification. The legal system makes it onerous and time-consuming to initiate bankruptcy procedures and to seize collateral for delinquent loans. Unfortunately, good reported vulnerability indicators cannot generally be taken at face value. Since 2002, the NBRB has been seeking to tighten prudential norms, raise capital requirements, improve risk assessment rules and step up banking oversight. Thus, minimum capital requirements for credit institutions that take household deposits were raised to EUR 10 million that year. The regulatory and supervisory framework has been significantly upgraded with the aim of reaching international standards. But supervisors do not seem to wield sufficient power to compel large state-owned banks to comply with regulations, which are systematically flouted by some of them.

In recent years, senior officials, including the president, have become concerned about bad credits. Therefore, in mid-2003, the NBRB issued an instruction to banks to cut non-performing loans to no more than 5% of total credits by end-2003. In the event, banks reported the overfulfillment of this target. The following

⁹ For instance, a large recapitalization of two state-owned banks (probably Belarusbank and Belagroprombank) occurred in December 2005 (NBRB, 2006a, p. 21).

year, banks reported a further reduction of the share of bad loans. The authorities attribute this performance to strengthened payment discipline, but to a large extent it probably also occurred as a result of portfolio growth and of “evergreening” (informally rolling over) loans (Jafarov, 2004, pp. 38, 41–42). Bad credits reportedly declined to 1.2% of the total credit volume at end-2006.

3.2.3 Fragile Credit Boom

From 2004 through 2006, the Belarusian banking sector appears to have joined the credit boom that has taken hold of all of the country’s neighbors, although the Belarusian credit volume is still comparatively modest and the extent to which the surge is market-driven rather than the result of forced growth is unclear. The volume of loans expanded from 15% of GDP in 2003 to 20% in 2005, and accelerated to 25% of GDP in 2006 (table 2). The IMF estimates lending at the government’s behest for designated purposes to have grown from 4¼% of GDP in 2005 to 5½% of GDP in 2006 – which in both cases corresponds to more than one-fifth of total lending (IMF, 2007, p. 6). Other sources (Minuk et al., 2005, p. 198) gauge recommended lending to comprise up to one-third of the total credit volume.

Consumer lending has started to play a role and has shown a particularly high growth rate – from a very modest basis.¹⁰ This happened on the back of rising deposits, triggered by (afore-mentioned) strong wage

growth, which has apparently been facilitated by a tightening of monetary and fiscal stances (macrostabilization). Spreads between deposit and lending rates contracted substantially over the years and in 2006 are recorded to have fallen to a little over 1%. Of course, state interventionism contributed at least partly to this latter outcome, thus calling into question its significance.¹¹ Since 2004, a degree of nominal exchange rate stability was reached in relation to the U.S. dollar and the Russian ruble. Therefore, a new outbreak of inflation was averted despite persisting inflationary pressures. A tenuous rise of confidence in the banking system helped stabilize and foster money demand and remonetization tendencies.

Still, accelerating loan growth triggered a liquidity crunch in late 2004, which particularly affected two large state-owned banks. However, the authorities quickly stepped in and increased government deposits in the credit institutions concerned, and also instructed some state enterprises to transfer their accounts to these destinations. These steps alleviated tensions on the interbank market. However, new capital injections into the two banks became necessary a year later, as mentioned above. In July 2006, a series of amendments to the Banking Code were adopted, strengthening the supervisory role of the NBRB and streamlining licensing procedures. It remains to be seen to what degree this new legal overhaul will change the reality on the ground. Progress has been made lately toward

¹⁰ As of end-2006, loans to households exceeded a quarter of the entire credit volume. A year earlier, on the average every third citizen of Belarus was reported to possess an account equipped with an ATM card (*kartshet*) (NBRB, 2007b, p. 16; NBRB, 2006b, p. 13).

¹¹ However, according to information provided by the NBRB, even the large state-owned credit institutions have recently become multi-purpose banks involved in operations in various segments of the financial sector. For example, *Belpromstroibank* has extended its focus to foreign trade business.

Table 3

Belarus: Top Ten Banks (end-2006)

Rank	Credit institution	Major owners (participation in %) ¹	Number of branches	Assets (EUR million)	Market share (in total banking assets in %)
1	Belarusbank	State (99.95)	119	4,520	43.8
2	Belagroprombank	State and government-related shareholders (99.2)	128	2,009	19.5
3	Belpromstroibank	State and government-related shareholders (87.1)	43	855	8.3
4	Priorbank	Raiffeisen International BeteiligungsAG (61.3), EBRD (13.5), State and government-related shareholders (10.5)	15	837	8.1
5	Belinvestbank	State and government-related shareholders (86.2)	48	760	7.4
6	Belvneshekonombank	State and government-related shareholders (48.4), Nationalny kosmicheski bank (32.5), Pinskiy (6.3)	24	286	2.8
7	Belgazprombank	Gazprom (33.9), Gazprombank (33.9), Beltransgaz (23.5), state (8.6)	7	182	1.8
8	Slavneftebank	Belneftekhim (32.6), other large domestic owners (46.4)	6	148	1.4
9	Bank Moskva-Minsk	Bank Moskvyy (Russia, 100)	5	121	1.2
10	Mezhtorgbank	State (40.9), Daltotrade (Cyprus, 42.7), Vikash Investments (U.K., 9.3), Bank Vozrozhdenie (Russia, 6.4)	5	94	0.9

Source: NBRB, IMF.

¹ Owners with a stake of more than 5%.

adopting legislation on upgrading deposit insurance and payment operations, and on establishing credit bureaus and mortgage laws. In August 2006, a presidential decree exempted credit institutions from the golden

share rule. If this proves to be a durable change, it should, by removing some distortions of property rights, facilitate private and foreign investment in the sector.

Box by Michael Boss¹

The Significance of the Belarusian Banking Sector for Austria:

An Initial Step with the Potential for Future Development

At first sight, the linkage of the Belarusian and the Austrian banking sector seems to be of marginal significance for both countries. While Belarusian banks have not invested in Austria at all, currently only one Austrian bank is present in Belarus. Raiffeisen Zentralbank Österreich AG (RZB), the third-largest Austrian bank, holds about 61% of the total equity of Belarusian Priorbank through its subsidiary Raiffeisen International. The second-largest shareholder in Priorbank is the European Bank for Reconstruction and Development (EBRD), with a share of 13.5%, and three state-owned Belarusian companies hold the remaining equity. However, although Priorbank is the fourth-largest bank in Belarus, it accounts only for about 8% of the overall banking sector's total assets. In terms of total assets, this participation is almost insignificant in regard to the Austrian banking sector, as

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Priorbank's share of the Raiffeisen group's total assets is below 1%, while the group itself accounts for about 13% of total assets of the overall Austrian banking sector on a consolidated basis.

Given these purely financial indicators for end-2006, the mutual significance of the respective banking sectors seem to be rather limited indeed. However, if one takes into account some additional aspects, the overall picture becomes somewhat more differentiated. While Austrian banks play a big role in many other CESEE countries, they do not play a predominant role in Belarus yet. However, in the past Austrian banks in general and RZB in particular followed a strategy of being present in the CESEE emerging markets at a very early stage to have a competitive advantage as soon as the banking systems in the respective countries start to evolve. For example, RZB founded its first subsidiary in the region (Hungary) as early as 1986. RZB's investment in Belarus obviously follows a similar strategy. Given the fact that the share of the Belarusian banking sector's total assets in the country's GDP is approximately 38% – compared to roughly 300% in Austria – there is an enormous potential for future development. Taking also into account that – after the large state-owned banks – Priorbank is number four in the Belarusian banking sector and hence the largest privately owned bank of the country, this would indeed correspond to a competitive advantage in case the Belarusian banking system evolves into a less state-dominated and more privatized and competitive model. Though in relative terms, Priorbank already is a highly profitable subsidiary within the RZB group, it could gain even more importance in terms of volume under such a scenario. In such a context, Priorbank would also be of heightened significance from the Belarusian perspective, as it is not only the largest private, but also the largest foreign-owned bank and is the only Belarusian bank with a major shareholder from the EU.

Hence, it can be concluded that the current investment of Austrian banks in Belarus, which is limited to the single case described above, is rather insignificant for both sides from a purely financial point of view. Accordingly, the respective financial risks for the RZB group are fairly low and, unlike in some other CESEE countries, the systemic relevance of the presence of the Austrian bank for the local banking sector is also limited in Belarus. However, taking into account the strategic dimension, there is potential for future development, which would comprise both additional risks and opportunities from the Austrian and from the Belarusian perspective.

4 Terms-of-Trade Shock in 2007 – Immediate Consequences for the Belarusian Economy and Banks, First Reactions of Authorities

4.1 The Shock

Following repeated prior announcements, Russia for the first time in years substantially lifted Belarusian energy import prices at the beginning of 2007. The agreement reached be-

tween the two countries in mid-January provides for:

- (1) the near-doubling of the Belarusian natural gas import price to USD 100 per 1,000 m³ and its subsequent gradual further increase to reach the Western European level by 2011;¹²
- (2) the acquisition of 50% plus one share of the Belarusian natural gas pipeline operator Beltransgaz by Gazprom for USD 2.5 billion,

¹² However, Gazprom reportedly agreed to let Belarus technically pay the old price (USD 46 per 1,000 m³) in the first half of 2007, the remaining amount was financed by a bridging loan provided by the Russian Finance Ministry (WPS, 2007). In August 2007 the Belarusian authorities paid off the accrued debt.

payable in four annual tranches of USD 625 million;¹³

- (3) the introduction of a Russian customs duty for crude oil deliveries to Belarus of USD 53 per ton, and the transfer to Russia of the lion's share of the profits from Belarusian exports of refined products to Europe;
- (4) the increase of the Belarusian gas transit fee from USD 0.75 to USD 1.45 per 1,000 m³ (Lechner and Laschevskaya, 2007, p. 1; Bayou, 2007, pp. 56–57).

Even with the current increase, the Belarusian gas import price remains at the lower end of the relatively cheap import price scale in CESEE. For instance, as of 2007, Ukraine has had to pay USD 130 per 1,000m³ of imported Russian gas, whereas the average price for the western part of the continent is currently USD 250 per 1,000 m³, as mentioned earlier. However, should the planned convergence to the market level actually be implemented (as declared) in a few years, this would constitute a major shock for an unreformed economy. The Russian “reclaiming” of oil trade profits hitherto appropriated by Belarus is certainly painful for the enterprises concerned as well as for the economy more generally. While the substantial proceeds from the sale of half of Beltransgaz and the transit fee hike may cushion the blow a bit, the coming years and measures (or lack thereof) will tell whether the further evolution of the country's terms of trade will fatally erode the foundations of the “Belarusian model” or not.

4.2 Immediate Aftermath and Reactions of the Authorities

Given the country's long-standing current account deficit (4.1% of GDP in 2006), lack of FDI and low foreign currency reserves (less than one month of goods and services imports), the new energy deal with Russia quickly gave rise to concerns that the NBRB might not be able to uphold the ruble's exchange rate stability and might be forced to devalue sharply. This triggered a banking scare in Belarus in January and February 2007, which the president himself referred to in an interview in April. Mr. Lukashenko pointed out that the authorities had spent about a third of their gold and foreign exchange reserves amid bank run fears in early 2007. Moreover, the Belarus central and local governments as well as the NBRB increased their deposits in commercial banks. The NBRB also raised its refinancing rate by 100 basis points at the beginning of February (Luzgin, 2007, p. 4). Interbank lending rates spiked in February and March.

“We did not publicize the matter amid a souring of relations with Russia in the economic sphere, but I was very much worried about the trends in the banking sphere. I will be honest with you: there was no bank run in which people would rush to withdraw money from banks. This did not take place. But there were enough people, a part of the population, who still went to banks to withdraw money and keep it under the pillow or elsewhere.” According to the Belarusian leader, the outflow of money from banks had been halted and cor-

¹³ The first tranche was transferred to the Belarusian state budget in early June 2007.

porate as well as private accounts had started to grow again. “The banking system has withstood this blow. And what matters most is that people have started believing in this. I’m very grateful to my Belarusians, my people for this,” he added (BelaPAN, 2007a).

Official statistics for the first months of 2007 depict a slowdown of economic activity, but not a dramatic one. GDP is reported to have grown 9.0% in January–May 2007 (year on year) compared to 10.5% in the first five months of 2006 and 9.9% in the entire year.¹⁴ Consumer price inflation remained more or less stable at 7% in May (year on year), although producer prices had spiked in early 2007 and came to 14% in May (more than twice the year-earlier level). Obviously, the pass-through of energy price adjustments to consumers has been very limited. The profitability of oil refineries is reported to have plummeted from 20% in 2006 to about 5% in the first months of 2007. Exports stagnated in real terms in the first four months of 2007 (–0.4% compared to the same period of the previous year), whereas imports expanded slightly (+4.6%). Gold and forex reserves (IMF definition) are reported to have slightly dipped from end-December 2006, when they stood at EUR 1.06 billion, to end-February 2007, when they came to EUR 990 million, before strongly re-

covering to EUR 1.72 billion at end-June.¹⁵

Bank deposits contracted by about 5% in January 2007 (compared to the preceding month). While total deposits had recovered by end-March 2007, ruble deposits only recovered in June, and corporate ruble deposits have not yet recovered to their level of end-December 2006. Whereas the total credit volume to the economy continued to expand in the first semester of 2007 (by around 15% over the level of end-2006), ruble loans grew about half as fast, and short-term ruble loans contracted by more than half, which seems to signal concern about devaluation pressures. During the first six months of 2007, nonperforming credits are reported to have declined further from 1.2% to 0.9%. Overall, in May 2007 the credit volume was reported to be about 50% higher (in real terms) than 12 months earlier.¹⁶ Capital adequacy decreased from 24.4% at end-2006 to 20.2% at end-May 2007. In July, the NBRB lowered the refinancing rate by 25 basis points again.

Whatever the concerns, as of August 2007, the exchange rate of the Belarusian ruble has held steady.¹⁷ In the first two months of 2007, Belarusian banks’ forex liabilities to foreigners (nonresidents) rose by almost half to EUR 1.48 billion. This may explain how the authorities, after re-

¹⁴ According to Prime Minister Sidorsky, the GDP slowdown in the first quarter of 2007 (to 8.4%) was due to the energy price shock (*Neue Zürcher Zeitung*, 2007).

