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The OeNB's biannual *Financial Stability Report* provides regular analyses of Austrian and international developments with an impact on financial stability. In addition, it includes studies offering in-depth insights into specific topics related to financial stability.

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Contents

Foreword	4
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Reports

From Financial Crisis to Global Economic Crisis	8
Global Financial and Economic Crisis Hits Eastern Europe	10
Financial Crisis Hits the Real Economy	24
The Financial Crisis Takes Its Toll on the Austrian Financial System	33

Special Topics

A Review of the Impact of the Crisis on Austria's Financial Sector <i>Martin Schürz, Markus S. Schwaiger, Julia Übeleis</i>	54
EU Bank Packages: Objectives and Potential Conflicts of Objectives <i>Michaela Posch, Stefan W. Schmitz, Beat Weber</i>	63
Modeling Credit Risk through the Austrian Business Cycle: An Update of the OeNB Model <i>Michael Boss, Gerhard Fenz, Johannes Pann, Claus Pühr Martin Schneider, Eva Ubl</i>	85
Direct Cross-Border Lending by Austrian Banks to Eastern Europe <i>Claus Pühr, Markus S. Schwaiger, Michael Sigmund</i>	102
Banking and Financial Stability in Russia and the Euro Area amid International Financial Market Turbulences <i>Stephan Barisitz, Gernot Ebner, Mathias Lahnsteiner, Johannes Pann</i>	123

Annex of Tables	143
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Notes	159
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Opinions expressed by the authors of studies do not necessarily reflect the official viewpoint of the OeNB or of the Eurosystem.

Foreword

The financial crisis that emerged in a small segment of the U.S. financial market has since developed into a severe global economic crisis. Both economic policy makers and central banks have to find effective and innovative answers to this difficult situation.

The current problems have multiple causes. First and foremost, the probability of a crisis (an inherent phenomenon of any economy) was undoubtedly underestimated, resulting in both excessive optimism and too little caution. Inappropriate incentive structures were another key factor contributing to the depth of this crisis. Owing to their short-term focus on maximizing stock prices, market participants were excessively ready to take risks. Furthermore, awareness about the risks entailed in complex financial instruments was inadequate. Misperceptions existed, in particular, regarding the implications of these incentive structures for the risks underlying such instruments. The role of some supervisory bodies and central banks in the run-up to the crisis has also come under scrutiny, and for good reason: Far too little consideration had been given to the correlation between global macroeconomic developments and the risks of individual institutions. Overall, we can now say without a doubt that the build-up of risk buffers in the global financial system had been inadequate in the run-up to the crisis.

Regarding the interaction between the real economy and the financial economy, too little attention has been paid to the procyclicality of the financial system, which is a topical problem in the current situation. In particular, accounting practices – including e.g. fair value accounting or loan loss provisions – underwent a series of developments that should be revisited in the

light of the crisis (with the aim of reducing this procyclicality).

In view of the dramatic growth slowdown and major external imbalances in the region, Austria's financial sector made the headlines primarily because of its leading role in the financial sector of Eastern Europe. In fact, Austrian banks hold approximately 20% of Eastern European countries' foreign liabilities vis-à-vis EU-15 banks, which is the largest share both in absolute and GDP percentage terms. The situation in Eastern Europe has eased significantly thanks to intervention by the EU and the IMF. In addition, Austrian politics has shown through its flexible intervention that it can take action on this issue. Strict vigilance is nonetheless warranted, a fact of which both banking supervisors and the banks concerned are well aware. At the same time, it should also be remembered that about 85% of loans issued by Austrian bank subsidiaries in Eastern Europe are covered by local deposits and that around three-quarters of Austria's exposures in the region are to countries which are already EU Member States.

What is to be done to resolve the situation? The following strategic elements are essential: We need to adopt a more systemic approach to financial regulation and supervision and strengthen the focus on the macroprudential dimension. In particular, micro- and macroprudential supervision must be integrated more closely at a national, European and global level.

In the future, effective financial stability analysis will have to be about more than identifying key weaknesses in the financial system – we have to ensure that risk mitigation measures are taken with immediate effect. The results of financial stability analysis must be integrated to a greater extent into

ongoing banking supervision and the regulation of financial players' behavior. This also implies that we need to make changes in the regulatory environment. We therefore support the de Larosière report on Europe's new supervisory architecture and related EU initiatives. After all, these matters can only be resolved at the European level. Institutional cooperation between supervisors, central banks and international organizations such as the IMF or the Financial Stability Forum is another equally important success factor.

The key debate on the financial crisis is focused on achieving the most effective regulation possible based on the lessons learned from the current crisis. At an international level, this discussion includes considerations about the degree of supervision to which major systemically important financial institutions (that are considered to be too big to fail) are subjected. Moreover, there are already specific proposals for more effective supervisory structures, such as the European Systemic Risk Board (ESRB), which has already been

approved by the European Council and assigns a greater supervisory role to the European System of Central Banks. There is an undisputed consensus that concealing risks in off balance sheet conduits must be impossible for market participants who are already subject to regulation. The same consensus exists regarding the well-founded call for greater transparency and increased disclosure duties for the financial sector as a whole.

The economic downturn in Austria has been severe and the fastest the country has experienced in a long time. The Austrian government reacted with a comprehensive flexible-use bank support package. Overall, Austria is well on track thanks to the fact that the country's supervisory architecture was restructured as early as 2007. Financial stability analysis plays an even more important role than ever before in this architecture. Central banks make a highly valuable contribution to the stability of the financial system and, for this reason, must safeguard their own independence.

Ewald Nowotny, Governor
Andreas Ittner, Executive Director

Reports

From Financial Crisis to Global Economic Crisis

World Economy Enters Deep Recession

The current global financial and economic crisis is posing extraordinary challenges for economic policy makers. This is because the crisis is global, its occurrence was sudden and the recession reached a scale not seen in recent decades.

In response, monetary and economic policies treaded new paths in both managing and combating the crisis. Central banks countered disruptions in financial markets by introducing extraordinary and historically unparalleled measures. Key policy rates worldwide are currently at historically very low levels. Moreover, a number of quantitative measures were established to support lending. This economic policy intervention basically had a two-pronged strategy: on the one hand, to stabilize the financial sector and, on the other hand, to develop economic stimulus packages given the swift spillover of the financial crisis into the real economy.

Dynamic measures implemented by central banks and governments prevented the financial crisis from escalating further. In spring 2009, early signs of stabilization were evident in international financial markets. Equity markets rallied modestly, and the spreads between money market and key interest rates narrowed from record highs.

In addition, the U.S.A., which was the first country to introduce comprehensive economic stimulus packages, witnessed the first signs of a possible stabilization of the economy. In the euro area, by contrast, the recession deepened in the first six months of 2009, and the outlook for the rest of the year remains bleak.

The repercussions of the recession also reached Central, Eastern and Southeastern European (CESEE) economies. The recession in this region is attributable to general factors such as the tightening of external financing conditions and the decline in external demand, as well as to specific circumstances in certain countries' situation at the start of the crisis (overheating of domestic demand, high external imbalances). Owing to the stabilization of international financial markets and to the economic support measures of the EU, the G-20 and international financial institutions, the financial markets of the emerging economies rallied modestly from March 2009.

Economic Downturn in Austria

The international economic crisis also reached the Austrian economy, with Austrian real GDP declining since the fourth quarter of 2008. The strength and speed of the downturn exceeded those of the country's previous recessions by a wide margin. Tax reform and economic stimulus packages should help stabilize the economy during the rest of 2009.

The financial crisis also adversely affected corporate financing conditions. In particular, borrowing in the equity market almost came to a standstill. Although bank lending continued to grow, banks tightened their credit standards and have been factoring in borrowers' risk-bearing capacity and their economic prospects more strongly into their lending decisions. Financing costs, which had risen markedly up to fall 2008, have thus far fallen in 2009. However, increased drawing of credit facilities deepened corporate debt and, after years of rising, capital ratios decreased in 2008.

The recession did not leave household balance sheets unscathed and, in this context, materialized especially in the form of heavy valuation losses for capital market securities. These losses not only affected households' financial assets but also had an impact on both funded pensions, which have become more important in recent years, and the repayment vehicles of bullet loans. New household borrowing, by contrast, went down significantly. However, the foreign currency share of household financing remained high.

Austrian Banks Increasingly Affected by Recession

The financial crisis and the downturn in the real economy had a clearly adverse effect on banks' profitability. In particular, marked valuation losses in trading income and higher loan loss provisions reduced profitability. In 2008, nevertheless, the Austrian banking system still generated a profit, albeit a considerably diminished one.

The CESEE business of banks active in the region accounted for a significant share of this profitability. Profits generated in this segment largely offset falling profits in others. In view of the gloomy economic outlook, international financial markets' risk aversion to this region increased sharply. Austrian banks' investment in CESEE countries increasingly came under the spotlight of critical international atten-

tion. This group of countries should not, however, be seen as a homogeneous region. Instead, the financial crisis affected individual countries to widely varying degrees. Furthermore, the activities of the IMF and the EU in the region created confidence and helped reduce significantly the likelihood of extremely negative developments.

Liquidity constraints, which marked bank refinancing in autumn 2008, became weaker, but have so far remained at historically high levels. Admittedly, in view of increasing feedback effects on the real economy from the financial system, the deterioration of Austrian banks' loan portfolio in both CESEE and Austria has only just begun.

However, the implementation of the bank support package helped prepare banks for an increase in loan loss provisions. Since the fourth quarter of 2008, both capital ratios and core capital ratios, after decreasing in previous periods, have risen via increased internal financing (retained earnings) and external financing (by core shareholders and by means of government participation capital).

To date, banks have been the financial intermediaries hardest hit by the crisis. However, the financial crisis also squeezed the investment results of insurance companies, investment funds and pension funds.

Global Financial and Economic Crisis Hits Eastern Europe

Industrialized Countries: IMF Sees Economic Contraction

The *industrialized countries* have been in recession since mid-2008. According to the IMF's April 2009 World Economic Outlook, it is the deepest and most synchronized recession of the postwar period. The industrialized economies are expected to shrink by 3.8% in 2009, and global trade is anticipated to plunge by 11%. For 2010, the IMF predicts both growth and global trade volumes to stagnate.

While real GDP in the *U.S.A.* continued to contract in the first quarter of 2009, there were also some signs of a possible stabilization. Industrial production declined again, shrinking by 1.5% in March compared with the previous month. Real estate prices continued to slump, too, albeit at a slightly slower pace than before according to the Case-Shiller Index. The labor market situation again deteriorated markedly, with the unemployment rate climbing to 8.5% in March. While the annual inflation rate dipped

in March for the first time since 1955 (−0.4%), the core rate (which excludes energy and food prices) still came to 1.8%. Against this background, the Fed expanded its unconventional policy tools. To help improve conditions in the credit markets, the Federal Open Market Committee (FOMC) decided on March 17 and 18, 2009, to increase its purchases of mortgage-backed securities and unsecured bonds issued by federal housing agencies to a total of USD 1.45 trillion. Moreover, the Fed will purchase up to USD 300 billion of longer-term Treasury securities to help cut long-term interest rates.

In the *euro area*, too, the recession has deepened, with real GDP shrinking by 2.5% in the first quarter of 2009 compared with the previous quarter. The unemployment rate rose to 8.9% in March, a significantly higher value than last year. Annual HICP inflation stood at 0.6% in April. On May 7, 2009, the Governing Council of the ECB decided to lower the key interest rate by another 25 basis points to

Table 1

IMF World Economic Outlook: Industrialized Countries

	GDP (real annual change)					CPI (annual change)					Current account		
	Oct. 08	Apr. 09	Oct. 08	Apr. 09		Oct. 08	Apr. 09	Oct. 08	Apr. 09		Apr. 09		
	2008 ¹	2008	2009 ¹	2009 ¹	2010 ¹	2008 ¹	2008	2009 ¹	2009 ¹	2010 ¹	2008	2009 ¹	2010 ¹
	%					%					% of GDP		
Industrialized countries	1.5	0.9	0.5	-3.8	0.0	3.6	3.4	2.0	-0.2	0.3	-1.1	-1.0	-1.0
U.S.A.	1.6	1.1	0.1	-2.8	0.0	4.2	3.8	1.8	-0.9	-0.1	-4.7	-2.8	-2.8
Euro area	1.3	0.9	0.2	-4.2	-0.4	3.5	3.3	1.9	0.4	0.6	-0.7	-1.1	-1.2
Germany	1.8	1.3	0.0	-5.6	-1.0	2.9	2.8	1.4	0.1	-0.4	6.4	2.3	2.4
France	0.8	0.7	0.2	-3.0	0.4	3.4	3.2	1.6	0.5	1.0	-1.6	-0.4	-0.9
Italy	-0.1	-1.0	-0.2	-4.4	-0.4	3.4	3.5	1.9	0.7	0.6	-3.2	-3.0	-3.1
Austria	2.0	1.8	0.8	-3.0	0.2	3.5	3.2	2.3	0.5	1.3	2.9	1.3	1.3
United Kingdom	1.0	0.7	-0.1	-4.1	-0.4	3.8	3.6	2.9	1.5	0.8	-1.7	-2.0	-1.5
Japan	0.7	-0.6	0.5	-6.2	0.5	1.6	1.4	0.9	-1.0	-0.6	3.2	1.5	1.2

Source: IMF (World Economic Outlook), October 2008 and April 2009.

¹ Forecast.

1.00%, which means that the ECB's key rate has been cut by 1.5 percentage points since the beginning of the year. Subsiding inflationary pressures allowed the ECB to continue monetary easing in response to the deteriorating economic outlook.

Japan is afflicted by the worst recession of the postwar period. In the fourth quarter of 2008, GDP was down by as much as 3.8% on the previous quarter and shrank by another 4.0% in the first quarter of 2009. In February 2009, both CPI and core inflation stood at -0.1%. At its meeting in early April, the Bank of Japan (BoJ) left its key interest rate unchanged at 0.1%. To strengthen financial institutions' capital base and thus improve their scope for lending, the BoJ is buying highly rated short-term debt securities as well as highly rated corporate bonds from commercial banks. Since early March 2009, banks have also had the opportunity to sell equity holdings to the BoJ.

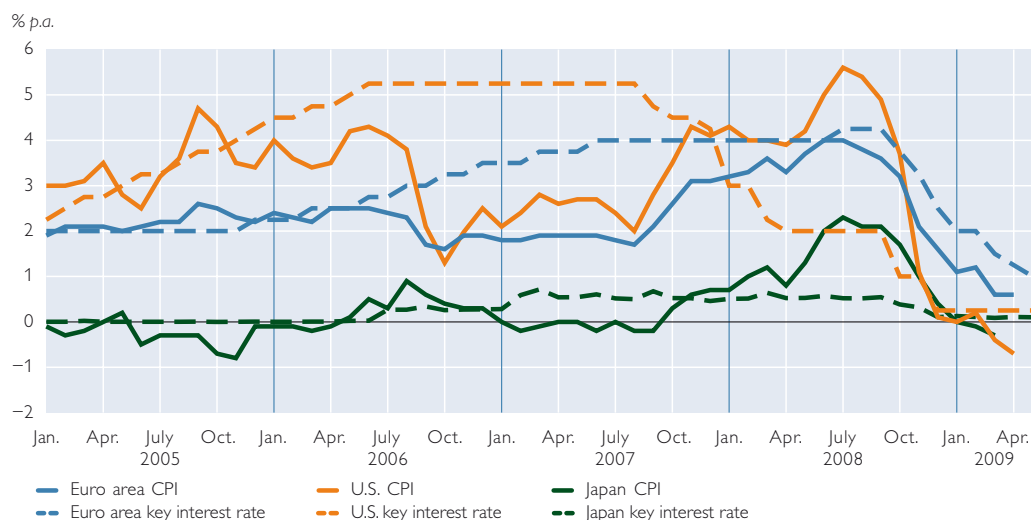
In U.S. and euro area *money markets*, the measures taken by central banks and governments caused tensions

to moderate and interest rates to drop. In April and May 2009, the three-month EURIBOR and the U.S. dollar three-month LIBOR came in at about 1%. In U.S. and euro area bond markets, ten-year *government bond* yields tended to move sideways in recent months.

Yields dropped markedly when the Fed announced it would purchase large volumes of government bonds in the secondary market. After that, long-term U.S. yields climbed again as stock markets stabilized. In the ten-year segment, the yield spreads between German bunds and government bonds issued by other euro area countries widened to high levels until February 2009 and then narrowed again. The highest value recorded for Austria was 100 basis points. The financial crisis also led to a substantial rise in yield spreads on *corporate bonds* in the U.S.A. and the euro area, which declined again significantly in April, though, especially those on AAA bonds. Since March 2009, international *stock markets* have recovered from a several-year low.

Chart 1

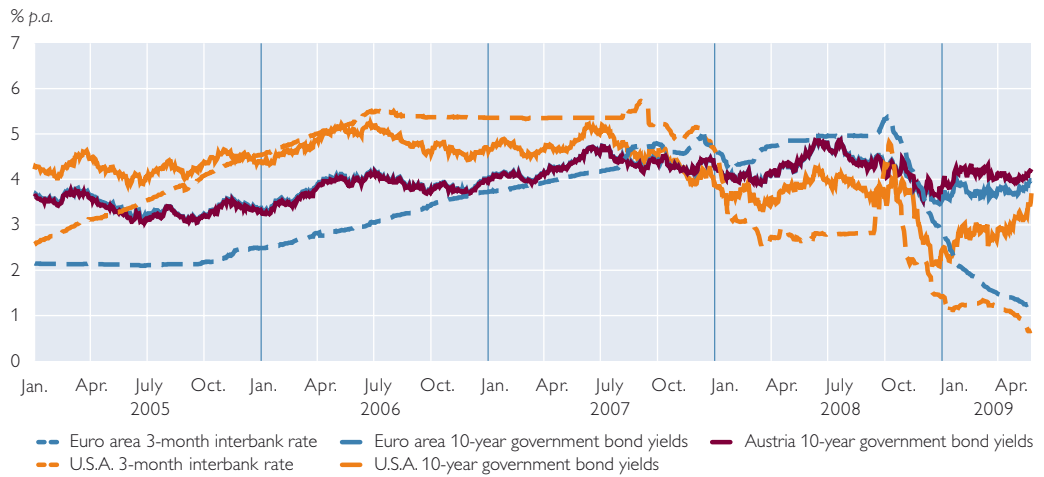
Euro Area, U.S.A. and Japan: Inflation and Key Interest Rates



Source: Eurostat, national statistical offices, Thomson Reuters, OeNB.

Chart 2

Euro Area, U.S.A. and Austria: 3-Month Interbank Rates and 10-Year Government Bond Yields



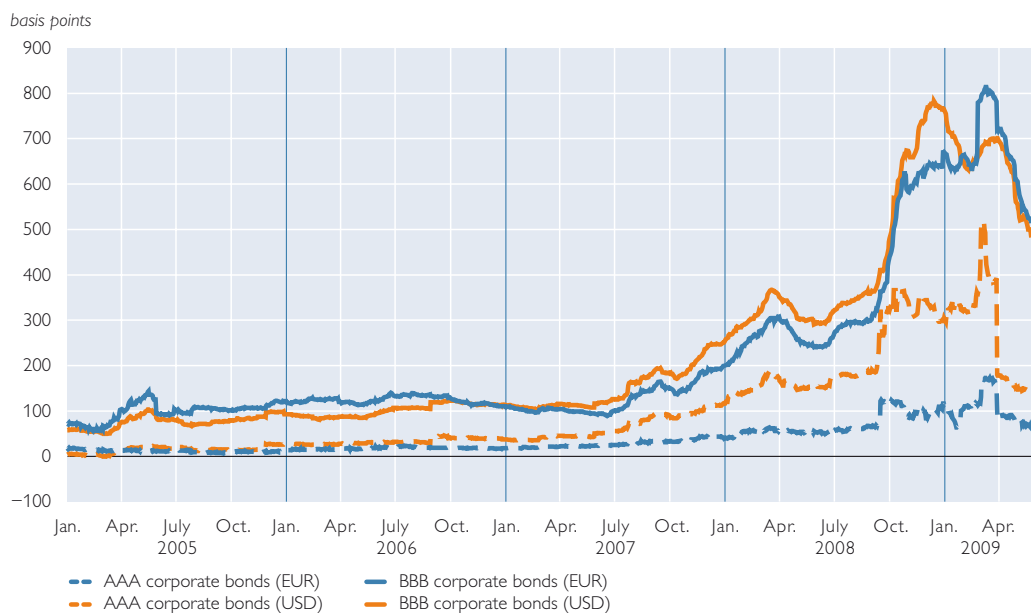
Source: Thomson Reuters, OeNB.

In the euro area, the stock market index rose by about 30% from early March to end of May, with banks' and insurance companies' stocks performing significantly above average. This sharp rise was driven by announce-

ments that the U.S. authorities would launch further support packages, by several banks reporting favorable results, and by the outcome of the G-20 summit.

Chart 3

Euro Area and U.S.A.: Spreads between 7- to 10-Year Corporate Bonds and Government Bonds

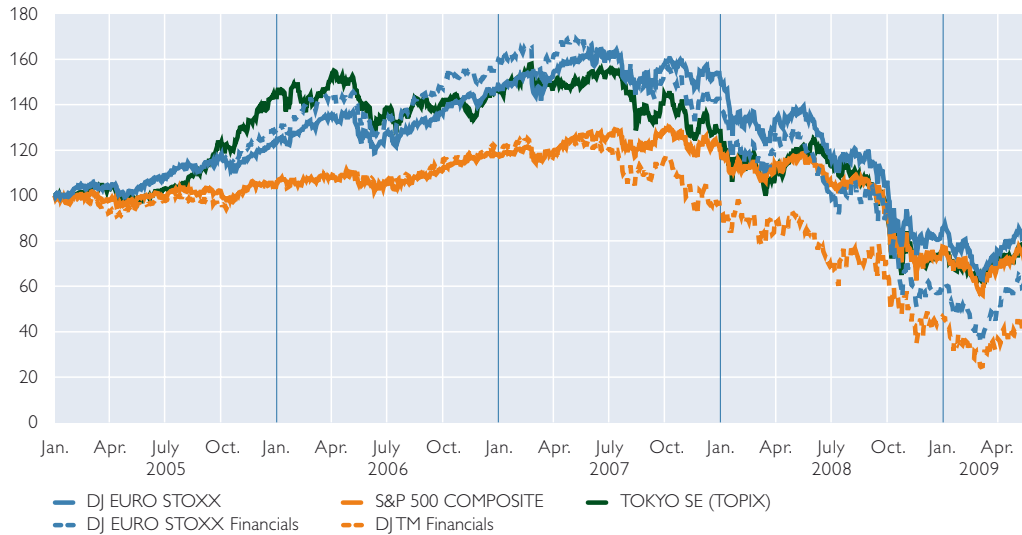


Source: Thomson Reuters, OeNB.

Chart 4

Euro Area, U.S.A. and Japan: Stock Market Indices and Bank Stock Subindices

January 1, 2005 = 100



Source: Thomson Reuters, OeNB.

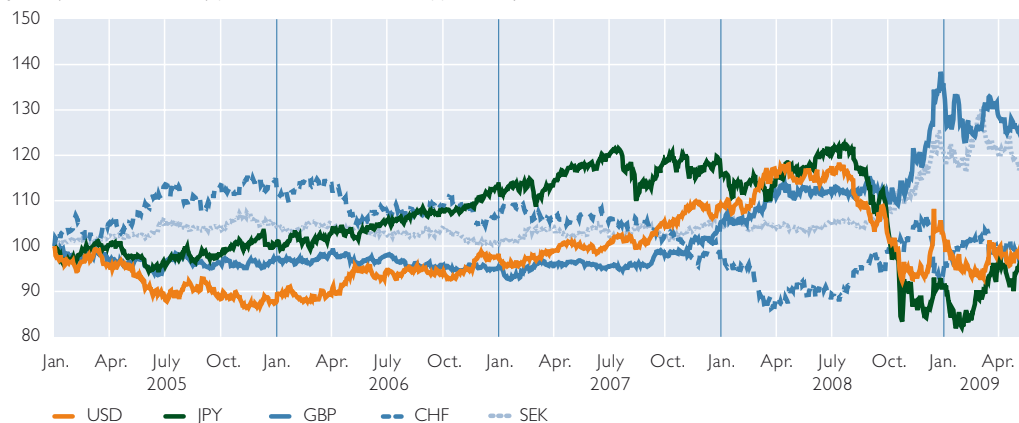
In *foreign exchange markets*, the USD/EUR exchange rate moved sideways amid temporarily large fluctuations, which reflected differing expectations about the relative economic

outlook. The Japanese yen and the Swiss franc continued to be affected by fluctuations in international investors' risk appetite.

Chart 5

Industrialized Countries: Exchange Rates against the Euro

January 1, 2005 = 100 (upward movement = euro appreciation)



Source: Thomson Reuters, OeNB.

Note: In national currency per unit of euro.

Comparing Developments in Central, Eastern and Southeastern Europe with Other Emerging Market Economies

The global financial and economic crisis triggered by the U.S. subprime crisis has affected emerging market economies (EMEs) through both financial sector and real economy channels. Looking at EME regions, the IMF predicts that, like the industrialized countries, the Commonwealth of Independent States (CIS), CESEE (excluding CIS) and Latin America will be in recession in 2009. In the CIS, this recession is expected to be deepest and, in particular, more severe than in the industrialized countries. For the other regions (Middle East, Africa, Asia), the IMF predicts growth to slow down sharply but remain positive.

Differences between the individual countries of a region are partly substantial, though. Developments in aggre-

gate Asia, for instance, are dominated by China's economic weight. Similarly, CESEE is anything but a homogeneous region – the differences between individual countries are huge. The IMF expects that, apart from the Baltic states, Romania will experience the largest decline in GDP growth from 2008 to 2009 and will be affected by the deepest recession in the region. Still, contrary to expected GDP developments in the Baltic and CIS countries, Romanian GDP is not forecast to shrink more sharply than euro area GDP. According to this outlook, the CESEE countries will likely be able to maintain the level they achieved in recent years in catching up with average per-capita income in the euro area. However, this outlook also takes into account the effect of international support packages for some countries of the region (e.g. Romania, Serbia and Latvia).

Chart 6

GDP Forecast

Annual changes in %, at constant prices



Source: IMF (World Economic Outlook), April 2009.

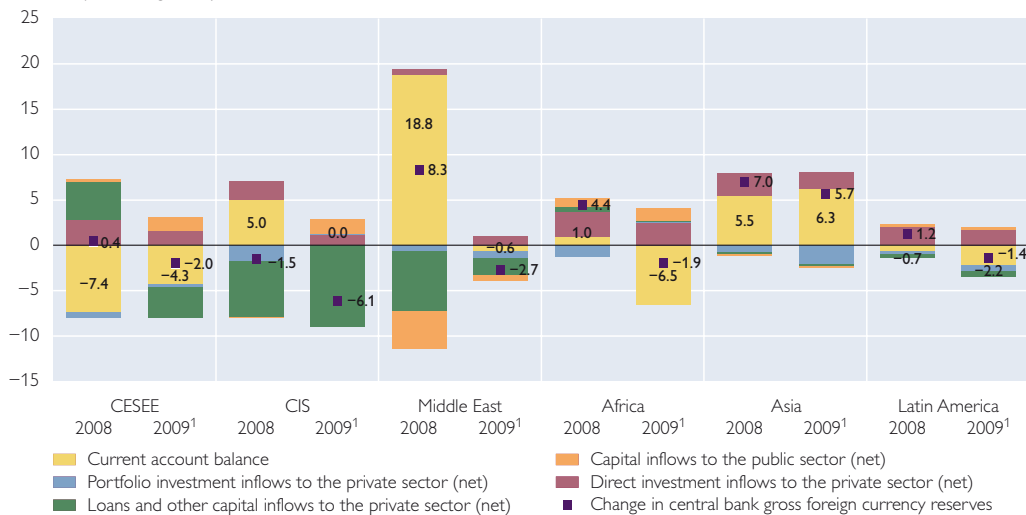
¹ Forecast.

Note: CESEE aggregate excluding European CIS countries.

Chart 7

Emerging Markets: Current Account Balances and Net Capital Inflows

% of GDP (at exchange rates)



Source: IMF, OeNB.

¹ Forecast.

Note: Negative net capital inflows (to the public sector) refer to net capital outflows from the public sector to the industrialized countries. Positive values for the change in official gross reserves indicate an increase. CESEE aggregate excluding European CIS countries; Asia aggregate including South Korea, Taiwan, Hong Kong and Singapore.

The extent to which individual emerging market economies or entire regions are affected by the financial and economic crisis depends on these economies' *structures and degree of openness*, among other things. Since most of the CESEE countries are highly open economies that have already achieved an especially high degree of economic integration (in terms of financing and the real economy) as well as institutional and political integration with the larger European economic area, developments in CESEE economies have closely followed those of the euro area and the EU-15. The CIS has been severely affected by the massive withdrawal of foreign credit and by the decline in commodity prices. The latter has also played a decisive role in the Middle East (where the current account surplus has disappeared as in CESEE) and in Africa (where a current account deficit has emerged). How severely a country is

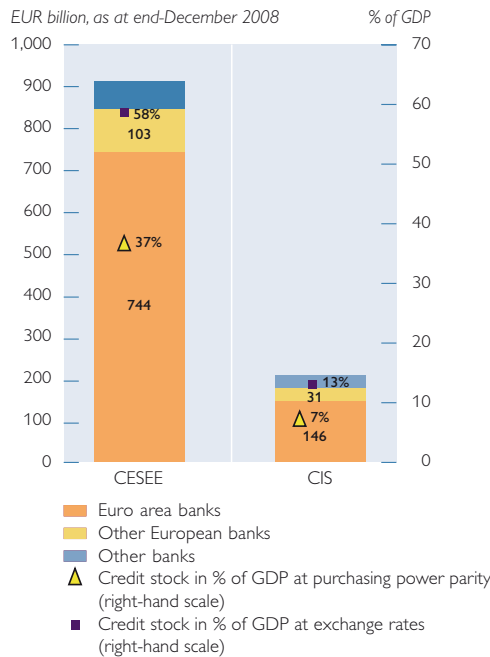
hit by the crisis also depends on the *magnitude of imbalances before the onset of the crisis*. Countries that posted high current account surpluses in the past and thus accumulated large foreign reserves now have better means to address current developments proactively. In some CESEE countries, however, the current account deficits were not just a result of the catching-up process and of deepening integration – they were also due to overheating domestic demand.

Among total *credit claims on emerging markets held by BIS reporting banks* (which are mainly based in industrialized countries), claims on CESEE (excluding CIS) are particularly high – both in euro and as a percentage of the recipient region's GDP.¹ The large exposure to this region is mainly attributable to the fact that banks reporting to the BIS (especially banks from the euro area) own almost the entire banking sectors

¹ Credit extended to offshore centers is even higher, though.

Chart 8

Domestic and Cross-Border Credit to CESEE and CIS Regions by BIS-Reporting Banks



Source: BIS, IMF, OeNB.

Note: CESEE excluding European CIS countries; proxy for euro area banks (including Danish and Norwegian banks, excluding banks from Luxembourg); points: credit stock in % of GDP of the recipient region (right-hand scale).

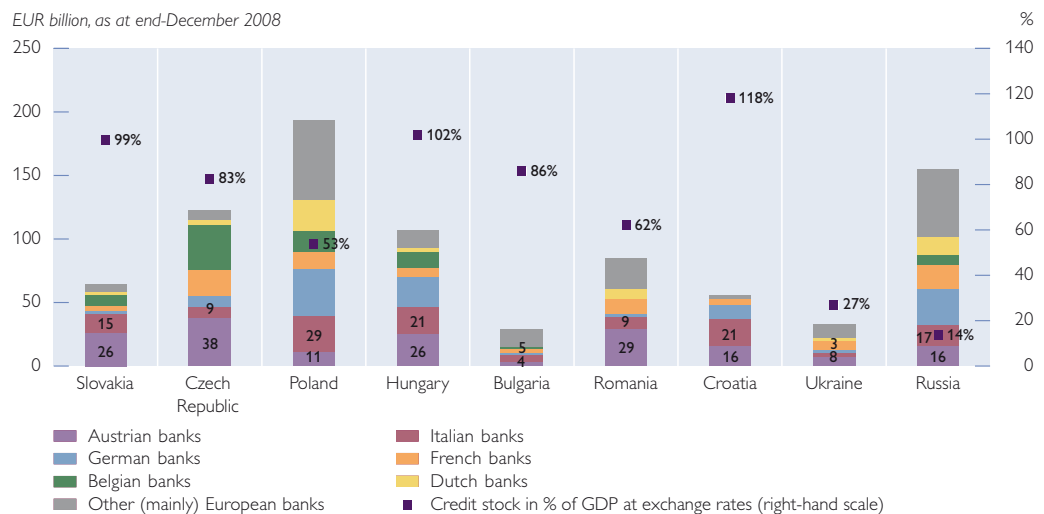
of most CESEE countries; therefore, the volume of claims outstanding is enhanced by domestic credit that is funded through domestic deposits. Among the banks reporting to the BIS, Austrian, Italian, German and French banks have substantial claims on most CESEE countries, while banks from Belgium and the Netherlands have substantial claims on individual countries of the region, and Swedish banks are particularly exposed to the Baltic countries.

Developments in *emerging market economies' financial markets (stock markets, euro bond markets)* are characterized, on the one hand, by large differences between countries (also within one region) in both boom and bust cycles.

On the other hand, the underlying pattern is clearly driven by developments in the industrialized countries and the associated risk appetite trends. The price gains and the decline in yield spreads observed since February 2009

Chart 9

Domestic and Cross-Border Credit to CESEE and CIS Countries by BIS-Reporting Banks

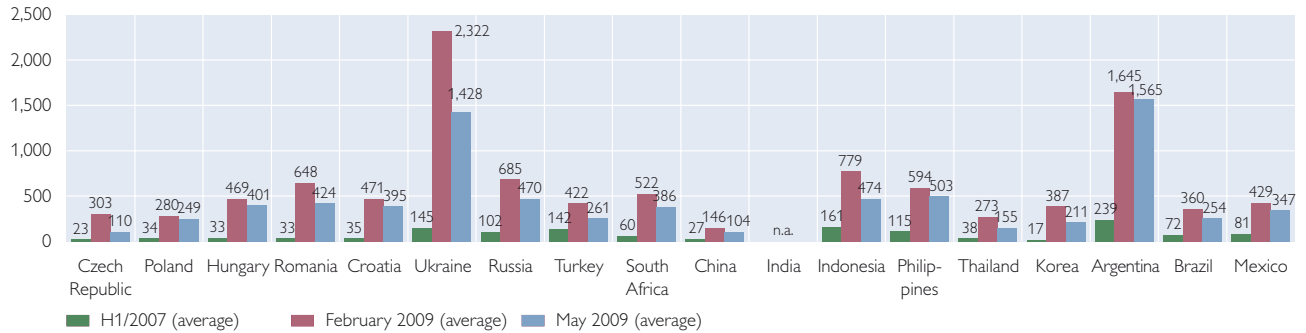


Source: BIS, IMF, OeNB.

Note: Austrian banks excluding UniCredit Bank Austria (assigned to Italy) and Hypo Group Alpe Adria (assigned to Germany). Points: credit stock in % of GDP (at exchange rates) of the recipient country (right-hand scale).

Emerging Markets: Spreads on Sovereign Eurobonds in Foreign Currency

JP Morgan Euro Emerging Market Bond Index (Euro EMBI) spread, level in basis points



Source: Bloomberg, Thomson Reuters, OeNB.