¹⁵ This recovery obviously benefited from Gazprom’s payment of the first tranche for Beltransgaz (see subsection 4.1).

¹⁶ In early June 2007, NBRB Governor Prokopovich assured President Lukashenko that the banking sector had been providing “unprecedented” support to the real sector. The president instructed the monetary authority to keep up the current lending pace and to try to curb loan interest rates (BelaPAN, 2007b).

¹⁷ The decision of mid-August to discontinue the (loose) peg to the Russian ruble will probably not have much economic impact and may rather be seen as a symbolic political step in the aftermath of the Russian gas price hike.

portedly spending a third of their international reserves on supporting the domestic currency, seem to have been able to quickly replenish these reserves – with the result that the statistics show hardly any weakening of reserves in the critical period. The banking system's acquisition of foreign debt also impacted on the country's external liabilities, which expanded by over EUR 900 million to EUR 6.1 billion in the first quarter of 2007, but remain relatively low (about 20% of GDP). The dedollarization trend appears to have been stopped, at least temporarily (NBRB, 2007a).

In terms of economic policy, as of August 2007, no significant or fundamental changes are perceptible in the position of the authorities. In late May, the government adopted a Program of Energy and Money Saving until 2011; it envisages targeted measures of energy import substitution, the introduction of energy saving technologies and upgrades of industrial facilities. Yet few concrete steps appear to have been taken so far. However, there is some momentum on the privatization front. Apart from upholding and possibly intensifying state-directed lending support to the economy, the authorities seem to have taken a two-pronged approach to Belarus' terms-of-trade shock: (1) solicitation of external financial assistance, linked with (2) attraction of FDI to some key enterprises to help modernize the economy.

Among the initiatives the authorities (and state-owned institutions) resorted to in early 2007 are the fol-

lowing: In mid-February, the Belarusian government asked Russia for a USD 1.5 billion interest-free “stabilization loan” to help it pay for the energy price hike; at end-April the government in Moscow declared its preparedness to meet this request – under the condition that shares of Beltransgaz are used as security. Since February, the government has been negotiating with Raiffeisen Zentralbank on conditions of assistance in borrowing up to EUR 1 billion from the international capital market (possibly bonds raised with investors and syndicated loans) for investment projects to raise the efficiency of domestic companies. Alternatively, these funds could be used in the forex market to maintain the stability of the exchange rate. However, so far no agreement with Raiffeisen seems to have been reached.¹⁸ The Finance Ministry plans to sell up to RUB 10 billion worth of bonds on the Russian market to strengthen the budget. To further this borrowing strategy, Belarus applied for a credit rating and received one in late August 2007 from Standard & Poor's and from Moody's. In both cases (Standard & Poor's: B+, Moody's: B1), the rating is a few notches below investment grade (*Börsenzeitung* 2007).¹⁹ Given the country's relatively low foreign debt (table 1), the borrowing strategy may be a promising one in the short run.

In February 2007, the government instructed the Ministry of Economy to draw up a list of state-controlled industrial enterprises in

¹⁸ Negotiations have also taken place with other international banks. Thus, a declaration of intent was signed in mid-June with ABN AMRO for the Dutch credit institution to provide lending to Belarus' two oil refineries (in Mozyr and Novopolotsk).

¹⁹ Major state-owned banks – Belarusbank, Belagroprombank, Belpromstroibank and Belinvestbank – as well as Belgazprombank have already been rated by Fitch (EBRD, 2006, p. 94; information provided by the NBRB).

which stakes could be sold (Pirani, 2007, p. 22). The authorities are reportedly considering selling majority stakes in Beltelekom (fixed-line operator), the Krynitsa brewery, the Minsk auto plant, some chemical plants, and sugar and oil refineries. But the difficult business environment may restrict the circle of potential investors from the outset.

With regard to Belarusian bank privatization (supported by the decree of 2002), Russian investors appear to have taken the initiative lately. In April, Russia's Alfa Bank agreed to buy the state's stake (about 40%) in Mezhtorgbank. Also in April, Russia's Vneshtorgbank purchased a controlling stake (50% + one share) in Slavneftebank for EUR 18 million (corresponding to a multiple of 2.7 times book value). In May 2007, Russia's Vneshekonombank sent out proposals to all shareholders of Belvneshekonombank in a bid to buy out all stakes in the credit institution. In June, Vneshekonombank was reported to have acquired 51.5% of its Belarusian namesake, although the deal has not yet been closed. All three above (planned) transactions had received the explicit green light from the president of the republic.²⁰ Meanwhile, the four largest state-owned banks (see table 3) remain important tools of economic policy. Belarusbank (the country's largest credit institution) plans to issue its first Eurobonds worth up to EUR 150 million in 2007.²¹ Belagroprombank (the second-largest bank) intends to take out a syndicated loan of up to RUB 1 bil-

lion, VTB (Vneshtorgbank, Russia) is earmarked as the arranger of the loan. The plan of Belinvestbank (the fifth-largest bank) is to take out a debut dual currency syndicated loan of EUR 5 million and USD 10 million for six months. VTB again features among the loan arrangers.

5 Outlook

If terms of trade deteriorate further in the coming years – as has to be expected according to the energy agreement – the above-described strategy of the authorities (acquisition of debt, selective opening to foreign capital) will not be able to do more than buy time and postpone a serious crisis, unless profound economic restructuring efforts start. Possible future instability emanating from the authoritarian political system add to concerns.

According to most recent studies or articles (Lechner and Laschevskaya, 2007; EIU, 2007; BMI, 2007; IMF 2007) experts largely concur on the following macroeconomic perspectives for Belarus: Economic activity will slow down (by 2 to 4 percentage points in 2007, then by a further 1 to 2 percentage points in 2008). The trade and current account deficits will rise as the energy shock unfolds. The current account shortfall will almost double to 6% to 8% of GDP in 2007, and further expand in 2008. With insufficient FDI to be expected to cover the widening gap and only relatively modest forex reserves to resort to, the external deterioration will likely translate

²⁰ According to Prime Minister Sidorsky, the country attracted more than USD 1 billion (about EUR 750 million) of foreign investments in the first half of 2007, or 20% more than the same period last year. However, he did not specify (RIA OREANDA, 2007).

²¹ So far, Belarus has never placed a bond on a foreign market.

directly into a sizable increase of foreign debt and growing depreciation pressures on the Belarusian ruble. The swelling of liabilities will be only temporarily cushioned by incoming proceeds from the Beltransgaz sale. The fiscal balance is bound to deteriorate, because tax revenues fall as enterprise profitability drops, and larger subsidies and transfers are needed to support loss-making firms and consumers. The fiscal deterioration could augment pressure on the NBRB to loosen or accommodate monetary policy to fiscal needs that, together with a probable devaluation, threaten to substantially push up inflation.

What does this mean for banks?

- Taking the events of January and February as an example, one can conclude that a substantial depreciation may quickly reignite deposit withdrawals and trigger banking turbulences. Given that, in the circumstances alluded to above, the authorities will find it difficult to avoid a weakening of the ruble altogether, they will probably try to opt for a gradual, gentle devaluation that will not upset savers.
- A major impact can be expected from declining enterprise profits and growing losses, which are liable to boost nonperforming loans

and to swell credit demand and risk from a less competitive real sector. As a consequence, banking system capital adequacy, profitability and solvency will fall markedly.

- This will likely trigger growing and increasingly urgent recapitalization needs for credit institutions, which, given the already precarious fiscal position, in the end might only be covered by the issue of money.
- Once this stage is reached, spiraling inflation or demonetization would trigger destabilization of the banking sector, which might contribute to the unraveling of the model.

However, one should repeat that the collapse of the Belarusian economic model via the breakdown of banks as instruments of redistribution and subsidization of the real sector would appear plausible *only* if rents derived from economic relationships with Russia (all but) disappeared and if at the same time no appreciable structural modernization or opening up of the economy to FDI took place. As Belarus remains a key geopolitical partner for Russia, such a medium-term scenario does not appear probable from the present point of view, but cannot be totally ruled out either.

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Indicators for Analyzing the Risk Exposure of Enterprises and Households

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This paper describes indicators that were developed to analyze the exposure of enterprises and households to financial risks. In this context, we distinguish three types of risk: interest rate risk, price risk and exchange rate risk. Our indicators measure risk exposure by the share of financial instruments exposed to these risks in the assets and liabilities of enterprises and households. Specific conceptual and technical problems arise when recording indirect investment via financial intermediaries. Statistics compiled by the Oesterreichische Nationalbank (OeNB) are used as the primary data basis. Although the indicators lack informative value at the micro level, they facilitate an analysis of corporate and household risk performance at the sectoral level.

JEL classification: E44, G30

Key words: Risk analysis, nonfinancial corporations, households, exposure indicators, financial stability

Introduction

Enterprises and households are increasingly exposed to financial risks. With rising prosperity, financial assets are burgeoning, making stronger diversification possible. As a result, bank deposits are now more and more often being substituted for riskier capital market products. In addition, risk-bearing capacity increases as the volume of financial assets expands, which means that enterprises and households are likely to be more willing to assume risks. Owing to financial innovations, furthermore, a wider range of investment and financing options is currently available to investors. Examples of financial products that have become highly popular in recent years are structured products, which serve as investment products, and foreign currency loans, which serve as financing instruments. Most of these products are exposed to risks to which traditional products are not subject.

Structural reforms – such as the stepping up of funded pension provision – also promote the greater involvement of real economy sectors in financial risks. Likewise, the growing influence of capital markets on the financing structure of Austrian enterprises is attributable in part to political measures (Basel II, the promotion of capital markets, monetary union as a stimulus for financial market growth, etc.). Changes in the international environment have also altered corporate financing requirements (e.g. FDI financing in the wake of the internationalization of the Austrian economy). Furthermore, banking sector risks are increasingly being transferred to other financial intermediaries and thus, indirectly, to the household sector – whether because of the higher market risk for life insurance companies and pension funds or because of the sale of credit risks to pension funds and insurance companies (for further details on this latter point, see IMF, 2005).

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The Oesterreichische Nationalbank (OeNB) therefore upgraded its analysis of the financial risks arising from the investment and financing of Austrian enterprises and households. In an initial step, this analysis attempts to assess, on an aggregated basis, the extent to which enterprises and households are exposed to these risks and how this exposure changes over time. The indicators that were developed to analyze exposure on an ongoing basis capture not only direct investment but also the increasingly risk-relevant phenomenon of indirect investment via financial intermediaries. Although some of these indicators have already been used in previous issues of the OeNB's Financial Stability Report, none has so far taken indirect investment into account.

This contribution describes the aforementioned indicators in terms of their design and data collection methods.² The second section discusses the design and data basis of our indicators, while the third section gives a detailed description of their composition. The final section presents the conclusions.

Design and Data Sources of Indicators

Quantification of Risk Exposure

The indicators described in this paper measure risk exposure based on the share of corporate and household assets and liabilities that are subject to changes in value owing to price fluctuations in the financial markets (interest rates, exchange rates, stock prices, etc.). In this context, we distinguish three types of risk:

- interest rate risk, which consists in a change in the general level of

interest rates (change in an interest rate's absolute level or in the shape of the yield curve),

- price risk, which is the risk of a change in asset prices, and
- exchange rate risk, which arises from price fluctuations between the invoicing currency and the reference currency of the borrower or investor. This type of risk ultimately constitutes a special case of price risk but is dealt with separately on account of its importance.

Indicators of risk exposure are calculated using the ratio of outstanding volumes of financial instruments that are subject to these risk types to total financial assets or total financial liabilities according to the financial accounts. They are therefore simple ratios that can range from 0 to 1 (or from 0% to 100%).

The indicators are used for two purposes: First, to quantify and observe on an ongoing basis the exposure of enterprises and households to the three types of risk listed above; second, they make it possible to estimate the relative degree to which financial assets or liabilities are affected by these individual types of risk and thus to signal structural shifts (from a risk perspective) within assets and liabilities – for instance, in relation to the changing role of capital markets. Risk exposure indicators therefore provide a basis for further in-depth analyses of the risk situation of enterprises and households.

Sectoral Analysis

To be able to use our indicators to monitor risk exposure on an ongoing basis, data that are periodically available is required. With respect to the

² In future issues of the OeNB's Financial Stability Report, the information provided by these indicators will be analyzed in the reports section.

OeNB's Financial Stability Report, this means a minimum periodicity of six months and the smallest possible time lag. Indicators are usually available as quarterly data.

Other than for banks, which periodically make available comprehensive data to the OeNB, individual data on assets and liabilities are not available for enterprises and households. Reporting obligations and regular representative surveys are also lacking.³ Our indicators are therefore calculated on the basis of macroeconomic sources of data.⁴ The most comprehensive data source available for this purpose are the financial accounts, which provide a uniform framework for reflecting both financial transactions and financial assets, classifying them by financial instrument and economic sector. Financial accounts are compiled on an annual basis. For selected financing instruments, quarterly data are also published for enterprises and households (OeNB, 2007). The values for the total volumes of individual financial instruments held by enterprises and households stem from these quarterly data. The financial accounts, however, do not provide specific details on individual financial instruments, and many data are not published at all (or, at least, not on a quarterly basis). For the purpose of classifying financial instruments by individual risk type, therefore, data provided by the

financial accounts are supplemented with data from other statistics that are periodically collected by the OeNB and – in some cases – with data compiled by third parties.

Based on these data, our indicators make it possible to state whether the exposure of enterprises and/or households to a specific risk changes over time. Such a change in risk exposure can signify that either the number of enterprises and households concerned has changed or that their average exposure has changed. This sectoral analysis does not, however, take account of the fact that risks on both the assets and liabilities sides of individual corporate and household balance sheets can offset each other. The same applies to individual products (e.g. foreign currency loans for which regular payments are made into a separate repayment vehicle). In addition, these indicators do not capture second-round effects such as the impact of exchange rate changes on enterprises' export potential or the impact of interest rate changes on the price of non-interest-bearing assets (e.g. stocks, real estate). Neither are reinvestment risks taken into account, nor the fact that both issuers and investors frequently have the opportunity to change the risk profile of their assets and liabilities by calling them in prior to maturity.