Note: Spreads refer to yield spreads vis-à-vis euro area government bonds of the same maturity. Russia, Indonesia and Argentina: (USD-based) EMBI and U.S. government bonds; Czech Republic, Thailand and Korea: 5-year sovereign CDS premia serve as a proxy.

partly reflect (preparations for) the G-20 decisions taken in early April (additional IMF funds and new IMF facilities), the increase in the EU balance of payments support facility and specific agreements on IMF and/or EU credit lines with individual countries of the region.

CESEE: International Financial and Economic Crisis Causes Recession and an Adjustment of Imbalances

The global financial and economic crisis has led to a slump in growth in CESEE (here including European CIS countries), with annual *real GDP growth* dropping in all countries in the fourth quarter of 2008 compared with the previous quarter. The downturn was especially pronounced in Romania and Ukraine and led to negative growth in Hungary and Ukraine, which was mainly attributable to a sharp decline in export demand (notably due to a fall in euro area imports) and to slower growth of domestic demand (in particular investments). In the first quarter of 2009, the downturn intensified in tandem with developments in the euro area, and almost all CESEE countries were in a recession as measured by an-

nual GDP change (albeit to markedly different degrees). Poland was the only country to post a rise in annual GDP (+1.9%).

Ukraine was among the countries that were hit hardest by the crisis (in addition to political uncertainties), with GDP tumbling by 8% in the fourth quarter of 2008. In February, the IMF suspended the release of the second tranche of a EUR 12.8 billion loan to Ukraine that had been agreed upon in November 2008. In early May, an agreement was reached to adjust the loan terms and a higher tranche than originally scheduled (EUR 2.1 billion instead of 1.5 billion) was disbursed. *Romania* secured a EUR 20 billion loan with a maturity of 24 months from international financial institutions and the EU in March 2009. On May 4, 2009, the IMF approved its EUR 12.9 billion share in that agreement; EUR 4.9 billion of this amount was made available immediately. In addition to loans under Stand-By Arrangements, which are only disbursed in tranches provided the recipients gradually fulfill certain conditions, the IMF introduced a Flexible Credit Line facility for countries with very strong fundamentals (ex ante conditionality) in late March

2009. On May 6, 2009, the IMF gave Poland unlimited access to a one-year flexible credit line in the amount of EUR 15.4 billion.

In 2008, the Southeastern European countries (notably Bulgaria) posted large deficits in the *combined current and capital account* that were primarily due to the goods and services balance. In Romania, the deficit was slightly smaller than in 2007, partly because of a depreciation of the leu. In Ukraine, the deficit rose as a result of plummeting steel prices, higher oil and gas import prices as well as overheating domestic demand in the first half of 2008. A drastic reduction of imbalances was reported for several countries in the first quarter of 2009. As goods and services imports dropped more sharply than exports, the current account deficit of Ukraine declined by 72% compared with 2008, while that of Romania and Bulgaria fell by 76% and 56%, respectively (Poland –80%). In Russia, the current account surplus shrank from EUR 25 billion to EUR 8 billion.

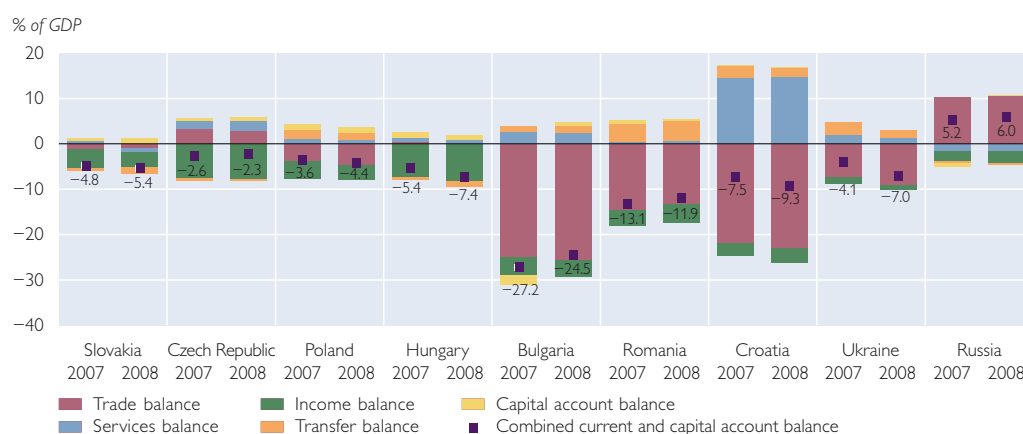
Only in the Czech Republic, *foreign direct investment* in 2008 still more than

offset the combined current and capital account deficit. The coverage level declined markedly in Bulgaria, Croatia, Ukraine and Poland, which implied *ceteris paribus* a higher demand for external funding (new debt).

Among the *currencies* of the CESEE countries here under study, only the Romanian leu depreciated significantly against the euro in the period from the onset of the financial market turbulence in mid-2007 to the collapse of Lehman Brothers in September 2008, whereas the Czech koruna and the Polish zloty still appreciated strongly in that period. After that, however, the Polish zloty, the Czech koruna and the Hungarian forint depreciated sharply against the euro until mid-February 2009. While these developments were partly attributable to general factors (an overall rise in risk aversion, the deleveraging of risky assets by internationally active financial institutions and the deterioration of the (export) growth outlook), specific factors also played a role (e.g. losses on foreign exchange options in Poland, and the supportive effect of the credit agreement with the IMF and the EU as well as of increases

Chart 11

Current and Capital Account Balances and Components



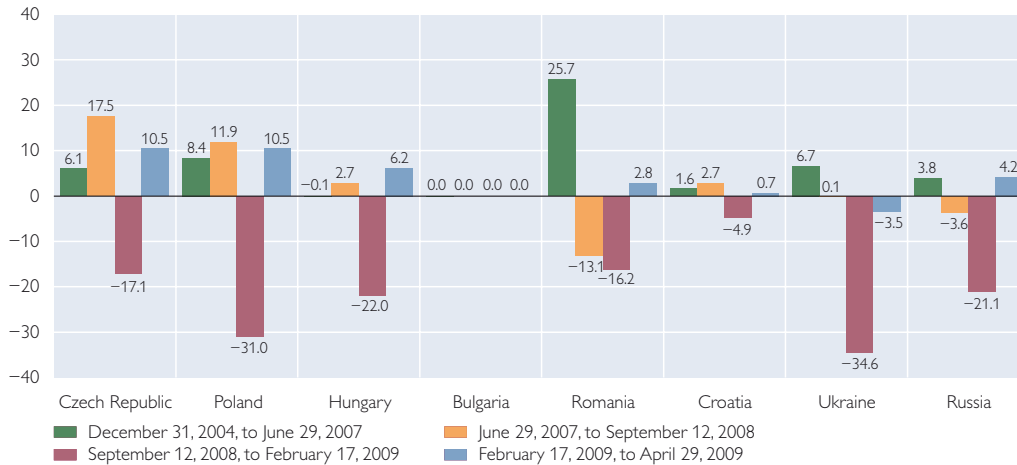
Source: Eurostat, national central banks, OeNB.

Note: Points refer to the combined current and capital account balance (sum of subaccounts) in % of GDP.

Chart 12

National Currencies and the Euro

Euro per unit of the respective national currency change in %



Source: Thomson Reuters, OeNB.

in key interest rates in Hungary). In Romania and Croatia, the currency depreciation was slowed down by central bank interventions. The Russian ruble also depreciated markedly in relation to the central bank's dual-currency basket (45% euro, 55% U.S. dollar), driven by the decline in oil prices and by capital outflows that had started already during the armed conflict with Georgia. Between November 2008 and January 2009, the Central Bank of the Russian Federation gradually widened the trading band against the basket, thus permitting a controlled depreciation of the currency. The Ukrainian hryvnia reached its low already in December 2008. Since then, the National Bank of Ukraine has managed to prevent the currency from tumbling further by making interventions and regulatory changes. While currency depreciations may support growth in the depreciating countries with some lag by fueling net exports (provided that the resulting losses on foreign exchange options do not weaken export businesses), they also have a negative impact on domestic demand in coun-

tries where a large share of household debt is denominated in foreign currency. Between February and May 2009, most of the currencies that had depreciated previously stabilized or even appreciated slightly in parallel to international developments.

Falling energy and food prices and the onset of recession had a dampening effect on *price developments*, which more than offset the inflationary effect of currency depreciation. Inflation declined sharply above all in Bulgaria and Croatia, two countries whose currencies had depreciated only slightly or not at all because of their currency regimes. In the first quarter of 2009, only Ukraine and Russia still posted double-digit inflation rates.

According to the spring forecast of the European Commission, the recession will lead to the widening or the emergence (Bulgaria and Russia) of *fiscal deficits* in all countries of the region in 2009. This is chiefly attributable to automatic stabilizers and only partly to discretionary measures. The latter play a role above all in Russia (accounting for more than 4% of GDP)

and Poland (where tax reductions that were scheduled some time ago will become effective). Public debt will continue to rise from relatively high levels first and foremost in Hungary, but also in Poland. Obtaining funding from capital markets is also difficult for countries with lower public debt levels, though. Loan arrangements with the IMF and the EU have helped to fill this gap for Romania and Ukraine.

In April 2009, government financing costs as measured by the *yields on ten-year government bonds in national currency* remained unchanged from August 2008 in Slovakia and (because of key interest rate cuts) in Poland. In light of lower average yields in the euro area, spreads (reflecting sovereign risk and exchange rate risk) have widened for these countries, as well. In the other CESEE countries, yields and spreads have risen markedly. In Romania and Hungary, this was also ascribable to higher *short-term interbank rates* as a result of (partly foreign exchange intervention-related) liquidity bottlenecks and key interest rate hikes to stabilize the currency. Hungary's key rate was lifted by 3 percentage points to 11.5% in October 2008 and then cut in several steps to reach 9.5% in January 2009. After raising the key interest rate by 0.25 percentage points to 10.25% in early August 2008, Romania's central bank waited until early February 2009 to cut the key interest rate by the same amount to 10.0% and reduced it further to 9.5% in early May 2009. Following the conclusion of the credit arrangement with the IMF and the EU, the central bank decided on March 31, 2009, to lower the reserve ratio for liabilities denominated in foreign currency with a residual maturity of more than two years from 40% to 0%, thus continuing monetary easing. In the Czech Republic and Poland, interbank

rates have declined thanks to key interest rate cuts by 200 basis points and 225 basis points, respectively, that were made since August 2008.

Among the CESEE countries, the *degree of intermediation* (as measured by the stock of domestic credit to the private sector as a ratio of GDP) is highest in Hungary, Bulgaria, Croatia and Ukraine; but even in these countries, intermediation is still markedly below the euro area average. This group also reports a large share of foreign currency credit in both credit to households and total (domestic and cross-border) corporate credit; Hungary, Bulgaria and Croatia also post the largest stock of cross-border corporate credit in the region. Only Croatia reported a considerable decline in the share of foreign currency credit to households over the past few years.

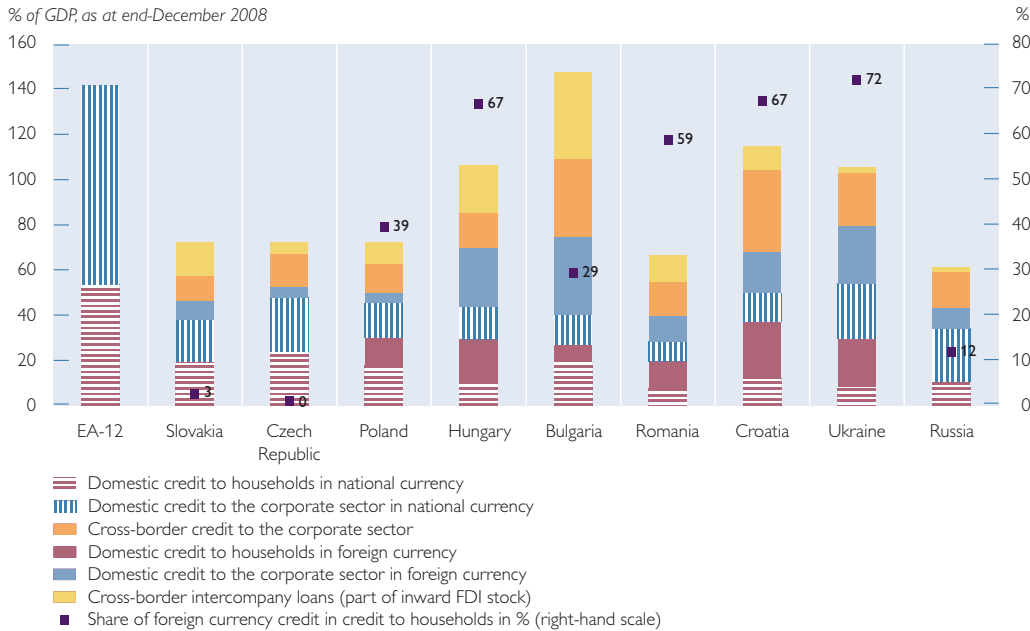
In the fourth quarter of 2008, total (i.e. domestic and cross-border) net lending to the private sector came to a halt in most countries (except Bulgaria and Croatia), and the volume of credit outstanding even declined in some countries. Cross-border corporate lending declined in all CESEE countries but Croatia. The volume of domestic corporate credit dropped in the Czech Republic, Hungary, Romania and Russia, while that of household credit fell in Romania, Russia and Ukraine. In countries where domestic credit aggregates did not decline, their growth slowed substantially (except in Croatia, where regulatory provisions were eased). Overall, both demand and supply factors seem to have been responsible for these credit developments.

In Hungary, Bulgaria, Romania and Ukraine, the *volume of credit outstanding* (as a percentage of total assets) at end-2008 was significantly higher than that of deposits, whereas in Slovakia and the

Chart 13

Outstanding Total (Domestic and Cross-Border) Credit to Households and the Corporate Sector

% of GDP, as at end-December 2008



Source: ECB, Eurostat, national central banks, national statistical offices, OeNB.

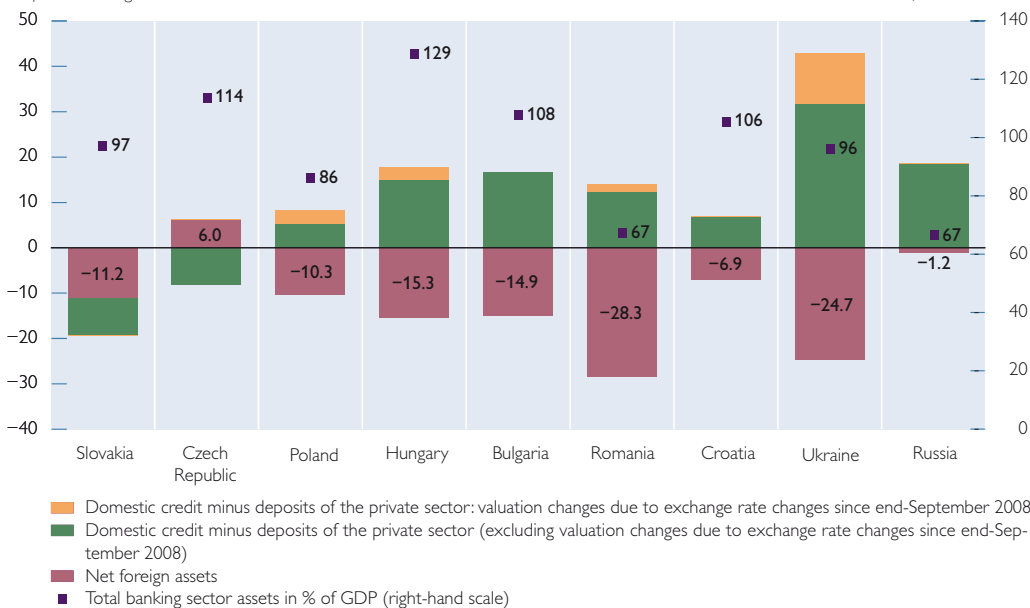
Note: Foreign currency credit also includes credit in national currency that is indexed to a foreign currency. EA-12 (the first 12 euro area members): Domestic credit in national currency (i.e. euro) includes also domestic credit in foreign currency. Points refer to the share of foreign currency credit in credit to households in % (right-hand scale).

Chart 14

Banking Sector: Gap between Credit and Deposits and Net Foreign Assets

% of total banking sector assets, end-2008

% of GDP, end-2008



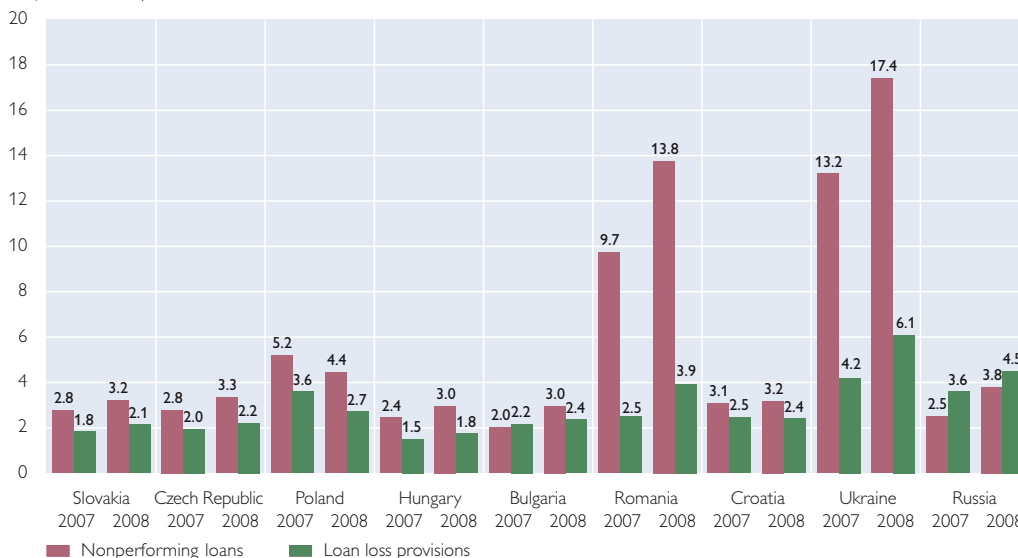
Source: ECB, Eurostat, national central banks, national statistical offices, OeNB.

Note: Points: Total banking sector assets in % of GDP (right-hand scale).

Chart 15

Banking Sector: Credit Quality

% of total loans at period-end



Source: IMF national central banks, OeNB.

Note: The data for the different countries are not comparable. Nonperforming loans comprise substandard, doubtful and loss loans. Poland: including irregular loans.

Czech Republic, the volume of deposits was higher than that of credit. Especially in Romania and Ukraine, and to a lesser extent also in Hungary and Bulgaria, banks continue to have substantial net *external liabilities*, primarily vis-à-vis foreign parent banks.

Currency depreciation and above all the recession have caused an increase in *credit risk in the banking sector*. At end-2008, the share of nonperforming loans was higher than it had been one year earlier in all CESEE countries except Poland; the rise was especially strong

Chart 16

Banking Sector: Profitability

%



Source: IMF national central banks, OeNB.

Note: Based on after-tax profit. The data for the different countries are not comparable.

in Romania. At the same time, *banking sector profitability* in terms of return on equity (RoE) and return on assets (RoA) was on the decline in all countries except Romania, where both indicators improved, and Croatia, where RoA remained stable. *Capital adequacy* with regard to market and trading risk varied widely in 2008: While some countries reported a decline in the

capital adequacy ratio (CAR), the CAR remained unchanged in Hungary and Ukraine and increased in the Czech Republic, Bulgaria and – due to state measures for banking sector recapitalization – Russia. At the end of 2008, the CAR was between around 11% (Slovakia, Poland and Hungary) and some 17% (Russia).

Financial Crisis Hits the Real Economy

Financial Crisis Impairs Corporate Sector Financing Conditions

Marked Economic Downturn in Austria

In the first half of 2009, the impact of the international economic crisis on Austria's economy gathered momentum. Real GDP went down in the first quarter of 2009 and is likely to decline in the second quarter as well. As the year progresses, the tax reform and economic stimulus packages should dampen the economic slump.

The gloomy economic outlook also dampened capital formation. New orders in manufacturing in Austria were on the decline since fall 2008, capacity utilization shrank and investment dropped sharply.

Finally, the growth rate of corporate profits also weakened considerably. In the fourth quarter of 2008, the gross operating surplus (including mixed income of the self-employed) had still been 4.6% above the same value of the previous year.

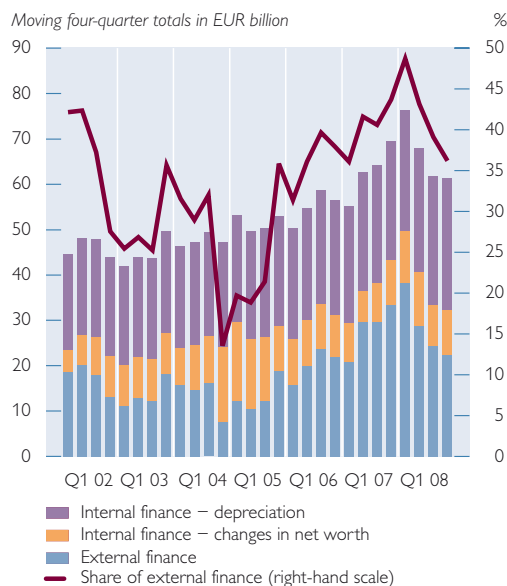
External Financing Share Decreases

In 2008, external financing contracted by roughly one-third to EUR 22.4 billion compared to 2007, whereas internal financing in the corporate sector rose by 8% to EUR 39 billion. The share of external financing in corporate finance, which had risen from less than 20% in the first quarter of 2005 to just under 50% in the first quarter of 2008, fell back to 36% in 2008.

Financial Crisis Causes Equity Financing to Grind to a Halt

The decline in external financing is traceable mainly to the drop in capital raised on the stock exchange. Financing via the stock exchange came to a standstill as a result of the crisis. No

Chart 17
Internal and External Corporate Finance



Source: OeNB.

significant listings have been made on Wiener Börse since mid-2008. New issues came to 0.4% of outstanding amounts in the first quarter of 2009.

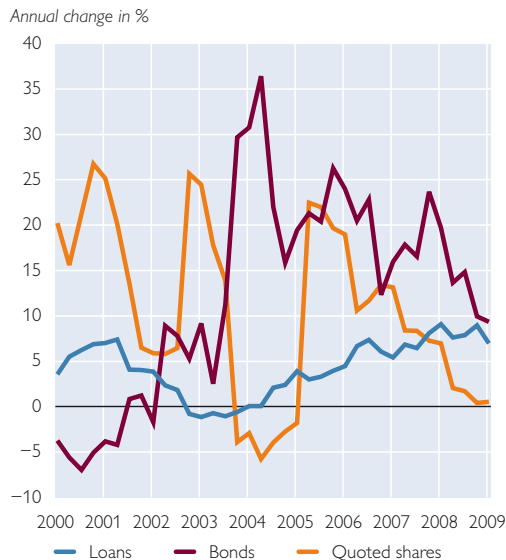
In addition to investors' more pronounced risk aversion, these figures stem from the sharp fall in equity prices and the resulting marked deterioration of the conditions for raising capital on the stock exchange. By November 2008, the earnings yield – the inverse of the price-to-earnings ratio – expanded to 17%, up from 6.5% recorded in mid-2007 when the financial turmoil began. Afterwards, tensions eased again, bringing the earnings yield back down to 11.1% at the end of April 2009.

In the second half of 2008, corporations raised approximately 29% of their external financing in the form of equity (including over-the-counter equities) – noticeably less than in the preceding years (average for 2003 through 2007: 48%). The proportion of shares in total liabilities contracted from 52% to 44% in 2008, a develop-

ment due to both the reduced amount of capital raised and to the lower market value of quoted shares.

Chart 18

Key Elements of External Corporate Finance



Source: OeNB.

Bond Financing Continues to Expand

So far, corporate debt financing has weakened less than corporate equity financing. Bond financing continued to increase, albeit with less momentum. The annual growth rate of corporate bonds according to the OeNB's securities issues statistics ran to 9.3% in March 2009 and has remained above the rate for the euro area. Enterprises in the quasi-public sector accounted for the lion's share of bonds issued.

The financial crisis has caused the terms and conditions for bond issues to worsen substantially. In fall 2008, corporate bond yields on the euro bond market rose markedly in the wake of heightened uncertainty and higher risk aversion and later stabilized at a high level. Yields went up above all for higher-risk bonds, and in April 2009, yields on BBB-rated bonds came in at about 8.5%.

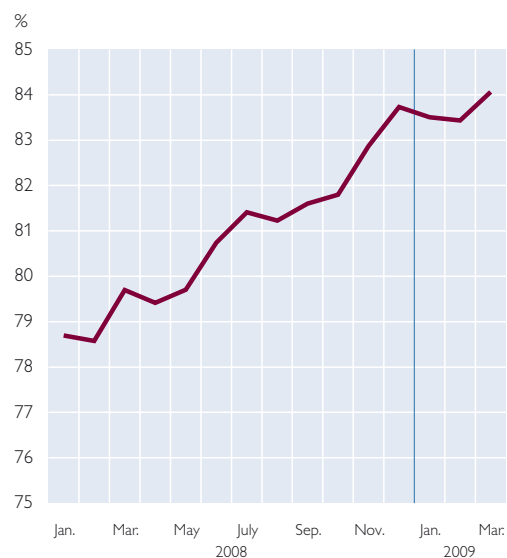
Bank Lending Has Been Augmenting

Bank loans gained importance among corporate external financing options in 2008, accounting for 73% of external finance in the fourth quarter of 2008 and recording an annual growth rate of 7% in March 2009. For the first time since Stage Three of Economic and Monetary Union began in 1999, the growth rate of banks' lending to enterprises was higher in Austria than in the euro area as a whole, where bank lending growth diminished far more. However, in the first three months of 2009, bank lending growth weakened to EUR 0.6 billion from EUR 2.3 billion in the fourth quarter of 2008.

Bank lending growth partly offset the near-paralysis of capital market financing. Moreover, it is conceivable that companies resorted to bank loans to meet their higher liquidity needs, a conclusion that is corroborated by the circumstance that the rate of increase in enterprises' bank deposits plummeted from fall 2008 onward.

Chart 19

Credit Line Utilization as Captured by the Central Credit Register



Source: OeNB.

Possibly, the current bank lending expansion partly reflects past borrowing decisions of companies and their stepped-up access to credit lines that were extended some time ago. Data are available only for major loans of above EUR 350,000 and show that companies' usage of available credit lines increased more than banks' extension of new credit lines. As a result, the ratio of utilization of credit lines and the extension of new credit lines advanced continuously throughout the year 2008 from about 79% to just under 84%. In the first quarter of 2009, utilization of credit lines continued to edge upward (chart 19).

Since November 2008, interest on loans has decreased considerably as a result of the massive key interest rate

cuts by the ECB. In March 2009, interest on new loans of up to EUR 1 million to nonfinancial corporations came to 3.4%, on loans of over EUR 1 million to 2.8%, some 2½ percentage points below the October 2008 level in both cases.

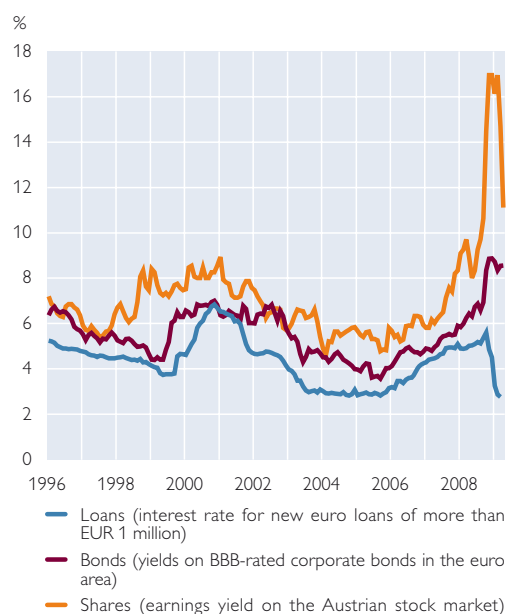
While banks may have cut interest rates on loans, they also tightened lending standards. According to the Austrian results of the euro area bank lending survey, the financial crisis has been hampering refinancing conditions and lending policies, especially in the corporate customer segment, for almost two years. Moreover, the worsening of the economic outlook and more selective credit ratings have contributed to a restrictive lending policy. Since the third quarter of 2007, credit standards for corporate clients have become continuously more restrictive, and conditions and terms – interest margins as well as collateral requirements, the size and maturity of loans granted, the covenants as well as noninterest rate charges – have been tightened.

Deterioration of Creditworthiness

Increasing use of debt financing raised the ratio of companies' debt to their gross operating surplus from 187% in the first quarter of 2007 to 205% in the fourth quarter of 2008. Debt in relation to GDP also rose from 77% in the first quarter of 2007 to 84% in the fourth quarter of 2008. However, Austrian company debt is still far lower than the euro area average, and it started to expand later than in the euro area, where the increase already began in 2005.

Chart 20

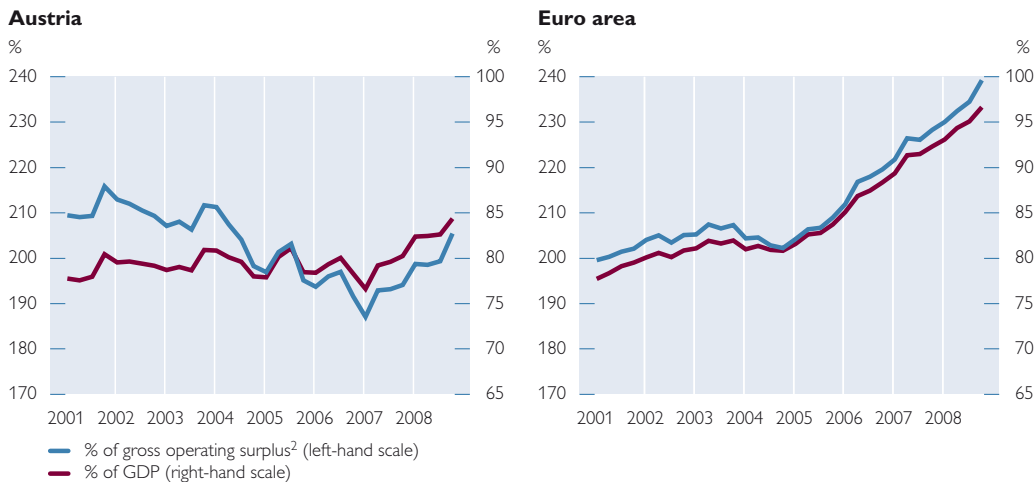
Corporate Financing Conditions



Source: OeNB, Thomson Reuters, Wiener Börse AG.

Chart 21

Corporate Sector Debt¹

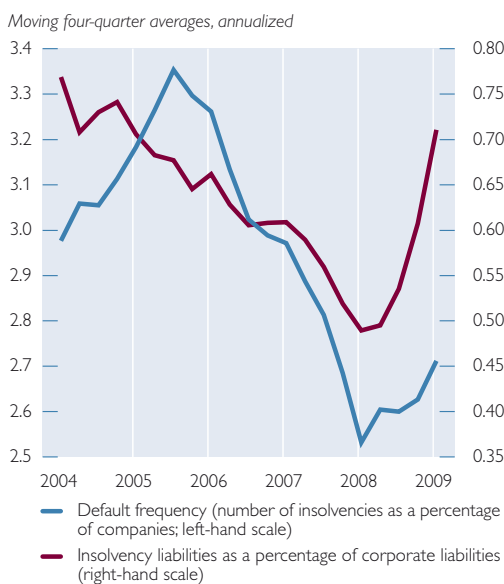


Insolvency statistics clearly signal the deterioration of corporate credit-worthiness. Insolvency numbers and liabilities have been going up since the second quarter of 2008. An analysis of the Austrian credit monitoring agency Kreditschutzverband von 1870 shows

that in 2008 the bulk of insolvencies still resulted from bankrupt companies' internal problems. But a noticeably larger number of insolvencies than in previous years was triggered mainly by external causes, such as changed market conditions, insolvencies of customers or delivery failures of suppliers. Their share went up from 10% to 16%. The share of insolvencies traceable to a shortfall of capital was of the same order and remained unchanged in 2008.

Chart 22

Development of Corporate Insolvencies



Conclusion: Crisis Seizes Corporate Finance

The financial crisis is impairing Austrian corporate financing. Since the onset of the crisis, companies have had to resort increasingly to borrowing to offset the decline in corporate profits and external equity financing. Consequently, the share of bank lending, which had clearly lost significance in the years leading up to the financial crisis, augmented substantially. Banks have, of course, tightened their lending standards and have been factoring their

clients' risk-bearing capacity and economic prospects more strongly into lending decisions, but in the aggregate, lending to the corporate sector has expanded up to now. The downside is that more borrowing from banks has swelled companies' debt: After rising for years, equity ratios dropped in 2008. Austrian companies have a greater latitude for taking out new debt than euro area companies on average, but primarily debt-based corporate finance carries considerable long-term risk, despite the fact that current low interest rates dampen the cost involved in borrowing.

Substantial Price Losses Hit Households' Financial Assets

Uncertain Business Environment

The economic downturn in the first quarter of 2009 caused conditions in

the Austrian labor market to deteriorate, weakening disposable incomes and dampening consumer spending growth, which came to just 0.9% year on year in 2008. The high household saving rate, which advanced from 11.6% in 2007 to 12.4% in 2008, is evidence of high uncertainty and a lack of household confidence in the economic outlook.

Lending to the Household Sector Weakens

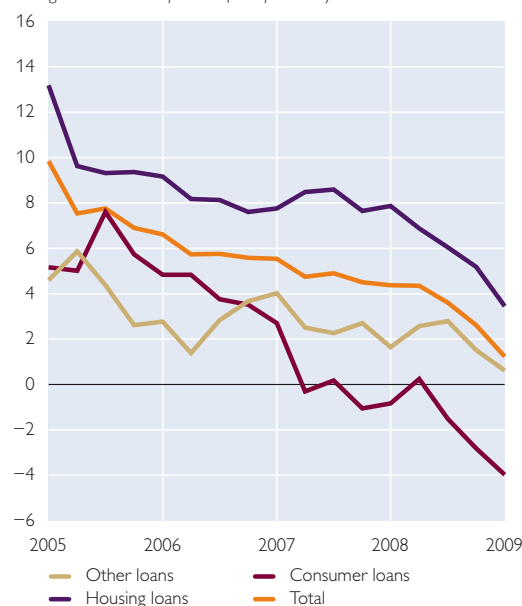
Declining by EUR 0.8 billion in the first quarter of 2009, the growth of lending to households has slumped. This corresponds to a 3.2 percentage point reduction in credit growth against the same quarter of 2008 – credit growth had come to 4.4% in the first quarter of 2008 compared to 1.2% in the first quarter of 2009.

Chart 23

Lending Growth and Real Estate Prices

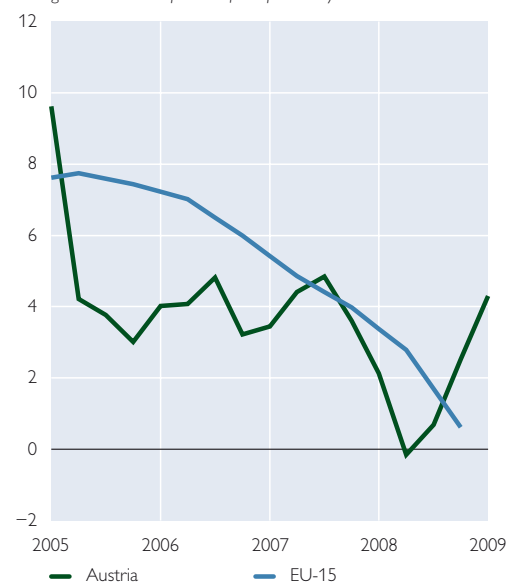
Growth of Lending to the Household Sector

Change on the same quarter of the previous year in %



Growth Rate of the Real Estate Price Index¹

Change on the same quarter of the previous year in %



Source: ECB, OeNB, Statistics Austria, Vienna University of Technology.