Finally, it should be noted that for some items no data are available; our

³ The OeNB still compiles statistics on the financial statements of Austrian enterprises. The respective data are made available to the OeNB in the context of their refinancing activities by enterprises and banks and are supplemented by aggregate data from a third-party provider (Austrian Institute for SME Research). Data are mainly provided by, or on, large enterprises, which means that the data set is not representative of the corporate sector as a whole. Since the data are based on audited balance sheets, they are only available on an annual basis and have a time lag exceeding twelve months.

⁴ The definition of the corporate sector and the household sector conforms to that of the European System of Accounts in its 1995 version (ESA 95), which defines enterprises as belonging to the sector of nonfinancial corporations (sector S.11). The household sector corresponds to households including nonprofit institutions serving households (S.14 and S.15), including the liberal professions and the self-employed.

data must therefore be supplemented by a number of estimates and assumptions. For this reason, the informative value of these indicators is limited: They represent only a relatively crude measure of risk exposure. Moreover, their informative value is also limited by problems related to their design and the different types of financial instruments included in the indicators – an issue that is dealt with in the following section.

Recording of Indirect Investment

Our indicators incorporate data relating to financial instruments on both the assets and liabilities sides of corporate and household balance sheets that are subject to interest rate or price fluctuations. On the assets side⁵ the indicators cover deposits, bonds and stocks, while on the liabilities side⁶ they cover loans and bonds.

However, enterprises and households do not only invest directly in these financial instruments, but also indirectly via financial products issued by financial intermediaries such as capital management companies, insurance companies as well as pension funds and severance funds.⁷ In recent years, these intermediated financial products have gained importance for the household sector, in particular. Not all the instruments considered in this discussion are relevant to both sectors, however. For instance, en-

terprises do not have any claims on life insurance reserves, pension funds and severance funds, while households do not issue bonds and stocks.

If we include intermediated financial products in our analysis, this creates both technical and conceptual problems. With respect to data collection, one problem is that data relating to investments by financial intermediaries (and thus to the composition of indirect investment) are not available from the financial accounts and that their composition must therefore be approximated using other statistics. For mutual fund shares, this approximation is carried out using the assets of investment companies according to mutual fund statistics, while for households' net equity in life insurance reserves we rely on insurance companies' assets according to the OeNB's insurance statistics. Holdings of enterprises and households are approximated on the basis of the composition of retail funds, which also include the shares in mutual funds (funds of funds) held by the investment companies themselves. The composition of specialized funds is used for approximating the mutual fund shares held by insurance companies. As for pension funds, our approximation is based on the OeNB's pension fund statistics, on data from the Oesterreichische Kontrollbank (OeKB) relating to the

⁵ For data reasons, loans issued by enterprises and households are not taken into account. The financial accounts show that, in practice, households do not issue loans; so any loans issued would in fact only relate to the corporate sector. Data relating to loans issued by the Austrian corporate sector are not included in the financial accounts. Cross-border loans, which primarily play a role in intra-company financing within the framework of corporate FDI, are included although data relating to the interest rate regime or the currency composition are not available. The same applies to loans issued by nonbank financial intermediaries considered here.

⁶ Stocks are not included on the liabilities side since, in respect of issuers, these are not subject to any of the risks considered in this paper.

⁷ Even though deposits are also intermediated financial products, we do not take them into account in this respect since neither the interest paid on them nor their repayment depend on the degree to which banks are subject to the three risk types considered here.

portfolio composition of pension funds (available from the OeKB's website at www.oekb.at) and on data from the Austrian occupational pension fund association. As regards severance funds, recourse is made to data sent to the OeNB under the Regulation on Quarterly Reports by Severance Funds (hereinafter referred to as severance fund statistics). For data reasons, the composition of the (growing) investment with foreign financial intermediaries must be approximated on the basis of investments of domestic intermediaries.

As regards pension funds, we also recognize that investment risks only pass through to households from defined contribution pension funds.⁸ To calculate our indicators, the invested volume is assigned to defined contribution and defined benefit pension funds in the same proportion as the number of active and retired beneficiaries according to the latest data available from the Austrian occupational pension fund association.

The portfolio composition of financial intermediaries is then conferred upon the financial assets of enterprises and households held in individual financial intermediaries. This approach is based on the assumption that the composition of enterprises' and households' investments in mutual fund shares, life insurance plans and pension funds corresponds to that of the total assets of retail funds, insurance companies and pension funds. Naturally, a certain degree of imprecision is inherent in this assumption. Furthermore, it should be noted that the assets of individual financial intermediaries may also be used for other purposes. In insurance statis-

tics, for instance, insurance companies' assets act as underlying assets for both life insurance and other insurance business (e.g. health and property/casualty insurance).

Finally, it must be taken into account that different statistics – especially where stocks and bonds are concerned – employ different concepts and definitions for individual financial instruments, which may give rise to certain discrepancies. What is more, if not adjusted, changes in reporting might also generate distortions.

In terms of design, it is important to note that some of the key differences between these various forms of investment are not evident in the aggregate analysis of direct and indirect investment. Compared with directly investing in individual securities, investing via intermediaries reduces risk as intermediaries offer the option of risk pooling. Financial intermediaries are also in a position to ensure professional risk management – something for which households often do not have the necessary resources and financial expertise. Actual risk exposure is, furthermore, modified by the fact that financial intermediaries frequently hedge their investments. The indicators described here cannot capture the distinction between direct and indirect investment, however. Above all, it is not possible to quantify the risk mitigation that is effected by intervention of an intermediary. Moreover, the direct use of hedging instruments (which is widespread in the corporate sector, in particular) is not taken into account, either.

From a risk perspective, it is also relevant that the current data situa-

⁸ *The risks arising from defined benefit pension funds are borne by employers, but a breakdown by economic sectors (nonfinancial corporations, financial corporations and government) is not possible.*

tion does not permit the inclusion of guarantees, which are associated with a large number of financial products. These relate to life insurance policies, pension funds and severance funds, as well as to mutual funds or structured products provided with guarantees.

Consequently, some uncertainties in terms of design are also inherent in the indicators described in this paper, which is why these indicators are rather suited to capture the change in risk exposure over time than to depict the absolute level of risk exposure. Nonetheless, they should throw some light on the development of individual risk types over time and on the contribution of indirectly held assets to the total exposure of enterprises and households.

Calculation of Indicators

Interest Rate Risk

Changes in interest rates have a two-fold impact. First, they influence both interest income from investment and the interest paid on liabilities. Second, they affect the prices of fixed-income securities in the secondary market. In terms of exposure to interest rate risk, we only consider the first case, i.e. the impact on regular interest payments and regular interest income.⁹ The impact of interest rate changes on security prices will be analyzed in connection with price risk.

The level of interest rate risk depends on the interest rate fixation periods of financial instruments (fixed or floating interest rates). The longer the period concerned, the higher the share of assets and liabilities that are sensitive to interest rate fluctuations.

A detailed analysis, however, cannot be carried out owing to a lack of sufficient data relating to the interest rate fixation periods of the individual financial instruments. At the very least, a distinction is made (where possible) as to whether the interest rate is floating (with a maximum interest rate fixation period of one year) or fixed over a longer period of time. In the first case, the interest rate risk is described as short-term and, in the second, as long-term risk.

Assets

In Austria, *deposits* usually have a floating interest rate. Only capital savings books and some building and loan deposits have fixed interest rates. According to the statistics on building and loan associations, building and loan deposits accounted for about 10% of total deposits at end-2006. However, it is not known what share of these deposits has a floating interest rate. Current data relating to capital savings books are not available. In the period from 1995 to 2003, the share of capital savings books in total deposits held by households stood between 11% and 14% (mean: 12%). On the basis of these historical data, we assume that 20% of household deposits have fixed interest rates and 80% have a floating rate.

Since enterprises do not invest in capital savings books or in deposits made under building and loan contracts, their deposits are considered to be entirely exposed to short-term risk. A small degree of inaccuracy arises because the financial accounts' quarterly figures only show enter-

⁹ This paper does not consider opportunity costs arising from the fact that borrowers do not enjoy falling interest rates in respect of long-term fixed rate loans or that depositors do not enjoy rising interest rates in respect of long-term interest rate fixation periods.

Table 1

Data Sources for Classifying Interest Rate Risk Indicators				
Financial instrument	Sectors		Data source for . . .	
	Enterprises	Households	A ¹	B ²
Assets				
Direct investment				
Deposits	x	x		Enterprises: 100%, households: 80% of deposits short-term ISSTAT/BIS ³
Bonds	x	x		
Indirect investment				
Mutual fund shares	x	x		
Deposits			MFSTAT (retail funds)	100% short term
Debt securities including fixed-income securities				ISSTAT/BIS ³
Insurance assets		x		
Deposits			INSSTAT	100 % short term
Unlisted fixed-income securities and debt securities as well listed fixed-income securities				ISSTAT/BIS ³
Pension funds		x		
Deposits			PFSTAT	100 % short term
Bonds				OeKB, MFSTAT (specialized funds)
Severance funds		x		
Deposits			SFSTAT	100% short term
Debt securities				ISSTAT/BIS ³
Liabilities				
Loans	x	x		Enterprises: 100% short term, households: according to shares in new business based on MIR statistics
Bonds	x			ISSTAT ³

¹ Share of relevant financial instrument in total investment/financing of the relevant intermediated financial product.
² Classification of investment according to short-term or long-term interest rate risk.
³ Classification of domestic issues as short-term/long-term based on Austrian issues (ISSTAT) and of foreign issues based on international issues (BIS).
Note: MFSTAT = mutual fund statistics; INSSTAT = insurance statistics; PFSTAT = pension fund statistics; SFSTAT = severance fund statistics; ISSTAT = securities issues statistics. OeKB indicates that OeKB data on the portfolio composition of pension funds were used; BIS refers to BIS international debt securities statistics, table 13B. Names of individual financial instruments according to the relevant statistics.

prises' bank deposits in conjunction with cash. The financial accounts' annual figures, which show deposits and cash separately, reveal that in the period from 2001 to 2006, cash – on average – accounted for less than 2% of the aggregate figure.

In respect of the fixed-income securities held by enterprises and households, data relating to the total vol-

ume outstanding are used as an approximation for classifying them as subject to short-term or long-term interest rate risk. In respect of domestic bonds, the proportion of fixed-rate debt securities (including zero coupon bonds) to floating-rate debt securities of all Austrian issuers according to securities issues statistics is assigned to the domestic bonds held

by both the corporate and household sectors.¹⁰ The foreign debt securities held in corporate and household portfolios are classified using BIS data relating to the total volume outstanding of international bonds with a maturity exceeding one year.¹¹ The implicit assumption that enterprises and households hold fixed- and floating-rate bonds in exactly the same proportion as these are placed by issuers gives rise to certain inaccuracies. A further inaccuracy results from the fact that bonds also include structured products, which – although they are debt securities (issued by MFIs) from a legal perspective – are in many cases not exposed to interest rate risk but are subject to other risks.

Assets indirectly held by enterprises and households via financial intermediaries (intermediated financial products) are classified as being subject to short-term and long-term interest rate risk as follows: Deposits are wholly classified as being exposed to short-term risk since financial intermediaries neither hold building and loan deposits nor capital savings deposits. Bonds (debt securities) held by financial intermediaries (with the exception of pension funds) are classified according to whether they are fixed or floating using the allocation key derived from securities issues statistics.

Enterprises' and households' holdings in mutual fund shares (according

to the financial accounts) are allocated to the different financial instruments in line with retail fund assets according to mutual fund statistics.

To account for the interest rate risk resulting from insurance companies' investments, we use the corresponding assets of Austrian insurance companies according to the OeNB's insurance statistics.

As regards pension funds, the assets grouped under "Bonds, cash and loans" in the OeKB's statistics are classified as being subject to interest rate risk. The share of bonds in assets is estimated by deducting the share of deposits and loans in pension fund assets (according to the OeNB's pension fund statistics) from the assets grouped under "Bonds, cash and loans" in the OeKB's statistics. When classifying bonds as being subject to either short-term or long-term interest rate risk, we assume that their distribution corresponds to that of bonds held by specialized funds.

In severance fund statistics, deposits ("balances with banks") are only shown in conjunction with cash holdings (for both direct and indirect investment). Severance fund statistics may show bonds both as "debt securities for which the redemption amount owed is less than 2% lower than the issuing price" and as "other debt securities and equity securities." The latter item can also include stocks. A further classification is possible for direct investment, resulting

¹⁰ More precisely, securities issues statistics data only relate to debt securities with an original maturity of more than one year. A breakdown by money market and capital market instruments (where securities with an originally agreed maximum maturity of up to one year are defined as money market instruments) is shown in the financial accounts only on an annual basis, however. This breakdown reveals that the share of money market instruments in the total of fixed-income securities held by enterprises and households is very small and, what is more, highly volatile. We therefore apply this proportion of fixed to floating rates to all fixed-income debt securities held by enterprises and households.

¹¹ See BIS (2007, table 13B, International debt securities by type, sector and currency – bonds and notes).

in the segregation of securities issued by specific sovereigns¹² and by credit institutions.¹³ These bonds are classified as being subject to interest rate risk. The item “Other debt securities,” which comes under “Other debt securities and equity securities,” is not recognized in respect of interest rate risk. For indirect investment, which accounts for by far the lion’s share of investment in debt securities and equity securities, such a classification not possible. This category is therefore not recognized in respect of interest rate risk.

Liabilities

As with assets, corporate and household liabilities are also differentiated by short-term and long-term interest rate risk. In respect of loans, floating-rate loans are subject to short-term interest rate risk. The MFI interest rate statistics for Austria, which have been compiled since 2003 and classify new lending business by interest rate fixation periods, can be used to throw light on interest rate regimes.¹⁴ These statistics show that, from 2003 to 2006, the average share of euro-denominated corporate loans with a floating interest rate was almost 95%. During this period, this share was subject to only minor fluctuations. As regards loans to households, the average share of consumer loans and home loans with a floating interest rate was 85% and 53%, respectively. The interest rate of foreign currency loans is

usually geared to the prevailing money market rate (Waschiczek, 2002) and is therefore also subject to short-term interest rate risk. This is why corporate loans are considered to be entirely exposed to short-term interest rate risk. In the household segment, foreign currency loans are also considered to be entirely exposed to short-term risk. As regards euro-denominated loans, moving averages of five years and ten years are used for consumer loans and home loans, respectively, assuming that their average maturities roughly correspond to these periods. Since the MFI interest rate statistics have only been available since 2003, we use the average shares for the years from 2003 onward until data for a sufficient number of years become available.

In the bonds segment, floating-rate notes issued by the corporate sector are subject to short-term interest rate risk. Data relating to these instruments are found in securities issues statistics.

Price Risk

We differentiate two types of price risks: those arising from changes in interest rates and those arising from changes in stock prices.

In connection with price risk, however, we consider assets only, as loans do not generally bear a price risk for the debtor and price risks to which corporate stocks and bonds are subject are not borne by the issuer.¹⁵

¹² *I.e. securities issued or guaranteed by a Zone A country pursuant to § 2 No 18 Austrian Banking Act, by the central or regional government(s) or by international public organizations to which one or more EEA member states belong.*

¹³ *I.e. debt securities issued by a credit institution that is established in an EEA member state and subject to special public supervision pursuant to legal provisions to protect the holders of such debt securities.*

¹⁴ *For further details on MFI interest rate statistics, see Swoboda (2003).*

¹⁵ *Indirectly, price risks might well have an impact as price losses in the stock market might have an unfavorable effect on a capital increase.*

Table 2

Data Sources for Price Risk Indicators

Financial instrument	Sectors		Data source for the share of relevant financial instrument in total investment/financing of the relevant intermediated financial product
	Enterprises	Households	
Price risks arising from changes in interest rates			
Direct investment			
Bonds	x	x	
Indirect investment			
Mutual fund shares	x	x	
Debt securities including fixed-income securities			MFSTAT (retail funds)
Insurance assets		x	
Unlisted fixed-income securities and debt securities as well as listed fixed-income securities			INSSTAT, MFSTAT (specialized funds)
Debt securities held by insurance companies via investment funds			
Pension funds		x	
Bonds			PFSTAT, OeKB, MFSTAT (specialized funds)
Severance funds		x	
Debt securities			SFSTAT
Price risks arising from changes in stock prices			
Direct investment			
Stocks	x	x	
Indirect investment			
Mutual fund shares	x	x	
Stocks and other equity securities			MFSTAT (retail funds)
Insurance assets		x	
Listed stocks			INSSTAT, MFSTAT (specialized funds)
Listed stocks held by insurance companies via mutual funds			
Pension funds		x	
Stocks			PFSTAT, OeKB
Severance funds		x	
Other debt securities and equity securities			SFSTAT

Note: MFSTAT = mutual fund statistics; INSSTAT = insurance statistics; PFSTAT = pension fund statistics; SFSTAT = severance fund statistics. OeKB indicates that OeKB data on the portfolio composition of pension funds were used. Names of individual financial instruments according to the relevant statistics.

In the securities segment, fixed income securities are exposed to price risks arising from changes in interest rates. Data relating to the portfolio of fixed-income securities directly held by enterprises and households are found in the financial accounts. In the segment of mutual fund shares, debt securities held in mutual

funds (both those directly held and those belonging to funds-of-funds) are subject to price risks. As regards insurance, data relating to holdings of fixed-income securities are found in the OeNB's insurance statistics (including the two items "Debt securities and listed fixed-income securities" and "Unlisted fixed-income se-

curities”). Mutual funds held by insurance companies are classified on the basis of their share of debt securities held therein. In respect of pension funds, we use the share of bonds according to the data on the portfolio composition of pension funds published by the OeKB. Since these data only relate to the amount of “Bonds, cash and loans,” we apply an approach similar to that adopted for interest rate risk to calculate the share of bonds in assets. As regards investment in severance funds, debt securities held via these funds are subject to price risks arising from changes in interest rates. To calculate the volume invested in debt securities, we adopt an approach similar to that for interest rate risk.

Listed stocks held in corporate and household portfolios are exposed to price risks arising from changes in stock prices. Data relating to direct holdings are found in the financial accounts. The item “Stocks and other equity securities” is used for mutual fund shares (again, including funds-of-funds). For the insurance segment, we use holdings of listed stocks¹⁶ and mutual funds. For mutual funds, we allocate the different financial instruments in line with specialized fund assets according to mutual fund statistics. For pension funds, we use the share of stocks derived from the OeKB’s data on the portfolio composition of pension funds. As regards severance funds, we use the item “Other debt securities and equity se-

curities,” which was not recognized when determining the price risk that arises from changes in interest rates.

Exchange Rate Risk

For borrowers, exchange rate risks exist notably when the borrowing currency appreciates, which increases the running costs of borrowing (interest rates, annuities) and the repayment amount at the time of maturity. For investors, exchange rate risk consists in the equivalent value of the rate of return (or, in the case of stocks, the equivalent value of the dividends) depreciating in euro terms over the life of the investment and in the decrease of its price in domestic currency.

Since the financial accounts do not show a breakdown by currency and other sources of data differentiate by individual currencies in but few instances, we take account of exchange rate risk only on an aggregated basis for all foreign currencies.

Assets

Data relating to *foreign currency deposits* are found in the MFI balance sheet statistics.¹⁷ The exchange rate risk indicator does not cover bonds held by enterprises and households, as data relating to their currency composition were not available.¹⁸ The same applies to foreign stocks, whose share in total financial assets is relatively small, however. For *intermediated financial products*, the distribution of euro- and foreign currency-

¹⁶ Of which only holdings for investment and trading (and not for participation) purposes.

¹⁷ It should be noted that financial accounts data relating to the level of corporate and household deposits differ to some extent from the levels shown in the MFI balance sheet statistics. Since the foreign currency share of deposits is relatively small, however, the resulting inaccuracy is likewise minimal.

¹⁸ As with the approach adopted for interest rate risk, an inference by analogy using the currency composition of Austrian issuers’ debt securities according to securities issues statistics is not permissible here since most foreign currency bonds issued by Austrian issuers are sold abroad, which means that the domestic investors’ share in euro-denominated bonds is likely to be considerably higher.

Table 3

**Data Sources for Determining the Foreign Currency Shares
of Exchange Rate Risk Indicators**

Financial instrument	Sectors		Data source
	Enterprises	Households	
Assets			
Direct investment			
Deposits	x	x	Foreign currency shares based on the MFI balance sheet statistics
Bonds	x	x	domestic: 0%; foreign: no data available
Stocks	x	x	domestic: 0%; foreign: no data available
Indirect investment			
Mutual fund shares	x	x	Total foreign currency-denominated assets based on MFSTAT (retail funds)
Insurance assets		x	Total foreign currency-denominated items based on INSSTAT
Pension funds		x	Total foreign currency-denominated assets based on PFSTAT
Severance funds		x	Total foreign currency-denominated assets based on SFSTAT
Liabilities			
Loans	x	x	Foreign currency loans based on the Austrian contribution to the Consolidated Balance Sheet
Bonds	x		Foreign currency issues based on ISSTAT

Note: MFSTAT = mutual fund statistics; INSSTAT = insurance statistics; PFSTAT = pension fund statistics; SFSTAT = severance fund statistics; ISSTAT = securities issues statistics. OeKB indicates that OeKB data on portfolio composition of pension funds were used. Names of individual financial instruments according to the relevant statistics.

denominated assets is used in the relevant statistics. With regard to mutual fund shares, we use the proportion of euro- and foreign currency-denominated assets held by *retail funds*.

Liabilities

Foreign currency *loans* and bonds are classified as liabilities that are exposed to exchange rate risk. Data relating to the currency composition of loans to enterprises and households are included in the MFI balance sheet statistics. For foreign currency bonds issued by the corporate sector, the securities issues statistics provide a breakdown by currency (euro or foreign currency).

Summary

This paper describes the data basis and method used to calculate indicators that serve to analyze the exposure of real economy sectors to financial risks. These indicators provide an initial estimation of the risk situation in both the corporate and household sectors and will henceforth be used on a regular basis in the macroeconomic analysis of financial stability and thus also in the reports section of the OeNB's Financial Stability Report.

In addition to being used in analysis, these indicators might also help, in a situation of increased risk, to focus public attention to a greater ex-

tent on certain financial products in a way analogous to the approach adopted for foreign currency loans. In addition, future OeNB publications on financial literacy may further investigate the risk situations signaled by these indicators.

In view of the aforementioned data problems and conceptual uncertainties, the informative value of these indicators is limited. To improve risk assessment, therefore, additional statistics and data should be consulted. In design terms, the next

step would be to sound out whether and to what extent guarantees, or the risk-mitigating effects of intermediation, can be included in calculating risk exposure. Finally, as regards a risk-oriented interpretation of indicators – and provided the indicators themselves have proved reliable – further studies might analyze whether it is feasible to assign critical values to these indicators and to interpret it as a potentially negative signal for financial stability if the indicators exceed these critical values.

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Quantitative Validation of Rating Models for Low Default Portfolios through Benchmarking

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The new capital adequacy framework (Basel II) is one of the most fiercely debated topics the financial sector has seen in the recent past. Following a consultation process that lasted several years, the regulations formally took effect on January 1, 2007. The advanced approaches (the advanced internal ratings-based, or A-IRB, approach and the advanced measurement approach, or AMA) are scheduled to become operational on January 1, 2008. The new framework allows banks to use the IRB approach for the calculation of the assessment base for credit risk. Use of the IRB approach is subject to regulatory approval, which can only be obtained if the internal rating systems meet certain requirements. One of these requirements is that the models employed must have good predictive power. Banks must review this predictive power once a year by performing a qualitative and quantitative validation of the models. The statistical methods used to perform quantitative validation require a significant amount of default data to derive valid statements about the model, but such data are typically scarce in the case of rating models for so-called low default portfolios (LDPs), i.e. portfolios for which banks have little default history. In this paper, we first deal with the general problems of LDPs under the IRB approach and cover the problems of validating rating models for LDPs. We then present an alternative method for the quantitative validation of such models, based on the idea of benchmarking. Finally, we provide an example of the application of the proposed validation method.

JEL classification: G20, C19

Keywords: rating models, validation, benchmarking, low default portfolios

1 Introduction

Following a consultation process that lasted several years, the Basel Committee on Banking Supervision (BCBS) published the revised framework “International Convergence of Capital Measurement and Capital Standards” (Basel II) in June 2004. The Capital Requirements Directive, comprising the recast EU directives 2006/48/EC and 2006/49/EC, transposed the Basel II provisions into EU law. These directives, in turn, were transposed into Austrian law by amending the Austrian Banking Act (*Bankwesengesetz – BWG*) in August 2006 and by publishing the new Solvency Regulation (*Solvabilitätsverordnung – SolvaV*) and Disclosure Regulation (*Offenlegungsverordnung –*

OffV) in October 2006. The Basel II revised international capital framework finally entered into force in Austria on January 1, 2007.¹

The new framework allows banks to use the IRB approach for the calculation of the assessment base for credit risk (IRB approach under Article 22b Austrian Banking Act), subject to regulatory approval, which can only be obtained if the internal rating systems meet a number of requirements that are defined under Article 37 ff. of the Solvency Regulation.

One of these requirements stipulates that banks must demonstrate that their rating models have good predictive power, and that the model must be quantitatively and qualitatively validated on an annual basis

¹ By exercising areas of national discretion, Austrian banks can postpone the application of the new regulations to January 1, 2008.

(Articles 41 and 59 of the Solvency Regulation). The statistical methods typically used to perform quantitative validation require a significant amount of default data to derive valid statements about the model, which may be problematic in the case of rating models for low default portfolios (LDPs), i.e. portfolios for which banks have little default history, e.g. sovereigns.

Therefore, this paper presents an alternative method for the quantitative validation of rating models that can be used to assess the predictive power of rating models for typical LDPs such as exposures to sovereigns or banks. The method presented is based on a method used in Hornik et al. (2006), i.e. a benchmarking concept in which the results of an internal rating model are compared with the results obtained from other methods or with external data. This paper covers the comparison with external data.

The paper first deals with the problems of LDPs under the IRB approach (section 2). Section 3 discusses the problems involved in the quantitative validation of rating models for LDPs, and section 4 presents an alternative method for the quantitative validation of rating models for LDPs based on a benchmarking concept. Section 5 shows an example of the application of the suggested validation method. Section 6 concludes.

2 Low Default Portfolios under the IRB Approach

Low default portfolios (LDPs) are portfolios with only few or no defaults. A portfolio may be LDP for different reasons, e.g.:²

- it may be a portfolio with few customers – either globally (e.g. sovereigns) or at an individual bank level;
- it may reflect a globally low default rate for certain customer groups (e.g. banks);
- it may reflect a low default rate for certain customer groups in certain time periods;
- it may have a short default history because the bank is a recent market entrant for a given portfolio.

Based on these different reasons, LDPs are often subdivided into the following types:³

- *Long-term versus short-term*: Long-term LDPs may be attributed to generally low default rates of certain borrower groups or a small number of borrowers. LDPs are short term, however, if the lack of sufficient default data is due to a bank's recent entry into a new market segment.
- *Systemic versus institution-specific*: In the case of systemic LDPs, all banks face the problem of having few or no default data, while in the case of institution-specific LDPs, data are unavailable only for the bank in question.

Although the lack of default data for LDPs makes it difficult to develop and validate rating models as well as estimate and validate risk parameters for these portfolios, statutory provisions do not contain requirements specifically applicable to LDPs. Consequently, many banks have raised concerns that LDPs may be generally excluded from IRB treatment. In a response to industry questions, the

² See BBA and ISDA (2005).

³ See CEBS (2006, p. 101).