¹ In nominal terms. For Austria, population-weighted average of Vienna and the rest of Austria (in line with the ECB method).

¹ In the following, the terms households and household sector will be used synonymously.

A breakdown of lending to households by loan type shows that lending weakened above all in the consumer loan category, where the March 2009 figure was 4.0% below the comparable year-earlier value (see chart 23, left-hand panel). The results of the OeNB's bank lending survey (a quarterly survey on bank lending in the euro area) in the most recent quarters suggest that the deterioration of consumer confidence was instrumental in dampening demand for consumer credit. The annualized growth rate of housing loans also diminished to 3.4% in the first quarter of 2009, bringing it some 4.5 percentage points below its year-earlier level. Nevertheless, this decline was far less pronounced than in a number of other euro area countries that are more severely hit by the weakening of their housing markets than Austrian, as a comparison of real estate price indexes shows (see chart 23, right-hand panel).

Moreover, until the end of 2008, the demand for housing and consumer credit was dampened by the long-term rise in interest rates on loans. Lending rates have been on the decline since

November 2008, though, with Austrian MFIs charging clearly lower interest rates on housing loans to Austrian households than on consumer credit.

In addition, the results of the bank lending survey indicate that credit standards for consumer and housing loans were tightened slightly in the first quarter of 2009 in view of banks' high refinancing costs and the gloomy economic outlook.

The share of foreign currency loans in total lending to households fell by half a percentage point to 30.3% in the first quarter of 2009. Swiss franc-denominated loans still accounted for the majority of such loans (94%), and Japanese yen-denominated loans for just 5%. As the Swiss franc continued to strengthen against the euro, (unrealized) revaluation losses on foreign Swiss franc-denominated loans came to 1.8% of the volume of foreign currency loans.

Performance risk represents a further risk for households' debt-servicing capacity. In the first quarter of 2009, roughly 74% of all loans to households were based on a repayment vehicle. A

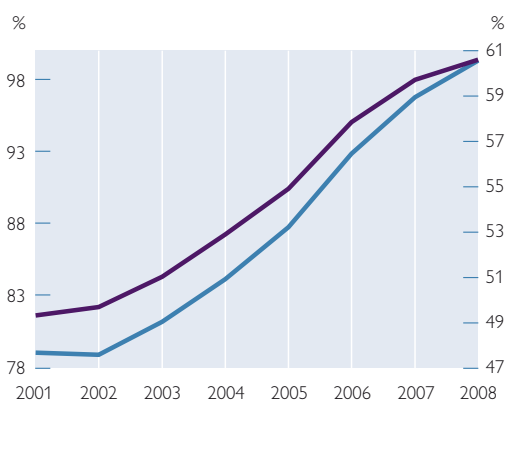
Chart 24

Household Debt

Austria



Euro area



Source: ECB, OeNB.

current survey (see box 3 “Survey on the Risks of Loans Linked to Repayment Vehicles” in the section “The Financial Crisis Takes Its Toll on the Austrian Financial System”) shows that there is a gap in the coverage of repayment vehicle-based lending to households that could result in an additional financial burden to households.

Stabilization of Household Debt

With the growth rate of lending to households easing continuously, the debt ratio of this borrower category has remained stable in spite of the slower increase in disposable incomes. At the end of 2008, the household debt ratio came to around 89% of disposable income or roughly 53% of GDP (see chart 24). Thus, Austrian household debt is moderate by comparison to the euro area average of 99% of disposable income or 61% of GDP.

The development of debt regulation proceedings, i.e. private bankruptcies, also reflected the stabilization of household debt: Whereas the number of private bankruptcies went up by 6% year on year in the first quarter of 2009, the volume of default liabilities expanded less than households’ total liabilities.

Interest Rate Risk Is Stable

With interest rates on loans declining in recent months and as a result of stabilizing household debt in 2008, households’ debt servicing burden – interest payments as a percentage of net dispos-

able income – stagnated after having trended upward for some time. Thus, the interest rate burden remained at 3.9% in the fourth quarter of 2008, the same level as in the third quarter. The most recent developments have already shown a contraction of the household interest payment ratio and therefore a stabilization of their interest rate risk.

Austrian household debt is characterized by a certain degree of heterogeneity masked by the aggregated data. First, not all households indeed carry debt; consequently, the aggregated interest payment ratio is too low for those households that have taken out debt.

Second, the debt-servicing capacity also depends on individual household income. First calculations on the basis of an OeNB-commissioned survey on household real estate assets (OeNB Household Survey on Housing Wealth 2008)² signal that in 2007 the debt-servicing ratio (interest payments and principal repayments as a percentage of household net incomes) was above average for the lowest-income households and below average for the highest-income households.

Third, the impact of interest rate changes depends on the type of interest rate agreed for the respective loan. In Austria, the share of variable rate loans is traditionally very high (83.6% in the first quarter of 2009 compared with 47% in the euro area). Hence, market interest rates have a rapid impact on loan interest.

² See Fessler, P. et al. 2009. *Real Estate Wealth of Austrian Households (preliminary title)*. In: *Monetary Policy & the Economy Q2/09*. Vienna: OeNB, forthcoming.

Box 1

Real Estate Financing by Austrian and Euro Area Private Households

Real estate debt accounts for the lion's share of household debt. In summer 2008, the OeNB conducted a survey on housing finance among the Austrian banks most heavily engaged in mortgage lending. A report on housing finance in the euro area provides additional information.¹ The main results of both the survey and the report are summarized below.

In the past decade, household debt for house purchase rose both in Austria and the euro area (from EUR 54 billion in 2001 to EUR 87.8 billion in 2007 in Austria). Several factors contributed to this rise: comparatively low interest rates, increasing disposable incomes and population growth figures, deregulation and liberalization trends that boosted the number of providers and widened the range of financial products. Given the low interest rates level, households' interest rate burden remained under control despite the rise in debt. The loan-to-value ratios (LTVs) rose, and households were given more flexible repayment terms, e.g. longer repayment periods than at the beginning of the 1990s. According to the housing finance survey, LTVs required by Austrian banks ranged from 70% to 96% in 2007, and the maximum duration of mortgage loans extended in 2007 came to 25 to 30 years.

The mortgage spread, i.e. the difference between interest on housing loans and banks' refinancing costs, has diminished in the course of time. This phenomenon may signal stepped-up competition. Moreover, in recent years, more securitization, improved financing conditions and a possible underestimation of risks may have contributed to looser credit standards (though much less so than in the U.S.A. or the U.K.).

The share of variable-rate credits ranged between 10% and 99% of total loans in the euro area in 2007. This huge range is likely to have resulted from different cultural, institutional (e.g. consumer protection considerations) and regulatory as well as fiscal factors (e.g. tax breaks for owner-occupied housing). In Austria, the majority of new loans carry variable interest rates – for new housing loans, the share of variable rate loans ranged from 52.8% to 68.5% in 2008.

In Austria, foreign currency lending plays a key role in housing finance. Foreign currency-denominated loans accounted for 39.2% of all Austrian housing loans in 2008.

¹ ECB. 2009. *Housing Finance in the Euro Area*. ECB Occasional Paper No. 101.

Continued Large Revaluation Losses in Financial Assets

The transaction volume of household financial assets dropped in 2008 in the wake of rising uncertainty and gloomier economic prospects. In the fourth quarter of 2008, the transaction volume weakened to EUR 2.7 billion, which corresponds to a slowing of the rate of growth from 4.6% in the fourth quarter of 2007 to 4.1% in the fourth quarter of 2008 – a rate last seen in the second quarter of 2002 (see chart 25, left-hand panel).

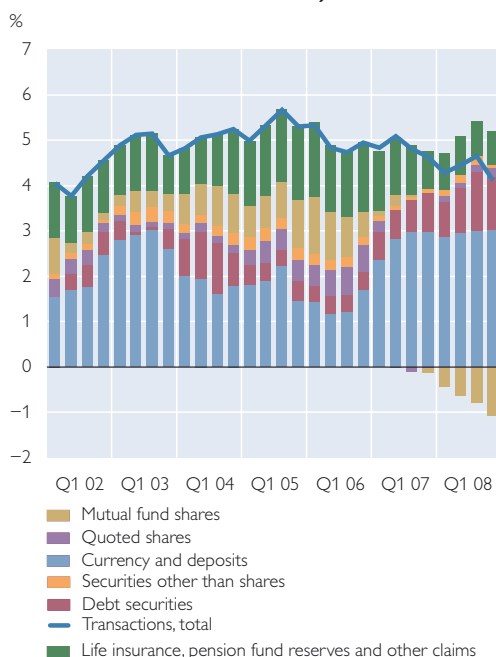
Households sought to invest in safe investment vehicles, shifting large parts of their portfolio toward less risky assets: Their weaker financial investment

was due primarily to the negative growth contribution of mutual fund shares. The annual growth contribution of this investment category came to –1.1% in the fourth quarter of 2008, following –0.1% growth in the comparable quarter of the previous year (see chart 25). At 0.5% in the fourth quarter of 2008, the growth contribution of life insurance assets was also lower than the 0.7% recorded a year before. The reductions contrast with the increase in the growth contribution of deposits and bonds, with the expansion of bank deposit guarantees likely to have played an important part.

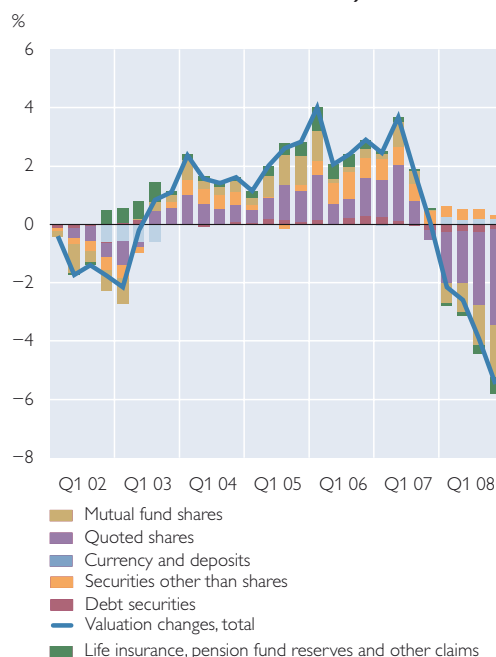
Additionally, massive price losses in the capital markets resulted in market

Determinants of Change in Household Financial Assets

Transactions¹ (including growth contributions of individual financial instruments)



Valuation changes² (including growth contributions of individual financial instruments²)



Source: OeNB.

¹ As a percentage of total financial assets four quarters before.

² Calculated on the basis of securities data in the case of mutual fund shares, quoted shares and debt securities; calculated as the difference between stock changes and transactions for the remaining aggregates.

value losses of household financial assets also in the second half of 2008 (see chart 25, right-hand panel). These losses hit quoted shares especially hard: The negative valuation effects of this asset category caused overall household financial assets to shrink by 3.3% in the fourth quarter of 2008 against the same quarter of 2007. Measured in terms of households' 2007 year-end financial holdings, stock price losses affected 59% of households' portfolio of quoted shares. The growth contributions of mutual fund shares and life insurance as well as pension fund reserves were also negative in the fourth quarter of 2008, reducing financial assets by 0.6% and 0.2%, respectively, against the previous year. Plummeting stock market prices thus had an adverse effect on funded pension instruments.

Conclusion: Household Sector Risks Have Increased

Financial sector-induced risks to the household sector have risen massively in the first half of 2009. High valuation losses in capital market investment had noticeable effects on the second and third pillars of pension provision and on the repayment vehicles for redeeming foreign currency loans. Conversely, sagging credit growth has stabilized debt, which, in tandem with the most recent cuts in interest rates, has reduced the interest rate burden on households. More unfavorable prospects for the labor market and for disposable income have increased the risk related to households' debt-servicing capacity, with the debt-servicing burden being proportionately higher for lower-income households in particular.

The Financial Crisis Takes Its Toll on the Austrian Financial System

Exposure to Eastern Europe Draws International Attention to Austrian Banks

Asset Growth Continued Robust in 2008 despite Crisis

In 2008, Austrian banks' consolidated total assets, which in addition to domestic business include Austrian subsidiaries' operations in Central, Eastern and Southeastern Europe (CESEE), continued to rise by a healthy 9.5% or EUR 102.4 billion to EUR 1,176 billion despite the turbulence in international financial markets. In terms of consolidated total assets,¹ the share of Austria's five largest banks dropped from 62% to 57.6% compared with end-2007. Austrian banks' unconsolidated total assets jumped to EUR 1,069 billion; the growth rate of 18.9% (a rate last achieved in 1985) was mainly attributable to new establishments and restructuring within two banking groups. These developments do not affect consolidated figures.

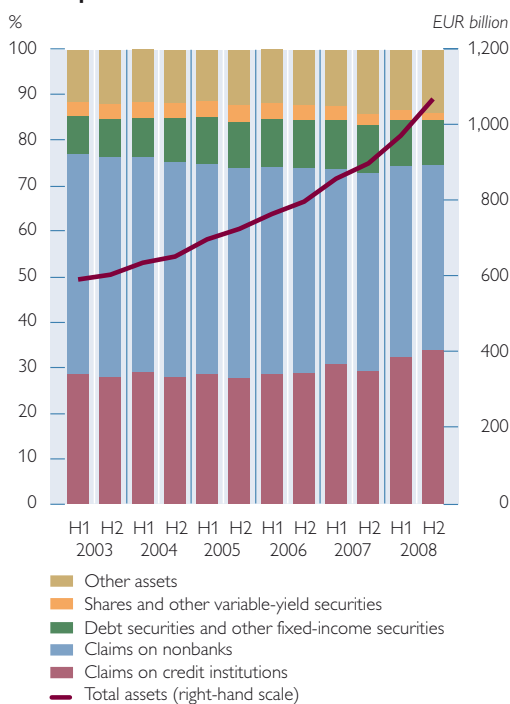
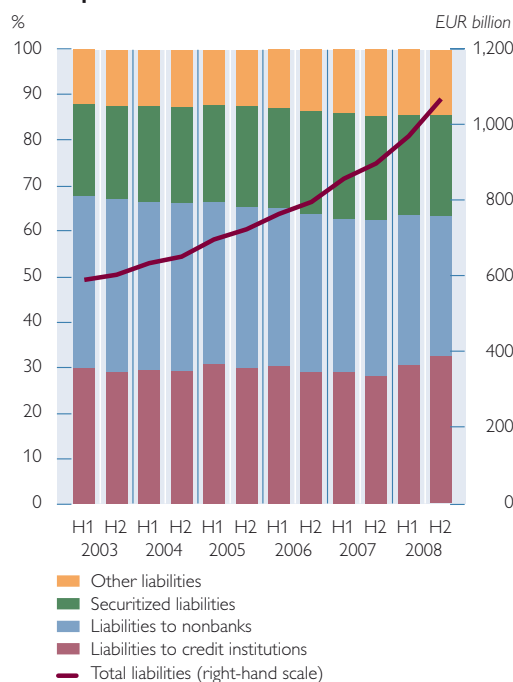
As a consequence of slowing foreign business in the fourth quarter of 2008, Austrian banks' foreign assets grew at a slightly lesser pace compared with 2007, inching up 7.3% to just under EUR 377 billion. Cross-border claims on nonbanks advanced by 11% year on year. Foreign assets declined from 39% (end-2007) to 35.2% (end-2008). On the liabilities side, the external share fell from 30.4% to 25.2% (-5.2% year

on year), mainly due to a decline in foreign liabilities against credit institutions.

Compared with previous periods, the domestic business of Austrian banks has gathered considerable momentum. For instance, claims on domestic nonbanks rose by 7.3% to EUR 308.7 billion year on year, compared with a growth rate of merely 3.4% in the same period 2007. On the liabilities side, the volume of domestic deposits showed sustained growth, advancing by 3.9% to EUR 275.7 billion, which reflects, among other things, the continued uncertainty in financial markets. The key drivers of this growth were demand and savings deposits, which picked up in the fourth quarter of 2008, as well as fixed-term deposits, which expanded at a slightly slower rate. Also, the volume of direct domestic issues to nonbanks expanded by 18.5% to EUR 113.3 billion, growing above average year on year, albeit at a slower rate than in previous periods.

The number of Austrian banking offices continued to decline in 2008, decreasing by 35 to 5,121 outlets (867 head offices and 4,254 branch offices). At the same time, staff numbers increased by 1.4% year on year to 80,293. Including the staff of Austrian subsidiaries abroad, the overall headcount expanded by 12.8% to 219,439 employees.

¹ The five largest banks at end-2008: UniCredit Bank Austria AG, Erste Group Bank AG, Raiffeisen Zentralbank AG (RZB), Oesterreichische Volksbanken AG, Hypo Group Alpe Adria.

Balance Sheet Structure of the Austrian Banking Sector (Unconsolidated)**Development of Assets 2003–2008****Development of Liabilities 2003–2008**

Source: OeNB.

Deepening of Financial Turmoil Further Dampens Profits

Unconsolidated operating profits² grew significantly from December 2007 to year-end 2008, surging 37.2% (or EUR 2.5 billion) to EUR 9.141 billion, owing to special and one-off effects on operating income and a moderate increase in operating expenses. Operating income increased by EUR 3 billion (17.3%) to EUR 20.6 billion, while operating expenses inched up by EUR 0.6 billion (5.2%) to EUR 11.4 billion in the same period. Consequently, the banks' unconsolidated cost-to-income ratio improved considerably by 6.5 percentage points to 55.5%.

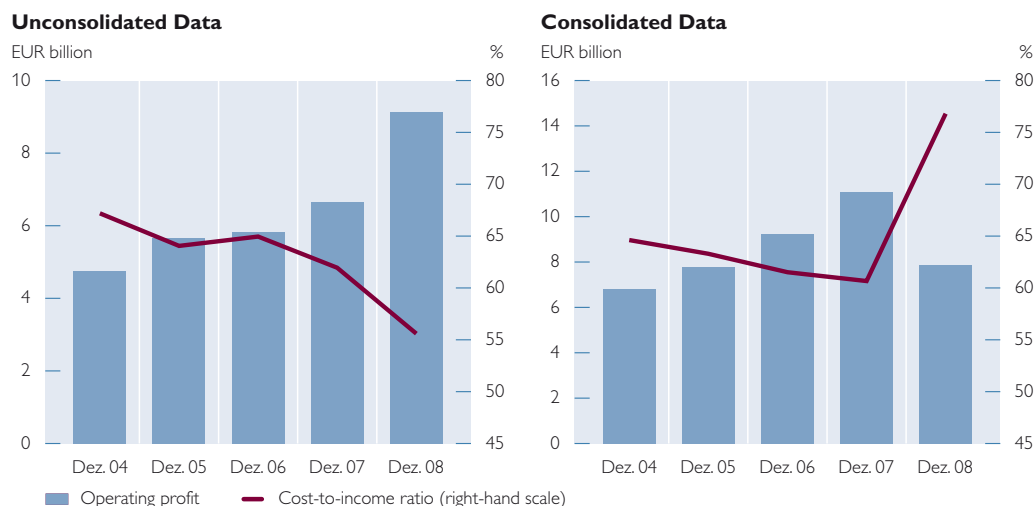
As at end-2008, net interest income maintained a high growth rate, climbing 11.5% year on year to slightly below EUR 8.2 billion. Lower key inter-

est rates and decreasing interbank rates were passed on to borrowers only with a certain time lag, a fact reflected towards end-2008 in consistently higher interest rates on new loans compared with 2007: capital-weighted rates on new consumer loans to households inched up from 6.29% to 6.82%. The rates on housing loans rose from 4.79% to 5.33% and those on other loans from 5.35% to 5.77%. By contrast, interest rates on loans to nonfinancial corporations grew at a slower rate: capital-weighted interest rates on new loans under EUR 1 million advanced from 5.11% to 5.47% year on year, while interest rates on loans over EUR 1 million climbed from 4.69% to 5.04%. However, in the first three months of 2009, all interest rates dropped significantly. At the same time, the interest

² Not adjusted for one-off and special effects at individual banks.

Chart 27

Austrian Banks' Unconsolidated and Consolidated Operating Profit



Source: OeNB.

Note: The bars reflect the operating profit at the end of each quarter (accumulated). Due to changes in the financial reporting regime at the beginning of 2008, the consolidated cost-income ratio for 2008 and beyond is not comparable with pre-2008 data.

margin reached a historical low, dropping from 0.95% at end-2007 to 0.87% in December 2008. The share of net interest income in total operating income³ reached approximately 40.1% (from 42.3% in the previous year). Owing to one-off and special effects, income from equity investments showed a 204% surge (year on year) to just below EUR 7.2 billion as at December 2008. The corresponding share in total operating income expanded to 35% (from 20.1% in the previous year).

Setbacks in fee-based income (by EUR 0.5 billion or 10.4% to EUR 4.2 billion) and the clearly negative net result of financial operations, which contracted by EUR 0.8 billion or 280% compared with the previous year, reflected the impact of the financial crisis particularly strongly. The drop in the net result of financial operations is a

consequence of banks not treating security transactions as financial investments but as part of the trading portfolio.

On the expenditure side, administrative expenses climbed EUR 0.6 billion (6.1%) to EUR 9.7 billion, accounting for 85.2% of total expenses as at end-2008 (84.5% at end-2007). At 5.6%, staff costs grew less markedly than expenditure for goods and services, which increased by 6.7%.

Consolidated operating profits,⁴ which also include the activities of the Austrian banking sector in Central, Eastern und Southeastern Europe and were considerably less exposed to special and one-off effects, shrank by EUR 3.2 billion (–29.1%) to EUR 7.9 billion year on year in 2008. While consolidated operating profits jumped 19.7% year on year to EUR 33.6 billion, operating expenses surged by 51.3% to EUR

³ It should be noted that the negative net result of financial operations has resulted in a slight upward bias in the other components of overall operating income.

⁴ As banks use different accounting standards, aggregated consolidated data may convey a slightly distorted picture.

25.8 billion. At the end of the fourth quarter of 2008, the consolidated cost-to-income ratio before risk provisions was 76.8%.

Adjusted for taxes and minority interests, the consolidated end-of-period result plunged by EUR 6.2 billion (91.4%) to EUR 0.6 billion. All things considered, the Austrian banking sector successfully coped with the challenges of the year 2008.

Thanks to good first quarter results, with operating profits growing by 17.7% to EUR 1.67 billion compared with the first quarter of 2008, which were mainly attributable to increased net interest income and positive trading income, and despite rising value adjustments, Austrian banks expect the annual result for 2009 to be higher than the relatively low annual result of 2008.

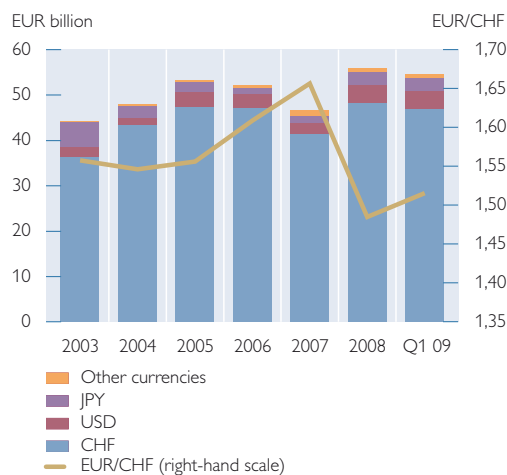
Slowing Loan Growth⁵ in a Difficult Environment

The annual growth of loans to domestic customers⁶ had dropped to 4.6% by end-March 2009, with euro-denominated loans increasing by 4.2% and foreign currency loans by 6.3% year on year. In the first quarter of 2009, lending to domestic customers fell by 0.9% (euro loans: -0.4%, foreign currency loans: -2.7%). The amount of loans to domestic customers totaled approximately EUR 253 billion as at end-March 2009 (euro loans: EUR 204 billion; foreign currency loans: EUR 49 billion).

As chart 28 indicates, the strong growth in foreign currency loans in 2008 is mainly attributable to the appreciation of the Swiss franc against the euro. This development once again highlighted the risks associated with

Chart 28

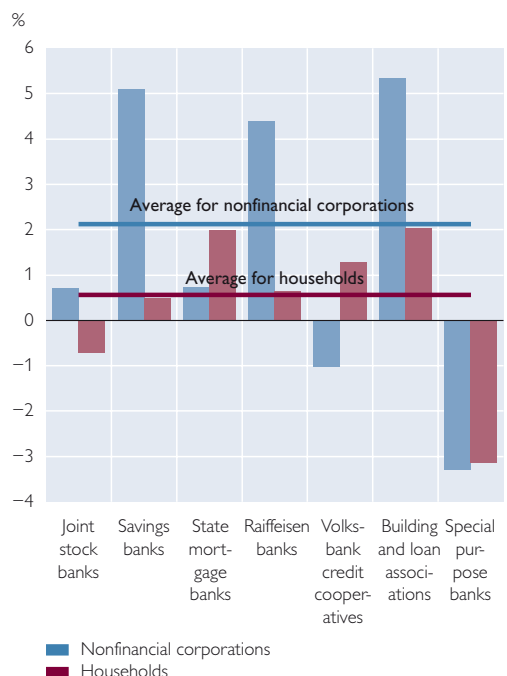
Foreign Currency Loans to Domestic Customers (Nonbanks)



Source: OeNB.

Chart 29

Loan Growth by Sector between September 2008 and March 2009



Source: OeNB.

⁵ The analysis of loan growth is based on the unconsolidated asset statement in the prudential statistics.

⁶ "Domestic customers" comprises the economic sectors "nonfinancial corporations" and "households."

foreign currency lending and supports the FMA's and the OeNB's critical stance on this issue. As risk aversion increased and volatile currency markets as well as lower interest margins made foreign currency loans less attractive for customers, the share of foreign currency loans in total lending to domestic nonbanks, adjusted for currency effects, continued to decrease between September 2008 and March 2009, dropping by another 0.7 percentage points to 17.3%. Foreign currency

loans to households suffered the sharpest decline, contracting by 0.92 percentage points to just under 30%.

A breakdown by banking sector (see chart 29) shows that in particular joint stock banks and special purpose banks recorded below-average growth of lending to domestic customers between September 2008 and March 2009. It also reveals that lending to nonfinancial corporations (2.1%) expanded significantly more rapidly than lending to households (0.6%) in the same period.

Box 2

Survey on Austrian Banks' Structured Credit Portfolio

Owing to the financial crisis, banks worldwide have been forced to make in part massive write-downs on their structured credit portfolios (securitizations, credit derivatives) since mid-2007. Therefore, the OeNB has taken to regularly assessing the volume of Austrian banks' structured credit portfolios and to identifying the write-downs required on these portfolios, even though domestic banks' exposure to these products is all in all relatively small. The most recent update of this survey, which covered the 25 largest Austrian banks, was carried out as at end-2008.

As at December 2008, Austrian banks' total exposure to typical structured credit products (especially securitized products like asset-backed securities, mortgage-backed securities and collateralized debt obligations) came to EUR 15.9 billion, with the six largest Austrian banks¹ accounting for slightly more than 90% or EUR 14.6 billion. Compared with end-2007 figures, the six major domestic banks reduced their structured credit portfolios by 8.3%. In the survey, the banks reported EUR 2.1 billion in write-downs as at end-2008, which equals 13.4% of the total structured credit portfolio.

In a separate part, the survey also covers banks' exposure to credit derivatives. At end-2008, protection sold in credit default swap (CDS) transactions by the banks surveyed amounted to EUR 29.1 billion and protection bought came to EUR 9.7 billion.

As regards the risk exposure of Austrian banks' structured credit portfolio, the survey showed that taking into account any rating migrations in 2008, AAA- and AA-rated products accounted for significantly more than half (57.6%) of the entire portfolio, while BBB-rated products represented 19.5% and non-investment grade 7.2%.

¹ Erste Group, UniCredit Bank Austria, BAWAG P.S.K., RZB, VBAG (including Kommunalkredit), Hypo Group Alpe Adria.

Credit Quality: Loan Loss Provisions on the Rise

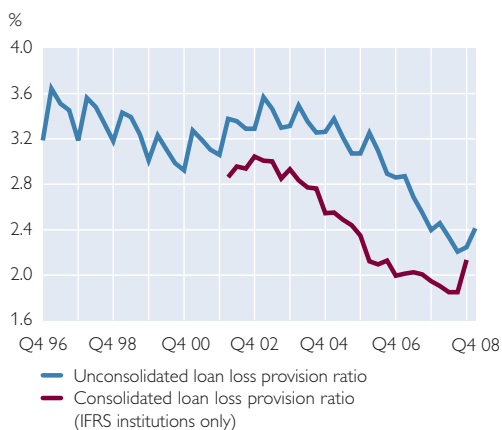
The recession-ridden economic environment in which Austrian banks have been operating started to affect Aus-

trian banks' credit risk provisioning in late 2008. The unconsolidated loan loss provision ratio⁷ for the entire Austrian banking system, which usually experienced a downtrend towards the end of

⁷ Specific loan loss provisions for claims on nonbanks in proportion of total outstanding claims. Claims are defined as loans and unlisted debt securities.

Chart 30

Loan Loss Provision Ratios of Austrian Credit Institutions



Source: OeNB.

the year edged up by 0.04 percentage points to 2.25% in the fourth quarter of 2008.⁸ The decline by 0.15 percentage points for the entire year 2008 is attributable to the ratio's pronounced contraction in early 2008. The upward

trend in the unconsolidated loan loss provision ratio continued in the first quarter of 2009 (see blue line in chart 30).

According to current projections and given the rising number of insolvencies of domestic corporations, it can be expected that the need for loan loss provisioning continues to rise. During the last economic downturn, the unconsolidated loan loss provision ratio peaked at 3.57% (first quarter of 2003).

While unconsolidated data clearly reflect the trend reversal regarding credit risk provisioning, consolidated data – including the entire non-domestic business – make it even more apparent. At IFRS-reporting institutions,⁹ the sustained decline in the loan loss provision ratio of past years¹⁰ came to a halt in the third quarter of 2008 and rose sharply in the fourth quarter (red line in chart 30).

Box 3

Survey on the Risks of Loans Linked to Repayment Vehicles

The bulk of foreign currency loans are bullet loans linked to repayment vehicles (RPV), i.e. repayment does not take place in regular installments but at maturity; during the life of the loan, the borrower makes payments towards an RPV, usually a life insurance plan or a mutual fund. At maturity, these payments and the returns earned on the paid in capital are used to pay back the principal. Such loans linked to RPVs involve the risk that in case of adverse financial market developments, the capital accumulated through the RPV may not suffice to repay the loan at maturity. If such loans are denominated in foreign currency, foreign exchange risk on the outstanding amount of the loan will add to the market risk underlying the RPV.

At end-2008, EUR 27.9 billion of credit to domestic households were foreign currency loans linked to RPVs. Euro-denominated loans linked to RPVs accounted for another EUR 4 billion. Loans linked to RPVs play a smaller role in lending to nonfinancial corporations: At end-2008, foreign currency loans with RPVs represented EUR 2.4 billion, euro-denominated loans with RPVs came to EUR 1.2 billion.

⁸ Over the past 12 years, the decline in loan loss provision ratio in the last quarter averaged 0.09 percentage points.

⁹ These groups' share in the consolidated total assets of the Austrian banking system is just over 80%.

¹⁰ These ratios cannot directly be compared with the unconsolidated loan loss provision ratios because for reasons of data availability, the consolidated ratios also refer to claims on banks.

The most important question in the survey, which covered the 166 most exposed banks, was to what extent the distress in financial markets had consumed the capital saved under RPV plans. The results show that as at December 31, 2008, according to projections¹ on an aggregate level, the amounts saved under RPV plans were 14% below the amount required to fully repay the principle at maturity in the case of household loans and 17% below this level in the case of corporate loans.

The funding gaps² differ depending on the type of RPV. Some 25% of the funds in households' RPV plans are invested in classic low-risk life insurance policies; this group does not show a funding gap at the aggregate level across all banks. Another 55% are invested in unit-linked life insurance plans, whose aggregate funding gap comes to 16%. "Other types" of RPVs, representing 8% of the total RPV volume, show the largest funding gap (54%). 5% of RPV funds are invested in equity funds, which have a funding gap of 26%. Fixed-income funds show a funding gap of 5%, but represent only 1% of the total RPV volume. Like life insurance contracts, balanced funds (6% of the RPV volume) do not show a funding gap.

The loans coupled with RPVs are collateralized with 53% of the outstanding loan volume.

¹ The projections indicate the amount that the RPV plan will have earned at the end of the life of the loan on the basis of current market values and current return expectations.

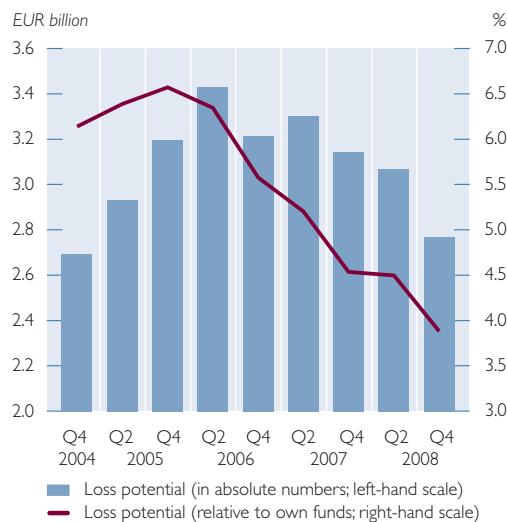
² Funding gap = 1 – projection of RPV/volume of loans coupled with RPVs.

Market Risk: Reduced Exposure to Interest Rate Risks in the Banking Book

The deterioration of the financial crisis has led to Austrian banks' exposure to market risk¹¹ remaining low relative to their credit risk exposure, even though capital requirements for position risk¹² as a percentage of total unconsolidated capital requirements have risen by just under 1 percentage point since mid-2008, coming to 4.2%. This development is attributable to increased capital requirements for interest-based instruments calculated on the basis of a value-at-risk method; increased volatility has played a major role in this context.

In addition to position risk, for which capital charges are required, banks are exposed to market risk through the interest rate risk in the banking book. The declining exposure to this risk category observed in past years continued in the second half of

Chart 31
Interest Rate Risk in the Banking Book (Unconsolidated)



Source: OeNB.

2008. Austrian banks' loss potential (on an unconsolidated basis) stemming from a change in interest rates has declined in the past two and a half

¹¹ Market risk refers to the risk of value changes in respect of financial instruments triggered by general fluctuations of market risk factors such as interest rates, stock prices, exchange rates or commodity prices.

¹² Position risk refers to the risk of stock price and interest rate fluctuations in respect of positions in the trading book as well as to the risk of exchange rate and commodity price fluctuations in respect of all bank positions.

years both in absolute numbers and in relation to the banks' own funds (see chart 31).¹³

Recent data about the consolidated interest rate risk in the banking book reveal that the risk decreased even more strongly between mid-2008 and end-2008. The large banking groups played a major role in this development.

Households' Investment Behavior Keeps Austrian Banks' Liquidity Afloat

The macroprudential analysis of the Austrian banking system's liquidity profile relies mainly on two data sets: the residual maturity statistics based on unconsolidated data as well as the weekly liquidity report, which is drawn up from consolidated data.

Analyzing the residual maturity statistics reveals the following: liquid claims (with a maturity of up to three months) and liquid assets (e.g. euro government bonds) held by Austrian banks as at December 31, 2008, amounted to 109% of short-term liabilities (with a maturity of up to three months); this is a decrease by 4 percentage points compared with the figure as at June 30, 2008. However, despite the prevailing tight money and capital market conditions, the data suggest that Austrian banks will be able to maintain their stable liquidity profile.