BCBS published a newsletter in September 2005.⁴ The BCBS's core statement is that the relative lack of historical data should not automatically preclude LDPs from the use of IRB approaches. Rather, greater reliance should be placed on alternative external and internal data sources for LDPs. If data richness is still not given, alternative techniques for estimation and validation should be used.⁵ Moreover, given an insufficient data base and therefore a larger uncertainty in parameter estimation, banks would have to increase the margin of conservatism added to the risk parameters.⁶

Rating is about bringing borrowers into an order with respect to their default probability. To this end, a discrete scale with various rating grades is typically used. Statistical procedures such as logistic regression are often used to develop a rating model; however, they require a minimum amount of default data. Given the lack of such data, such procedures cannot

be applied to LDPs. Instead, expert models, i.e. models where the rating criteria are chosen and weighted by experts, are typically employed.

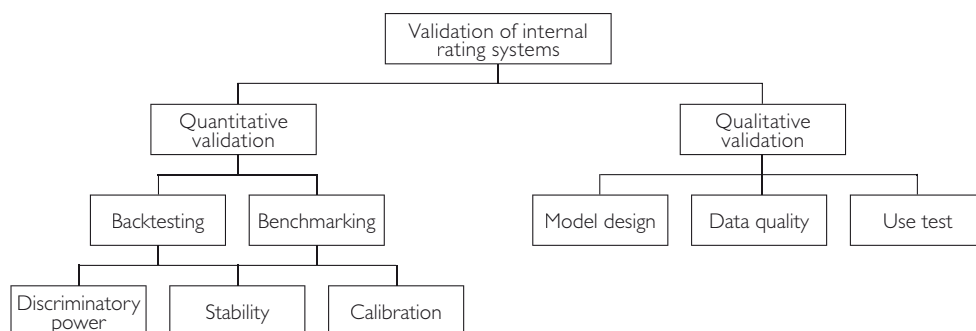
The use of expert models for LDPs is permitted in principle.⁷ However, the use of an expert model does not exempt banks from the obligation to validate the model regularly by means of quantitative techniques. This poses problems for many banks, as the methods traditionally employed for the quantitative validation of a rating model require a certain number of defaults, which do not exist in the case of LDPs. The next section therefore presents an alternative technique for the quantitative validation of rating models for LDPs.

3 Validation of Low Default Portfolios

According to Deutsche Bundesbank (2003) and OeNB and FMA (2004), the validation of a rating model has to comprise the measures depicted in chart 1.

Chart 1

Validation of a Rating Model



Source: Deutsche Bundesbank (2003, p. 60).

⁴ See BCBS (2005a).

⁵ These statements can be also found in the CP 10 consultation paper of the Committee of European Banking Supervisors (CEBS) published in April 2006, see CEBS (2006).

⁶ In national legislation, this issue is addressed under Article 47 para 6 of the Solvency Regulation.

⁷ For parameter estimates, however, such a method is not permissible, as Article 47 para 1 of the Solvency Regulation explicitly demands that parameter estimates not be based purely on judgmental considerations but also on empirical results.

Quantitative validation refers to the use of statistical procedures to examine the discriminatory power⁸ and the accuracy of calibration⁹ of the rating model as well as the stability of the rating results, while qualitative validation refers to the data quality, the model design, and the internal use of the rating results in the bank's risk management. Quantitative validation can be performed on the basis of internal data (backtesting) or external data (benchmarking).

Quantitative validation through backtesting is possible only to a very limited extent for LDPs, since the number of defaults in the bank's portfolio is typically so low that performing statistical tests does not lead to any reasonable results. Should the LDP be institute specific, this problem may be solved by using data from other banks. However, if the LDP is systemic, quantitative validation through benchmarking (comparing own data with other banks' data) is not possible.

BCBS (2005a) as well as BBA and ISDA (2005) therefore define the term benchmarking more broadly to comprise methods such as the comparison of internal ratings with ratings by rating agencies and with proxies for default risk derived from mar-

ket prices. In the next section, we will present a possible technique for this kind of comparison.

4 Benchmarking of Rating Models for Systemic Low Default Portfolios

A rating is an ordinal variable, i.e. the borrowers are ranked by their default probability, typically using a discrete scale with different rating grades to which the borrowers are allocated.¹⁰

In the following, we present a benchmarking approach for the quantitative validation of rating models for systemic LDPs,¹¹ where the ordinal structure of the results of a rating model, i.e. the ranking of the borrowers by their default probability, is compared with the ranking of rating agencies or with proxies for default risk observable in the capital market.¹²

The literature often suggests Spearman's rank correlation coefficient, Somer's D or Kendall's τ as measures of the strength and direction of association between two ordinally scaled variables.¹³ However, Emond and Mason (2002) have shown that these measures have certain weaknesses and have therefore suggested an enhanced coefficient, τ_x , which e.g. Hornik et al. (2006) use.

⁸ The discriminatory power of a rating model refers to its ex ante ability to distinguish borrowers who will default from those who will not default.

⁹ The calibration of a rating model denotes the assignment of probabilities of default to the different rating grades.

¹⁰ In a further step – calibration – a default probability is assigned to the individual rating grades.

¹¹ It should be mentioned at this point that, on the one hand, benchmarking analysis requires sufficiently large multi-rater panels. On the other hand, these panels have to be complete, which is usually not the case in practice as not all agencies assess all borrowers concerned. This contribution does not deal with the problem of incomplete panels, as all borrowers in the example are assessed by all agencies. See Hornik et al. (2006) for a treatment of this problem.

¹² The approach presented in this paper thus can be seen as an examination of the discriminatory power under the assumption that the rating agencies and/or capital market players are in a position to distinguish borrowers who will default from those who will not default in the future. It is also possible to examine the calibration of rating models for LDPs through benchmarking, but this is not the object of this paper.

¹³ See BCBS (2005b).

To calculate τ_x for a sample with n borrowers, an $n \times n$ matrix is first created for each variable,¹⁴ the elements of which are determined as follows for variable a :

$a_{xy} = 1$ if borrower x is ranked ahead of or even with borrower y ;

$a_{xy} = -1$ if borrower x is ranked behind borrower y ; and

$a_{xy} = 0$ for all diagonal elements of the matrix.

Based on this matrix, τ_x can be calculated for variables a and b with the following formula:

$$\tau_x = \frac{\sum_{x=1}^n \sum_{y=1}^n a_{xy} b_{xy}}{n(n-1)} \quad (1)$$

τ_x can range between -1 and $+1$, with higher values of representing a higher degree of association.

External ratings and proxies for default risk derived from market prices, e.g. bond spreads¹⁵ or credit default swap (CDS) spreads,¹⁶ are typically recommended as benchmarks.¹⁷ The benchmarks implicitly assume that the ranking of the borrowers by the external rating agencies and/or capital market investors is perfect.

The ratings of the large rating agencies and the level of bond spreads and/or CDS spreads are closely linked.¹⁸ Nevertheless, there are some important differences between these measures of the default risk of a borrower. One of these differences lies in the stability of the measure.

Rating agencies emphasize that their ratings are through the cycle (TTC).¹⁹ This means that the rating should reflect the borrower's long-term creditworthiness irrespective of the business cycle.²⁰ Short-term, possibly only temporary, changes in default risk are not considered, as the agencies tend to focus on the stability of the rating.²¹

The market-based proxies for a borrower's default risk, by contrast, are typically point-in-time (PIT) measures. This means that they react to changes in the economic environment and therefore fluctuate more strongly than TTC ratings.

When choosing the benchmark, this circumstance has to be taken into account. If the model to be validated is a TTC model, external ratings would appear to be appropriate as a benchmark. In the case of a PIT

¹⁴ In this case, the variables are the internal rating and the proxies for the default probability used for comparison, e.g. an external rating.

¹⁵ A bond spread is the difference in yield between a risky bond and a (nearly) risk-free bond with the same maturity; it is typically higher the higher the default risk of the bond issuer is.

¹⁶ A CDS is a contract to hedge against credit risks, i.e. the protection seller agrees to pay compensation to the protection buyer in the amount of a potential loss in the event of a prespecified credit event. In exchange, the protection buyer pays the protection seller a fee, the so-called CDS spread (in percent of the nominal amount of the exposure) for the hedging period. The higher the probability of the credit event is, the higher the fee is.

¹⁷ Zhu (2004) showed that bond spreads and CDS spreads move together in the long run, but that this relationship does not always hold in the short run. The level of both measures is influenced not only by default risk but also by other factors such as liquidity, taxes or risk premiums requested by investors; see e.g. Elton et al. (2001) or Amato and Remolona (2003).

¹⁸ See Amato and Remolona (2003).

¹⁹ See Cantor (2001) and Standard & Poor's (2006).

²⁰ Several empirical studies investigated whether the ratings of the big rating agencies are really independent of the state of the economy; see Nickell et al. (2000), Bangia et al. (2002), Amato and Furfine (2004), and Löffler (2006).

²¹ See Fons et al. (2002).

Table 1

Rating Grades and CDS Spreads of Sovereigns					
Borrower	Internal rating model	S&P	Moody's	Fitch	CDS spreads
Brazil	8	BB+	Ba2	BB+	71
Hungary	3	BBB+	A2	BBB+	19
Mexico	4	BBB	Baa1	BBB	34
Poland	3	A-	A2	BBB+	8
Russia	5	BBB+	Baa2	BBB+	42
South Korea	2	A-	A3	A+	16
Turkey	9	BB-	Ba3	BB-	148
Ukraine	9	BB-	B1	BB-	131
Venezuela	10	BB-	B2	BB-	251

Source: Standard & Poor's, Moody's, Fitch, Deutsche Bank (2007).

model, however, a market-based proxy should be used as a benchmark.²² However, due to the high fluctuation of the market-based proxies compared to internal ratings, which are normally updated only once a year, the benchmarking result may depend strongly on the valuation date.

Notwithstanding the different rating philosophies discussed, the various ratings should mirror the same risk parameter. Thus, it has to be considered whether the ratings are to be regarded exclusively as PD estimates or whether they focus on expected loss. In addition, the different ratings should refer to the same time horizon. We are aware of the fact that the benchmarks proposed do not always fulfill these requirements. Nevertheless, they are proposed since "better" benchmarks for LDPs are often not available in practice.

The next section demonstrates the application of the presented method to a simple example. The results of a fictitious internal rating

model for sovereigns are compared with the ratings of the three big rating agencies Standard and Poor's (S&P), Moody's, and Fitch and with CDS spreads observable in the capital market.

5 Example for the Application of the Proposed Benchmarking-Based Method for the Validation of Rating Models

This section uses an example to illustrate the application of the method presented in section 4 in more detail. To this end, the (fictitious) results of an internal rating model for sovereigns are compared with the ratings of the rating agencies S&P, Moody's and Fitch on the one hand and with (CDS) spreads observable in the capital market on the other hand.

Table 1 presents the ratings and the CDS spreads of the individual sovereigns.²³ The results of the internal rating model are fictitious values on a rating scale of 1 to 12, with 1 being the best rating. The CDS

²² Based on interviews, Treacy and Carey (1998) discovered that the internal rating models of (big U.S.) banks are typically PIT rating models. In addition, Weber et al. (1999) found out that the ratings of the models of larger German banks fluctuate more strongly than the external ratings of the respective borrowers, which might serve as evidence that the internal models of large German banks are PIT rather than TTC models.

²³ In general, validation should be performed with a sample that is as large as possible so that the results are not distorted by individual outliers. However, for the sake of clarity, only ratings of nine sovereigns are considered in the example.

Table 2

Assessment Matrix for the Internal Rating System

	Brazil	Hungary	Mexico	Poland	Russia	South Korea	Turkey	Ukraine	Venezuela
Brazil	0	-1	-1	-1	-1	-1	1	1	1
Hungary	1	0	1	1	1	-1	1	1	1
Mexico	1	-1	0	-1	1	-1	1	1	1
Poland	1	1	1	0	1	-1	1	1	1
Russia	1	-1	-1	-1	0	-1	1	1	1
South Korea	1	1	1	1	1	0	1	1	1
Turkey	-1	-1	-1	-1	-1	-1	0	1	1
Ukraine	-1	-1	-1	-1	-1	-1	1	0	1
Venezuela	-1	-1	-1	-1	-1	-1	-1	-1	0

Table 3

Product Matrix of a (Fictitious) Internal Rating and S&P Rating

	Brazil	Hungary	Mexico	Poland	Russia	South Korea	Turkey	Ukraine	Venezuela
Brazil	0	1	1	1	1	1	1	1	1
Hungary	1	0	1	-1	1	1	1	1	1
Mexico	1	1	0	1	-1	1	1	1	1
Poland	1	1	1	0	1	-1	1	1	1
Russia	1	-1	-1	1	0	1	1	1	1
South Korea	1	1	1	1	1	0	1	1	1
Turkey	1	1	1	1	1	1	0	1	1
Ukraine	1	1	1	1	1	1	1	0	1
Venezuela	1	1	1	1	1	1	1	1	0

Source: Standard & Poor's.

spreads used are values observed in the capital market.²⁴

Based on the data presented in table 1 and following the technique for calculating τ_x described in section 4, we first create a matrix for each variable (i.e. for the internal rating system, the ratings of the three rating agencies, and the CDS spreads). The columns and rows of the matrix represent the respective sovereigns (borrowers). Table 2 presents the assessment matrix for the internal rating system as an example. If a cell contains 1, the internal rating of the sovereign in that row is better or the same as that of the sovereign in the column. The row for South Korea, for instance, contains 1 in every cell, as this sovereign was assigned the best

rating of the nine sovereigns by the internal rating system. -1, however, is assigned if the sovereign in that row has a worse internal rating than the sovereign in the column. By definition, the diagonal is 0.

After an assessment matrix has been created for each of the five variables, the matrix for the internal rating system is multiplied with each of the other matrices in turn. Table 3 presents the product matrix for the internal rating system and the matrix for the S&P ratings as an example. A cell contains 1 whenever the respective cells in both matrices concurrently show 1 or -1. This means that the ranking of the two sovereigns to which the respective cell refers is not opposite in the two variables. For ex-

²⁴ The data for the CDS spreads (five-year CDS spreads) are from Deutsche Bank (2007); as at July 6, 2007.

ample, South Korea receives a better rating than Hungary both from the internal rating system and S&P. However, a value of -1 arises in the product matrix if the ranking of the two compared sovereigns is opposite in the observed variables. Hence, e.g. Russia's creditworthiness is lower than that of Mexico in the internal rating system, while S&P awards a better rating to Russia than to Mexico.

After the product matrices have been created, the indicator τ_x can be calculated for each product matrix based on formula (1). To compare the results of the internal rating system with those of S&P, for instance, τ_x is computed as follows:

$$\tau_x = \frac{58}{9(9-1)} \approx 0.81$$

Table 4 presents the (rounded) results for the given example:

Table 4

(Rounded) Results for τ_x	
Method	τ_x
Internal rating system and S&P	0.81
Internal rating system and Moody's	0.86
Internal rating system and Fitch	0.83
Internal rating system and CDS spreads	0.89

It is evident that in this fictitious example the result of all four comparisons exceeds 0.8, with the highest τ_x for the risk measure CDS spread.

The above-mentioned issues – the rating philosophy, the considered risk parameter or the time horizon – have to be considered when interpreting the results.

6 Conclusion

This paper has suggested a method for the quantitative validation of rating models for LDPs. One necessary requirement for the application of this method is the existence of an appropriate benchmark. The benchmarks *external ratings* and *bond and/or CDS spreads* presented in this paper are available for typical LDPs, such as sovereign, bank and large corporate exposures, making the method particularly well suited for these LDPs.

The explanatory power of the results strongly depends on the quality²⁵ of the benchmark, since the presented method does not directly assess the quality of the results of the internal rating model but rather the association of its results with those of the benchmark. Thus, it can only be concluded from a high τ_x value that the internal rating model has a high discriminatory power if the benchmark itself has a high discriminatory power. Conversely, a low discriminatory power of the internal rating model cannot be directly inferred from a low result for τ_x . Rather, the reasons for the low τ_x value – for example a low discriminatory power of the benchmark – should be examined.

²⁵ Quality in the sense of discriminatory power.

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A N N E X O F T A B L E S

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Cutoff date for data: November 5, 2007

Conventions used in the tables:

x = No data can be indicated for technical reasons

.. = Data not available at the reporting date

Revisions of data published in earlier volumes are not indicated.

Discrepancies may arise from rounding.

International Environment

Table A1

Exchange Rates

Period average (per EUR 1)

	2003	2004	2005	2006	2004	2005	2006	2007
	Year				1 st half			
U.S. dollar	1.13	1.24	1.24	1.26	1.23	1.29	1.23	1.33
Japanese yen	130.96	134.40	136.86	146.06	133.07	136.23	142.16	159.61
Pound sterling	0.69	0.68	0.68	0.68	0.67	0.69	0.69	0.67
Swiss franc	1.52	1.54	1.55	1.57	1.55	1.55	1.56	1.63
Czech koruna	31.84	31.90	29.78	28.34	32.44	30.07	28.49	28.15
Hungarian forint	253.51	251.73	248.04	264.26	256.08	247.38	260.70	250.32
Polish zloty	4.40	4.53	4.02	3.90	4.73	4.08	3.89	3.84
Slovak koruna	41.49	40.03	38.59	37.23	40.32	38.61	37.57	34.05
Slovenian tolar ¹	233.82	239.07	239.57	239.60	238.26	239.64	239.57	239.64

Source: Thomson Financial.

¹ From January 1, 2007: irrevocable conversion rate against the euro.

Table A2

Key Interest Rates

End of period, %

	2003	2004		2005		2006		2007
	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30
Euro area	2.00	2.00	2.00	2.00	2.25	2.75	3.50	4.00
U.S.A.	0.75	1.25	2.00	3.25	4.25	5.25	5.25	5.25
Japan	0.001	0.002	0.002	0.001	0.004	0.027	0.275	0.610
United Kingdom	3.75	4.50	4.75	4.75	4.50	4.50	5.00	5.50
Switzerland ¹	0.00–0.75	0.00–1.00	0.25–1.25	0.25–1.25	0.50–1.50	1.00–2.00	1.50–2.50	2.00–3.00
Czech Republic	2.00	2.25	2.50	1.75	2.00	2.00	2.50	2.75
Hungary	12.50	11.50	9.50	7.00	6.00	6.25	8.00	7.75
Poland	5.25	5.25	6.50	5.00	4.50	4.00	4.00	4.50
Slovak Republic	6.00	4.50	4.00	3.00	3.00	4.00	4.75	4.25
Slovenia ²	6.00	4.00	4.00	4.00	4.00	3.25	3.50	x

Source: Eurostat, Thomson Financial, national sources.

¹ SNB target range for three-month LIBOR.² Until January 2003: official interest rate; since February 2003: interest rate for 60-day tolar bills issued by Banka Slovenije; from 2007 onwards: see euro area.

Table A3

Short-Term Interest Rates

Three-month rates, period average, %

	2003	2004	2005	2006	2004	2005	2006	2007
Year					1 st half			
Euro area	2.33	2.11	2.19	3.08	2.07	2.13	2.75	3.94
U.S.A.	1.22	1.62	3.57	5.19	1.21	3.06	4.99	5.36
Japan	0.09	0.09	0.09	0.31	0.08	0.09	0.16	0.63
United Kingdom	3.69	4.59	4.70	4.80	4.32	4.85	4.59	5.61
Switzerland	0.33	0.47	0.80	1.51	0.28	0.75	1.25	2.32
Czech Republic	2.28	2.36	2.01	2.30	2.12	2.07	2.10	2.67
Hungary	8.49	11.29	7.02	6.99	11.95	7.86	6.23	8.06
Poland	5.68	6.20	5.29	4.21	5.65	5.97	4.22	4.31
Slovak Republic	6.18	4.68	2.93	4.32	5.31	2.84	3.71	4.34
Slovenia ¹	6.78	4.66	4.03	3.58	5.27	4.05	3.63	x

Source: Thomson Financial.

¹ From 2007 onwards: see euro area.

Table A4

Long-Term Interest Rates

Ten-year rates, period average, %

	2003	2004	2005	2006	2004	2005	2006	2007
Year					1 st half			
Euro area	4.14	4.12	3.42	3.84	4.24	3.52	3.79	4.32
U.S.A.	4.00	4.26	4.28	4.79	4.29	4.22	4.81	4.90
Japan	0.99	1.50	1.39	1.74	1.45	1.34	1.74	1.70
United Kingdom	4.58	4.93	4.46	4.37	4.98	4.59	4.26	4.97
Switzerland	2.66	2.74	2.10	2.52	2.82	2.18	2.54	2.82
Czech Republic	4.12	4.75	3.51	3.78	4.75	3.56	3.70	4.01
Hungary	6.82	8.19	6.60	7.12	8.29	6.90	6.91	6.77
Poland	5.78	6.90	5.22	5.23	6.96	5.50	5.06	5.27
Slovak Republic	4.99	5.03	3.52	4.41	5.11	3.68	4.13	4.35
Slovenia	6.40	4.68	3.81	3.85	4.91	3.91	3.76	4.43

Source: Eurostat, national sources.

Table A5

Corporate Bond Spreads

Period average, percentage points

	2003	2004	2005	2006	2004	2005	2006	2007
Year					1 st half			
Euro corporate bond spreads against euro benchmark	0.68	0.26	0.47	0.69	0.27	0.48	0.63	0.65
U.S. dollar corporate bond spreads against U.S. dollar benchmark	4.82	4.36	3.88	4.53	2.89	2.95	3.26	2.51

Source: Thomson Financial.

Table A6

Stock Indices¹

Period average

	2003	2004	2005	2006	2004	2005	2006	2007
	Year				1 st half			
Euro area: EURO STOXX	213.29	251.14	293.81	357.33	250.68	278.15	347.92	415.76
U.S.A.: S&P 500	964.85	1,131.10	1,207.40	1,310.49	1,128.13	1,186.94	1,282.07	1,460.71
Japan: Nikkei 225	9,312.88	11,180.88	12,421.34	16,121.25	11,273.45	11,437.04	16,198.92	17,521.30
Austria: ATX	1,303.80	1,977.96	2,992.87	3,939.88	1,833.46	2,662.12	3,947.23	4,636.35
Czech Republic: PX50	558.24	828.23	1,255.53	1,478.63	770.53	1,149.26	1,474.91	1,736.66
Hungary: BUX	8,400.74	11,752.23	19,018.09	22,514.79	10,655.10	16,873.74	22,485.36	24,842.22
Poland: WIG	17,103.10	24,108.88	29,567.50	42,977.49	23,365.29	26,810.65	39,932.30	57,590.50
Slovak Republic: SAX16	164.08	213.42	437.07	402.98	183.10	421.74	405.62	409.80
Slovenia: SBI20	3,377.57	4,561.36	4,674.89	5,223.35	4,341.10	4,820.36	4,748.28	8,086.73

Source: Thomson Financial.

¹ EURO STOXX: December 31, 1986 = 100, S&P 500: December 30, 1964 = 100, Nikkei 225: March 31, 1950 = 100, ATX: January 2, 1991 = 1,000, PX50: April 6, 1994 = 100, BUX: January 2, 1991 = 100, WIG: April 16, 1991 = 100, SAX: September 14, 1993 = 100, SBI20: January 3, 1994 = 100.

Table A7

Gross Domestic Product

Annual change in %, period average

	2003	2004	2005	2006	2004	2005	2006	2007
	Year				1 st half			
Euro area	0.8	2.0	1.4	2.7	1.9	1.4	2.7	2.9
U.S.A.	2.5	3.9	3.2	3.3	4.1	3.1	3.3	1.7
Japan	1.4	2.7	1.9	2.2	3.5	1.2	2.4	2.2
Austria	1.1	2.4	2.0	3.1	2.0	2.3	3.2	3.5
Czech Republic	3.6	4.6	6.5	6.4	4.2	6.2	6.6	6.2
Hungary	4.2	4.8	4.1	3.9	4.9	3.8	4.2	1.9
Poland	3.9	5.3	3.6	6.1	6.6	2.8	5.5	6.8
Slovak Republic	4.2	5.4	6.0	8.3	5.3	5.2	6.7	9.2
Slovenia	2.7	4.4	4.0	5.2	4.3	4.2	4.9	6.5

Source: Eurostat, national sources.

Table A8

Current Account

% of GDP, cumulative

	2003	2004	2005	2006	2004	2005	2006	2007
	Year				1 st half			
Euro area	0.4	0.6	-0.2	-0.3	0.6	-0.3	-0.5	-0.2
U.S.A.	-4.7	-5.6	-6.2	-6.4	-4.7	-6.0	-6.2	-5.6
Japan	3.5	4.0	3.6	3.5	3.9	3.5	3.8	..
Austria	1.7	2.1	2.9	3.0	2.2	2.1	3.1	4.1
Czech Republic	-6.2	-5.3	-1.6	-3.1	-4.0	-0.2	-1.0	-1.6
Hungary	-8.0	-8.4	-6.8	-6.5	-9.2	-6.7	-7.6	-6.0
Poland	-2.1	-4.2	-1.6	-3.2	-5.8	-1.3	-3.2	-4.0
Slovak Republic	-6.0	-7.9	-8.5	-7.1	-7.7	-7.1	-6.8	-4.7
Slovenia	-0.8	-2.7	-2.0	-2.9	-2.3	-0.9	-0.6	-2.7

Source: Eurostat, European Commission, Thomson Financial, national sources.

Note: Due to seasonal fluctuations, the comparability of half-year figures with yearly figures is limited. The half-year figures for the U.S.A. are based on seasonally adjusted nominal GDP data.

Table A9

Inflation

Annual change in %, period average

	2003	2004	2005	2006	2004	2005	2006	2007
	Year				1 st half			
Euro area	2.1	2.1	2.2	2.2	2.0	2.1	2.4	1.9
U.S.A.	2.3	2.7	3.4	3.2	2.3	3.0	3.8	2.6
Japan	-0.3	0.0	-0.3	0.3	-0.2	-0.2	0.0	-0.1
Austria	1.3	2.0	2.1	1.7	1.7	2.2	1.7	1.8
Czech Republic	-0.1	2.6	1.6	2.1	2.2	1.3	2.4	2.1
Hungary	4.7	6.8	3.5	4.0	7.1	3.6	2.5	8.7
Poland	0.7	3.6	2.2	1.3	2.6	2.9	1.2	2.1
Slovak Republic	8.4	7.5	2.8	4.3	8.2	2.7	4.4	1.9
Slovenia	5.7	3.7	2.5	2.5	3.7	2.5	2.7	2.9

Source: Eurostat.

The Real Economy in Austria

Table A10

Financial Investment of Households

Transactions, EUR million

	2003	2004	2005	2006 ³	2004	2005	2006	2007 ³
	Year				1 st half			
Currency and deposits ¹	8,230	6,048	5,471	6,931	2,599	3,276	2,561	7,288
Securities (other than shares) ²	1,449	2,490	1,520	1,583	1,980	869	1,097	1,810
Shares (other than mutual fund shares)	831	962	1,778	1,794	534	1,566	1,614	-572
Mutual fund shares	1,119	2,883	3,761	2,083	1,951	1,537	2,062	486
Insurance technical reserves	3,188	4,630	6,375	5,348	2,593	3,592	2,587	2,407
Total financial investment	14,817	17,013	18,905	17,739	9,656	10,840	9,922	11,419

Source: OeNB.

¹ Including loans and other assets.² Including financial derivatives.³ Preliminary data.

Table A11

Household Income, Savings and Credit Demand

Year-end, EUR billion

	2003	2004	2005	2006
Year				
Net disposable income	139.5	144.8	151.1	157.5
Savings	12.3	12.9	14.1	15.3
Saving ratio, in % ¹	8.7	8.9	9.3	9.7
MFI loans to households	89.40	98.33	111.27	115.48

Source: Statistics Austria (national accounts broken down by sectors), OeNB (financial accounts).

¹ Saving ratio = savings / (disposable income + increase in accrued occupational pension benefits).

Table A12

Financing of Nonfinancial Corporations

Transactions, EUR million

	2003	2004	2005	2006 ¹	2004	2005	2006	2007 ¹
	Year				1 st half			
Securities (other than shares)	4,299	2,909	4,255	2,586	1,038	1,063	1,157	1,955
Loans	5,757	4,859	6,678	6,066	990	2,747	3,857	7,682
Shares and other equity	3,608	4,592	7,157	10,442	4,121	5,230	8,509	8,294
Other accounts payable	2,651	561	557	738	118	1,284	578	341
Total debt	16,315	12,921	18,647	19,832	6,267	10,324	14,101	18,272

Source: OeNB.