The analysis of the cumulated net financing gap confirms this assessment. Assets and liabilities are netted in three maturity bands (next banking day, up

to one month, up to three months). Consideration is given to positions vis-à-vis both banks and nonbanks on both sides of the short-term balance sheet. The net positions are subsequently totaled over the three maturity bands. Austrian banks' cumulative net funding gap is negative, which results inevitably from maturity transformation, the banking system's key function. At end-2008, this indicator had risen to 11.1% of total assets, which represents a slight increase of 0.8% compared with the first half of 2008. A negative cumulative net financing gap gives rise to a certain liquidity risk. While the Austrian banking system's coverage of the cumulative net funding gap by liquid assets decreased from 164% to 145% in the first half of 2008, its risk-bearing capacity remains high.

Austrian banks' high resilience to liquidity shocks is attributable above all to their – by international standards – very sound financing structure, where customer deposits play a greater role than in other banking systems. At end-2008, 46.8% of Austrian households' financial assets were domestic bank deposits, which is a very high rate by international standards. The saving rate edged up from 11.7% of disposable income in 2007 to 12.4% in 2008; the net acquisition of financial assets (financial investment) thus came to EUR 18.8 billion, 70% of which are bank deposits (66% in 2007). Funds available at short notice at Austrian banks by far exceeded short-term bank deposits held by their customers.¹⁴ The

¹³ The blue bars in the chart show the loss potential referring to the change in the present value of the banking book that follows a parallel yield curve shift of 2 percentage points for all currencies, aggregated over all banks. The red line displays each banks' loss potential put in relation to its eligible own funds (Basel ratio of interest rate risk), weighted by total assets and averaged across all Austrian banks.

¹⁴ Liquid assets held by Austrian banks grew from EUR 164 billion (first half of 2008) to EUR 172 billion, while liquid claims increased from EUR 266.1 billion to EUR 275 billion. In total, this represents approximately 247% of short-term deposits (with a maturity of up to three months) held by nonbanks (households and nonfinancial corporations) or, in other words, 230% of Austrian households' total bank deposits.

solid liquidity profile was also attributable to the successful issue of government-guaranteed bank bonds (EUR 15.6 billion as at June 5, 2009) as well as the creation of the Oesterreichische Clearingbank AG (EUR 6.6 billion of allocated funds as at June 5, 2009).

Austrian banks' cumulative net funding gap vis-à-vis other banks outside Austria is only 4.6% of total assets, its coverage by liquid assets being approximately 385%.

An analysis of the consolidated data¹⁵ of the weekly liquidity report, which includes 32 banks and banking groups as well as sectors, produces a similar picture: for this report, detailed data both about banks' expected inflow of funds and outflow of funds as well as data regarding the counterbalancing capacity of the report have been taken into account. The data is broken down to four maturity bands (up to 5 days, between 6 days and 1 month, between 1 and 3 months, between 3 and 6 months) as well as to six currencies (EUR, USD, CHF, GBP, YEN and other currencies). As at early June, the additional liquidity available after six months came to EUR 104 billion. In other words, even if banks use a conservative approach when estimating their future cash flows over six months, they would still have a stable liquidity profile¹⁶ that can be considered adequate in the current situation characterized by fragile money and capital markets (even though conditions have

improved notably compared with October and November 2008).

Given the turmoil in the financial market, it must be highlighted that payment and securities settlement systems have maintained their full functionality even in times of major workload caused by the financial crisis. No disturbances with an impact on the financial system were recorded at the national or European levels.

Uncertainty Regarding Exposure to CESEE Rises Significantly

The CESEE economies are now suffering the full blow of the financial crisis. Against the background of a very gloomy short- and medium-term outlook and emerging problems in the real economy, risk aversion towards investment in CESEE in international financial markets has increased. While financial markets are already factoring in the region's economic downturn, which is also clearly reflected in macro-economic indicators and projections, the risk positions in banks' balance sheets as well as reported data mirror this development with a lag.

Overall, earnings in the CESEE segment in 2008 offset the negative results in other business fields. According to the data in the business segment reports submitted to the OeNB,¹⁷ large Austrian banks' activities in CESEE generated consolidated profit before taxes of EUR 2.9 billion in 2008, compared with a negative result recorded in

¹⁵ The definition of consolidation used for the liquidity report differs from the definition in the Austrian Banking Act. Here, it refers to all companies of a group or sector for which the respective parent bank or a sector's central institution assumes liquidity risks.

¹⁶ Since the introduction of the weekly liquidity report, banks have been observed to make conservative projections (according to the respective reporting guidelines). The actual payment flows turned out to be much more balanced than projected by banks in their periodical reports. As a consequence, the short-term liquidity (funds realizable within five days) climbed from approximately EUR 95 billion in early 2009 to EUR 120 billion as at June 5, 2009.

¹⁷ In 2008, only 40 Austrian banking groups provided data for these business segment reports. Therefore, figures on profitability and business performance in this paragraph differ from previous sections, which cover all banking groups.

Market Share of Austrian Banks' Subsidiaries¹

As at December 31, 2008

Aggregated national total assets of banks



¹ In this chart, all countries with aggregated total assets of Austrian banks' subsidiaries exceeding EUR 1 billion have been taken into account. Therefore, the latest acquisitions in CIS and CEE countries, with the exception of Kazakhstan and Montenegro, have not been included. Note: The chart shows the individual countries according to the Austrian subsidiary banks' 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 vis-à-vis the respective country. Because of the large size of the Russian banking sector (EUR 676 billion as at end-2008), the chart does not show Russia, where Austrian subsidiaries held a market share of 4.3%. The countries are colored according to Moody's average bank financial strength (BFS) rating.

the domestic business and in the segment rest of the world (EUR –1.2 billion and EUR –1.5 billion respectively). The data reported also show continued slight total asset growth – by some 2% to EUR 314 billion – in CESEE in the second half of 2008, accounting for a percentage of just under 31.16% (31.24% in the second quarter of 2008) of the consolidated assets of all Austrian banks.¹⁸ In view of the adverse environment, the contribution of the CESEE segment to profitability can be expected to shrink notably in the near future.

All in all, at end-2008, 12 Austrian banks operated 69 fully consolidated subsidiaries in CESEE (not including Yapi ve Kredi Bankasi, UniCredit Bank Austria's nonfully consolidated joint venture in Turkey). Of these 69 subsidiaries, 27 operate in the Member States that joined the EU in 2004 (NMS-2004),¹⁹ 7 in the Member States that joined the EU in 2007 (NMS-2007)²⁰ and 24 in the remaining Southeastern European (SEE) countries²¹ and 11 do business in countries of the Commonwealth of Independent States (CIS).²²

¹⁸ This figure for total asset growth was not distorted by significant restructuring in 2008 and is therefore based on the organic growth of existing subsidiaries and the expansion of cross-border direct lending.

¹⁹ NMS-2004: Latvia (LV), Poland (PL), Slovakia (SK), Slovenia (SI), the Czech Republic (CZ) and Hungary (HU).

²⁰ NMS-2007: Bulgaria (BG) and Romania (RO).

²¹ SEE: Albania (AL), Bosnia and Herzegovina (BA), Croatia (HR), Montenegro (ME), Macedonia (MK) and Serbia (RS).

²² CIS: Kazakhstan (KZ), Kyrgyzstan (KG), Russia (RU), Ukraine (UA) and Belarus (BY).

Austrian subsidiaries continued to play a prominent role in the region in the second half of 2008. Their share in the entire CESEE banking market decreased only marginally between end-2007 (15.3%) and end-2008 (15.1%); if Russia is not included, the decline would have been from 22.7% to 21.9%.²³

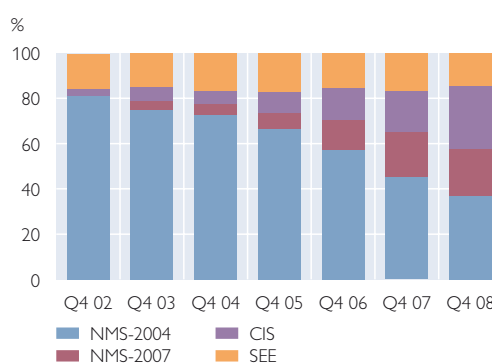
Unconsolidated total asset growth of Austria's fully consolidated subsidiaries in CESEE rose by 15.4% in 2008 as a whole, confirming that expansion continued in the year under review (see chart 33). More than 80% of this expansion was achieved in the first half of 2008. In the second half of 2008, continued growth was recorded in the CIS only, while business stagnated in all other countries. Total asset growth also reflects Austrian banks' strategic interest in this region.

Accounting for almost 50% of the CESEE subsidiaries' total assets, Austrian subsidiaries in the NMS-2004 contributed only 37% to the total operating earnings of the CESEE segment (some EUR 2,653 billion). The shift to-

wards countries where less capital investment produced higher gains seen in previous periods continued in 2008. For instance, CIS subsidiaries contributed 28% or EUR 1,985 billion to total operating earnings in CESEE, whereas their share in total assets was only 18%; Austrian subsidiaries in the NMS-2007 contributed 20% or EUR 1,464 billion (total assets share: 15.2%), and SEE subsidiaries accounted for 15% or EUR 1,039 billion (total assets share of 17.5%).

Chart 34

Operating Profit of CESEE Subsidiaries

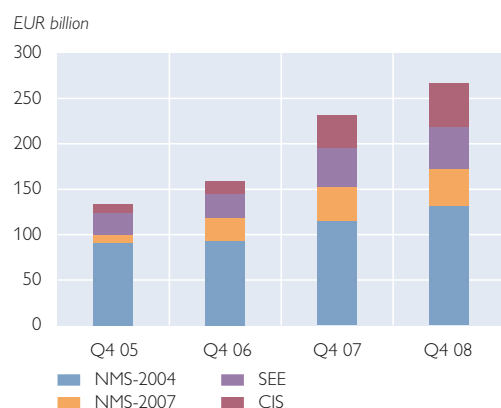


Source: OeNB.

Chart 33

Total Assets of Austrian Banks' Subsidiaries in CESEE

As at December 31, 2008



Source: OeNB.

Austrian subsidiaries' total exposure through loans increased by 16.3% to EUR 170.6 billion compared with the fourth quarter of 2007 (for developments in foreign currency lending, see box 4 below). While the NMS-2004's share in the total CESEE exposure dropped from 48.5% at end-2007 to 47.4% at end-2008 and the SEE countries' share also shrank from 18.2% to 17.7% over the same period, the share of the NMS-2007 remained almost unchanged at 15.2% at end-2008 (15.1% at end-2007). At the same time, the CIS countries' share increased from 18.2% at end-2007 to 19.8% at end-2008.

²³ Both figures excluding Turkey.

Direct lending by Austrian parent banks picked up by 24.7% to EUR 68.5 billion between end-2007 and end-2008.²⁴ The NMS-2004 accounted for the lion's share of loans extended directly by Austrian banks (45.3%), followed by SEE countries (30.9%), the NMS-2007 (15.6%) and the CIS (8.1%).

However, the rapid expansion seen in recent years resulted in deposits growing at a lesser pace than lending. Correspondingly, the relation between loans to customers and customers' deposits held at Austrian subsidiaries in CESEE deteriorated from 66% in early 2002 to 117% at end-2008. Yet, more than 85% of all credit extended by Austrian subsidiaries in CESEE were still funded by local deposits. It needs to be borne in mind, however, that there is a currency mismatch between deposits and loans in many markets.

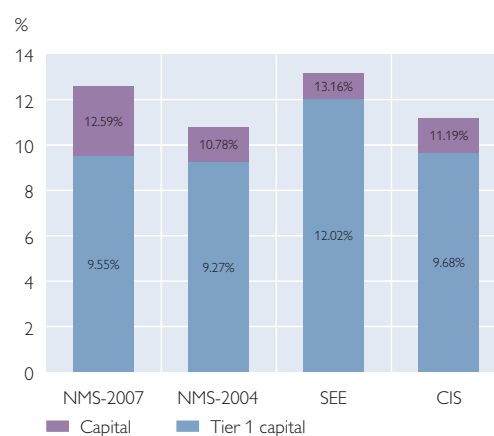
The aggregated loan loss provision ratio of Austrian subsidiaries in CESEE, which has climbed steadily since its low in the third quarter of 2007, edging up from 2.3% to 3% at end-2008, indicates that the credit cycle has peaked and that a pronounced increase in credit risk provisioning can be expected in the near future (for details, see the study by Schürz, Schwaiger and Übeleis in this Financial Stability Report). As a consequence of the latest aid packages provided by the IMF and the European Commission, an escalation of the situation now appears much less likely. In any case, CESEE cannot be regarded as a homogeneous region, as

certain countries or country groups have been affected by the financial crisis to varying degrees. Similarly, the activities of the Austrian financial intermediaries in CESEE are regionally well diversified, which reduces the danger of a country-specific or subregional concentration risk.

Chart 35, which shows the average weighted capital ratios of fully consolidated Austrian subsidiaries in CESEE, points to the fact that most banks have, in addition to profit before risk costs, excess equity (i.e. the weighted mean capital ratio was 11.7% at end-2008), which can be used for risk provisioning if need be. Despite this buffer, recapitalization will be required at certain subsidiaries, as has been the case at subsidiaries in Ukraine. For such recapitalizations, funds from the Austrian bank support package can be used.

Chart 35

Average Capital and Tier 1 Capital Ratio of Austrian Banks' Subsidiaries in CESEE



Source: OeNB.

²⁴ As there were changes in reporting to the Central Credit Register in early 2008 (among other things, Austrian banks' direct loan exposure to the region has been included), a historical assessment of loan growth is possible only to a limited extent.

Box 4

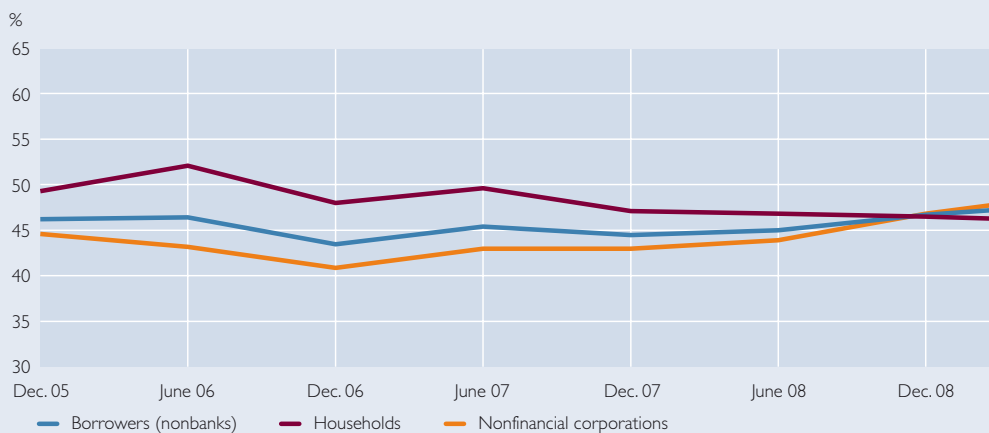
Foreign Currency Loans Continue to Play a Prominent Role in CESEE

Borrowing in foreign currency has been a typical feature of the financing landscape in CESEE. As the financial crisis spread to the region and the local currencies started to feel the ensuing negative impact, foreign currency loans were identified as a key risk factor, thus becoming the focus of international attention. The Austrian Financial Market Authority (FMA) and the OeNB have been skeptical about foreign currency lending in CESEE for some time and have therefore been following developments very closely.

At the end of March 2009, the amount of retail loans (to households and nonfinancial corporations) issued by Austrian subsidiaries in CESEE totaled some EUR 173 billion. About EUR 85 billion or slightly below 49% (exchange rate adjusted: 47%) of this amount were denominated in foreign currency.

Chart 36

Share of Foreign Currency Loans in Total Loans Issued by Austrian Subsidiaries in CESEE



Source: OeNB.

Note: Adjusted for exchange rate effects.

In addition to the foreign currency loans issued by their local subsidiaries, Austrian banks provided some EUR 41 billion in direct lending (i.e. lending from the Austrian parent) denominated in foreign currency. As a result, Austrian banks' total foreign currency exposure to CESEE and the CIS amounted to some EUR 136 billion and is hence considerably higher than their domestic foreign currency exposure (about EUR 50 billion in household and corporate loans).

Financial Market Crisis Drives Up Capital Requirements

In the current international financial market crisis banks' capital ratios are an important gauge of their risk-bearing capacity. The capital ratio and the tier 1 capital ratio are used to assess banks' capital adequacy.²⁵ Following

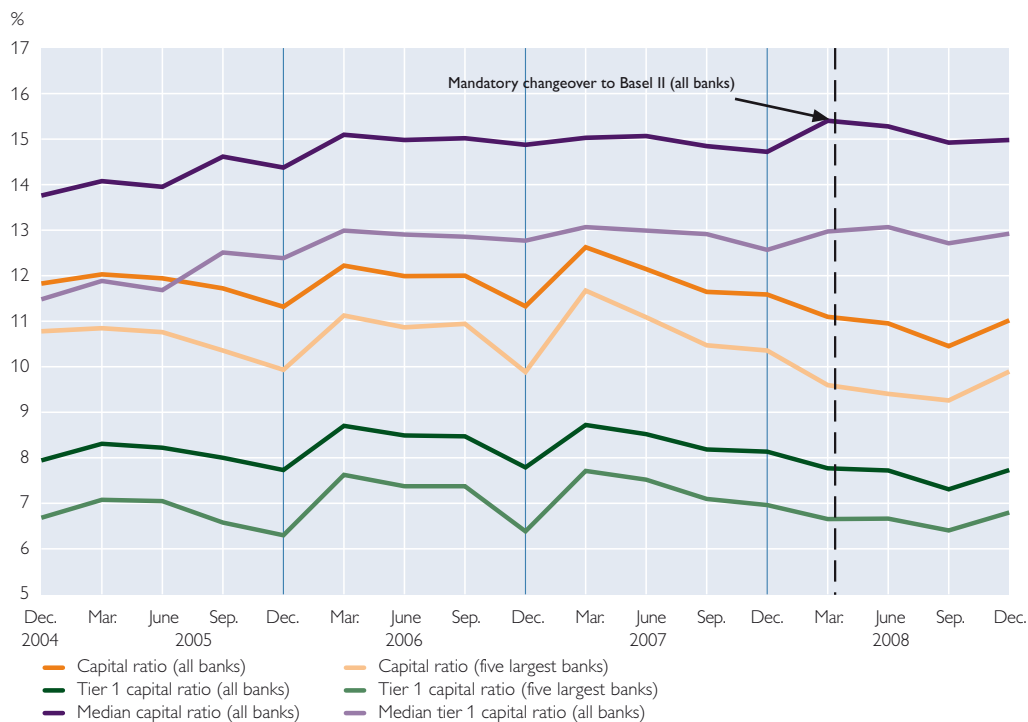
the mandatory changeover to Basel II at all banks in the first quarter of 2008, Basel II transition effects no longer obscure the analysis of changes in capital adequacy.²⁶

At end-2008, Austrian banks' aggregate capital ratio (tier 1 capital ratio) came to 11.02% (7.73%), down by

²⁵ For detailed information regarding the method of calculation, see the Financial Stability Report 16.

²⁶ For a brief description of effects owing to the changeover to Basel II, see the Financial Stability Report 16.

Austrian Banks' Consolidated Capital and Tier 1 Capital Ratios



Source: OeNB.

0.57% (0.40%) compared with the end-2007 figure, but still clearly above the regulatory minimum requirement of 8%.

Following a sharp decline in the third quarter of 2008 to 10.45% and 7.3% respectively, the capital ratio and the tier 1 capital ratio rebounded in the fourth quarter of 2008, mostly due to better ratios reported by the five largest Austrian banks. This improvement was mainly attributable to one-off effects including capital increases through main shareholders, retained earnings, sale proceeds as well as government participation capital.²⁷

In addition, since end-2008, participation capital has been repeatedly increased under the government's bank support package, which boosted the tier 1 capital ratio and the capital ratio

still further. If the EUR 15 billion earmarked for participation capital under the bank package were fully utilized, the capital ratio could increase by approximately 220 basis points compared with end-year figures.

Ratings of Largest Austrian Banks Downgraded or under Review

While the major rating agencies had not changed the ratings of large Austrian banks until the fall of 2008, they acted decisively afterwards, cutting ratings and publishing reports on Austrian banks' exposure to Eastern Europe. In November 2008, Moody's changed the outlook on Hypo Group Alpe Adria's long-term deposit rating to "under review/negative" and VBAG's Bank Financial Strength Rating (BFSR) from C to C- while maintaining the outlook

²⁷ Of the five largest Austrian banks, only Hypo Group Alpe Adria had received government participation capital (in the amount of EUR 900 million) as at December 31, 2008.

Table 2

Ratings of Selected Austrian Banks

As at May 26, 2009

	Deposit rating		Bank Financial Strength Rating	
	Long-term	Outlook		Outlook
UniCredit Bank Austria	A1	negative	D+	negative
BAWAG P.S.K.	Baa1	stable	D	stable
Erste Bank	Aa3	negative	C-	negative
Hypo Group Alpe Adria	Baa1	under review/negative	D-	under review/negative
VBAG	Aa3	stable	C-	under review/negative
RZB	A1	stable	D+	negative

Source: Moody's Investors Service.

at “under review/negative.” In April 2009, several other banks were downgraded: Erste Bank (BFSR from C to C-), RZB (long-term deposit rating from Aa2 to A1 and BFSR from C to D+), UniCredit Bank Austria (long-term deposit rating from Aa2 to A1 and BFSR from C+ to D+). Likewise, Standard & Poor’s changed the long-term foreign issuer rating both for RZB (in November 2008) and UniCredit Bank Austria (in March 2009) from A+ to A.

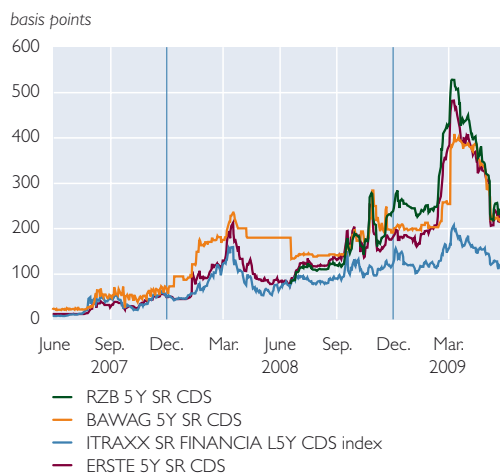
CDS Spreads and Stock Prices of Austrian Banks Under Pressure

The stock prices of the large Austrian banks have moved roughly in line with those of other large European banks (Dow Jones EURO STOXX Bank Index²⁸) since the outbreak of the financial crisis (June 1, 2007). However, due to Austrian banks’ large exposure to CESEE and the CIS, their stock price losses exceeded those seen at other large European banks by several per-

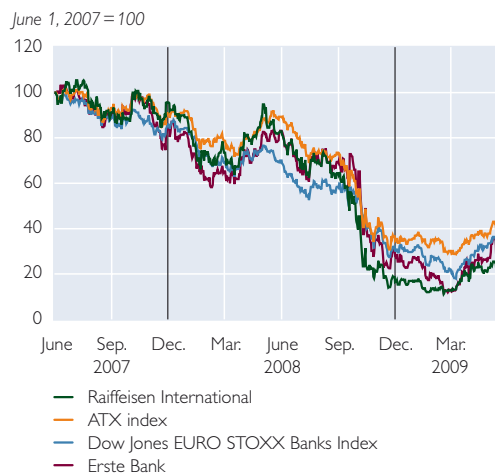
Chart 38

Austrian Banks’ Stock Prices and CDS Spreads

CDS of Austrian banks



Austrian Banks’ Stock Prices Compared with National and International Stock Price Developments



Source: OeNB, Bloomberg.

²⁸ The Dow Jones EURO STOXX Banks index, which is a weighted index of bank shares, includes 39 European banks (e.g. Erste Bank, Raiffeisen International and UniCredit).

centage points. After stock prices reached their trough in March 2009, a pronounced upward trend has been observed.

A comparison of large Austrian banks' CDS spreads with the European finance industry's average figures, represented by the iTraxx Senior Financials Index,²⁹ points to the fact that a reassessment of the situation of Austrian banks took place in the first quarter of 2009. While at the onset of the crisis, the focus of attention was on exposures to subprime loans and then shifted to credit derivatives following the collapse of Lehman, afterwards the financial markets turned their attention to Austrian banks' exposure to Eastern Europe. Many capital market players started to question the quality of Austrian banks' loan portfolios in Eastern Europe; as a result, Austrian banks CDS spreads widened to up to 500 basis points by March 2009, as shown in chart 38. As global financial markets started to recover in mid-March 2009, CDS spreads subsequently fell to below 400 basis points. Nevertheless, the implied volatilities of at-the-money call options on the stocks of the two listed Austrian banks point to significantly increased stock price volatility in the near future.

Financial Crisis Weighs on Investment Returns of Other Financial Intermediaries

Insurers Worldwide Facing Higher Risks

The international insurance sector increasingly felt the impact of the turmoil in financial markets in 2008, albeit to a lesser extent than the banking sector. Inadequate risk management coupled with substantial exposure to the struc-

tured credit market (including credit derivatives) were the main reasons for problems encountered by some major U.S. and European insurers that had to seek government assistance. Aggregate profitability declined in 2008. Investment performance suffered as equity securities and debt securities lost ground. The increase in credit risk premiums also had a negative effect, given that debt securities (including corporate and bank bonds) accounted for the lion's share of the invested capital. It has to be noted though that insurers tend to have more leeway than banks in accounting valuation; this may be one of the reasons why insurance companies have been hit less severely by the crisis than banks. Insurers' hidden reserves fell notably in the second half of 2008, and some insurers may have even built up hidden liabilities. The sector's solvency has deteriorated accordingly.

The difficult economic environment and the high uncertainty prevailing in financial markets have been a big challenge for insurers. Market indicators confirm that the overall outlook for the European and the Austrian insurance industries has deteriorated. However, the insurance sector too has benefited from the general market recovery from March 2009 on. A prolonged period of low interest rates in conjunction with a weak stock market performance would considerably increase pressure on the insurance sector.

The Solvency II framework with its more risk-sensitive regulatory requirements aims to reinforce the harmonization of supervision of the insurance industry at EU level. It was adopted by the European Parliament in April 2009; implementation at the national level is expected to start in 2012.

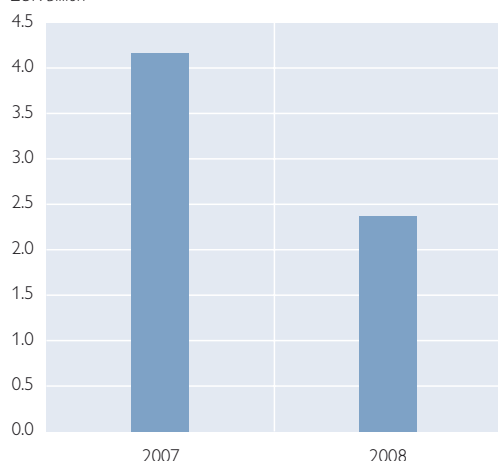
²⁹ The iTraxx Senior Financials Index, which is a subindex of iTraxx Europe Index is a CDS index for financial titles, includes 25 European financial values (16 banks and 9 insurance companies).

Chart 39

Austrian Insurers' Capital Investment

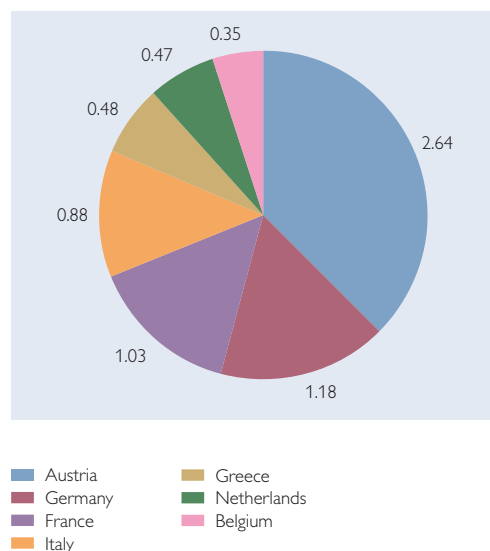
Net investment results

EUR billion



Major government bond holdings

EUR billion



Source: FMA, OeNB, OeNB calculations.

Austrian Insurers Report Declining Profits

The domestic insurance sector has felt the impact of the crisis primarily due to losses in their investment portfolio. In 2008, Austrian insurers' premium income³⁰ increased by some 2.8%; factoring in an average inflation rate of 3.2%, real premium income even shrank slightly year on year. Claims payments rose by 7.5%. The net investment result dropped by 40%; at more than 60%, the decline was particularly strong in the property/casualty business, which can be traced, inter alia, to this segment's fairly high exposure to stocks and equity securities. Aggregate pre-tax profits slumped by three-quarters to slightly above EUR 400 million. Except for life insurance, all segments reported net profits, however.

The reappraisal of risk has led to considerably higher risk premiums even on euro area government debt, feeding through to insurers' bond portfolios. According to the OeNB's securities issues statistics, the seven largest sovereign bond portfolios totaled almost EUR 7 billion at end-2008, the lion's share of which had been issued by prime borrowers. Italian and Greek government bond spreads against German bunds have widened particularly strongly.

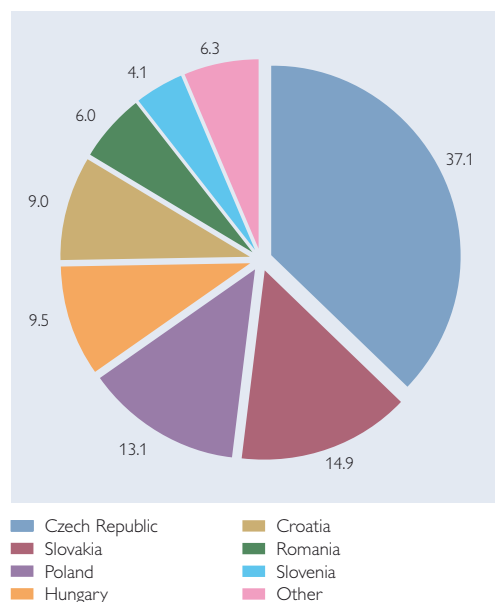
Like Austrian banks, domestic insurers have expanded into CESEE over the past few years, building up a broadly diversified exposure with a strong focus (87%) on the EU Member States of the region.

³⁰ Excluding reinsurance transactions.

Chart 40

Austrian Insurers' Exposure to CESEE in 2007 (as a percentage of total assets)¹

EUR million in %



Source: FMA.

¹ Due to differences in accounting rules and in the definition of balance sheet items, the data reported to the FMA may differ from the data reported in individual annual reports.

Note: Country share in the Austrian insurance sector's total assets in CESEE (total: EUR 8.9 billion).

Premium growth was comparatively robust in CESEE in 2008, even though it already lost some momentum in the second half of the year. The gloomier economic outlook for CESEE in conjunction with slower credit growth seems to have affected the demand for insurance products. Moreover, investors' declining risk appetite and the depreciation of local currencies are likely to have dampened demand for life insurances (linked to foreign currencies and funds), which had contributed strongly to premium growth. Still, the CESEE insurance market still holds high potential in terms of catching up and development.

³¹ Including investments held as fund- and index-linked life insurances. Here, the insurance holder bears the investment risk, so that the figures given for the sector's total exposure are slightly too high.

An analysis of the insurance sector's exposure to the banking sector to assess the risk of contagion shows that Austrian insurers' total exposure³¹ to domestic credit institutions increased by some 23% year on year and came to 15.6% of the insurance sectors' total assets. Debt securities issued by domestic banks accounted for the bulk of this exposure, having climbed by 14% to EUR 9.8 billion. Insurance companies' investments with domestic credit institutions thus came to slightly more than 1.3% of Austrian banks' consolidated total assets. The current outlook suggests that the mutual risk of contagion has increased somewhat, albeit from a low level.

Mutual Funds Record Steep Decline

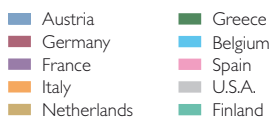
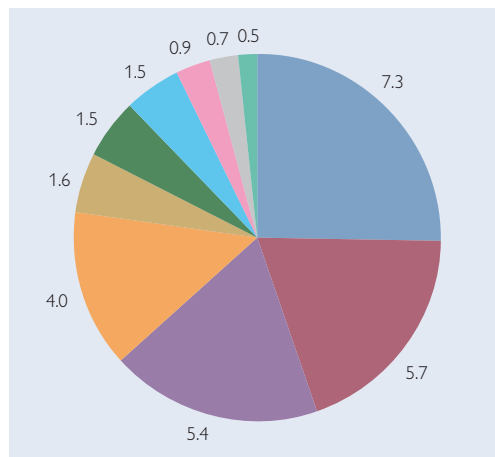
European mutual funds felt the full impact of the financial crisis in 2008. Assets under management by European mutual funds contracted by 22% to EUR 6,142 billion, mostly due to price losses – in particular of stocks – and capital outflows. Outflows peaked in October 2008, when uncertainty about the stability of the international financial system reached its highest levels. Furthermore, the introduction of higher guarantees for bank deposits in the EU reduced the attractiveness of mutual fund shares, in particular in bond and money market funds, relative to bank deposits. In December 2008, the revelations about U.S. investment manager Bernard Madoff led to rising reputational risk, especially in the hedge fund sector. Also, investors increasingly expressed concerns about controls and transparency. Owing to the difficult economic environment, the outlook for the European mutual fund sector continues to be uncertain.

Chart 41

Mutual Funds and Investment Companies

Ten largest government bond holdings

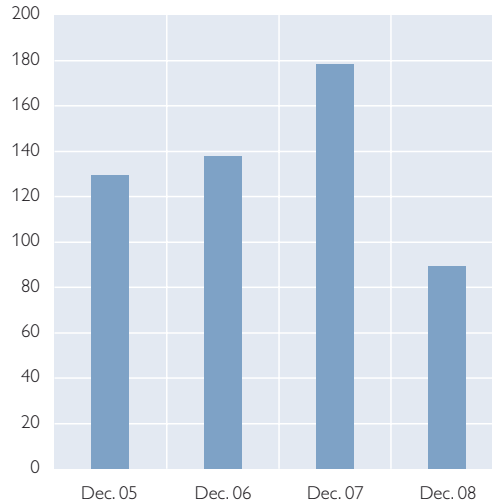
EUR billion



Source: OeNB.

Aggregate operating profits of Austrian investment companies

EUR million



Austrian Mutual Fund Performance on Par with European Average

According to the OeNB's mutual fund statistics, assets under management by Austrian mutual funds (including fund-of-fund investments) performed in line with the European market, falling by 23% or EUR 38.2 billion to EUR 127.4 billion. In October 2008 alone, the decline amounted to more than EUR 10 billion. Price losses and capital outflows are the main reasons for this downward trend. Almost halving in 2008, the volume of equity funds slumped more than any other fund segments. However, even the assets under management by bond funds, which are usually fairly stable in their performance, contracted by 20%. As the situation in international financial markets started to calm down, the decline in assets under management slowed somewhat (−4%) in the first quarter of

2009. Austrian real estate funds were hardly hit by the financial market turmoil up until the third quarter of 2008. However, amid heightened investor uncertainty, an increased preference for liquidity and profit-taking, open-end real estate funds too registered capital outflows and suspended repurchases of fund shares in the fourth quarter of 2008.

More than half of Austrian mutual funds' assets (55%) are invested in debt securities. Because of their relevance for Austrian mutual funds and following a reassessment of credit risk (even for euro area government issuers), the OeNB analyzed the ten largest government bond positions on the basis of its securities issues statistics. As at end-February 2009, the exposure of mutual funds to government bonds was highest vis-à-vis Austria and Germany, two prime issuers. In January and February

2009, German government bonds were sold, however, which can be traced to their high liquidity relative to other bonds.

The capital-weighted average total performance of all Austrian mutual funds stood at -13.4% (equity funds: -61.2% , balanced funds: -14.6% , bond funds: -0.15%) in 2008.

The 29 Austrian investment companies reported a steep decline in profits in 2008. Operating profits halved and stood at just under EUR 90 million at year-end. Decreasing profitability resulted in likewise smaller profit shares for the company owners, primarily Austrian banks. Still, in these economically uncertain times, Austrian mutual funds have contributed to the stable refinancing of Austrian banks.

Pension Funds and Severance Funds Feel Impact of the Crisis

The economic and financial crisis led to a further deterioration in investment results in the fourth quarter of 2008. The nominal return on investment of Austrian pension funds was -12.9% for the entire year of 2008 (first to third quarter: -8.4%). The OECD estimates that pension assets worldwide have shrunk by some EUR 3,800 billion or more than 20%.³²

In the defined benefit system, the crisis has led to a marked increase in the concerned companies' liabilities. While the value of accumulated assets has declined, the discounted present value of future benefits has increased on the back of lower long-term interest rates (discount rates). In Austria, some 16% of (prospective and current) beneficiaries were members of a defined benefit scheme in 2007. Employers were obliged to make supplementary contributions for around 26% of premium reserves. In the defined contribution system, it is mostly the beneficiaries who bear the losses. A recent study shows that the volatility of pension benefits in Austria is high by international standards.³³ The OECD study referred to above concludes that Austrian pension funds require improvements in terms of risk management, governance structures and transparency.³⁴

Austrian severance funds suffered considerably smaller losses in 2008 (return on investment: -2%). This is mainly due to legal provisions requiring capital guarantees. For this reason, severance funds invest mainly in euro bonds.

³² Antolin, P. and F. Stewart. 2009. *Private Pensions and Policy Responses to the Financial and Economic Crisis*. OECD Working Paper on Insurance and Private Pensions No. 36. Paris.

³³ Klec, G. 2008. *Sicherungssysteme und Risikoverteilung bei Betriebspensionen*. Vienna. Study commissioned by Arbeiterkammer Wien. December. Countries for comparison: Denmark, Sweden, Netherlands, Germany, United Kingdom and Belgium.

³⁴ See Schmitz, S. 2006. *The Governance of Occupational Pension Funds and the Politico-Economic Implications: The Case of Austria*. In: Mooslechner, P., H. Schuberth and B. Weber (eds.). *The Political Economy of Financial Market Regulation: The Dynamics of Inclusion and Exclusion*. Cheltenham, U.K. Edward Elgar. pp. 214–246.

Special Topics

A Review of the Impact of the Crisis on Austria's Financial Sector

Martin Schürz,
Markus S.
Schwaiger,
Julia Übeleis¹

Given its economic structure and the business model generally used by its banks, Austria became exposed to the current crisis with a certain lag but has since felt the impact quite strongly in some respects. This article provides a rundown of the repercussions of the financial crisis on Austria, focusing on the financial sector, i.e. banks and the capital market.²

Assuming that financial crises tend to follow a typical pattern, this study uses this pattern to shed light on the specifics of the current crisis and of the Austrian financial sector. Austrian banks, for instance, are characterized by the strong regional focus of their activities in Central, Eastern and South-eastern Europe (CESEE) and by their strong strategic focus on retail banking. So far, the crisis has caused default rates to rise, credit conditions to become more restrictive for companies and households, and retail demand for stocks to shrink; some of those effects, though, are yet to fully emerge. Likewise, banks' core business – lending in Austria and in the CESEE area – is just beginning to feel the full impact of the crisis.

1 Typical Financial Crisis Cycles and Triggers

Borio (2003) applies the frame of boom-bust cycles to characterize financial crises. Differences notwithstanding, financial crises are typically characterized by various phases and share a

common crisis determinant, namely aggressive risk-taking.³ The current crisis arguably differs from other crises, such as the Asian crisis or the crises in Latin America in the 1980s and 1990s, in terms of magnitude – but it does not differ as far as the fundamental causes are concerned.⁴

First, financial imbalances build up, as evidenced by excessive credit growth and the overshooting of stock prices. Second, the boom leads to looser financing conditions and makes loans easier to obtain. Banks take a more relaxed approach to risk assessment and risk premiums decline. Such phases of credit expansion are usually highly correlated with a rapid increase in asset prices.

In the third stage, a trigger may reverse the dynamics. This leads to a repricing of long-term assets submitted to banks as collateral. The resulting credit squeeze and the undermined confidence in the system weigh on the economy, which eventually slips into recession. If banks' capital base is poor, a banking and financial crisis ensues and banks could collapse.

Compared with this conceptual framework, the current crisis unfolded at an unusually swift pace, and it remains subject to substantial uncertainty with regard to the path of recovery. In the financial sector, the widespread build-up of mark-to-market assets in banks' balance sheets caused expected losses to be realized prematurely on a

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² *Examining medium-term effects of the financial crisis on the real economy (e.g. demand and growth setbacks, unemployment and bankruptcies) would go beyond the scope of this article; these effects are briefly referred to whenever necessary.*

³ *In this context, Borio (2003 and 2008) explicitly cites limited perception of systemic risk over time.*

⁴ *See also Goodhart et al. (2004).*

large scale. In the real economy, a range of economic fundamentals were revised downward drastically within very short timeframes. The Austrian economy, for instance, contracted by 2.8% in real terms in the first quarter of 2009 against the last quarter of 2008 (fourth quarter 2008 against previous quarter: -0.4%). Confidence indicators point to a deceleration of the downtrend, but at -4.2%, the economic contraction will nevertheless be substantial in 2009 as a whole; and for 2010, the OeNB expects the economy to stagnate at -0.4%.

2 Austrian Banks and the Financial Crisis

The current crisis is traceable to the U.S. subprime market for structured credit securities. In a nutshell, rising risk aversion to these structured credit products caused more and more market participants to lose confidence, as a result of which refinancing in the interbank market and later also in capital markets became more restrictive. In a second stage of the crisis beginning in the fall of 2008, the unfavorable conditions increasingly spread to the emerging markets, including Central, Eastern and Southeastern Europe. CESEE risk premiums soared as a consequence. The slowdown in real economic activity eventually reached Eastern Europe via the advanced economies.

Owing to their “originate and hold” business model,⁵ Austrian banks were comparatively little affected by the turmoil in the structured credit product markets. At about 1.5% of total assets or EUR 15.9 billion⁶, the 25 largest Austrian banks had a relatively modest

total exposure to structured credit products at end-2008. The share of the six largest banks⁷ accounted for EUR 14.6 billion. Besides, 57.6% of the respective exposure was rated AAA or AA.⁸ For this reason, the necessary write-downs were small by international standards: in 2007, they came to around 0.1% of total assets (about EUR 1.1 billion) and until the end of 2008 increased by about EUR 2.1 billion (EUR 1.9 billion for the six largest banks) or some 0.2% of total assets in 2008 to approximately EUR 3.2 billion for both 2007 and 2008.

During this first stage of the current crisis, the direct exposure of Austrian banks was largely limited to refinancing problems in interbank markets, as it became increasingly difficult to raise funds from other banks, especially funds in U.S. dollars. To stabilize the situation, central banks conducted additional tenders, including operations with longer-term maturities (initially 6 months; 12 months from June 2009), switched to fixed rate tenders and extended the list of collateral eligible for repo operations. Moreover, U.S. dollar funding was made available through the USD/EUR swap line implemented by the ECB and the Federal Reserve System at end-2007 (and through the EUR/CHF swap agreement concluded with the Swiss National Bank in October 2008). In Austria, the establishment of the Oesterreichische Clearingbank AG, which began operations on November 13, 2008, further contributed to smoothing interbank market operations, in particular for banks lacking sufficient eligible assets to obtain

⁵ “Originate and hold” means that assets remain in the banking book of the bank, whereas according to the “originate and distribute” model, assets are securitized and sold.

⁶ Excluding credit default swaps (CDS).

⁷ Erste Group Bank AG, UniCredit Bank Austria AG, Raiffeisen Zentralbank AG, BAWAG P.S.K., Oesterreichische Volksbanken AG (incl. Kommunalkredit), Hypo Group Alpe Adria.

⁸ 19.5% of the total volume is rated BBB, 7.2% is non-investment grade.

liquidity from the ECB. All in all, Austrian banks profited from their solid retail base in this respect. Since the outbreak of the financial crisis, retail customer deposits in Austria increased by EUR 40.2 billion until the end of the first quarter 2009 (+EUR 34.2 billion by end-2008), and in consolidated terms (including cross-border operations), customer deposits even grew by EUR 60 billion by end-2008.

By international standards, the dislocation in the interbank market, however, impaired Austrian banks much less than the spillover of the crisis to CESEE. Even though Austrian bank groups' CESEE exposure equals only some 20% of western banks' total exposure in the region, at EUR 199 billion, it is nevertheless substantial above all in relation to GDP (about 70% at end-2008). This phenomenon not only triggered a drastic widening of CDS spreads in the final quarter of 2008 but also had Austrian bank stocks plummet (see also p. 47 in this issue). A certain recovery was discernible in the spring 2009, which went hand in hand with

news about the willingness of both the IMF and the European Commission to swiftly provide new funds for CESEE.

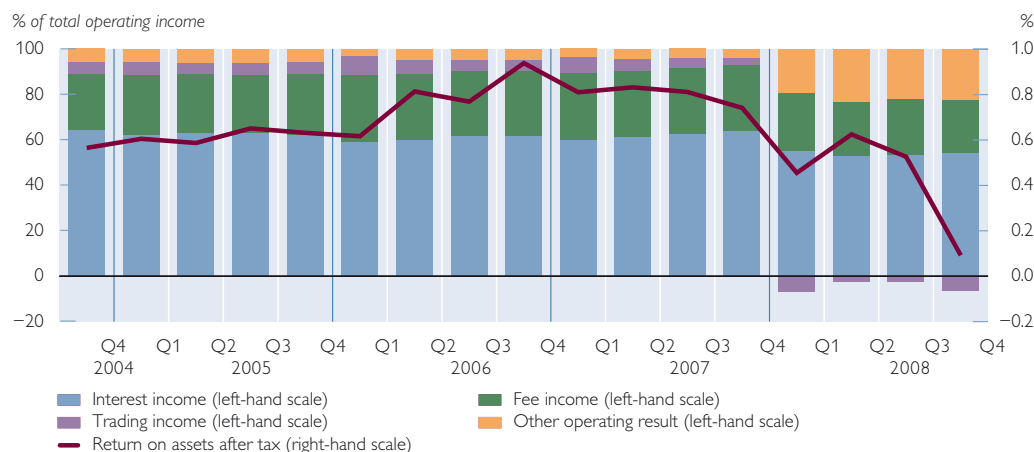
2.1 Austrian Banks' Profitability Decreased Markedly

A host of measures adopted by central banks, governments, the IMF, the European Commission and the World Bank contributed to mitigating the negative impact of the crisis on banks' liquidity situation and performance. The Austrian banking package for instance helped prevent a liquidity squeeze and expand banks' capital buffers. Even though the Austrian banking system still posted a profit in 2008, banks' profitability had deteriorated considerably. Their (consolidated) return on assets after tax fell to 0.09% in 2008.

A sharp increase in loan loss provisions and a negative trading result were offset by continued robust interest income, including net year-on-year gains in the first quarter of 2009. This development was mainly attributable to continued high credit growth in 2008.

Chart 1

Consolidated Operating Income by Type of Income and Return on Assets after Tax



Source: OeNB.

2.2 Austrian Banks' Loan Supply Policy Compared with Other European Banks

Such an analysis naturally gives rise to the question about a potential credit crunch in Austria, which to date has more or less been refuted (OeNB, 2009). While new lending by banks has not let up noticeably, it nevertheless has not offset the decreases in other types of financing, which have been sharp in some segments.

However, according to the general trend in the euro area as gleaned from the Eurosystem's quarterly bank lending survey (BLS), banks in all countries have continually tightened their credit approval standards and/or credit conditions for corporate loans since the onset of the crisis. The margins on both average and riskier loans were increased in all countries, with the increase more marked for riskier loans.

When comparing the Austrian BLS data with the aggregate euro area data, we see that Austrian developments closely correlate with the euro area average. In light of the financial market turbulence, several Austrian banks captured in the BLS, among other things, markedly tightened their credit stan-

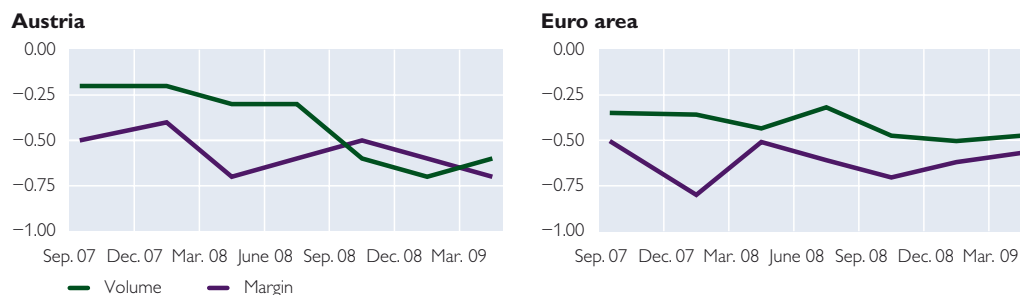
dards for corporate loans. On a consolidated basis, the tightening was even more pronounced than in the euro area as a whole.

The unfavorable refinancing conditions in the money and bond markets impaired Austrian and euro area banks' lending activities. The effects on the volume of loans extended in Austria were by comparison more pronounced than the effects on margins (see chart 2).

Since the beginning of the financial turmoil, banks have tightened their standards⁹ more sharply for corporate loans than for consumer loans. Interest margins for riskier corporate loans and – somewhat less – for borrowers with average credit ratings were raised for the seventh time in a row in the first quarter of 2009. Large corporate loans were affected more markedly than SME financing. The credit standards applicable to households were tightened much less in contrast. Households' credit demand is weak in view of current economic developments. Yet, Jobst and Kwapil (2008) show that in the short term, interest rates were passed on to households at a markedly slower pace than to corporate borrowers.

Chart 2

Impact of Financial Market Situation on Lending Volume Money and Bond Markets – Volume and Margins



Source: ECB, OeNB (bank lending survey).

Note: 0: mainly unaffected; -0.5: slightly affected; -1: clearly affected.

⁹ Credit standards refer to the criteria banks use to evaluate new loans.

The lending restraint was above all traceable to the financing conditions prevailing in money and bond markets as well as banks' liquidity position. Financing via short-term (one-week) money market instruments and short-term debt securities was impaired in particular. Clear effects were, however, also evident for medium- to long-term debt securities (including mortgage bonds). Furthermore, changes in banks' perception of risk amid the general economic outlook, industry- and company-specific factors as well as the risk on collateral demanded caused banks to slightly tighten their credit standards.

2.3 Crisis yet to Reach Austrian Banks' Core Business

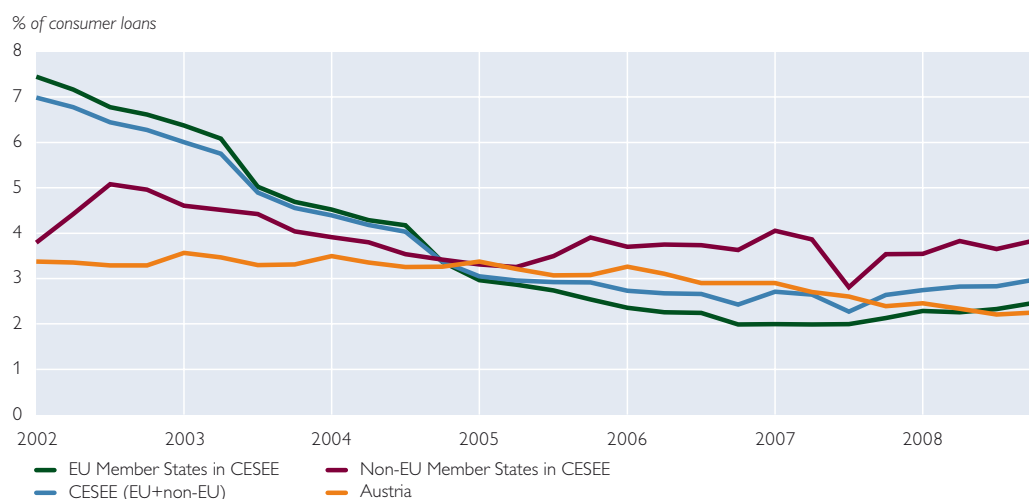
Up to year-end 2008, Austrian banks' core business had not yet been affected by the upheavals on the financial market (write-offs on exposures to Lehman Brothers, Washington Mutual and Iceland), as it proved to be relatively

robust with regard to asset quality until the fourth quarter of 2008. As a case in point, the loan loss provision ratios for both domestic and CESEE assets were at a historically very low level:¹⁰ the ratio came to around 2.2% in Austria, where it had peaked at 3.8% in the first quarter of 1997, when the economy had by today's standards been in a better condition. The notable economic downturn is, however, bound to weigh on banks' profitability in the quarters to come. In CESEE, such a pass-through has already started, as evidenced by chart 3.

Comparing today's situation with previous emerging market crises is not really possible in this respect. Drawing a cautious analogy to the Asian crisis would, however, imply a sharp increase in the loan loss provision ratios. At end-2008, the ratios ran to about 2.5% (CESEE EU Member States) and to around 3.8% (CESEE non-EU Member States). During the Asian crisis, loan

Chart 3

Loan Loss Provision Ratios for Consumer Loans in CESEE and in Austria

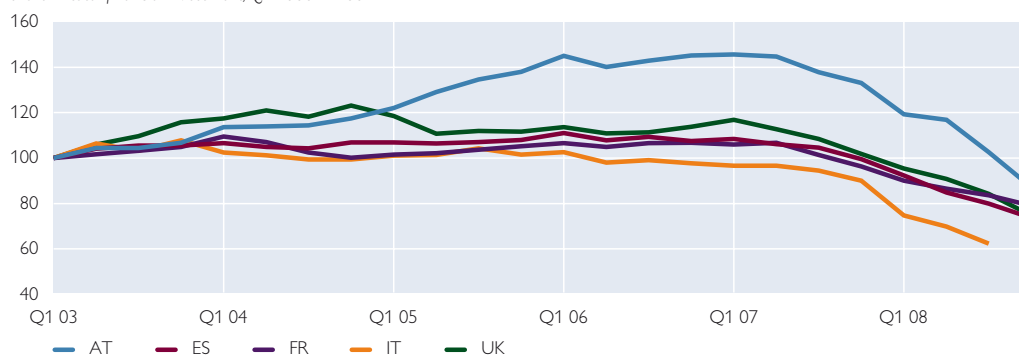


¹⁰ Foreign currency loans are subject to a separate analysis, see box 4 "Foreign Currency Loans Continue to Play a Prominent Role in CESEE" on page 45.

Chart 4

Listed Stocks and Mutual Fund Shares Held by Households

share in total financial investment, Q1 2003 = 100



Source: OeNB, Banco de España, Suomen Pankki–Finlands Bank, Banque de France, NSI UK, ECB (for Italy).

loss provision ratios exceeded 20% in some countries,¹¹ and the volume of nonperforming loans peaked 1.5 to 5 years after the onset of the Asian crisis.¹² Growth rates in the affected countries recovered relatively quickly, though, as the slump in demand was confined to a particular region.

Given the global nature of this time's growth setback, the IMF reckons that it will take some time for the economy to rebound. At the same time, the additional financial assistance provided by the IMF and the EU helped dramatically reduce the likelihood of very bleak scenarios.

As the pressure on profitability is expected to rise, the Austrian banking sector will increasingly be faced with structural issues. This applies to the overbranched domestic business¹³ as well as CESEE activities, where the incipient consolidation trend is expected to continue. Given the strategic nature of Austrian banks' CESEE activities, banks could also frame the crisis as an opportunity, even though several bank

groups have already begun to increasingly refocus on core markets.

2.4 Massive Revaluation Losses on Capital Market Instruments Held by Households

The crisis did not only hurt banks' balance sheets, but also households' assets. At some EUR 416 billion, households' financial assets in 2008 stagnated at the year-earlier level. Amid the financial crisis, households stepped up saving, with the saving ratio climbing from 11.7% in 2007 to 12.4% in 2008, a level last seen in 1995.

The increase in bank deposits equaled over 70% of aggregate financial investment made in 2008 (EUR 18.8 billion). Households channeled funds above all into saving deposits (+EUR 9 billion), but increasingly also in time deposits (+EUR 3.2 billion). Products with an initial maturity of up to one year were particularly sought after. The broadened deposit guarantees definitely helped bolster demand.

¹¹ See also Laeven and Valencia (2008).

¹² See also Asian Development Bank (2002).

¹³ ECB (2008, p. 38).

Between the first quarter 2003 (11.2%) and the fourth quarter 2008 (9.8%), riskier assets accounted for an average 13.8% of Austrian households' financial portfolio. Chart 4 illustrates that the importance of stocks and mutual fund shares in Austrian households' portfolio differs considerably vis-à-vis other euro area counterparts over time. In Austria, demand for riskier assets increased notably before the financial crisis, to decline more strongly thereafter.

Price losses amid the financial crisis concentrated on stocks, but mutual fund shares also experienced profound price and exchange rate effects. Altogether, households have lost around EUR 29 billion on their investments in tradable securities since the onset of the financial crisis (early third quarter of 2007). At some 22%, the participation rate for stocks and/or mutual fund shares is by international standards rather low in Austria. Only the top 5% holders of gross financial assets have a participation rate of 74%. Since it is primarily wealthier households that hold securities, the wealth effects of

the crisis on consumption are expected to be rather weak (see Fenz and Fessler, 2008).

Investment behavior in Austria has changed more profoundly over the past years than in other euro area countries. The capital market, which economic policymakers had sought to promote in recent years (subsidized personal pension scheme, occupational pension plans, equity culture), considerably gained in importance for households before the crisis. Currently, households are shifting to "safe assets" (see Fessler and Schürz, 2008).

Falling capital market prices also pushed down the market value of the invested assets of insurance corporations and pension funds. Households' net equity in life insurance reserves and pension fund reserves suffered valuation losses of an estimated EUR 2.3 billion.

3 Economic Policy Measures in Support of the Austrian Financial Sector

The current crisis drives home the fact that throughout the world banking

Chart 5

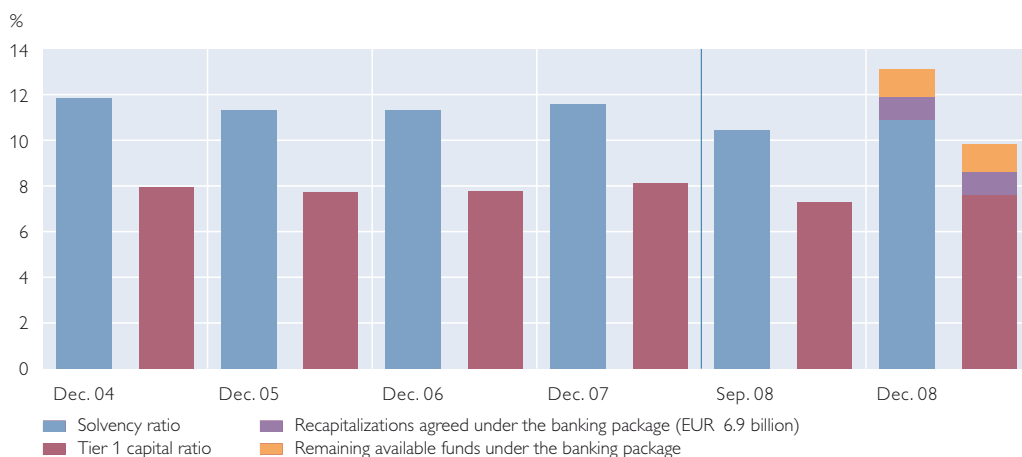
Household Sector, Price and Exchange Rate Effects



Source: OeNB.

Chart 6

Development of the Tier 1 Capital Ratio and the Capital Ratio, including Recapitalization under the Banking Package



Source: OeNB.

systems had relied too heavily on debt financing.¹⁴ The high leverage was attributable to overall low risk aversion and to the fact that the regulatory capital requirements applicable to the trading book were relatively low. Given the absence of large trading books in Austria, this issue did not play a significant role, but Austrian banks' capital ratio likewise declined, falling from 11.8% at end-2004 to 10.5% in the third quarter of 2008, following, among other things, Austrian banks' rapid expansion in CESEE. While the capital ratio still considerably exceeded the 8% regulatory minimum requirement at all times and as from the second half of 2008 banks have increasingly raised new capital (outside of the banking package), banks had – before the crisis – failed to meet investors' demand to build up additional capital buffers.

Since Austrian banks would have otherwise been at a disadvantage and uncertainty about their CESEE exposure was rising, the Austrian government also adopted a banking package to raise banks' capital via participation and hybrid capital. To date, EUR 6.9 billion of participation and hybrid capital have been formally agreed upon. In addition, EUR 15.5 billion and CHF 250 million of bank bonds guaranteed and securitized by the government have been issued.¹⁵ For hybrid capital there is a regulatory ceiling in place, up to which hybrid capital instruments qualify as tier 1 capital (on a consolidated basis). Theoretically, i.e. if taken up in full, the EUR 15 billion banking package enabled Austrian banks to lift their tier 1 capital ratio, as a percentage of the risk-weighted assets, by as much as 222 basis points by end-2008, as is evident from chart 6.¹⁶

¹⁴ See also IMF (2009, p. 4 and p. 27ff).

¹⁵ Under the corporate liquidity support act, EUR 10 billion of the total EUR 75 billion earmarked for state guarantees under the interbank market support act were reappropriated to be used for guaranteeing loans to medium-sized and large Austrian businesses.

¹⁶ For further details, see also Posch et al. (2009) in this issue.

4 Summary

Amid the financial crisis, Austria has been on a downtrend like the rest of the world. Even though structured loans and related losses have played a comparatively minor role in the Austrian banking system, the crisis is already starting to eat into Austrian banks' profits. Credit conditions for companies and households have tightened in Austria more or less in line with moves across the euro area, but banks, unlike capital markets, have continued to fulfill their financing function for the real economy. Judged by the se-

quence of events in previous crisis episodes, at the current juncture, the brunt of the feedback of the real economic downturn on the banking sector is yet to come.

By international standards, Austrian households had been slow to start investing in capital market instruments. The significance of listed securities soared before the financial crisis, but thereafter decreased faster than in other euro area countries. Households' valuation losses have to date amounted to EUR 29 billion and are concentrated on Austria's wealthier households.

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EU Bank Packages: Objectives and Potential Conflicts of Objectives

Any attempt to resolve a systemic financial crisis inherently involves conflicts of objectives. In the following article, we identify and elaborate on the conflicts of objectives embodied in the EU bank packages. Building on this, we then analyze how the EU Member States and the EU institutions are dealing with these conflicts of objectives. The empirical basis of our analysis comprises the explicit objectives of the EU bank packages and the details of the bank packages of the individual Member States. Our main findings are: (1) Although much effort has been extended to ensure a harmonized EU approach, the Member States in fact enjoy great leeway in designing national bank packages, which leads to competitive distortion. (2) In the conflict between fiscal objectives and micro- and macroeconomic objectives, the latter have been afforded priority. The bank packages entail passing on the costs of overcoming the crisis to the taxpayers, while the banks' creditors are not required to make a contribution. (3) As a result, short-term financial stability is favored over long-term stability in the conflict between these two objectives. (4) Some attempts have been made to resolve these conflicts of objectives by attaching conditions to state aid. Our analysis indicates first of all, that under certain circumstances conditions such as dividend restrictions, state influence on company management and salary caps may be consistent with all of the objectives specified, and second, that requirements to maintain lending and solve borrowers' debt problems are themselves subject to unavoidable conflicts of objectives.

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JEL classification: D53, E44, F36, G18, G28

Keywords: Financial crisis, bank packages

All bank rescue plans, regardless of design, are invariably subject to conflicts of interest. Thus, decisions on balancing the objectives have to be made (Mayes, 2004, p. 545). These objectives represent a variety of economic policy goals, many of them conflicting with respect to the implementation of the bank packages. This study examines the types of conflicts of objectives inherent in the structure of the bank packages of the EU Member States and how these conflicts are resolved.

Since the fall of 2008 the financial crisis that erupted in the U.S.A. in 2007 has been leading to massive financial market distress in the EU as well. The Member States interpreted this situation as an economic policy challenge to be met at the national level within a joint framework.

A concerted plan of action was resolved in a declaration by the euro area countries² at their summit on October 12, 2008, aiming at:

- Facilitating the funding of banks: The Member States are to guarantee new short- and medium-term (up to five years) bank senior debt issuance. Such guarantees are to be made available at market conditions (including possible further conditions) to all financial institutions operating in the country in question that meet the regulatory capital requirements and other non-discriminatory objective criteria. The scheme will be temporary (until December 31, 2009) and limited in amount.
- Providing financial institutions with additional capital so as to ensure the

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² The declaration was also adopted by the European Council on October 16, 2008.

Refereed by:
Christoph Walkner,
European
Commission

financing of the economy by sound institutions and allowing for the recapitalization of distressed banks: Tier 1 capital will be made available to financial institutions, with price conditions taking into account the market situation of each involved institution; additional restrictions may also apply. The failure of systemically important financial institutions should be avoided. In so doing, the interest of taxpayers should be observed and it should be ensured that existing shareholders and management bear the due consequences of the intervention. Recapitalization should be followed by a restructuring plan.

Moreover, the euro area countries welcomed the actions taken by the European Central Bank (ECB) to support the interbank money market and announced that flexibility in the implementation of accounting rules will be ensured. These initiatives were preceded on October 7, 2008, by the ECOFIN Council's resolutions to raise deposit guarantee protection to at least EUR 50,000 and to guarantee that deposits are reimbursed up to the coverage level without a deductible.

The euro area countries also called upon the Commission to continue to apply flexibility in state aid decisions; taking into account the ECB's relevant recommendations, the Commission provided guidance on state guarantees and recapitalizations (see relevant sections).

In this article, we analyze the potential conflicts of objectives emerging

in the Member States' implementation of bank packages to strengthen bank refinancing and to recapitalize banks.³

1 Objectives of the Bank Packages

The official documents of the European Council, the Commission and the ECB⁴ set forth the objectives that are being pursued by means of the bank packages as follows:

1.1 Microeconomic Objectives

The purpose of guarantees and recapitalizations is to assist solvent banks in overcoming temporary problems related to the unusual business climate and to enable them to maintain sound businesses. The failure of systemically important financial institutions is to be avoided.

1.2 Macroeconomic Objectives

Apart from safeguarding the short- and medium-term stability of the financial system, including guarding against systemic effects of insolvencies, the overriding macroeconomic objective is to ensure the financial system's capacity to fund the economy.

While both of the aforementioned objectives are aimed at averting the direct consequences of the crisis on financial institutions and the financial system, economic policymakers must consider how any such intervention can be financed, its long-term effects on the financial sector and the impact of any action on other economic sectors; therefore, a number of additional objections have been stipulated.

³ At the time of writing, the possibility of taking over impaired assets as resolved by the European Council on March 19 and 20, 2009, was still in the early stages of implementation and has therefore not been taken into consideration.

⁴ See Summit (2008), EC (2008b), ECB (2008b). In accordance with their respective mandates, the European Commission emphasizes objectives relating to a level playing field while the main emphasis of the ECB is on financial stability and safeguarding the single monetary policy.

1.3 Fiscal Objectives

The European Council has emphasized the importance of considering the interests of the taxpayers; this implies the objective of minimizing the losses resulting from aid packages and ensuring adequate revenues.

1.4 Safeguarding Market Integrity

Shareholders and management should bear the due consequences of the intervention in order to prevent state assistance from abetting moral hazard and to provide incentives for a return to normal market conditions – and thus long-term financial stability – after state intervention has ceased.

1.5 Safeguarding the Level Playing Field, Avoiding Market Distortion

Implementation of the national bank packages entails the risk of competitive distortion between banks in different Member States and, as a result, the risk of a “subsidy race,” along with competitive distortion between sound and unstable banks and competitive distortion between banks receiving public assistance and institutions opting for capital market financing. All of this should be avoided wherever possible.

Aside from economic objectives, ensuring the political legitimacy of state action to stabilize the banking sector is another important goal that governments must consider when defining and implementing plans of action.

The study at hand identifies the types of conflicts of objectives inherent in the structure of the bank packages designed to achieve the goals described

and examines how these conflicts are resolved in the following areas: action to strengthen the interbank market (section 2.1) and medium-term refinancing (2.2) as well as capital (2.3) and that related to conditions for providing guarantees and additional capital (3).

2 Common Framework, but Variations in Implementation of Bank Packages by the EU Member States

The sets of measures already approved in the EU correspond in essence to the agreed framework. Most EU Member States have included recapitalization and refinancing measures that are essentially based on similar (general) principles and involve similar access requirements, beneficiaries and terms. The packages also exhibit major similarities on an abstract level in terms of the instruments applied and the general requirements. With respect to their specific design and practical implementation, however, the differences are considerable.

19 EU countries have introduced packages to refinance banks, with 17 of them explicitly providing for the possibility of reinforcing banks' capital base.^{5,6} The Member States have earmarked a total of some EUR 2.8 trillion, or 22% of the EU's GDP, for these measures. Some EUR 300 billion of this amount will be made available for recapitalizing banks and approximately EUR 2.5 trillion for state guarantees of liabilities (as of mid-March 2009). The Austrian bank package is more extensive than the average EU package,

⁵ Two countries (Belgium and Luxembourg) have taken discretionary action to refinance/recapitalize specific institutions without introducing bank packages. It should be noted that the plans are being adapted on an ongoing basis as the crisis develops, and many countries still have to work out the details.

⁶ Three countries (Spain, Greece and the U.K.) have introduced additional asset relief programs. Other EU countries also implement asset relief measures to stabilize banks in certain cases.

amounting to EUR 90 billion (not including EUR 10 billion in deposit guarantees) or approximately 32% of GDP.

2.1 Measures to Strengthen the Interbank Market

The financial crisis hit the euro interbank market earlier than the EU bond market or the stock markets – specifically, as early as on August 9, 2007. Interest rates on unsecured interbank loans (e.g. relative to secured interbank loans in the form of securities repurchase agreements) increased significantly. Despite cuts in key interest rates, interest rates on unsecured interbank loans remained high compared to those on secured interbank loans due to the high premiums charged on unsecured interbank loans, i.e. the short-term yield curve remained historically very steep. At the same time, both market liquidity and the maturity terms of interbank loans actually granted decreased significantly. After the collapse of U.S. investment bank Lehman Brothers in mid-September 2008, the interbank market came to a virtual standstill. In order to facilitate short-term refinancing for banks, the euro area countries proposed state guarantees for short-term bank liabilities with

maturities of up to 12 months in the declaration on a concerted European action plan of the euro area countries of October 12, 2008. The bank packages of the Member States include five models for applying such guarantees:

1. State guarantees for existing and newly issued short-term securities as well as interbank loans and wholesale deposits (e.g. Denmark,⁷ Ireland);
2. State guarantees for new issues of short-term securities and new interbank loans (e.g. Belgium);
3. State guarantees for new issues of short-term securities (e.g. commercial paper), but not for interbank loans (e.g. Germany, Sweden);
4. Exchanges of government bonds in return for bank receivables (asset swaps) in order to increase banks' collateral eligible for ESCB tender operations (e.g. Greece, Italy);
5. Clearinghouses (with state guarantees) for the interbank market (e.g. Austria, Italy). Since this instrument for strengthening the interbank market is somewhat more complex than the others and is particular to Austria, it is described briefly in box 1; it is also an issue of focus in the following analysis.