¹ Preliminary data.

Table A13

Insolvency Indicators								
	2003	2004	2005	2006	2004	2005	2006	2007
	Year				1 st half			
	EUR million							
Default liabilities	2,440	2,540	2,426	2,569	1,169	1,034	1,101	1,151
	Number							
Defaults	2,957	2,972	3,203	3,084	1,469	1,552	1,547	1,548

Source: Kreditschutzverband von 1870.

Table A14

Selected Financial Ratios of the Manufacturing Sector				
Median, %	2003	2004	2005	2006
Self-financing and investment ratios				
Cash flow, as a percentage of turnover	7.91	8.05	7.55	..
Self-financing of investments ¹	316.02	405.56	413.64	..
Reinvestment ratio ²	47.06	59.09	45.00	..
Financial structure ratios				
Equity ratio	14.15	15.43	22.87	..
Risk-weighted capital ratio	19.22	20.99	29.43	..
Bank liability ratio	41.95	39.96	32.01	..
Government debt ratio	9.22	9.11	8.64	..

Source: OeNB.

¹ Corresponds to the cash flow as a percentage of investment.

² Investment x 100 / credit write-offs.

Financial Intermediaries in Austria¹

Table A15

Total Assets and Off-Balance-Sheet Operations

End of period, EUR million

	2003		2004		2005		2006		2007	
	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30
Total assets on an unconsolidated basis	605,107	636,035	652,758	697,505	725,761	765,258	797,758	859,343		
of which: total domestic assets	430,888	441,250	452,306	463,815	479,817	493,966	504,237	518,713		
total foreign assets	174,219	194,785	200,452	233,690	245,943	271,292	293,521	340,630		
Interest rate contracts	1,853,494	1,891,262	1,241,189	1,266,274	1,247,825	1,278,429	1,360,613	1,451,559		
Foreign exchange derivatives	305,447	255,755	216,284	245,677	240,564	264,876	279,686	367,550		
Other derivatives	15,173	17,375	8,490	15,916	17,731	21,751	20,103	21,067		
Derivatives total	2,174,114	2,164,392	1,465,963	1,527,867	1,506,120	1,565,056	1,660,402	1,840,176		
Total assets on a consolidated basis	x	x	732,780	789,045	847,627	874,322	927,751	1,037,390		

Source: OeNB.

Note: Data on off-balance-sheet operations refer to nominal values.

Table A16

Profitability on an Unconsolidated Basis

End of period, EUR million

	2003				2004				2005				2006			
	1 st half		Year		1 st half		Year		1 st half		Year		1 st half		Year	
Net interest income	3,530	3,547	3,562	3,568	7,058	7,131	7,094	7,170								
Income from securities and participating interests	990	1,125	1,198	1,387	1,719	2,076	2,700	2,878								
Net fee-based income	1,671	1,903	2,169	2,453	3,187	3,387	3,941	4,300								
Net profit/loss on financial operations	310	333	446	361	618	607	642	688								
Other operating income	590	621	686	758	1,292	1,255	1,333	1,581								
Operating income	7,091	7,530	8,062	8,527	13,875	14,457	15,710	16,618								
Staff costs	2,382	2,418	2,624	2,654	4,740	4,859	5,036	5,451								
Other administrative expenses	1,511	1,628	1,706	1,800	3,108	3,107	3,332	3,516								
Other operating expenses	780	776	838	843	1,620	1,748	1,694	1,828								
Total operating expenses	4,673	4,822	5,168	5,297	9,468	9,715	10,063	10,795								
Operating profit/loss	2,418	2,708	2,894	3,230	4,407	4,742	5,647	5,823								
Net risk provisions from credit business ¹	x	x	1,636	1,257	1,850	2,094	2,014	1,845								
Net risk provisions from securities business ¹	x	x	-723	-404	-46	-1,154	-408	-2,875								
Annual surplus ¹	x	x	3,931	4,695	2,069	3,233	3,734	3,957								
Return on assets ^{1,2}	0.42	0.39	0.49	0.51	0.35	0.46	0.53	0.50								
Return on equity (tier 1 capital) ^{1,2}	8.4	8.0	8.6	7.3	7.2	9.3	11.1	9.5								
Interest income to gross income (%)	x	x	44	42	51	49	45	43								
Operating expenses to gross income (%)	x	x	64	62	68	67	64	65								

Source: OeNB.

¹ Data referring to the 1st half of 2007 are expected year-end values.² Annual surplus in % of total assets and tier 1 capital, respectively.

¹ Since 2007, the International Monetary Fund (IMF) has published Financial Soundness Indicators (FSIs) for Austria (see also www.imf.org). The tables below have therefore been expanded to include FSIs as computed by the OeNB for banks operating in Austria. Figures published here may differ from those published by the IMF, which cover only domestically owned banks.

Table A17

Profitability on a Consolidated Basis								
End of period, EUR million								
	2004	2005	2006	2007	2003	2004	2005	2006
	1 st half				Year			
Operating income	x	10,259	11,713	13,929	x	19,303	21,153	23,993
Operating expenses	x	6,490	7,224	8,184	x	12,473	13,389	14,758
Operating profit/loss	x	3,769	4,488	5,745	x	6,830	7,765	9,235
Result before minority interests	x	2,471	3,712	4,087	x	4,408	5,341	8,696
Return on assets ¹	x	0.59	0.83	0.72	x	0.56	0.63	0.94
Return on equity (tier 1 capital) ¹	x	13.3	16.3	14.6	x	13.3	14.7	18.7
Interest margin to gross income (%)	x	63	60	61	x	64	62	62
Operating expenses to gross income (%)	x	63	62	59	x	65	63	62

Source: OeNB.

¹ Result before minority interests in % of total assets and tier 1 capital, respectively.

Table A18

Sectoral Distribution of Loans										
End of period, EUR million										
	2003		2004		2005		2006		2007	
	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30
Nonfinancial corporations	110,840	108,979	109,924	111,334	108,944	114,171	116,078	118,086		
of which: foreign currency-denominated loans	17,791	17,343	16,094	16,109	14,604	14,006	12,586	10,501		
Households	87,358	93,984	97,130	100,375	107,561	109,255	111,404	114,931		
of which: foreign currency-denominated loans	23,691	27,077	28,461	30,401	33,316	34,395	34,266	33,383		
General government	29,945	29,679	31,238	30,192	29,141	29,856	28,662	27,297		
of which: foreign currency-denominated loans	1,231	1,588	1,688	2,074	2,160	2,159	1,862	1,489		
Other financial intermediaries	13,392	13,505	14,510	15,131	19,365	20,523	22,001	20,758		
of which: foreign currency-denominated loans	1,412	1,594	1,667	2,030	3,216	3,491	3,353	3,142		
Foreign nonbanks	51,585	55,774	56,434	66,163	69,273	74,014	80,985	88,217		
of which: foreign currency-denominated loans	21,658	23,250	22,431	28,140	28,534	29,280	31,378	33,961		
Nonbanks total	293,119	301,921	309,235	323,195	334,283	347,820	359,129	369,290		
of which: foreign currency-denominated loans	65,783	70,851	70,341	78,754	81,830	83,331	83,445	82,476		
Banks	168,915	183,949	182,416	199,908	201,117	218,833	230,320	264,871		
of which: foreign currency-denominated loans	x	54,593	49,569	58,368	56,915	62,313	62,467	46,049		

Source: OeNB.

Note: Due to breaks in the time series growth rates vary from the ones indicated in the text, which have been adjusted.

Table A19

Foreign Currency-Denominated Claims on Domestic Non-MFIs

End of period, % of total foreign currency-denominated claims on domestic non-MFIs¹

	2003		2004		2005		2006		2007	
	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30
Swiss franc	81.6	86.0	90.1	89.3	89.0	89.3	90.8	89.0		
Japanese yen	12.2	7.1	5.6	5.2	3.9	2.8	2.8	3.0		
U.S. dollar	5.0	5.6	3.6	4.8	6.3	6.8	5.5	5.7		
Other foreign currencies	1.2	1.3	0.7	0.6	0.8	1.1	0.9	2.3		

Source: OeNB, ECB.

¹ The indicated figures refer to claims of monetary financial institutions (MFIs, ESA definition) on domestic non-MFIs. Given the differences in the definition of credit institutions according to the Austrian Banking Act and of MFIs according to ESA and differences in the number of borrowers, comparability to "Claims on Domestic Nonbanks" is limited. Due to rounding, figures do not add up to 100.0% for every year.

Table A20

Loan Quality

	2003		2004		2005		2006		2007	
	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30
End of period, % of claims										
Specific loan loss provisions for loans to nonbanks	3.3	3.4	3.3	3.2	3.1	3.1	2.9	2.7		
Nonperforming loans	3.0	x	2.7	x	2.6	x	2.1	x		
End of period, % of tier 1 capital										
Nonperforming loans	59.2	x	53.1	x	52.6	x	42.1	x		

Source: OeNB.

Table A21

Market Risk¹

End of period, EUR million and %, respectively

	2003		2004		2005		2006		2007	
	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31
Interest rate risk										
Basel ratio for interest rate risk (%) ²	7.8	7.5	6.1	6.4	6.6	6.3	5.6	5.2		
Capital requirement for the position risk of interest rate instruments in the trading book	470.2	514.8	609.8	810.3	703.0	792.6	737.3	980.0		
Exchange rate risk										
Capital requirement for open foreign exchange positions	54.9	66.1	52.9	97.3	93.3	101.8	75.2	89.1		
Maximum open position in foreign exchange to capital (%) ³	2.2	1.1	2.1	3.4	3.2	2.8	3.8	4.8		
Equity price risk										
Capital requirement for the position risk of equities in the trading book	28.4	52.4	43.4	71.1	95.9	94.0	101.0	211.6		

Source: OeNB.

¹ The calculation of capital requirements for market risk combines the standardized approach and internal value-at-risk (VaR) calculations. The latter use previous day's values without taking account of the multiplier. Capital requirements for interest rate instruments and equities are computed by adding up both general and specific position risks.

² Average of the Basel ratio for interest rate risk (loss of present value following a parallel yield curve shift of all currencies by 200 basis points in relation to regulatory capital) weighted by total assets of all Austrian credit institutions excluding banks that operate branches in Austria under freedom of establishment. For banks with a securities trading book, interest rate instruments of the trading book are not included in the calculation.

³ The maximum open position in foreign exchange refers to the monthly peaks of the 12 currencies to be included in the monthly report. A net position is calculated for each currency across all banks. The absolute values of the net positions are added up across currencies.

Table A22

Liquidity Risk

End of period, %

	2003		2004		2005		2006		2007
	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	June 30
Liquid loans to short-term liabilities	x	x	x	69.7	65.4	67.4	66.2	70.1	
Liquid loans and other liquid assets minus creditlines to short-term liabilities	x	x	x	98.7	94.1	96.0	93.6	98.3	
Liquid resources of the first degree: 5% quantile of the ratio between available and required liquidity of degree ¹	179.8	170.5	171.6	171.8	178.6	173.0	152.4	134.4	
Liquid resources of the second degree: 5% quantile of the ratio between available and required liquidity of degree	125.5	128.5	121.7	121.7	118.5	118.7	111.5	114.1	

Source: OeNB.

¹ The liquidity ratio relates liquid assets to the corresponding liabilities. Article 25 of the Austrian Banking Act defines a minimum ratio of 2.5 % for liquid resources of the first degree (cash ratio) and of 20% for liquid resources of the second degree (quick ratio). The 5% quantile indicates the liquidity level surpassed by 95% of banks on the respective reporting date.

Table A23

SolvencyEnd of period, eligible capital and tier 1 capital, respectively,
as a percentage of risk-weighted assets

	2003		2004		2005		2006		2007
	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	June 30
Unconsolidated capital adequacy ratio ¹	14.5	14.8	14.7	14.8	14.7	15.4	15.1	17.0	
Unconsolidated tier 1 capital ratio	9.9	10.1	10.0	10.1	9.9	10.7	10.6	12.2	
Consolidated capital adequacy ratio	x	x	12.2	12.4	11.7	12.4	11.6	12.6	
Consolidated tier 1 capital ratio	x	x	8.3	8.7	8.1	8.9	8.1	9.1	

Source: OeNB.

¹ The capital adequacy ratio refers to the capital eligible as credit risk cover under the Austrian Banking Act (i.e. tier 1 capital plus tier 2 capital minus deduction items) as a percentage of the assessment base. As tier 3 capital is subordinated capital that may only be allocated against market risk, it was not included here so as to produce a conservative capital adequacy assessment.

Table A24

Assets Held by Austrian Insurance Companies¹

End of period, EUR million

	2003		2004		2005		2006		2007
	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	June 30
Cash, overnight and other deposits at domestic banks	2,106	1,744	2,516	2,472	2,570	3,218	2,359	1,867	
Domestic debt securities	9,101	9,175	8,909	9,238	9,309	9,840	10,237	10,606	
of which: domestic banks	6,824	6,938	7,068	7,519	7,647	8,021	8,415	8,642	
Equity securities and other domestic securities	15,204	15,987	17,359	19,387	21,208	21,754	23,575	23,699	
Loans	7,303	6,733	6,504	5,933	5,724	4,701	4,305	3,663	
of which: domestic banks	146	148	161	206	366	407	468	502	
Domestic equity interests	3,588	3,682	3,906	3,928	3,965	4,315	4,448	4,590	
Real estate	3,573	3,438	3,361	3,340	3,288	3,118	3,118	3,046	
Foreign assets	17,261	19,209	20,691	22,964	25,058	26,439	28,703	31,482	
of which: debt securities	12,755	14,979	15,648	17,002	18,230	19,333	20,360	21,161	
Custody account claims on deposits on reinsurers	2,149	..	2,260	..	2,163	..	2,136	..	
Other assets	3,548	4,068	3,594	4,361	4,048	5,199	4,192	4,936	
Total assets	63,833	65,927	69,100	73,433	77,333	80,339	83,073	85,625	

Source: OeNB.

¹ Semiannual data exclusive of reinsurance transactions, based on quarterly reports.