⁷ However, the participating banks must bear a portion of the losses of up to DKR 35 billion. Denmark has revised its original bank package in the meantime.

Box 1

The Oesterreichische Clearingbank AG (OeCAG)

The legal basis for the activities of the Oesterreichische Clearingbank AG (OeCAG) is set out in Article 1 paras 1 to 3 of the Interbank Market Support Act (Interbankmarktstärkungsgesetz, IBSG, published in Federal Law Gazette I, No. 136/2008). The OeCAG is owned by Austria's main banks, with the various sectors being represented by their top institutions. The shareholder interests were negotiated *ex ante*. The operating business of OeCAG is carried out by Oesterreichische Kontrollbank AG. OeCAG has shareholders' equity of EUR 180 million. Its business volume is limited to a maximum of EUR 10 billion, although this may be increased following an evaluation phase. The OeCAG's deposit and lending business is open to all banks and insurance companies; there are no restrictions on subscribing to OeCAG's issues.

The business model of OeCAG is based on reflecting the interbank market, i.e. the OeCAG does not carry out any maturity transformations. Funds may be provided in the form of deposits from participating banks or by OeCAG's own securities issues. Bids for deposits and loans are matched on the basis of pre-defined maturities (mostly 3 or 6 months) in regular auctions in which both market sides enter their price/quantity bids. Allotments are made only when bids for loans can be matched with bids for deposits. Any issue proceeds collected by OeCAG are distributed among the shareholder banks, with 50% being allocated on the basis of shareholders' equity and 50% via auction.

Until December 31, 2009, when issuing short-term securities, OeCAG may arrange for the Austrian government to assume liability as guarantor and payer up to an aggregate amount of EUR 5 billion. A maturity cap of one year applies to the issues. The Austrian government has also pledged to cover loan defaults of up to EUR 4 billion in the event that loan defaults by borrowers cause OeCAG's regulatory capital to fall below the legally required level. In such cases, the government will provide sufficient equity capital to ensure that the 8% minimum is reached, provided the clearinghouse assigns the loan defaults to the government. The OeCAG must provide its services at market prices. The additional guarantor fee for government backing is 50 basis points, which are added to the loan interest rate.

Microeconomic objectives

The microeconomic objective of short-term refinancing was to reopen banks' access to the market for unsecured interbank lending. At the European level, these measures were successful to the extent that banks were once again able to borrow larger amounts over longer maturities. In Austria, as of mid-March 2009 the OeCAG had deposit bids of EUR 18.6 billion compared with loan bids of EUR 22.2 billion, with the amount allotted totaling EUR 5.1 billion (22% of the loans bids). The liquidity risk of Austrian banks has declined

since the introduction of the bank package.

Macroeconomic objectives

The macroeconomic objective (ending the turmoil in the interbank market) has only been partially fulfilled. Even though liquidity and maturities have risen somewhat, they still have not reached pre-crisis levels. The yield curve also continues to indicate significant market disruption,⁸ and so do the above-average amounts deposited by European banks at the ECB even though this involves high opportunity costs.⁹

⁸ In March 2009, the spreads between the three-month EURIBOR and the three-month overnight index swap or the three-month EUREPO were still much wider, and maturities for unsecured interbank loans were considerably shorter than before the financial crisis erupted (ECB, 2009a, p. 27). Since March the situation in euro money markets has improved further.

⁹ The interest rate differential between deposit facilities and the minimum bid rate was usually 100 basis points. The spread narrowed to 50 basis points in the period from October 15, 2008, to January 21, 2009.

Why have banks accepted these opportunity costs despite the fact that state guarantees have virtually eliminated credit risk?

The action taken by EU Member States to strengthen the interbank market has focused on credit risk in the interbank market while disregarding the liquidity risk of banks. To hedge this risk, they maintain liquid funds to be able to cover any net outflows. In a functioning interbank market, credit institutions are also able to obtain refinancing via unsecured loans if necessary, which can represent a form of insurance. In the course of the financial crisis, the maturity transformation of banks has risen while the interbank market has largely forfeited its function as an insurer. Liquidity risk has thus risen considerably for banks – a situation that has not been taken into account in action to strengthen the interbank market.¹⁰ The effectiveness of such action could be increased by taking liquidity risk into consideration (e.g. maturity transformation by the OeCAG).

Fiscal objectives

The fiscal objectives of the bank packages focus on minimizing taxpayer losses and ensuring adequate revenues. The ECB recommendations of October 20, 2008, (ECB, 2008b) call for a guarantee fee of 50 basis points for short-term liabilities; all Member States have implemented this recommendation. However, to date there are no known defaults in the area of short-term refinancing. Since the Member States have agreed not to allow any systemically important banks to become insolvent,

they would provide additional capital to and/or nationalize the banks before any guarantees were called upon. The fee for short-term guarantees is risk-independent, therefore the guarantee scheme involves implicit transfers from the government to banks with above-average risk exposure. By contrast, a risk-based guarantee fee would result in a high administrative burden by requiring regular risk assessments of all banks receiving state guarantees; a higher guarantee fee that better reflected market prices during the crisis would make short-term refinancing of banks more expensive. In other words, there is a conflict of objectives between the fiscal objectives on the one hand and the microeconomic and macroeconomic objectives on the other that has been interpreted to the disadvantage of the former in the pricing of guarantees.

Safeguarding market integrity

To reach this objective, the measures would have to be designed to prevent future problems resulting from adverse incentive structures. In those bank packages in which new and/or existing interbank loans are guaranteed, however, there is a risk that wrong incentive structures could impair long-term financial stability: Banks are able to nationalize potential losses ensuing from their investment decisions, which distorts incentives aimed at risk-revenue optimization. This could undermine the future effectiveness of market discipline in the interbank market, which would have a detrimental effect on long-term financial stability. Based on these considerations and for the pur-

¹⁰ The ECB estimates that only approximately 50% of the sharp widening in the spread between the interest rate on unsecured interbank credit with a maturity of three months (three-month EURIBOR) and the interest rate on secured interbank credit with the same maturity (three-month EUREPO) can be explained by credit risk. The remaining 50% is attributable to increased liquidity risk (ECB, 2008c, pp. 144–149).

pose of safeguarding the single monetary policy, the ECB spoke out against state guarantees for interbank loans in its recommendations, although not all Member States committed themselves to this. However, if state guarantees are seen as the only remedy in an acute crisis situation, this could result in a conflict of objectives between short-term (strengthening confidence) and long-term financial stability.

Within the framework of OeCAG, the state is only second in line as guarantor after the OeCAG's shareholders' equity, which is paid in by the banks and acts as a safety buffer to absorb loan defaults. This largely prevents moral hazard.

Safeguarding the level playing field, avoiding market distortion

This objective would be achieved if the bank packages did not lead to national discrimination and segmentation of the money market and banks with similar risk profiles from different Member States were to pay the same money market interest rates. A joint European approach to improving short-term financing – e.g. a European clearinghouse for interbank loans – could have served two purposes: strengthening the European interbank market and restoring the level of integration existing up until July 2007. Since there is no central EU budget to back up the necessary guarantees, it was decided that short-term issues and interbank liabilities be covered by state guarantees. This could lead to a segmentation of the euro money market (ECB, 2009b), which had been almost completely integrated prior to August 2007. All EU Member States restrict the issuance of guarantees to credit institutions active in the country in question, which necessarily involves a certain amount of discrimination and segmentation in the

money market. Banks with similar risk profiles from different Member States must expect to pay different money market interest rates. This is a consequence of varying market estimations of the credit quality of the individual EU Member States (as also expressed in the interest rate differentials between the government bonds) and is largely independent of the organizational structure of the national measures to boost short-term refinancing (clearinghouses or state guarantees). The goal of avoiding market distortion is thus in conflict with the microeconomic and macroeconomic objectives of stabilizing the banking system in the short term and was given a lower priority in the guarantee packages.

Due to its structure, the clearinghouse model was especially criticized as contributing to distortion in European interbank markets as well as to the disintegration thereof (Buiter, 2009). The Austrian Interbank Market Support Act, however, does not limit participation in the OeCAG's deposit business to domestic banks or insurance companies, meaning that no competitive distortion occurs in the interbank euro market and foreign banks are not discriminated against.

Moreover, experience in Austria shows that especially small banks, i.e. those banks that have only limited access to the euro money market or to the ESCB's open market operations, turn to OeCAG for refinancing. The allotted amounts are very low compared to the euro money market. In addition, the maximum amount of outstanding loans is limited to EUR 10 billion, making the implications of the Austrian approach negligible for the euro money market. Most of the funds are allotted by auction. Furthermore, guarantee fees must be paid for interbank loans processed via OeCAG. The price for-

mation process reduces any distortion of the euro money market. In addition, the deposits with OeCAG are not guaranteed directly by the state, meaning that the depositing banks must meet the relevant capital requirements for interbank deposits. This can even result in a competitive disadvantage for Austrian banks compared with banks whose interbank deposits are guaranteed by the state directly. The action taken in Austria to boost short-term refinancing is therefore largely compatible with the objectives of safeguarding the level playing field and avoiding market distortion.

Since the pricing of state guarantees for short-term liabilities (commercial paper or interbank loans) is quite uniform in the EU (ECB, 2008b), this does not result in any competitive distortion.

2.2 Measures to Boost Medium-Term Refinancing

Refinancing costs in the bond market have been rising rapidly for banks since August 2007. Hoping for narrowing spreads, many banks strove to postpone some of their debt issues in favor of refinancing via alternative sources (e.g. private placements, short-term securities and interbank loans). However, this led to an increase in maturity transformation and thus higher liquidity risk (ECB, 2008d). After the collapse of Lehman Brothers, this contributed to banks finding access to the bond market to be as impaired as access to the money market. All of the bank packages therefore include measures to boost medium-term refinancing.

Most Member States that have launched bank packages guarantee new issues of unsecured bank bonds with maturities of one to three or one to five years.¹¹ Only Ireland and Denmark also guarantee secured and unsecured bank bonds that were issued before the bank packages were established. Spain has additionally set up a fund that can purchase securitized bank loans.

Microeconomic objectives

The main microeconomic objective was to restore banks' access to the bond market, which the state guarantees succeeded in doing to a certain extent. By the end of March 2009, some EUR 300 billion in state-guaranteed debt issues had been placed by banks. Some banks¹² were also able to issue unsecured debt, which yielded average premiums in the euro area of 31 (AA rating) or 64 (A rating) basis points over the state-guaranteed issues (ING, 2009).¹³ The state guarantees restored banks' access to medium-term refinancing. In spite of the state guarantees, however, the medium-term refinancing costs¹⁴ are much higher and the yield curve much steeper than before the start of the crisis (ECB, 2009a, p. 34).

This also explains why banks were not able to pass on reductions in key interest rates to the full extent. A steeper yield curve can contribute to the stability of the banking system, given that *ceteris paribus*, a steep curve has a positive impact on the profitability of maturity transformation. However, this results in Austrian enterprises facing much higher external finance premiums (OeNB, 2009). Fulfilling this mi-

¹¹ As the crisis intensified in the first quarter of 2009, a trend toward extending maturities to five years emerged in the countries with shorter maturities (e.g. Germany, the Netherlands, Austria).

¹² E.g. BBVA, BNP Paribas, Caixa Geral de Depósitos, Commerzbank, Rabobank, Société Générale.

¹³ Excluding Greece, Ireland, Slovenia and Slovakia.

¹⁴ The premium on the relevant swap rates averaged 143 basis points for banks with an AA rating and 155 basis points for banks with an A rating (ING, 2009).

macroeconomic objective can come at the expense of the macroeconomic objective of supplying the economy with affordable credit.

Macroeconomic objectives

At a macroeconomic level, the bank packages were aimed at providing the economy with affordable credit. At present, it is difficult to assess the measures to boost medium-term refinancing. They have, however, succeeded in preventing a decline in lending to date. At the European level, loans to non-financial corporations rose by 6.3% from March 2008 to March 2009 (households: 0.4%); against the fourth quarter of 2008, loan growth slowed down (nonfinancial corporations: 11.3%; households: 2.8%).¹⁵ In Austria, the volume of outstanding loans issued to domestic nonbanks increased by 5.6% between March 2008 and March 2009 – from EUR 293.2 billion to EUR 309.6 billion – after adjustment for exchange rates. Of this amount, EUR 135.4 billion went to domestic nonfinancial corporations and EUR 118.8 billion to domestic households, with the exchange-rate-adjusted increase amounting to 7.1% and 2.4%, respectively.¹⁶ Even after the collapse of Lehman Brothers, total loan volumes to the private sector rose by 1.8% between September 2008 and March 2009 (nonfinancial corporations 3.1% and domestic households 0.6%). Refer-

ring to refinancing costs and the balance sheet restrictions they faced, banks nonetheless continued to tighten credit standards and the conditions and terms of credit at both the EU and the Austrian level.¹⁷ An analysis of the effect of the bank packages on lending must take into consideration any impact of the recession on demand for credit, for which reason the figures do not provide a basis for a clear conclusion regarding the supply behavior of the financial sector.¹⁸

Fiscal objectives

The fiscal objectives would be achieved, if the costs incurred by the state for potential future guarantee obligations were to approximately correspond to the future expected revenues from risk-based guarantee fees at market prices. According to the ECB recommendations of October 20, 2008, the pricing of credit guarantees on bank debt with maturities exceeding one year should be based on banks' CDS spreads¹⁹ and include an add-on fee of 50 basis points (or less if collateral is provided) in order to recover the operational costs (ECB, 2008b). Actual guarantee fees are not standardized across the Member States.²⁰ Whether or not this is sufficient to reach the fiscal objectives depends ultimately on default rates and therefore cannot be definitively assessed at this time. However, it can be ascertained that the ECB recommenda-

¹⁵ See ECB (2009c, table 2, p. 20).

¹⁶ Source: OeNB.

¹⁷ Source: OeNB.

¹⁸ Decreasing investment activity can lead to a decline in refinancing demand. In Austria, however, there were substitution effects between possible sources of refinancing, e.g. higher credit demand as a consequence of more difficult capital market financing (OeNB, 2009).

¹⁹ Median five-year CDS spreads in the period from January 1, 2007, and August 31, 2008, of either the bank itself or its rating category; if no rating is available then the lowest rating category is used.

²⁰ For banks in the euro area (excluding Greece, Ireland, Slovenia and Slovakia), actual fees for state guarantees are between 57 (French bank with AA rating) and 137 (Italian bank with AA rating) basis points or 65 (French bank with A rating) and 145 (Italian bank with A rating) basis points, with an average of 86 (AA rating) and 94 (A rating) basis points (ING, 2009).

tions of October 20, 2008, provide for a long calculation period for pricing default risk, meaning that guarantee fees are significantly below the banks' CDS spreads at the time the individual bank packages were approved. When the packages were introduced, banks' CDS spreads fell significantly, while the sovereign spreads of numerous EU countries²¹ increased markedly (ECB, 2009a, p. 36).²² This implies a transfer of risk from bank shareholders to taxpayers that – according to market estimation – was not adequately priced into the guarantees. The conflict of objectives that exists in principle between fiscal objectives on the one hand and microeconomic and macroeconomic objectives on the other is difficult to avoid in the case of bank packages, since their whole purpose is to distribute (potential) banking system losses such as to prevent them from endangering financial stability. Therefore, the main question is who will ultimately bear the losses; the European approach imposes a particularly high share of the losses on taxpayers.

Safeguarding market integrity

The bank packages are meant to ensure that long-term financial stability not be undermined, e.g. by reducing the effectiveness of market discipline. However, some countries provide explicit guarantees for existing bond issues from national banks, thus protecting bondholders against the potential negative consequences of their investment decisions. Apart from that, in all EU countries, bondholders of systemically important banks are implicitly protected against defaults, since the EU countries have agreed that no systemically important banks should be al-

lowed to enter bankruptcy. Thus, the effectiveness of market discipline in a central refinancing market is reduced, which could have negative long-term effects on financial stability. For this reason, numerous economists (including Zingales, 2008) have recommended mandatory debt-for-equity swaps relating to outstanding bonds. This would considerably accelerate the deleveraging process, as debt would be reduced and equity increased. In addition, this measure would be compatible with the microeconomic objective of strengthening confidence and safeguarding short-term financial stability. Furthermore, Zingales assumes that bondholders would also benefit since they would then be creditors of a bank with lower debt and higher equity. Other economists (including Santomero and Hoffman, 1998; Mayes, 2004; Bulow and Klemperer, 2009) proposed restructuring and winding down insolvent banks as alternative models that would have led to a reduction in the fiscal burden given that bank creditors (e. g. bondholders) would also contribute to distribution of the burden. A sound framework facilitates such alternative models for reorganizing and winding down insolvent banks (BCBS, 2002) but does not yet exist in Europe (Brouwer et al., 2003; Hadjiemmanuil, 2003). A conflict of objectives arises between ensuring long-term market integrity (incentive compatibility) and short-term stability (confidence) if state guarantees are seen as the only alternative in an acute crisis situation. The two objectives are regarded as compatible in alternative models of distributing the financial burden. The fiscal objectives and the objective of safeguarding market integrity prove to coincide, since

²¹ E.g. Austria, Italy, Greece, Portugal, Ireland, Spain.

²² Some of the CDS spread increases and rating downgrades are attributable to the economic stimulus packages and the fiscal effects of the economic crisis.

bondholder participation in losses would significantly reduce fiscal costs. The bank packages resolve the conflict of objectives to the detriment of long-term financial stability and fiscal objectives.

Safeguarding the level playing field, avoiding market distortion

With respect to this objective, the bank packages could be classified as successful if the refinancing costs in the bond market were similar for banks with similar risk profiles. In spite of the ECB recommendation on guarantee pricing, there are still variations between the Member States. Guarantees are most expensive in the U.K. due to the calculation period selected. Originally, the calculation period extended from October 8, 2007, to October 7, 2008. This resulted in considerably higher guarantee costs for U.K. banks, since the calculation period only included the months during the crisis (including the Lehman crisis). By contrast, the ECB recommendation included the eight months prior to the crisis (with exceptionally low CDS spreads), but not the months immediately before and after the Lehman crisis (with exceptionally high CDS spreads). As a result, the U.K. pushed back its calculation period to extend from July 2, 2007, to July 1, 2008, which resulted in a drop in the average fee by 22 basis points (ING, 2009). U.K. banks nonetheless have to pay a guarantee fee an average 10 basis points higher than that proposed in the ECB recommendation or that charged by other Member States. Italy also deviated from the ECB recommendation to the detriment of the banks requiring

state guarantees, charging them an extra 50 basis points for maturities exceeding two years. Guarantees cost the least in France. The fixed premium in France amounts to only 20 basis points rather than the 50 recommended, which results in much lower refinancing costs for French banks.²³ In addition to the guarantee fees, institutional processing of the guarantees apparently also plays a role. Some countries (e.g. France) issue debt via a (partly state-owned) specialized lending institution, from which the banks can then obtain refinancing. Paper issued by the partly state-owned specialized lending institution enjoys a refinancing advantage in the market compared with state-guaranteed bank bonds. In addition, the Eurosystem applies a lower haircut on these bonds provided they are delivered as collateral, which has a positive impact on the refinancing costs of French banks. Despite the joint EU basic principles, a level playing field could not be forced, since this objective might conflict with the microeconomic and macroeconomic objectives, i.e. there could be relevant differences between the banks and the banking systems of the Member States (e.g. exposure to toxic assets). Ultimately, the bank packages give priority to these microeconomic and macroeconomic objectives as opposed to the objective of ensuring a level playing field.

2.3 Measures to Strengthen the Capital Base

As a consequence of the financial crisis, the probability has increased that financial institutions will suffer losses to such an extent that their capital could

²³ See EC (2008c). Prior to the end of February 2009, the average premium charged on the corresponding swap rate (including the full guarantee fee) for French debt issues (via the partly state-owned specialized lending institution) amounted to 72 (AA rating) and 80 (A rating) basis points, while the average for the euro area was 143 (AA rating) and 155 (A rating) basis points (ING, 2009). The fee structure in Finland is also different, given that the fixed premium for mortgage bonds is only 25 basis points (EC, 2008d).

fall below minimum regulatory requirements. At the same time, in view of uncertainty regarding the quality of banks' balance sheets, investors expect banks to have stronger capital buffers.

To avoid insolvency, at-risk financial institutions must either attempt to reduce their risk-weighted assets and/or raise fresh capital. A capital injection can come from existing or new shareholders, by swapping debt for equity (through negotiations with creditors or by government order), or via merger with or acquisition by another financial institution. However, the capital market has suffered a general loss of confidence due to the financial crisis, with most financial institutions having become much less attractive as expressed in falling share prices and rising insurance premiums (CDS spreads) for banks' liabilities. For this reason, since the fall of 2008 financial institutions wishing to raise capital in the market have either been faced with high costs of capital or have found that they no longer had access to the capital market.

By mid-February 2009, the Member States had offered recapitalization funds totaling EUR 300 billion on the basis of the agreement concluded in October 2008 to provide tier 1 capital in order to ensure the proper financing of the economy through solvent banks and to prevent instable banks from collapsing. The volume of funds made available varies considerably between the Member States offering recapitalization plans, with Italy providing 0.7% of domestic GDP and Ireland and Austria 5%.

In most cases, preference shares²⁴ (usually nonvoting shares) or other

hybrid instruments are offered as the preferred instrument meeting the conditions for tier 1 capital, sometimes with an option to convert them into ordinary shares.²⁵ Subordinated bonds²⁶ may also be offered. Differences exist between yield requirements, repayment modalities and redemption rules of the various countries and the affected institutions. The level of available information is not sufficient to enable a detailed analysis. Apparently, the microeconomic interest of the affected institutions in confidentiality collides with the goal of avoiding competitive distortion and ensuring the legitimacy of the bank packages in light of their fiscal implications.

In some cases, banks have been (partially) nationalized²⁷ on the basis of the legal framework of the bank packages. Some countries have also provided for the possibility of assuming control of banks against the will of the owners.²⁸

Microeconomic objectives

Recapitalization is intended to strengthen the capital base of banks and/or their capacity to absorb losses. Since the fall of 2008, market expectations relating to the capital base of banks have exceeded the regulatory requirements to an unusual extent. At the same time, write-offs of bad securities and loans are rising. In this climate, state capital injections have led, roughly speaking, to an increase or stabilization of the level of bank capital (source: Bloomberg).

Most bank packages provide for buying preference shares, in some cases including the possibility of converting them into ordinary shares or other

²⁴ Germany, France, Greece, the Netherlands, Sweden, Spain, the U.K. and Hungary.

²⁵ E.g. Ireland.

²⁶ Finland and Italy.

²⁷ E.g. Anglo Irish Bank, Fortis, Kommunalkredit, Lloyds-HBOS, RBS.

²⁸ E.g. Germany, Austria, Sweden.

financial instruments at a later time. This instrument largely preserves the existing shareholder structure and management. The appropriateness of this approach rests on the assumption that the affected institution is in distress through no fault of its own. Market actors have different assessments regarding the classification of this instrument as tier 1 capital, since preference shares do not have all of the typical features of true equity (share capital), e.g. with regard to profit sharing and voting rights arrangements. Thus, the extent to which preference shares are a suitable instrument for increasing the stability of the supported institutions remains to be seen (Carmel, 2008).

Macroeconomic objectives

Capital injections for banks were intended to restore the banks' capacity to extend credit. The objective of maintaining lending flows (the degree of achievement of which was already discussed in section 2.2) collides with the objective of requiring – sometimes large-scale – deleveraging and minimizing risk in the banking book made necessary by the recession. Therefore, explicit requirements are needed in order to ensure that recapitalization will benefit the macroeconomic objective of maintaining lending. There is also a strong contrast between the macroeconomic objective of preserving lending and that of safeguarding financial stability. The objective of preserving the stability of the financial system has thus far been achieved insofar as no systemically important bank has become insolvent (even though some had to be nationalized in order to prevent this).

Fiscal objectives

According to the ECB recommendations (ECB, 2008a), capital injections

provided by the state to sound banks should carry an average rate of return on subordinated debt of 6% and an average rate of return on ordinary shares of 9.3%. For the hybrid capital forms used most frequently, this means that the average rate of return will be somewhere within this corridor, depending on the features of the relevant instrument, including redemption and repurchase conditions.

The European Commission approves state aid based on these recommendations for setting the initial price and recommends using step-ups and repayment clauses over the term of the aid to create incentives for swifter termination. When private investors participate in the capital injection at a rate of at least 30%, the price can be reduced (e.g. in Austria from 9.3% to 8%). According to the European Commission, the recapitalization of weak banks should be subject to higher compensation and stricter requirements (EC, 2008b).

The use of instruments that boast the features of debt securities and therefore are likely to yield comparatively secure returns satisfies the objective of ensuring that taxpayer interests are protected and budget resources are used prudently, as the higher risk of capital loss related to the use of ordinary shares is avoided. This lower risk is gained, however, at the cost of forfeiting any direct influence on management, which entails other risks as detailed in the next section.

It is difficult to judge the quality of the measures from a taxpayer perspective due to a lack of sufficient information on the pricing of specific recapitalization measures and the fact that any pricing variations must be considered in the context of the overall features of the package in question.

Participation Capital in Austria

The Financial Market Stability Act (FinStaG) makes it possible for the Federal Minister of Finance to strengthen banks' equity base by taking up participation capital.¹ In the case of sound banks, the federal government requires a dividend of at least 9.3%. If repayment is made with a return on capital of 110% or private investors contribute at least 30% to the capital injection (with a maximum of one-third coming from current shareholders and at least two-thirds from third parties), the dividend may be decreased to 8%.² In such a case, the restriction on dividend distribution to a maximum amount of 17.5% of distributable profits before allocation to provisions does not apply. For distressed banks, the dividend must amount to at least 10% and no dividends may be paid to other shareholders. Similar to comparable initiatives in other Member States, the Austrian program is geared toward offering banks capital at better conditions than prevailing market rates, as these rates are considered to be too high, i.e. an expression of market distortion. At the end of 2008, the European Commission determined a market price for capital of 15% in the autumn 2008 (EC, 2008b). This can be taken as a reference for an approximate calculation of the subsidy share of the state aid extended. If the sum of EUR 15 billion made available by the Austrian government for participation capital is provided to sound banks in the full amount at a dividend of 9.3%, banks would save EUR 855 million per year (in terms of the difference between the dividends demanded and market compensation).

¹ See https://www.bmf.gv.at/Finanzmarkt/ManahmenpaketzurSic_9175/bStrkungundStabilis_9177/Partizipationskapital/_start.htm

² This provision appears to allow interpretations that deviate from its substantive meaning, as shown by the reciprocal subscription of hybrid capital and participation capital by Erste Bank and Wiener Städtische Versicherung (see <http://www.nachrichten.at/nachrichten/wirtschaft/art15,139210> from April 4, 2009).

Safeguarding market integrity

Although some emergency measures have involved nationalization (see footnote 27), the EU countries, in their joint undertakings, have preferred recapitalization and allowing the affected institutions to preserve their private-sector independence. This is because the provision of capital by the government stands in contrast to the economic policy paradigm dominant in the EU according to which state ownership in the banking sector is seen as an inferior corporate governance model and isolated cases of state ownership are considered as undesired competitive distortion. For this reason, governments chose largely passive instruments as

recapitalization measures, i.e. instruments that comply with the definition of tier 1 capital but keep government influence on management to a minimum while at the same time being less risky than ordinary shares.

Recapitalization assistance also includes incentives to minimize the duration of government involvement. According to the current state of knowledge, repayments are usually stipulated at nominal value, with some of the repayment agreements including clauses providing for conversion of hybrid capital into ordinary shares²⁹ or repayment in excess of the nominal amount³⁰ if repayment is not made within a certain period (between two and five years).

²⁹ E.g. Finland, France, Greece.

³⁰ E.g. Ireland, Italy.

Governments attempted to compensate for the waiver of control rights, which usually come along with capital injections, by attaching conditions to the award of capital (see detailed explanation below). This represents a concession to shareholders³¹ based on the assumption that any loss in value of assets would be an expression of unjustified, temporary market distortion and not the consequence of a lack of good corporate governance.

In making nationalization an option of last resort and preserving private ownership, the public sector is faced with considerable principal-agent problems with respect to limiting risk and steering economic policy.

The objective of safeguarding microeconomic autonomy is thus given priority over the objective of market integrity.

Safeguarding the level playing field, avoiding market distortion

The recommendations of the European Commission are aimed above all at preventing competitive distortion. In its Communication of October 25, 2008, (EC, 2008a) on managing the current financial crisis, the European Commission specified principles that must be met by Member States when implementing measures to support financial institutions in order to comply with EU state aid rules. Guarantee schemes must be non-discriminatory; their duration must be limited and their scope clearly specified and limited; the private sector must make an appropriate contribution; the schemes must stipulate adequate behavioral constraints for beneficiaries, and an appropriate follow-up must ensue in the form of structural

adjustment measures. However, the fact that the affected financial institutions have different risk profiles, coupled with their varying degrees of success in dealing with regulators, has resulted in differences in the volume and pricing of recapitalization measures. In some cases, the European Commission has responded to this situation by requiring adjustments to be made, which has resulted in delays in approving the applications submitted. In this case, the objective of avoiding competitive distortion conflicts with micro- and macroeconomic objectives, but contributes to reaching fiscal objectives given that it serves to prevent “competitive subsidization.”

3 Conditions for Guarantees and Capital

Attaching conditions to state aid for banks serves as a central instrument for achieving the economic policy objectives specified in section 2. The debate on the political legitimacy of bank packages also focuses on the extent and the stringency of conditions linked to state aid for the financial sector. In many of the Member States, the bank packages include some of the following five conditions.

3.1 Lending Requirements

The central motive and aim of state intervention in the banking sector is to maintain the intermediation function of the banking sector and to keep credit flowing to businesses and households. In some countries, this aim is to be achieved by requiring banks to fulfill specific conditions: 11 Member States³² require beneficiary institutions to commit to providing loans in return for

³¹ No dilution of existing shares, in return for which the capital provided by the state will only be used to cover future potential losses after the share capital has been exhausted.

³² Denmark, Germany, Finland, France, Greece, Ireland, Italy, Austria, Portugal, Slovenia and the U.K.

receiving state aid, with the extent of the obligation differing in the various Member States.

3.2 Dividend Restrictions

Dividend restrictions are intended to prevent banks from distributing funds to shareholders while making use of state aid. Eight Member States³³ provide for the possibility of dividend restrictions in their bank packages.

3.3 Restrictions on Salaries and Bonuses

The bank packages of 13 Member States³⁴ provide for the possibility of restricting salaries and bonuses paid to executives of institutions receiving the benefit of state aid.

3.4 Obligation to Attempt to Solve Borrowers' Debt Problems

Three Member States³⁵ provide for the possibility of requiring institutions ben-

efitting from state aid to offer relief for borrowers in their bank packages.

3.5 Seat on Executive Board/Voice in Management

The bank packages of seven Member States³⁶ provide for the government to have a say in corporate management (or a right of veto with respect to certain issues).

The following tables provide an assessment of the aforementioned requirements in terms of the various objectives specified and how such requirements have been integrated into the bank packages of the Member States, to the extent that this information is publicly available. All requirements can be regarded as contributing to the political legitimacy of state aid measures.

Assessment in terms of economic policy objectives

Microeconomic objectives

Lending requirements	Conflict with financial institutions' need to strengthen the equity base and deleverage.
Dividend restrictions	May have the unwanted effect of dissuading potential investors and putting pressure on share prices, depending on the investor structure (percentage of stable core shareholders), investor expectations (which are affected, for instance, by the role of previous dividend policy in maintaining investor loyalty) and on the general market situation (i.e. the dividend policy of similar companies). In any case, a prohibition on dividends helps banks to build up equity.

³³ Germany, Denmark, France, Greece, Italy, Austria, Portugal and the U.K.

³⁴ Germany, Finland, France, Greece, Ireland, Italy, Lithuania, the Netherlands, Austria, Portugal, Sweden, the U.K. and Hungary.

³⁵ France, Ireland and the U.K.

³⁶ Greece, Ireland, the Netherlands, Portugal, Sweden, the U.K. and Hungary.

Restrictions on salaries and bonuses	Free up funds for other purposes, such as building up reserves. Concerns that salary caps could make the affected institution less attractive as an employer and thus impair the quality of executive management become less relevant in a job market suffering from recession and massive layoffs in the financial sector. Moreover, since banks will be adjusting their business models, the job specifications for executive personnel in the banking sector are likely to change in comparison with the expansionary phase of recent years.
Requirements to solve debt problems	May entail losses and thus lower earnings.
State involvement in corporate management	Limits decision-making leeway for existing management. While under normal conditions, the stock market usually perceives any state involvement in management as undesirable, in times of crisis this can be interpreted as a reassuring sign. If deficient corporate governance structures have contributed to the need for the affected institution to recapitalize, state involvement can bring an improvement.

Hence, requirements to maintain strict salaries and bonuses and allow lending and solve borrowers' debt problems tend to conflict with microeconomic objectives, whereas requirements to forgo dividend payments, re-state involvement in management may under certain circumstances be compatible with these objectives.

Macroeconomic objectives

Lending requirements	Involve a conflict of objectives between facilitating the flow of lending to the real economy and safeguarding financial stability.
Dividend restrictions	Are in principle suitable for preventing a misallocation of resources. To assess the macroeconomic effect, it is necessary to know the identity of the dividend recipients. If the dividends flow to households, dividend restrictions are not likely to greatly affect financial stability. However, if dividend restrictions lead to the removal of a significant source of income from systemically important institutional investors, such restrictions could have negative consequences for financial stability. Any restriction of dividends must also be viewed as a return to normal levels after the record highs seen in recent years (see ECB, 2008c, p. 82).

Restrictions on salaries and bonuses	Could bring a desired correction of a period of overpayment prior to the crisis and contribute to reshaping the financial sector as well as reducing the inflationary effects of high management salaries in the banking sector on management salaries in other industries. Caps on salaries and bonuses may also send a signal of legitimacy to other wage groups and taxpayers.
Requirements to solve debt problems	Ensure that the state aid reaches other sectors of the economy.
State involvement in corporate management	Contributes to corporate policy being geared directly to macroeconomic objectives.

From a macroeconomic perspective, requirements to maintain lending thus entail a conflict of objectives, whereas dividend restrictions, salary caps, requirements to solve debt problems and state influence on management tend to be compatible with macroeconomic objectives.

Fiscal objectives

Lending requirements	The risk that additional losses could ensue from granting new loans has to be weighed against their potential returns.
Dividend restrictions	Contribute to giving priority to utilizing net profits to compensate taxpayers (although this objective could also be attained by giving priority to coupon payments for state capital).
Restrictions on salaries and bonuses	Free up funds for repaying state aid in the short term, but complicate the process of setting medium-term salary incentives that could maximize revenue for the state.
Requirements to solve debt problems	Waiving claims would mean taking losses, while rescheduling debt would postpone returns. Indirect effects on the budget (such as effects on borrowers' capacity to pay taxes) could compensate for this, however.
State involvement in corporate management	Fiscal objectives are easier to implement when the state can directly influence corporate policy, since direct involvement improves the state's level of information and its ability to steer the generation and appropriation of income.

Hence, requirements to maintain lending and solve debt problems tend to conflict with fiscal objectives, while dividend restrictions and influence on corporate management are compatible in principle, and salary caps may be compatible with fiscal objectives under certain circumstances.