Table A25

Assets Held by Austrian Mutual Funds

End of period, EUR million

	2003		2004		2005		2006		2007	
	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30
Domestic securities	34,309	35,405	37,341	43,052	47,032	46,422	49,593	49,882		
of which: debt securities	19,436	19,058	19,025	20,545	20,350	18,302	17,632	15,892		
equity securities	14,873	16,347	18,316	22,507	26,682	28,120	31,961	33,990		
Foreign securities	69,435	75,707	80,505	91,473	100,367	102,876	109,306	112,816		
of which: debt securities	48,952	53,022	56,821	64,635	68,054	69,482	70,280	71,373		
equity securities	20,483	22,685	23,684	26,838	32,313	33,394	39,026	41,443		
Other assets	7,274	7,530	7,441	7,984	9,286	10,232	9,961	11,622		
Total assets	111,018	118,642	125,287	142,509	156,685	159,530	168,860	174,320		
of which: foreign currency	22,178	24,328	24,591	28,085	32,694	32,699	36,797	38,078		

Source: OeNB.

Table A26

Assets Held by Austrian Pension Funds

End of period, EUR million

	2003		2004		2005		2006		2007	
	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30
Domestic securities	8,267	8,770	9,179	9,744	10,112	10,074	10,742	10,901		
of which: federal treasury bills and notes	0	0	0	0	0	0	0	0		
debt securities	45	121	108	96	98	89	116	147		
mutual fund shares	8,159	8,607	9,019	9,579	9,949	9,921	10,589	10,722		
other securities	63	42	52	69	65	64	37	32		
Foreign securities	405	460	525	727	1,006	1,010	1,224	1,426		
of which: debt securities	44	15	27	69	74	81	73	91		
mutual fund shares	330	417	469	645	906	903	1,113	1,299		
other securities	31	28	29	13	26	26	38	36		
Deposits	221	72	125	95	113	150	173	270		
Loans	42	59	83	94	94	99	93	124		
Other assets	143	147	170	196	224	220	264	249		
Total assets	9,078	9,508	10,082	10,856	11,549	11,553	12,496	12,970		
of which: foreign currency	212	236	249	272	312	327	555	601		

Source: OeNB.

Table A27

Assets Held by Austrian Severance Funds									
End of period, EUR million									
	2003		2004		2005		2006		2007
	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	
Total direct investment	38.5	64.9	92.3	129.4	158.7	228.7	295.6	415.5	
of which: euro-denominated	38.2	64.0	89.2	122.5	153.8	223.3	288.4	390.5	
foreign currency-denominated	0.0	0.0	x	x	x	x	x	x	
accrued income claims from direct investment	0.4	0.9	x	2.0	3.2	2.4	4.2	4.6	
Total indirect investment	59.5	123.5	269.6	382.3	537.8	658.1	832.5	949.3	
of which: total of euro-denominated investment in mutual fund shares	59.2	122.8	266.6	370.4	490.4	608.1	781.4	877	
total of foreign currency-denominated investment in mutual fund shares	0.0	x	3.2	11.9	47.4	50.0	51.1	72.3	
Total assets assigned to investment groups	146.5	188.5	362.1	511.7	696.5	886.5	1,128.1	1,364.8	
of which: foreign currency-denominated	0.0	x	4.9	16.9	49.1	52.4	54.2	92.7	

Source: OeNB.

Note: Due to special balance sheet operations total assets assigned to investment groups deviate from the sum of total indirect investments.

Table A28

Transactions and System Disturbances in Payment and Securities Settlement Systems							
Number of transactions in million, value of transactions in EUR billion							
	2004		2005		2006		2007
	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	
ARTIS/TARGET							
Number	3.7	1.9	4.0	2.1	4.4	2.4	
Value	8,470.0	5,077.8	10,412.9	5,780.8	11,563.3	6,295.6	
System disturbances	4	0	8	1	2	3	
Securities settlement systems							
Number	1.0	0.8	1.9	1.7	3.0	1.8	
Value	187.9	157.3	309.8	267.1	448.6	330	
System disturbances	0	0	0	0	0	0	
Retail payment systems							
Number	377.9	197.4	412.3	216.5	448.5	237.8	
Value	31.5	15.5	31.1	16.9	35.3	18.3	
System disturbances	17	12	41	25	58	3	
Participation in international payment systems							
Number	8.8	5.9	12.0	7.5	16.8	10.2	
Value	1,101.1	562.0	1,127.4	702.2	1,468.8	868.9	
System disturbances	15	5	8	1	4	1	

Source: OeNB.

N O T E S

Abbreviations

ARTIS	Austrian Real Time Interbank Settlement (the Austrian RTGS system)	IHS	Institut für Höhere Studien und Wissenschaftliche Forschung – Institute for Advanced Studies, Vienna
A-SIT	Secure Information Technology Center – Austria	IIF	Institute of International Finance
ASVG	Allgemeines Sozialversicherungsgesetz – General Social Security Act	IIP	international investment position
A-Trust	A-Trust Gesellschaft für Sicherheitssysteme im elektronischen Datenverkehr GmbH	IMF	International Monetary Fund
ATX	Austrian Traded Index	ISO	International Organization for Standardization
BCBS	Basel Committee on Banking Supervision (BIS)	IWI	Industriewissenschaftliches Institut – Austrian Institute for Industrial Research
BIC	Bank Identifier Code	JVI	Joint Vienna Institute
BIS	Bank for International Settlements	LIBOR	London Interbank Offered Rate
BOP	balance of payments	M3	broad monetary aggregate M3
BSC	Banking Supervision Committee (ESCB)	MFI	monetary financial institution
CACs	collective action clauses	MRO	main refinancing operation
CEBS	Committee of European Banking Supervisors (EU)	MoU	memorandum of understanding
CEE	Central and Eastern Europe	NACE	Statistical Classification of Economic Activities in the European Community
CEECs	Central and Eastern European countries	NCB	national central bank
CESR	Committee of European Securities Regulators	OeBS	Oesterreichische Banknoten- und Sicherheitsdruck GmbH – Austrian Banknote and Security Printing Works
CIS	Commonwealth of Independent States	OECD	Organisation for Economic Co-operation and Development
CPI	consumer price index	OeKB	Oesterreichische Kontrollbank (Austria's main financial and information service provider for the export industry and the capital market)
EBA	Euro Banking Association	OeNB	Oesterreichische Nationalbank (Austria's central bank)
EBRD	European Bank for Reconstruction and Development	OPEC	Organization of the Petroleum Exporting Countries
EC	European Community	ÖBFA	Austrian Federal Financing Agency
ECB	European Central Bank	ÖNACE	Austrian Statistical Classification of Economic Activities
Ecofin	Council of Economic and Finance Ministers (EU)	POS	point of sale
EEA	European Economic Area	PRGF	Poverty Reduction and Growth Facility (IMF)
EFC	Economic and Financial Committee (EU)	RTGS	Real-Time Gross Settlement
EIB	European Investment Bank	SDR	Special Drawing Right (IMF)
EMS	European Monetary System	SDRM	Sovereign Debt Restructuring Mechanism (IMF)
EMU	Economic and Monetary Union	SEPA	Single Euro Payments Area
EONIA	Euro OverNight Index Average	SPF	Survey of Professional Forecasters
ERM II	Exchange Rate Mechanism II (EU)	STEP2	Straight-Through Euro Processing system offered by the Euro Banking Association
ERP	European Recovery Program	STUZZA	Studiengesellschaft für Zusammenarbeit im Zahlungsverkehr G.m.b.H. – Austrian Research Association for Payment Cooperation
ESA	European System of Accounts	S.W.I.F.T.	Society for Worldwide Interbank Financial Telecommunication
ESAF	Enhanced Structural Adjustment Facility (IMF)	TARGET	Trans-European Automated Real-time Gross settlement Express Transfer
ESCB	European System of Central Banks	Treaty	refers to the Treaty establishing the European Community
ESRI	Economic and Social Research Institute	UNCTAD	United Nations Conference on Trade and Development
EU	European Union	UNO	United Nations Organization
EURIBOR	Euro Interbank Offered Rate	VaR	Value at Risk
Eurostat	Statistical Office of the European Communities	WBI	Wiener Börse Index
FATF	Financial Action Task Force on Money Laundering	WEF	World Economic Forum
Fed	Federal Reserve System	WIFO	Österreichisches Institut für Wirtschaftsforschung – Austrian Institute of Economic Research
FMA	Financial Market Authority (for Austria)	WIIW	Wiener Institut für internationale Wirtschaftsvergleiche – The Vienna Institute for International Economic Studies
FOMC	Federal Open Market Committee (U.S.A.)	WKO	Wirtschaftskammer Österreich – Austrian Federal Economic Chamber
FSAP	Financial Sector Assessment Program (IMF)	WTO	World Trade Organization
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		

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

Working Papers about ten papers a year

The OeNB's *Working Paper* series is designed to disseminate, and provide a platform for discussing, findings of OeNB economists or outside contributors on topics which are of special interest to the OeNB. To ensure the high quality of their content, the contributions are subjected to an international refereeing process.

Economics Conference (Conference Proceedings) annual

The *Economics Conference* hosted by the OeNB 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* is a review of the OeNB's intellectual capital and its use in the OeNB's business processes and services. The report clarifies the relationships between different types of human, relational, structural and innovation capital and describes various determinants that influence the OeNB's intellectual capital. The report provides an integrated view of the OeNB and serves to assess the consistency of the OeNB's intellectual capital with its knowledge-based strategic orientation.

Publications on Banking Supervision

Guidelines on Credit Risk Management

The increasing use of innovative financial products such as securitization or credit derivatives and the further development of modern risk management methods lead to significant changes in the business environment of credit institutions. The credit sector is particularly affected by these innovations, with internal software systems and relevant business processes having to be adapted to cope with the new environment. “Guidelines on Credit Risk Management” is designed to assist in redesigning the systems and processes within a bank in the course of implementing Basel II.

Rating Models and Validation

www.oenb.at/en/img/rating_models_tcm16-22933.pdf

Best Practices in Risk Management for Securitized Products

www.oenb.at/en/img/lf_securit_engl_tcm16-23501.pdf and

Appendix B: Securitization Framework in Basel II

www.oenb.at/en/img/appendix_b_englisch_06122004_tcm16-23500.pdf

Credit Approval Process and Credit Risk Management

www.oenb.at/en/img/credit_approval_process_tcm16-23748.pdf

Credit Risk Models and Credit Derivatives

(By Gaal, A. and M. Plank. 1998. In: Focus on Austria 4/1998, OeNB.)

www.oenb.at/en/img/credit_risk_tcm16-11201.pdf

Legal Framework in Croatia

www.oenb.at/en/img/croatia_screen_tcm16-45599.pdf

Legal Framework in Poland

www.oenb.at/en/img/poland_screen_tcm16-45602.pdf

Legal Framework in Slovakia

www.oenb.at/en/img/slovakia_screen_tcm16-45603.pdf

Legal Framework in Slovenia

www.oenb.at/en/img/slovenia_screen_tcm16-45604.pdf

Legal Framework in Hungary

www.oenb.at/en/img/hungary_screen_tcm16-45600.pdf

Legal Framework in the Czech Republic

www.oenb.at/en/img/czech_republic_screen_tcm16-45601.pdf

Guidelines on Market Risk

Two volumes of this six-volume series of guidelines centering on the various facets of market risk provide information on how the Oesterreichische Nationalbank appraises value-at-risk models and on how it audits the standardized approach. The remaining four volumes discuss in depth stress testing for securities portfolios, the calculation of regulatory capital requirements to cover option risks, the general interest rate risk of debt instruments, and other risks associated with the trading book, including default and settlement risk.

General Market Risk of Debt Instruments

(2nd revised and extended edition) (Volume 1)

www.oenb.at/en/img/band1ev40_tcm16-20471.pdf

Standardized Approach Audits (Volume 2)

www.oenb.at/en/img/band2ev40_tcm16-20472.pdf

Evaluation of Value-at-Risk Models (Volume 3)

www.oenb.at/en/img/band3ev40_tcm16-20473.pdf

Provisions for Option Risks (Volume 4)

www.oenb.at/en/img/band4ev40_tcm16-20474.pdf

Stress Testing (Volume 5)

www.oenb.at/en/img/band5ev40_tcm16-20475.pdf

Other Risks Associated with the Trading Book (Volume 6)

www.oenb.at/en/img/band6ev40_tcm16-20476.pdf

Guidelines on Operational Risk Management and Bank-Wide Risk Management

Guidelines on Operational Risk Management

www.oenb.at/en/img/operational_risk_screen_tcm16-49652.pdf

These guidelines describe the features of operational risk, evaluate the significance of this risk category for banks and securities firms, and provide an overview of methods and measures adopted to control operational risks. The guidelines explore the major risk areas and risk control/limitation measures in line with the four causes of operational risk (people, systems, processes, external events) and also assess associated legal risks. Furthermore, the guidelines offer an overview of the methods used to calculate (quantitative and qualitative) capital requirements.

Guidelines on Bank-Wide Risk Management

www.oenb.at/en/img/lf_icaap_englisch_gesamt_tcm16-39190.pdf

The Guidelines on Bank-Wide Risk Management (Internal Capital Adequacy Assessment Process) give a detailed overview of assessment procedures in all major risk categories. They provide in-depth information on the different types of capital and their suitability for risk cover. Moreover, the guidelines present quantitative methods and procedures to determine the risk-bearing-capacity of a credit institution. A separate section highlights the significance of having a limit system in place that is adequate in a given risk scenario and underscores the need for efficient internal control mechanisms.

Other Publications**Structured Products Handbook**

www.oenb.at/en/img/phb_internet_tcm16-11173.pdf

The first part of the „Structured Products Handbook“ deals with structured bonds whose payoff properties depend on interest rate movements, and the following two parts focus on products whose payoff characteristics are shaped by equity prices and foreign exchange rates.

New Quantitative Models of Banking Supervision

www.oenb.at/en/img/new_quantitative_models_of_banking_supervision_tcm16-24132.pdf

Off-Site Analysis Framework of Austrian Banking Supervision – Austria Banking Business Analysis

www.oenb.at/en/img/offsiteanalysis_internet_tcm16-33280.pdf

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