Safeguarding market integrity

Lending requirements	An assessment depends on whether the requirements effect a refocusing on sustainable business activities or a prolongation of excessive lending.
Dividend restrictions	Contribute to avoiding future moral hazard problems since they imply that shareholders are penalized for their failure to exert control in the period prior to the crisis. Forfeiting dividends when profits are lacking also corresponds with the logic of dividends as participation of the owners of capital in any profits.
Restrictions on salaries and bonuses	May be regarded as corrective intervention in corporate government mechanisms, the failure of which was brought to light by the crisis insofar as these mechanisms provided incentives for excessive risk-taking by management. Restrictions function as a signal that state aid is linked to personal losses for management, which lowers the moral hazard in future cases.
Requirements to solve debt problems	Signal banks to deal with lending in a responsible manner in the future.
State involvement in corporate management	Ensures that the state will be able to carry out the shareholder's role of supervising management. In the case of unstable banks that benefit from state support, supervision of the banks' business policies is of key importance, given that incentive exists for the banks to initiate risky transactions which, if successful could save the institution but if unsuccessful could increase the taxpayers' tax burden ("gambling for resurrection").

Requirements to maintain lending restrictions, salary caps, requirements are compatible with the objective of to solve debt problems and state influence on business policy are generally safeguarding market integrity under certain circumstances, while dividend compatible with this objective.

Avoidance of competitive distortion

Lending requirements	Earmarking prevents the funds from being used to aggressively expand into other areas of business.
Dividend restrictions	The loss of relative attractiveness to shareholders of state-assisted banks on which dividend restrictions have been imposed compensates for the competitive advantage enjoyed by banks receiving state assistance over their competitors and therefore contributes to the objective of safeguarding the level playing field.

Restrictions on salaries and bonuses	Are compatible with the aforementioned objective to the extent that such restrictions create incentive for affected management members to repay the state aid swiftly.
Requirements to solve debt problems	Represent ex-post sanctions for market shares gained on the basis of unsustainable lending policies.
State involvement in corporate management	May contribute to achieving the objective if state involvement prevents state aid from being used to gain market share.

Therefore, all of the requirements specified may contribute to the objective of avoiding competitive distortion.

4 Conclusions

The EU bank packages are structured such as to entail a number of conflicting objectives, which imply distributional conflicts. The analysis at hand has identified four areas of potential conflict in particular: First, microeconomic and – to some extent also macroeconomic – objectives imply that the bank packages are designed in a way that conflicts with fiscal objectives and thus with ensuring the political legitimacy of the measures. Second, where state guarantees are seen as the only way out of the current crisis, there are often contradictions between bolstering confidence for the benefit of short-term financial stability and safeguarding market integrity and avoiding moral hazard to maintain long-term financial stability. Hence the lack of a sustainable EU framework for restructuring and winding down insolvent cross-border banks has intensified this conflict of objectives. In the EU bank packages, the objective of short-term financial stability takes priority over avoiding moral hazard in this context. The two objectives can be regarded as compatible when alternative models of distributing the financial burden are considered. The central problem in this regard is the politically motivated decision of the EU Member States to refrain from

forcing bond and money market creditors to share in the losses, a policy that is also questionable in the light of fiscal target setting and political legitimacy (distributive justice). Third, the EU has decided to afford the Member States leeway to factor in the specific features of national markets and financial institutions with a view to short-term financial stability; this leads to competitive distortion between the Member States. Fourth, while microeconomic objectives such as deleveraging are consistent with the goal of market integrity and financial stability, they conflict with the macroeconomic objective of maintaining lending.

The EU has made some attempts to resolve these conflicts of objectives by attaching conditions to state aid. Our analysis indicates first of all that under certain circumstances it may be possible to reconcile conditions such as dividend restrictions, state influence on company management and salary caps with all of the objectives specified, and second, that requirements to preserve lending and solve borrowers' debt problems are themselves subject to unavoidable conflicts of objectives.

In some cases, the institutional framework of the bank packages intensifies the conflict of objectives. The decision to leave it to the Member States to implement the bank packages within a joint EU framework has led to divergence in the scope and design of the packages. While this could facilitate the

achievement of micro- and/or macro-economic objectives in the Member States, it impedes achievement of the objective of safeguarding the level playing field. A key question for future research will be whether the heterogeneity of the amounts and modalities of the bank packages is an expression of an appropriate adjustment to the different circumstances in the financial sectors of the individual Member States or rather an expression of other factors such as differences in the fiscal room of

maneuver or the ability of the financial sector to affect policymaking.

The lack of transparency surrounding the implementation of the bank support measures by the Member States, for instance with regard to the pricing of state aid, contributes to maintaining the opacity that is regarded as one of the main causes of the current financial crisis; such lack of transparency is thus extremely problematic from a macroeconomic perspective.

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Modeling Credit Risk through the Austrian Business Cycle: An Update of the OeNB Model

In quantitative financial stability analysis, the link between the macroeconomic environment and credit risk is of particular importance when assessing the risk hidden in loan portfolios. Macroeconomic stress testing, in particular, which aims at measuring the impact of an economic crisis on individual banks or on the entire financial system, depends on means to quantitatively assess this link. Hence, the objective of this paper is to provide a methodological update of the OeNB's previous credit risk model that improves the capture of the relation between macroeconomic variables and probabilities of default for the main Austrian corporate sectors. In addition to the standard model based on individual macroeconomic variables, the paper explores solutions to two important challenges: first, the challenge related to the exploitation of potential information inherent in a larger macroeconomic data set and second, the problem that accounts for potential nonlinearity in the relation between credit and business cycles. The first issue is addressed via a regression model based on a principal components analysis that takes in a wider range of macroeconomic variables than commonly practiced. The second issue is addressed via a threshold approach. This paper presents the estimation results for the three different models and discusses them on the basis of an illustrative example.

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1 Introduction

In recent years, a lot of effort has been put into modeling the link between macroeconomic variables and credit risk measures. Interest in this issue was first, driven by the new perspectives on risk based on the Basel II framework and has, more recently, been intensified by the financial crisis. As central banks and other supervisory authorities try to assess the impact of the financial crisis on the real economy and – once again – on banks' loan portfolios, understanding the relation of business and credit cycles has probably become more important than ever. This need has triggered a reassessment of commonly used approaches to measure credit risk with a focus on the capability of credit risk models to adequately capture downside risks, particularly in light of the ongoing crisis.

In terms of Basel II, the objectives of credit risk models are twofold: First, under Pillar I of the Internal Rating Based (IRB) Approach, banks can use their own credit risk forecasts as input for calculating regulatory capital. Second, banks are required to conduct stress tests under Pillar II. Forecasts as well as stress testing, however, not only matter for banks and their supervisors, but also for authorities concerned with financial market stability.

From a conceptual point of view, it should be possible to perform both forecasts and stress tests with a single model. But in practice, there are certain obstacles that have to be addressed. First of all, stress tests try to study the impact of shocks that are severe but plausible. However, such shocks are by definition hardly present over the sample horizon for which credit risk mod-

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els are usually estimated. Second, in pure forecasting exercises the ability to identify macroeconomic drivers of credit risk does not carry the same weight as in stress testing exercises, where storytelling is a fundamental feature. Moreover, Drehmann et al. (2006) argue that due to the presence of nonlinearity, standard econometric forecasting models such as linear vector autoregressions (VARs) are inadequate for stress testing.

All these arguments lead to the conclusion that time series models are inappropriate for stress tests, despite their superiority regarding the predictive power over the sample period. As an alternative, Drehmann et al. (2006) e.g. propose the application of a nonlinear methodology first published by Jordà (2005). The basic idea of Jordà's approach is to overcome the nonlinearity problem through estimating different approximation models (e.g. quadratic or cubic approximations) for each horizon of interest. Drehmann et al. (2006) emphasize that the results of their nonlinear VAR are significantly different to results obtained when using standard probit models.

Another strand of research focuses on the identification of threshold effects in credit risk stress testing. Gasha and Morales (2004) assess the impact of economic activity on nonperforming loans (NPLs) and conclude that advanced financial systems with low levels of NPLs appear to have an embedded self-correcting adjustment when NPLs exceed a minimum threshold. Bruche and González-Aguado (2007) propose another econometric approach which allows for time varia-

tion in default and recovery rate distributions via an unobserved Markov chain, which they interpret as the "credit cycle." One of the main conclusions of their empirical investigation is that the time variation in recovery rate distributions does amplify risk, but that this effect is much smaller than the contribution of the time variation in default probabilities to systematic risk.

Koopman et al. (2007) were presumably the first to tackle the problem of a certain degree of arbitrariness, choosing variables to take into account the numerous possibilities in modeling the link between macroeconomic variables and credit risk measures. They propose the application of a dynamic common factor model, as developed by Stock and Watson (2002), to overcome this problem. A related model using frequency domain analysis was implemented by Schneider and Spitzer (2004) to produce short-term forecasts of real Austrian GDP.

This paper is most closely related to the work of Boss (2002), on which the current OeNB model is based.² But there is other closely related literature, e.g. Virolainen (2004), Simons and Rolwes (2008) and Fiori et al. (2007), all of which make use of the framework linking the macro-environment to the business cycle, as originally proposed by Wilson (1997a and 1997b). Our contributions to the empirical credit risk literature are fourfold: First, we present the regression models for the Austrian corporate sectors. Second, we provide an illustrative example based on a macroeconomic scenario calculated with the OeNB's Austrian Quarterly Model (AQM).³ This provides an

² Although the methodological foundation of the OeNB model is to link macroeconomic variables to probabilities of default, the model described in Boss (2002) has been frequently updated and numerous improvements have been incorporated, most importantly the estimation of multiple models (one for each of the main Austrian corporate sectors).

³ See section 5 for a detailed description.

illustration and comparison of the performance of the different models. Third, in order to exploit the potential information inherent in a larger macroeconomic data set, we apply a principal component analysis (PCA) to a set of 24 Austrian macroeconomic variables.⁴ This approach avoids the – usually arbitrary – selection of variables and makes use of the entire output of large-scale macroeconomic models such as the AQM. Fourth, in order to account for potential nonlinearity in the relation between credit and business cycles, we investigate a threshold approach.

The remainder of this paper is structured as follows: In section 2, we describe the underlying data set. Section 3 specifies the methodologies used and section 4 presents the results of the regression analysis. In section 5 we examine our models on the basis of a macroeconomic scenario to illustrate and discuss their dynamics. Finally, conclusions are drawn in section 6.

2 Data

When it comes to analyzing probabilities of defaults, we are fortunate in the sense that long historical time series are available for the Austrian economy. Our analysis is based on firm default frequencies for the period from 1970 to 2007. These default frequencies are calculated by dividing the number of quarterly defaults by the total number of firms in each sector; they are interpreted as sectoral default probabilities

throughout the paper.⁵ The number of firm defaults and the total number of firms were obtained from the Austrian creditor association *Kreditschutzverband von 1870* and combined with additional information on the number of firms per sector from *Statistics Austria*.

For our analysis, the Austrian economy was divided into the following main sectors (with the number of firms at mid-2008 in parenthesis): agriculture (7,330), production and mining (22,912), construction (26,916), trade (56,224), tourism (22,723), transport (11,637), financial services (6,383), services (82,120), overall⁶ (228,967).

In chart 1, the default probabilities of all sectors show an ascending trend at least for the 1970s. Most of the time series show evidence of structural breaks, in particular in the beginning of the 1990s. This is not surprising given the changes the Austrian economy underwent at the time, for example the privatization of large, formerly state-owned firms and the preparations for EU accession.

The macroeconomic variables were taken from the OeNB's macroeconomic database. Table 1 presents descriptive statistics of a representative sample of the Austrian macroeconomic variables included in our regressions. For a list of the 24 macroeconomic variables used for the PCA analysis, refer to table 8 in the appendix.

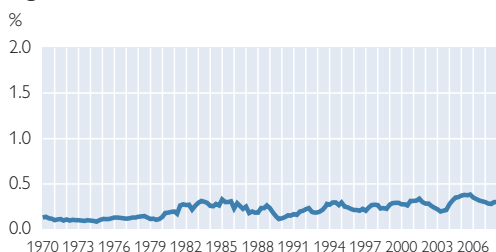
⁴ See table 8 in the appendix for a complete list of the 24 macroeconomic variables.

⁵ Because of certain data limitations we use the moving average over four quarters in full knowledge of the problems of autocorrelation.

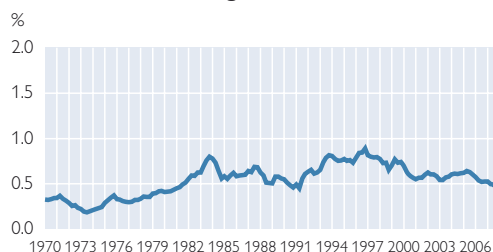
⁶ "Overall" refers to the overall Austrian economy, excluding public services and the agricultural sector.

Probabilities of Default for the Main Austrian Business Sectors (1970–2008)

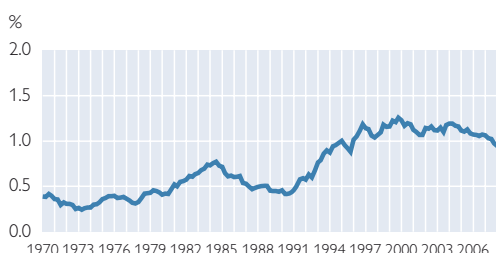
Agriculture



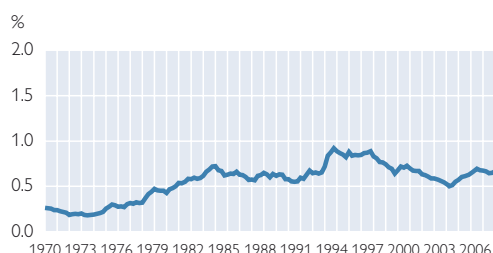
Production and Mining



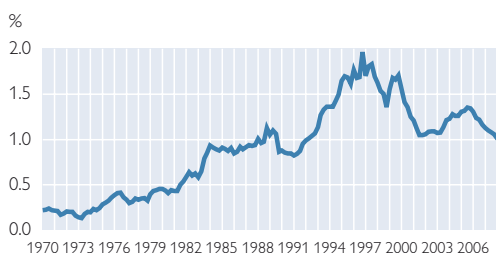
Construction



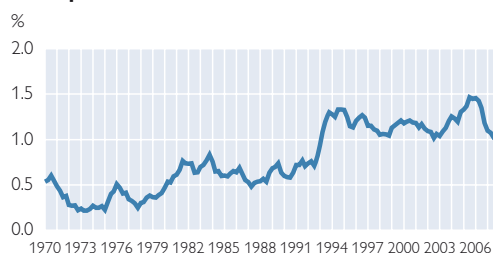
Trade



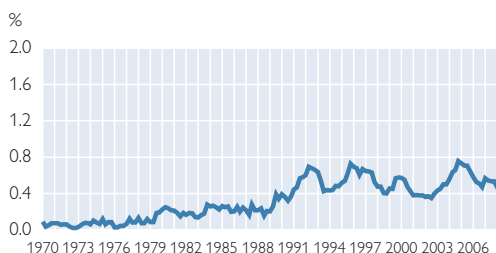
Tourism



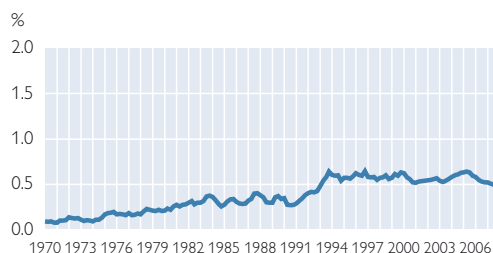
Transport



Financial services



Services



Source: Kreditschutzverband von 1870, Statistics Austria.

3 Methodology

This section includes descriptions of the three models underlying our analysis (the standard regression model, the principal components analysis (PCA) and the threshold model) as well as the algorithm applied to select the optimal model.

3.1 Standard Regression Analysis

The average sectoral default probability at time t is modeled as a logistic function of an industry-specific “macroeconomic index” which, in turn, depends on the current values of the macroeconomic variables under observation. The initial logistic regression equation can be noted as:

Table 1

Descriptive Statistics of Quarterly Austrian Macroeconomic Variables

	Expected sign	Number of observations	Mean	Standard deviation
Cyclical indicators				
GDP, real (YER)	–	154	2,71	1,71
Industrial production, real (IPexE) ¹	–	154	3,57	4,49
Household indicators				
Private consumption, real (PCR)	–	154	2,59	1,98
PCR/GDP	–	158	0,57	0,02
Unemployment rate (URX)	+	154	2,83	1,44
Private sector disposable income, real (PYR)	–	154	2,74	2,41
Corporate indicators				
Average labor productivity (PRO)	–	154	2,25	1,61
Total investment, real (ITR)	–	154	2,53	4,80
Investment in equipment, real (IER)	–	154	3,16	6,56
IER/GDP	–	158	0,08	0,01
Unit labor costs (ULCN)	+	154	3,22	3,42
Storage (SCR)	+	152	–19,72	246,41
External indicators				
Exports, real (XTR)	–	154	6,31	4,30
XTR/GDP	–	158	0,34	0,12
Oil	+	154	15,84	51,42
USD	+	154	1,00	0,24
Price stability indicators and interest rates				
Consumer price index (CPI)	+	152	3,67	2,25
Short-term interest rate, real (STI real)	+	154	2,19	1,84
Long-term interest rate, real (LTI real)	+	154	3,36	1,56
Short-term interest rate, nominal (STI nominal)	+	154	5,85	2,41
Long-term interest rate, nominal (LTI nominal)	+	154	7,03	1,85

Source: OeNB.

¹ Real industrial production excluding energy.

Note: All variables are annual growth rates except for URX, USD, STI, LTI (real and nominal) and all ratios.

where $y_{t,s}$ denotes the industry-specific macroeconomic index at time t for sector s .⁷

We apply two different estimation methods for this equation. In the first estimation, we follow the approach proposed in Wilson (1997a and 1997b) and calculate “observed” values for the macroeconomic index y_t by simply taking the inverse of the logistic function based on the historically observed default probabilities:

$$y_t = -\ln\left(\frac{1}{p_t} - 1\right).$$

Since the macroeconomic index is not stationary, we conduct an ordinary least square regression for $\Delta y_t = y_t - y_{t-4}$.

This is reasonable for models with a long-term horizon such as ours (from 1970 to 2007), as such time series are subject to structural changes. Hence, an estimation of transformed levels could lead to wrong parameter estimates. The following regression equation was estimated:

$$\Delta y_t = \sum_{i=0}^K \beta_i \Delta x_{i,t} + \varepsilon_t = X_t \beta + \varepsilon_t \quad \text{with} \\ \Delta x_{0,t} := 1$$

where y_t is the macroeconomic index, calculated according to the respective equation above. $\Delta x_{1,t}, \Delta x_{2,t}, \dots, \Delta x_{K,t}$ denote

⁷ In the following, we skip the subindex s for reasons of simplicity as all sectors are modeled in the same way.

the set of year-on-year (logarithmic or absolute) changes of the macroeconomic variables and $\beta_0, \beta_1, \beta_2, \dots, \beta_k$ stand for the parameters to be estimated. They determine the direction and extent of the impact the factors have on the index and finally on the sector-specific default probability. These parameters are estimated by means of a linear regression, where the error term ε_t is assumed to be an independent, normally distributed random variable $\varepsilon_t \sim N(0, \sigma_\varepsilon)$.

Having calculated the coefficient vector $\hat{\beta}$, estimates for the default probabilities can be calculated on the basis of estimated changes of the macroeconomic index $\Delta \hat{y}_t$ as follows:

$$\hat{p}_t = \frac{1}{1 + e^{-(\hat{y}_{t+4} + \Delta \hat{y}_t)}}, \text{ where } \hat{p}_t \text{ denotes the}$$

estimated probabilities of default.

Actually observed lagged values were used to calculate the first four estimations of the macroeconomic index.

The other method we apply for the initial logistic regression equation is based on the work of Papke and Wooldridge (1996), who estimate the default probabilities directly but, in contrast to common logistic regression, explicitly account for fractional data between 0 and 1. To account for this feature, we estimate default probabilities according to the following equations:

$$p_t = G(\Delta X_t \beta) + \varepsilon_t \text{ and } \varepsilon_t \sim N(0, \sigma_\varepsilon G(\Delta X_t \beta) \{1 - G(\Delta X_t \beta)\}).$$

The estimation is done using a quasi-maximum likelihood method where the log likelihood is given by

$$\ln L(\beta) = \sum_{t=1}^T \{ p_t \ln[G(\Delta X_t \beta)] + (1 - p_t) \ln[1 - G(\Delta X_t \beta)] \},$$

where ΔX_t is the t -th row of ΔX .

This method uses an estimation technique superior to ordinary least squares, but which can be applied to levels of probabilities of default only. The problems related to the stationarity of the dependent variable could in this case be dealt with by including an AR(1) term. To get the maximum dependency on the macroeconomic variables and consequently a higher impact of the scenario on the probabilities of default, however, no AR terms were included in the models presented in this paper. Instead, a time variable was included to take into account the upward trend of the probabilities of default described in section 2.

3.2 Principal Components Analysis

Instead of estimating the probabilities of default by the changes of individual macroeconomic variables, we use a PCA and take the resulting factors as input for the regression analysis. A PCA is an orthogonal linear transformation that places the projection of the data with the greatest variance on the first coordinate. The other coordinates are chosen subsequently, so that they explain the maximum remaining variance subject to the condition of orthogonality. In this paper, the first five factors are taken into account and they explain 74% of the variance of the 24 variables.⁸

X is the $t \times n$ matrix of the standardized macroeconomic variables⁹ of annual changes. We calculate the diagonal matrix of eigenvalues A and the matrix of eigenvectors V of $X'X$.

⁸ For a complete list of the 24 macroeconomic variables used in this analysis, refer to table 8 in the appendix.

⁹ Macroeconomic variables are standardized by subtraction of the mean and division by the standard deviation.

$$\begin{aligned} X'XV &= VA \\ V'X'XV &= A \\ (XV)'(XV) &= A \end{aligned}$$

The fraction of each eigenvalue λ_i over the sum of all eigenvalues is the variance explained by the i -th eigenvector. The first q eigenvectors sorted according to the size of the associated eigenvalues V_q constitute the orthogonal linear transformation of X described above. The reduced factors F are obtained by $F=XV_q$, with F being a $t \times q$ matrix. It is obvious from the equation that the factors must be orthogonal by definition. This property is advantageous in the context of a regression analysis as it helps avoid problems related to collinearity. However, PCA models might include variables that are not significant in explaining probabilities of default at all. In terms of stress testing, these variables might alter the results and hence interfere with a proper risk assessment.

3.3 Threshold Model

To assess the presence of potential asymmetries regarding the dependence of probabilities of default on the business cycle, we examine whether the estimated parameters – or variables included in the model selection process – of our standard model differ significantly from those of an exogenous threshold model. This could be an indication for an underestimation of risks of the standard modeling approach. We re-estimate our models under the following condition:

$$\begin{aligned} y_t &= \delta_{1,t} \sum_{i=0}^K \beta_i \Delta x_{i,t} + \varepsilon_t + \\ &+ \delta_{2,t} \sum_{i=0}^K \beta_i \Delta x_{i,t} + \varepsilon_t \\ \delta_{1,2,t} &= \begin{cases} 1 \\ 0 \end{cases} \end{aligned}$$

where y_t denotes the transformed probabilities of default, with $\delta_{1,t}=1$ for below-average growth of the Austrian economy of two consecutive quarters else $\delta_{1,t}=0$ and vice versa for $\delta_{2,t}$ which identifies the observations corresponding to above-average growth. The same model can be applied to Δy_t .¹⁰

3.4 Model Selection

To find the optimal multivariate model, we use the following model selection procedure. All macroeconomic variables under consideration are assigned to one of the following groups: cyclical indicators, price stability indicators, household indicators, corporate indicators, interest rates and external indicators. Then we estimate all possible models, including no more than one variable of each group per regression. The regression results are sorted by the value of the adjusted R-squared value for the logistic regression, respectively by the highest value for the quasi-likelihood estimator for the fractional logistic regression. The models with the wrong sign for the coefficients and with a t-value of below 1.2 are dropped. The same procedure is conducted for each sector. In a next step, the best model is selected from the sorted models, accounting also for other statistical properties such as AIC and BIC, F test and ML ratio.

¹⁰ This simple threshold model can be extended by including a threshold “kick-in” once growth has breached some low percentile or in periods where one variable (or a collection of variables) becomes highly volatile by historical standards.

In the PCA analysis, an analogous procedure is applied with one group per factor. In addition to the five factors, the oil price as well as short- and long-term real interest rates are taken into account. For the PCA factors no sign restriction can be applied, which might lead to statistical artefacts.

4 Estimation Results

This section provides the estimation results for univariate regressions as well as for the three multivariate regressions outlined in the methodology section.

4.1 Results of a Univariate Analysis

In a first step we estimate all univariate¹¹ models with the fractional logistic regression model and with OLS regressions for the changes of the default probabilities for each sector. These estimations provide an indication of the dependency of the sectoral default probabilities on macroeconomic variables. T-values are documented in table 2.

It can be observed that GDP, private consumption, the unemployment rate and industrial production as well as the ratios of equipment investment to GDP and exports to GDP are significant under both regression methods for almost all economic sectors. By es-

timating the levels of the probabilities of default, significant coefficients can also be found for average labor productivity, private sector disposable income and real exports. By contrast, the regressions based on the changes of probabilities of default show significant estimates with the expected sign for real total investment, real equipment investment and the oil and consumer price index for most of the sectors. Among the cyclical indicators (GDP and industrial production), GDP has higher values for the fractional logistic regression models, while for the OLS models industrial production has a higher explanatory power for most of the sectors.

All PCA factors are highly significant in explaining the levels of probabilities of default in most of the business sectors. The first and second factors (which together explain 50% of the variance of all included macroeconomic variables) have a negative sign, therefore they move inversely to the probabilities of default. They are not significant for the agricultural sector, but that finding is consistent with economic intuition in case the first and second factors do indeed represent the business cycle.

¹¹ Including a constant and, for the fractional logistic regression, an additional time variable.

Table 2

t-Values of the Univariate Regression for Probabilities of Default and for the Changes of the Logit-Transformed Probabilities of Default

Dependent variable: Pt (Method: Fractional logistic regression)

Explanatory variable	Expected sign	Agriculture	Production	Construction	Trading	Tourism	Transport	Financial services	Services	Other
GDP, real (YER)	-	-4.20***	-3.72***	-3.53***	-3.00***	-1.63*	-1.96**	-1.16	-4.93**	-3.92***
Private consumption, real (PCR)	-	-3.28***	-1.50	-2.21**	-2.16**	-0.38	-0.57	0.66	-0.99	-1.6*
PCR/GDP	-	2.31	15.19	2.77	16.65	16.76	5.90	12.85	13.89	15.08
Unemployment rate (URX)	+	2.91***	3.75***	1.59*	2.83***	0.99	2.1**	3.04***	3.25***	2.69***
Average labor productivity (PRO)	-	-3.47***	-3.34***	-3.25***	-4.51***	-2.06**	-1.78*	-2.58**	-2.97***	-3.75***
Private sector disposable income, real (PYR)	-	-2.70**	-2.01**	-4.14***	-1.92***	-0.81	-2.00**	0.34	-4.13***	-2.5**
Total investment, real (ITR)	-	-0.62	0.14	0.21	0.03	2.26	0.06	0.26	-2.10**	0.26
Equipment investment, real (IER)	-	1.04	1.89	1.78	0.60	0.91	2.02	0.18	0.37	1.24
IER/GDP	-	-5.70***	-6.20***	-4.09***	-7.46***	-3.44***	-3.51***	-1.24***	-5.73***	-6.65***
Unit labor cost (ULCN)	+	-1.24	-3.81	-6.36	-1.73	-4.54	-3.62	0.12	-3.01	-3.86
Exports, real (XTR)	-	-1.36	-3.29***	0.13	-2.94***	-0.51	-0.23	-2.33**	-3.34***	-2.28**
XTR/GDP	-	-1.59	-23.40***	-7.30***	-20.29***	-27.93***	-7.03***	-14.08***	-21.55***	-24.91***
Short-term interest rate, real (STI real)	+	-0.45	-3.11	-4.53	-1.57	-1.15	-3.18	-1.72	-3.35	-2.85
Long-term interest rate, real (LTI real)	+	1.89*	0.61	-0.07	1.10	0.95	0.59	-1.33	0.74	0.79
Short-term interest rate, nominal (STI nominal)	+	-2.84	-6.57	-7.41	-4.19	-4.60	-4.78	-0.79	-6.24	-6.16
Long-term interest rate, nominal (LTI nominal)	+	-1.85	-5.03	-3.65	-2.99	-3.06	-2.50	-0.99	-4.06	-3.89
Industrial production, real (IPexE) ²	-	-1.25	-2.57**	-1.73*	-1.97**	-0.40	-0.72	-1.54	-3.39***	-1.99**
Oil	+	-3.62	-4.23	-0.61	-3.95	-2.20	-1.05	-0.15	-1.94	-2.76
Consumer price index (CPI)	+	-1.36	-7.01	-3.18	-5.37	-9.47	-2.32	-1.96	-4.69	-6.27
Factor 1	-	-0.44	-4.06***	-5.58***	-1.90**	-3.3***	-2.77***	-3.20***	-4.58***	-3.82***
Factor 2	-	-2.68**	-4.27***	-4.38***	-4.14***	-3.03***	-4.82***	-2.81***	-5.70***	-4.88***
Factor 3	-	-2.28**	2.21**	2.02**	1.75*	1.27	0.96	3.15***	2.21**	1.84*
Factor 4	-	1.75*	-0.68	0.00	-0.94	-0.04	-0.58	-2.27**	-0.48	-0.39
Factor 5	-	-1.05	-2.58**	-3.58***	-1.7*	-1.25	-3.87***	-2.21**	-4.68***	-3.12***

 Dependent variable: ΔY_t (Method: OLS regression after logistic transformation)

Explanatory variable	Expected sign	Agriculture	Production	Construction	Trading	Tourism	Transport	Financial Services	Services	Other
GDP, real (YER)	-	-2.77***	-4.05***	-4.33***	-3.04***	-2.54***	-4.18***	1.25	-1.18	-4.61***
Private consumption, real (PCR)	-	-2.34**	-1.33	-3.33***	-0.59	-1.66**	-2.38**	1.08	0.17	-1.92
PCR/GDP	-	2.31	15.19	2.77	16.65	16.76	5.90	12.85	13.89	15.08
Unemployment rate (URX)	+	2.38**	7.81***	4.41***	4.25***	4.14***	2.88***	0.00	5.09***	5.89***
Average labor productivity (PRO)	-	-1.62	0.16	-1.20	-0.75	1.23	-3.18	0.89	0.84	-0.73
Private sector disposable income, real (PYR)	-	-2.29**	1.03	-2.94***	-0.18	-1.09	-1.10	1.42	0.84	-0.45
Total investment, real (ITR)	-	-2.86***	-4.96***	-6.42***	-4.42***	-4.84***	-4.87***	1.58	-0.68	-6.56***
Investment in equipment, real (IER)	-	-2.09**	-4.20***	-4.51***	-4.23***	-2.47**	-2.95***	0.66	-1.57	-4.57***
IER/GDP	-	-5.70***	-6.20***	-4.08***	-7.46***	-3.44***	-3.51***	-1.24	-5.73***	-6.66***
Unit labor costs (ULCN)	+	-1.63	0.16	-1.20	-0.75	1.23	-3.18	0.89	0.84	-0.73
Exports, real (XTR)	-	0.33	-5.44***	-2.26**	-2.65***	-0.95	-1.40	-0.99	-4.52***	-3.61***
XTR/GDP	-	-1.59	-23.39***	-7.30***	-20.30***	-27.93***	-7.03***	-14.08***	-21.55***	-24.91***
Short-term interest rate, real (STI real)	+	-0.28	-2.39	-3.69	-1.78	-4.08	-1.77	2.38	-3.20	-3.44
Long-term interest rate, real (LTI real)	+	0.94	2.05	-0.01	0.82	0.58	0.19	0.60	-0.46	0.87
Short-term interest rate, nominal (STI nominal)	+	-2.84	-6.57	-7.41	-4.19	-4.60	-4.78	-0.79	-6.24	-6.16
Long-term interest rate, nominal (LTI nominal)	+	-1.85	-5.03	-3.65	-2.99	-3.06	-2.50	-0.99	-4.06	-3.89
Industrial production, real (IPexE) ²	-	-1.64*	-8.32***	-5.60***	-4.52***	-2.60***	-3.23***	-0.14	-5.78***	-6.50***
Oil	+	0.13	0.56	1.40	2.33**	2.88***	3.43***	2.33**	-0.26	2.25*
Consumer price index (CPI)	+	2.45**	1.81*	2.12**	3.92***	3.01***	1.14	0.45	2.33**	2.97***
Factor 1	-	0.68	-1.42	-1.07	0.57	-0.31	0.29	2.22**	-0.91	-0.55
Factor 2	-	0.64	-3.03***	-3.07***	-1.79*	-1.48	-1.85*	-1.39	-3.18***	-2.87***
Factor 3	-	2.91***	0.24	1.98*	-1.33	-1.03	-0.96	-0.81	-0.63	-0.41
Factor 4	-	-0.77	3.03***	0.33	0.40	3.15***	-0.03	-0.26	3.06***	2.46***
Factor 5	-	-0.92	-1.74	-3.66***	-1.16	-1.92	-4.05***	1.48	-2.09**	-2.76***

Source: OeNB.

¹ *, ** and *** indicate significance at the 0.1, 0.05 and 0.01 level, respectively.

² Real industrial production excluding energy.

Note: Data (1970–2007) include 155 observations per sector.

Table 3

**Results of the Standard Regression Model
(Method: OLS for the changes of the logistically
transformed probabilities of default)**

Sector: Overall
Time period: 1970–2008
Quarterly observations
Number of observations: 153

Dependent variable: ΔY_t OLS

Variable (lag)	Coefficient	t-Statistics	Probability
Constant	0.02	1.60	0.11
Industrial production	-1.30	-8.81	0.00
Unemployment rate	0.08	3.99	0.00
Unit labor costs (2)	2.63	4.89	0.00
Oil	0.10	5.75	0.00
Long-term interest rate, real	0.01	1.32	0.19
R-squared	0.55		
Adjusted R-squared	0.54		

Source: OeNB.

Table 4

**Results of the Standard Regression Model
(Method: Fractional Logistic Regression)**

Sector: Overall
Time period: 1970–2008
Quarterly observations
Number of observations: 153

Dependent variable: P_t fractional logistic regression

Variable (lag)	Coefficient	t-Statistics	Probability
Constant	-3.78	-33.07	0.00
Time	3.79	42.04	0.00
Industrial production	-1.03	-7.38	0.00
Unemployment rate (4)	0.06	2.84	0.01
Investment in equipment/ GDP (4)	-18.45	-12.72	0.00
Exports/GDP (4)	-5.11	-27.56	0.00
Quasi-maximum likelihood	-5.31		
AIC	22.61		
BIC	40.64		

Source: OeNB.

**4.2 Results of the Standard
Regression Analysis**

In a second step we estimate multivariate regression models for the differences of the transformed default probabilities as well as for their levels. We follow the model selection process de-

scribed in subsection 3.4 and present the results of the two models in table 3 and 4.¹²

For the fractional logistic regression method we present two different models. The model presented in table 4 has the smallest quasi-maximum likelihood, the model presented in table 5 has a smaller AIC.

Depending on whether we estimate the levels or the changes of the logistically transformed probabilities of default, we include different variables in the selected models. The driving cyclical indicator for almost all models is industrial production, but for the fractional logistic model industrial production can be replaced by GDP without losing much of the model's explanatory power. Surprisingly, the macroeconomic variables in our models are very similar for almost all industrial sectors. For the fractional logistic models, the variables used besides industrial production are the unemployment rate, the investment in equipment-to-GDP ratio and the exports-to-GDP ratio. For the trade and tourism sectors, the nominal short-term interest rate was found to be significant, too.

Variables for the services sector include the consumer price index, while for the transport sector they include oil instead of the exports-to-GDP ratio. For the models based on the changes of the macroeconomic index, industrial production, the unemployment rate, unit

¹² Model results for all business sectors are available from the authors upon request.

Table 5

Results of the Standard Regression Model (Method: Fractional Logistic Regression) without Ratios

Sector: Overall
Time period: 1970–2008
Quarterly observations
Number of observations: 153

Dependent variable: P_t fractional logistic regression

Variable (lag)	Coefficient	t-Statistics	Probability
Constant	-5.06	-67.25	0.00
Time	0.75	9.26	0.00
GDP	-6.78	-6.36	0.00
Unit labor costs	-12.37	-6.77	0.00
Exports (4)	-1.11	-2.91	0.00
Quasi-maximum likelihood	-5.32		
AIC	20.63		
BIC	35.65		

Source: OeNB.

Table 6

Results of the Regression Model Based on Principal Components

Sector: Overall
Time period: 1970–2008
Quarterly observations
Number of observations: 153

Dependent variable: P_t fractional logistic regression

Variable (lag)	Coefficient	t-Statistics	Probability
Constant	-5.15	-150.79	0.00
Time	0.49	7.44	0.00
Factor 1 (3)	-0.01	-2.02	0.05
Factor 2 (4)	-0.02	-3.63	0.00
Factor 3	0.03	6.55	0.00
Factor 4	0.11	13.00	0.00
Factor 5	-0.03	-3.43	0.00
Long-term interest rate, real	0.02	2.08	0.04
Oil (2)	0.25	9.12	0.00
Quasi-maximum likelihood	-3.70		
AIC	25.41		
BIC	47.50		

Source: OeNB.

labor costs or investment in equipment, oil and the short-term interest rate (real)¹³ are significant in most of the sectors.

verify that the data point segmentation of the threshold model is superior to an arbitrary selection when it comes to providing statistical proof for the as-

4.3 Results of the Principal Components Analysis

Moving on to the PCA, we re-estimate multivariate regression models for the levels of default probabilities, this time, however, including the five factors obtained from the PCA (lag 1 to 4). As not all 24 macroeconomic variables have been available since 1970, time series for the PCA start in 1986. This obvious disadvantage might be set off by the fact that structural breaks in the Austrian economy pose a lesser problem for the shorter time horizon. On this account and given the results of the univariate case, we only estimate the fractional logistic models for the PCA factors.¹⁴ The inclusion of the PCA factors in the selection procedure is limited to one occurrence by factor in the final model. In addition, we include real interest rates as well as the oil price; in these cases, the maximum likelihood estimator and the expected sign are the selection criteria. As shown in table 5, all five factors, the oil price and the interest rates enter the selected model.

4.4 Results of the Threshold Model

Finally, we estimate the threshold model. Our intention is to

¹³ When including interest rates in the models, restrictions concerning the t-value must be very tolerant, coming to about 1.2, which corresponds to a p-value of about 0.2.

¹⁴ Results of the OLS regression were not as promising as those of the fractional logistic regression.

assumption that the model is consistent. However, we fail to verify this statement, which might be related to the fact that our threshold model approach is still very basic. Overall results do not look very promising, however. Further research to capture the nonlinearity of the business cycle will be necessary. For the downside part of the model, no cyclical indicators are significant; only exports and unit labor costs have statistically relevant explanatory power. For the upside part of the model, industrial production, unit labor costs and the oil price are significant variables.¹⁵

5 An Illustrative Example

To illustrate the applicability of our research, we analyze the impact of an adverse economic shock on probabilities of default according to the different models presented above.

5.1 Scenario Description

We assume a severe global recession which heavily impacts on the Austrian

economy. This assumed downturn affects the Austrian economy mainly via three channels:

- a decline in demand for Austrian exports;
- a global reassessment of risk that drives up risk premiums on interest rates in Austria and thus causes a decline in investment and consumption. In addition, equity prices are assumed to fall in this scenario, exerting negative wealth effects on consumption.
- negative confidence effects, which amplify the negative wealth effects. Austrian households are assumed to step up their precautionary savings, and firms are assumed to postpone investment projects.

The impact of the downturn on the Austrian economy is simulated using the OeNB's Austrian Quarterly Model (AQM) (see Fenz and Spitzer, 2004, and Schneider and Leibrecht, 2006); it turns out to be severe (see table 6).

Box 1

The OeNB's Model for Quarterly Macroeconomic Analysis

The OeNB's model for quarterly macroeconomic analysis (Austrian Quarterly Model – AQM) is a small to medium-size macroeconomic model in the tradition of neoclassical synthesis. It is therefore in line with most models used by Eurosystem central banks. The long-term relationships are derived from a neoclassical optimization framework, whereas short-term dynamics are data driven. Adjustment to the real equilibrium is sluggish. Imperfections on goods and labor markets typically prevent the economy from adjusting instantaneously to the long-term equilibrium. In the current version of the AQM, the formation of expectations is strictly backward looking. The relatively small scale of the model keeps the structure simple enough for projection and simulation purposes, while incorporating a sufficiently detailed structure to capture the main characteristics of the Austrian economy. The main behavioral equations are estimated using the two-step Engle-Granger technique. The model currently consists of 146 variables.

¹⁵ Result tables are available from the authors upon request.

Table 7

GDP Growth According to the Assumed Scenario

	Year 1				Year 2				Year 3			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Year-on-year change in %	1.9				-1.6				-0.4			
Quarter-on-quarter change in %	0.6	0.4	0.1	-0.1	-0.9	-0.7	-0.5	-0.3	-0.1	0.1	0.3	0.5

Source: OeNB.

In this three-year scenario, the GDP growth rate for Austria in quarter-on-quarter terms turns negative at the end of the first year and remains negative for six consecutive quarters. The trough is reached in the first quarter of the second year with a quarterly decline of GDP of -0.9% . In the third year of our scenario, GDP growth turns positive, but remains below potential growth until the end of the scenario horizon. Such a long economic downturn is an extraordinary event, which in reality has not been observed in Austria since World War II. The slump in economic activity in our scenario is mainly caused by a decline in exports and business investment, while

the negative impact on private and public consumption is significantly smaller.

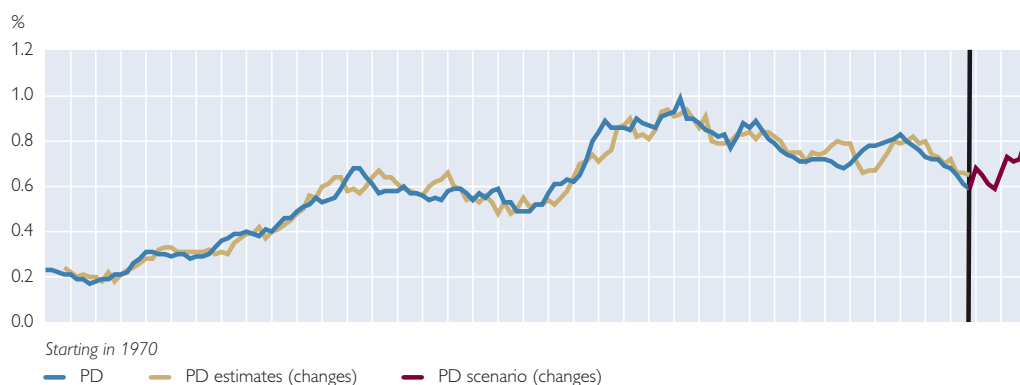
Given the scenario described above, different sensitivities of the probabilities of default can be observed that depend on (1) the model as well as (2) the sector. In the following two subsections we present the impact of the scenario on the overall sector according to the standard regression and the PCA models presented in section 3.¹⁶

5.2 Impact of the Scenario Based on Standard Regression Analysis

The graph presented in chart 2 is based on the regression estimations presented in table 3. It shows the impact of the as-

Chart 2

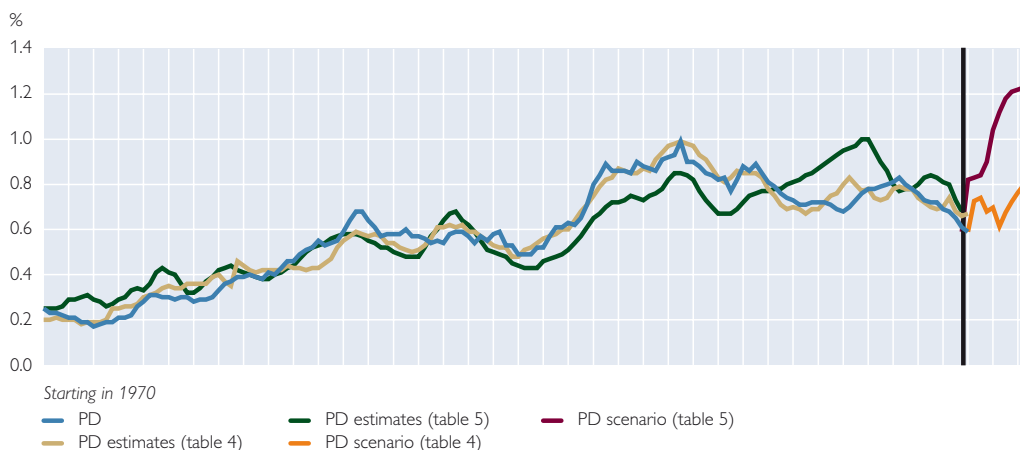
Probabilities of Default (PD) for the Overall Sector: OLS Regression Graph and Scenario Impact



Source: OeNB.

¹⁶ Graphs and impact tables for all other sectors are available from the authors upon request.

Probabilities of Default (PD) for the Overall Sector: Fractional Logistic Regression Graph and Scenario Impact



Source: OeNB.

sumed scenario according to standard regressions based on the differences of transformed default probabilities. This model has a rather small impact under the scenario. The changes of the probabilities of default depend on a lag of four quarters; therefore the impact of the variables is time delayed and shows a seasonal trend.

Chart 3 shows the impact of the fractional regression models presented in table 4 and 5. The graph based on the estimation presented in table 4 has a better fit than the graph based on table 5 results, but in the scenario the probabilities of default increase only by about 30%, which is quite similar to the model based on changes. The smaller impact of the scenario on the probabilities of defaults for the model based on table 4 results, which includes ratios of macroeconomic factors as explanatory variables, might be due to the fact that in the scenario in which both macroeconomic variables move in the same direction the change in the ratios

is smaller than the change in the macroeconomic variable itself.

The impact of the scenario on the model based on table 5 shows a 100% increase in the probabilities of default. Independent of econometric arguments, from a supervisory perspective we feel more comfortable using this model because of its quicker response and the more pronounced increase in probabilities of default, and because it provides more conservative estimates of stress impact.

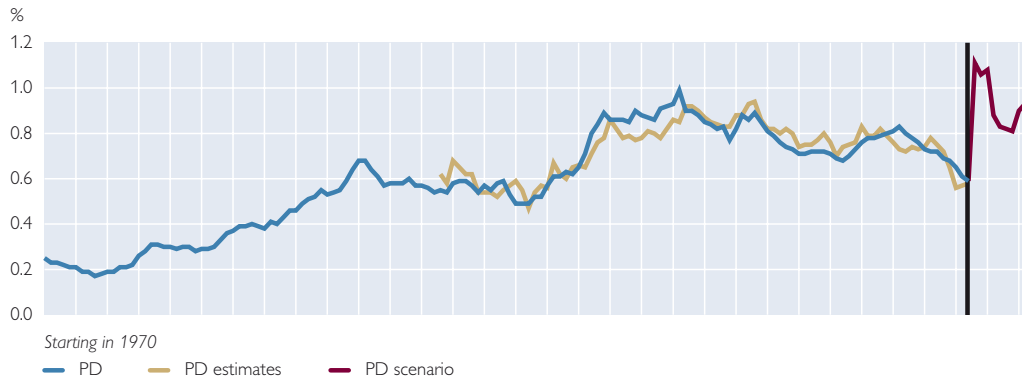
5.3 Impact of the Scenario Based on the Principal Components Analysis

The graph in chart 4 is based on the PCA model; regression estimations are the same as presented in table 6.¹⁷ We observe a good fit and an increase of the probabilities of default of about 100% in the scenario. However, the probabilities of default show a considerable increase in the first quarter of the scenario and a drop in subsequent quarters. This property could not be ob-

¹⁷ Since no broad macroeconomic dataset is available for the period before 1987, the estimation period of the PCA model is shorter than the periods considered in the other models.

Chart 4

Probabilities of Default (PD): PCA Fractional Logistic Regression Graphs and Scenario Impact



Source: OeNB.

served at any point in time over the horizon of our input time series. Further research is called for to analyze this surprising result.

6 Conclusion

With this paper we aim at achieving the methodological improvements necessary to bridge the gap between macroeconomic forecasting and credit risk modeling in order to run consistent macroeconomic stress tests. The ongoing crisis, in particular, highlights the need to quantitatively assess the impact of a possible economic deterioration on individual banks' loan portfolios or even on the entire financial system. In a period of systemic fragility it is of utmost importance to have a clear view of potential future credit defaults, as policymakers are more than ever called upon to help draft the appropriate policy response.

In that light, the objective of this paper – i.e. improving the OeNB models that link Austrian default probabilities to macroeconomic variables – is as timely as it could be. Next to standard regression models, we explore a PCA of 24 macroeconomic variables and an external threshold model. The models based on factors derived from the PCA

are statistically significant and show a good fit. An economic interpretation of these factors, and hence the story-telling capacity based on this model, however, suffer from the methodology's lack of transparency and tractability. Moreover, results from our illustrative example were quite surprising. Under the assumed scenario, the probabilities of default increased rapidly in the first quarter but decrease later on. These results are not in line with economic intuition. For the threshold approach, no consistent models were found, as simulations based on arbitrary data point segmentation suggest that the models were driven by statistical artefacts. However, including the nonlinearity of the business cycle might increase the value of our threshold model and will be subject to further research at the OeNB.

As our attempt to address two of the main shortcomings in modeling the link between credit and business cycles – namely arbitrary variable selection and nonlinearity – has yielded no convincing results so far, we returned to more traditional modeling approaches. Two different methods to estimate standard regression are presented in this paper, each with its individual ad-

vantages and disadvantages. Regressions based on the changes of the transformed probabilities of defaults avoid problems like the nonstationarity of the default probabilities and other concerns related to structural breaks in economic time series. Fractional logistic regression, however, is a superior estimation method to OLS and is especially suited for data between 0 and 1.

Moreover, models for the changes of the logarithmically transformed probabilities of default react rather weakly to the scenario of our illustrative example. The increase in probabilities of default was comparatively small for such a severe scenario. In our example, models based on fractional logistic regression show a higher sensitivity than other models. In fact, probabilities of default double under the presented scenario. Surprisingly, in almost all corporate sectors, similar macroeconomic variables prove to be significant, but they differ depending on

whether we estimate on the basis of changes in, or on the basis of levels of, the probabilities of default. In the light of this observation, it is even more surprising that our results show that the different models have comparable explanatory power, while at the same time showing vastly different properties regarding their reaction to the economic scenario assumed in our illustrative example.

By way of conclusion we can say that from the supervisory point of view, we prefer using the models based on fractional logistic regression, as they provide conservative estimates of probabilities of default in times of economic distress. Given the importance of the topic further research is called for, however, to support the continuous improvement of the models used to forecast and stress probabilities of default and, hence, of our capacity to properly assess the impact of the macroeconomic environment on credit risk.

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Appendix

Table 8

Macroeconomic Variables Transformed in the Principal Component Analysis (PCA)

Variables included in the PCA	Number of observations	Mean	Standard deviation
Total capital cost (CAC)	84	5.43	2.79
Private credit, amount outstanding (CPN)	84	6.46	2.67
Domestic demand, real (DDR)	84	2.22	1.29
Government budget balance (GB)	84	279	1317
Government debt gross (GDN)	84	5.20	4.12
Government disposal income (GYN)	84	4.27	3.97
Harmonised index of consumer prices (HICP)	84	1.94	0.83
Interest payments on government debt (INN)	84	3.94	6.26
Total investment, real (ITR)	84	2.49	2.37
Real marginal product of capital (MPC)	84	0.03	0.00
Imports, real (MTR)	84	5.71	3.83
Net foreign assets (NFA)	84	3.04	20.70
Net factor income (NFN)	84	34	74
Private consumption, real (PCR)	84	2.24	1.46
Direct tax paid by households (PDN)	84	4.82	5.43
Average labor productivity (PRO)	84	1.83	0.72
Private sector disposal income, real (PYR)	84	2.47	2.08
Total tax revenues (TOTREV)	84	3.60	3.77
Unit labor costs, adjusted (ULA)	84	0.63	0.04
Unemployment rate (URX)	84	3.97	0.60
Value added tax (VAT)	84	3.29	3.29
Real compensation per employee (WURYD)	84	0.95	0.84
Export, real (XTR)	84	6.20	3.49
GDP, real (YER)	84	2.48	1.07

Source: OeNB.

Note: All values are annual growth rates, except MPC, INN, ULA and INN levels.

Direct Cross-Border Lending by Austrian Banks to Eastern Europe

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Direct cross-border lending is an important component in the ongoing process of financial deepening in Central, Eastern and Southeastern Europe (CESEE) and the Commonwealth of Independent States (CIS). We use a loan-level dataset of Austrian banks to study the characteristics as well as the major driving forces of direct cross-border lending in CESEE and the CIS. Direct cross-border lending to nonbanks by Austrian banks expanded rapidly over the last few years; the bulk of loans is extended to corporate customers and is denominated in a foreign currency, with the euro taking a prominent position. By means of a series of univariate analyses, we provide support for the relevance of geographic proximity – small and medium-sized banks mainly lend to neighboring countries. Banks' direct lending also seems to follow nonfinancial FDI by Austrian corporates to CESEE and the CIS. We furthermore analyze the interdependencies between direct (i.e. by Austrian headquarters) and indirect (i.e. by local subsidiaries) cross-border lending and find support for a complementary effect between the two. In addition, host country factors such as GDP growth, private sector credit growth, financial intermediation growth and wage growth are also associated with direct lending growth.

JEL classification: G21, F37

Keywords: direct lending, cross-border lending, credit growth, Central, Eastern and South-eastern Europe

1 The Importance of Direct Lending

Strong credit growth to nonbanks since the turn of the millennium has been a striking feature of the convergence process in CESEE and the CIS. Much of the funding of this credit boom came from foreign, mainly Western European banks, which had entered CESEE and the CIS banking markets on a large scale since the end of the 1990s. Today most of these markets are dominated by foreign banks, mostly from Austria, Italy, Belgium and Nordic countries. In light of the current financial crisis – which has triggered a global economic downturn – the credit exposure of many Western European banks has attracted international attention.

The generally available figures on credit growth miss out an important element of debt financing in CESEE and the CIS, however: the provision of direct cross-border credit to the nonbank sector.² The stock of direct cross-border lending is considerable both in terms of GDP as well as in terms of domestic credit. In any case, direct cross-border lending by itself is an important element of convergence in CESEE and CIS, driven not only by intercompany debt but also by direct financing from foreign banks.³

This paper focuses on the provision of funds by Austrian banks to CESEE and the CIS in the form of direct cross-border lending. Austrian banks account for a market share of approximately

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² *In what follows direct (cross-border) lending denotes loans of Austrian banks to customers resident in CESEE and the CIS, whereas domestic loans extended by CESEE and CIS subsidiaries of Austrian banks are referred to as indirect (cross-border) lending.*

³ *The remaining part of external debt is made up of e.g. debt securities of CESEE and CIS companies held directly by foreign investors.*

Refereed by:
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OeNB

20 % in the region.⁴ Hence, we cover a substantial portion of lending to the region, although the possibility of a selection bias has to be acknowledged. The aim of this paper is twofold: After a short literature review and the description of the data we give a broad overview of the structure of direct cross-border lending by Austrian banks to CESEE and the CIS in terms of its evolution, its currency composition and sectoral distribution in chapter 4. In a second step, relying on a simple univariate analysis, we attempt to shed some light on the drivers of direct cross-border bank lending in the region in chapter 5. Chapter 6 concludes.

2 Literature Review

There are relatively few papers that discuss international banking and the role of cross-border lending from a theoretical perspective.⁵ Empirically, indirect cross-border lending via foreign subsidiaries has received some attention recently, not least owing to the rapid credit expansion in CESEE and the CIS.⁶ Surprisingly, direct cross-border lending by banks has received comparatively little attention so far. Available literature applies the conceptual framework on trade and multinational finance (see e.g. Berger et al., 2004, or Helpman et al., 2004) in order to investigate the choice of foreign banks between foreign direct investment (FDI, i.e. indirect cross-border lending via subsidiaries) and the “export” of financial services (i.e. direct cross-border lending). Whereas multinational

finance literature focuses on the trade-off between fixed/sunk costs and transportation cost and/or trade barriers, in international banking the focus is on the trade-off between fixed costs and information costs, which increase with geographic distance (see also Fidrmuc and Hainz, 2008).

Based on aggregated BIS data for Italian, Spanish and U.S. banks, García Herrero and Martínez Pería (2007) empirically show that the level of indirect cross-border lending is mainly driven by economies of scale as well as the openness of the host country’s banking sector. Buch and Lipponer (2007) are the first to use an individual bank dataset to investigate the direct versus indirect cross-border lending decision of banks. For a German sample, they show that direct and indirect loans are complements rather than substitutes. Furthermore size is an important factor determining the likelihood of a bank opening up a subsidiary abroad.

Data restrictions are certainly one reason why the dynamics of banks’ direct cross-border lending decisions has not received more attention so far. While data on domestic lending are relatively easy to obtain through commercial vendors (e.g. Bankscope), freely available cross-border lending data exist only in the form of aggregate data, such as the IMF’s collection of international investment statistics or the BIS banking statistics on the external positions of banks in individual reporting countries. In order to study the drivers

⁴ Note that Bank Austria and the Hypo Group Alpe Adria are counted as Austrian banks in this calculation.

⁵ See e.g. Morgan et al. (2003), extending the moral hazard framework of Holmström and Tirole (1997), or Rijkceghem and Weder (2000), who add portfolio theoretical ideas to the discussion of cross-border direct lending.

⁶ See e.g. Hilbers et al (2005), Cottarelli et al. (2005) or Backé et al. (2006) for an analysis of credit growth at country level. A second branch of the literature uses individual bank data to investigate CESEE and CIS credit growth, focussing on lending contagion in multinational banks. See e.g. de Haas and Naaborg (2005), de Haas and Lelyveld (2006a) and (2006b) or Derviz and Podpiera (2006) in this respect.

of direct cross-border lending, however, an individual bank dataset that identifies both the country of origin and the destination of a direct cross-border loan is desirable. In the following chapter, we introduce the characteristics of the Austrian Central Credit Register, a source of such data that is not publicly available.

3 Data⁷

As the primary data source in this paper we use the OeNB's Central Credit Register (Großkreditevidenz, GKE), which provides detailed information on Austrian banks' credit portfolios on a customer-by-customer basis. For domestic and foreign borrowers the GKE contains data on securitized and nonsecuritized lending as well as guarantees and other off-balance sheet items exceeding a volume of EUR 350,000. Aside from this volume-based restriction, there is one notable exception regarding the reporting requirements to the GKE: Reporting on short-term interbank loans was not required until the year 2008.⁸ For each borrower banks report the outstanding volume, granted credit lines, the sum of collateral and finally their internal rating.⁹

For this paper we use GKE-based aggregate borrower positions by economic sectors according to the three main categories provided by the GKE:

(1) banks, (2) other (i.e. nonbank) financial intermediaries (from here on referred to as FIs) and (3) local governments, other corporate customers and households¹⁰ (from here on NBs). In addition to economic arguments the aforementioned data limitation provides further reason to focus on the second and third types of borrowers. However, we still use additional data sources on direct cross-border lending to enrich our analysis. These data stem mainly from the OeNB's Monetary Statistics,¹¹ a reporting scheme that is used, among other things, to provide data for the harmonized ECB Monetary and Banking Statistics and the BIS Banking Statistics. The quarterly data cover international financial claims and liabilities broken down by currency, by sector (bank and nonbank), and by country of residence of the counterparty.

Although the OeNB's Monetary Statistics are more extensive in some areas,¹² the GKE provides numerous advantages:

(1) All banks are required to report to the GKE, whereas the OeNB's Monetary Statistics employ a "cutting-off-the-tail" principle,¹³ which covers 95% of the total assets of the Austrian banking system but omits many of the small Austrian institutions.

(2) The GKE allows forming consistent aggregates across all countries

⁷ Note that our sample of CESEE and CIS countries includes Albania (AL), Belarus (BY), Bosnia and Herzegovina (BA), Bulgaria (BG), Serbia and Montenegro (added up for a consistent sample across the entire observation period, CS), the Czech Republic (CZ), Croatia (HR), Hungary (HU), Latvia (LV), Poland (PL), Romania (RO), Russia (RU), Slovenia (SI), Slovakia (SK) and Ukraine (UA).

⁸ However, as our analysis focuses on direct cross-border lending to nonbanks, this is no restriction given the purpose of this paper.

⁹ A detailed description of the Austrian Central Credit Register (GKE) is available in OeNB (2008a).

¹⁰ Unfortunately, the GKE does not allow an easy differentiation between local governments, other corporate customers and households.

¹¹ A detailed description of the OeNB's Monetary Statistics is available in OeNB (2008b).

¹² The advantages include the lack of a reporting threshold, the currency decomposition of direct cross-border loans as well as more granular sectoral information (at least for other ESCB countries).

¹³ For a description of the "cutting-off-the-tail" principle see OeNB (2008b).

where customers of Austrian banks are resident as opposed to other data sources that treat the ESCB, the EU and the rest of the world differently.

(3) Although the BIS Banking Statistics recently introduced features that allow the separate analysis of direct cross-border lending to banks' own subsidiaries, the GKE consistently provides this possibility not only for banks, but also for nonbank financial intermediaries and corporates for the entire time horizon of our analysis.

(4) The GKE includes not only on- but also off-balance sheet items (e.g. guarantees and leasing).

The availability (and use) of multiple data sources obviously calls for some sort of benchmarking of input data. We tried to "harmonize" and reconcile the different databases as far as possible, yet the aforementioned differences in the data sources' focus cause significant (not entirely resolved) differences in the aggregates used throughout our paper. However, as the general results appear to be stable across different data sources, restrictions regarding the length of our paper lead us to abstain from any further description. For much of the same reasons and due to (public) unavailability of equally granular data on an international level, our choice of individual loans data inhibits a comparison of Austrian banks' direct cross-border lending with direct cross-border lending by banks located in other countries.

Finally, we use additional data on individual banks (Austrian parent banks as well as local CESEE and CIS subsidiaries) from the OeNB's standard reporting schemes and macroeconomic data on CESEE and the CIS from Bloomberg, Eurostat and the IMF.

4 Cross-Border Lending by Austrian Banks

Austrian banks started to expand to CESEE as early as in the mid-1980s, when banks followed their corporate customers to provide services to clients starting business in the region. By the early 1990s three Austrian banking groups (or their predecessors) had established subsidiaries in neighboring countries, but also in Poland and Russia. More Austrian banks followed suit in the second half of the 1990s. That period saw a significant departure from Austrian banks' initial greenfield business models. Some banks stuck with their strategy of organic growth, whereas others took part in the first wave of privatization of state-owned banks to grow through acquisitions. At the turn of the millennium, the economic environment in most CESEE and CIS countries stabilized and banking activities entered a path of sustained expansion (see Barisitz, 2006). Foreign banks, mainly from Western Europe, began to enter the markets in significant numbers, taking advantage of further large-scale privatizations. At the same time the region began to gain importance for the Austrian banking system beyond the large banking groups with local subsidiaries. Surging direct cross-border loans contributed to an increasing CESEE and CIS exposure. Today, Austrian banks hold a market share of almost 20% in the region, which has attracted international attention given the increased risk awareness triggered by the financial crisis.

4.1 Direct Lending Growth

Over the entire observation period from the first quarter of 2002 to the fourth quarter of 2008, direct cross-border lending to NBs and FIs¹⁴ in the

¹⁴ See chapter 3 "Data" for a definition of nonbanks (NB) and nonbank financial intermediaries (FI).

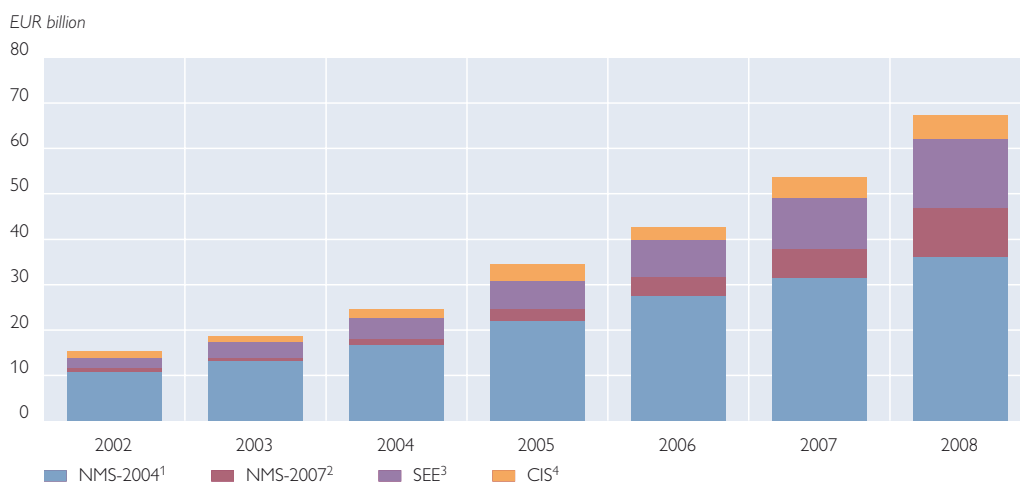
CESEE and CIS region more than tripled from EUR 15.3 billion to EUR 67.4 billion.¹⁵ Although direct lending to CESEE and the CIS grew on an aggregate basis at a steadily increasing pace, local and regional differences are quite significant (see chart 1). Its relative importance in terms of total (i.e. direct and indirect) cross-border lending to NBs and FIs in the region remained constant at about one-fifth of the total volume.¹⁶ In the second half of 2008, as a consequence of the current financial crisis and its reassessment of the risk posed by the regional credit exposure, the dynamics of credit expansion lost momentum. In the third quarter of 2008 growth rates decreased, and they were only slightly positive in the fourth quarter, i.e. growth almost came to a standstill to-

ward the end of the year. However, any assessment of the impact of the global financial crisis on the lending behavior of Austrian banks would be premature at this point.

In terms of cross-border credit extended to customers resident in the EU, direct lending to the CESEE countries that joined the EU in 2004 (NMS-2004) increased at a fairly steady pace of about 20% a year to EUR 36.2 billion, whereas direct lending to the CESEE countries that joined the EU in 2007 (NMS-2007) grew at a significantly faster rate of more than 50% on average from EUR 0.7 billion at year-end 2002 to EUR 10.7 billion at year-end 2008. Together the two regions account for a steady share of little over two-thirds of direct lending to countries within the EU. Also at a steady

Chart 1

Cross-Border Lending by Region from 2002 to 2008



Source: OeNB.

¹ NMS-2004 includes: CZ, HU, LV, PL, SI and SK.

² NMS-2007 includes: BG and RO.

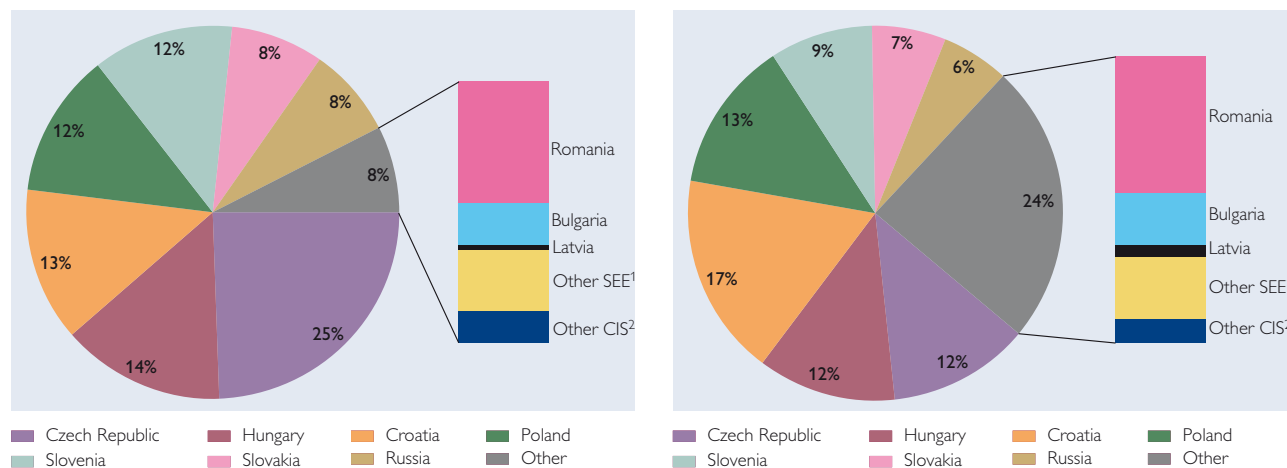
³ SEE includes: AL, BA, CS (which includes ME and RS) and HR.

⁴ CIS includes: BY, RU and UA.

¹⁵ The difference between GKE data and the OeNB's Monetary Statistics is significant but fairly constant on a disaggregate country-by-country level. Because of the numerous advantages as described in chapter 3 and length restrictions, the data used in the remainder of the paper are based on GKE reports.

¹⁶ In addition, the relative importance of direct cross-border lending by Austrian banks to nonbanks in CESEE compared with direct cross-border lending by Austrian banks to the rest of the world almost doubled from about one-fifth in 2002 to almost two-fifths in 2008.

Share of Cross-Border Lending by Country at End-2002 and at End-2008



Source: OeNB.

¹ Other SEE includes: AL, BA and CS (which includes ME and RS at end of 2008).

² Other CIS includes: BY and UA.

pace of about 35% year-on-year, the growth of direct credit extended to customers resident in Southeastern Europe (SEE) increased to EUR 15.3 billion at year-end 2008. Meanwhile direct lending to the CIS almost quadrupled to EUR 5.2 billion, albeit with enormous local differences.

Looking at the borrowers of non-bank direct cross-border credit, the data reveal two fairly steady trends: (1) Not only did the share of FIs increase in absolute terms, but it also increased in relative terms from 25.4% to 34.4% of total direct credit to the region, while (2) at the same time the share of recipient *intra-group* FIs increased from some 65% to more than 70% of total direct credit to FIs. These growth rates are *inter alia* due to the growing importance of leasing firms affiliated to Austrian banks. Although steadily growing in absolute terms, direct cross-border lending to (mostly corporate¹⁷) NBs grew at a lesser pace. Contrary to the FI segment, these loans were mainly granted to customers outside the group,

which account for a fairly stable share of substantially more than 95%.

4.2 Direct Lending by Country

Taking a closer look at the geographic dispersion of direct cross-border lending to CESEE and the CIS, customers from Croatia (with a share of 17.4%), Poland (13.3%), the Czech Republic (12.3%), Hungary (11.8%), and Romania (11.5%) were the leading recipients of credit from Austrian banks at year-end 2008, all accounting for EUR 8 billion or more (see chart 2). From the start of our time series in 2002, however, the NMS-2004 and Croatia have dominated the exposure of Austrian banks. However, lending to the once leading target country, the Czech Republic, which more than doubled in absolute terms, decreased significantly in relative importance (even more markedly than lending to other leading recipients at that date). Of the seven largest direct lending destinations in the region in 2002 (the Central European NMS-2004, Croatia and Russia ac-

¹⁷ See section 4.4.

counted for more than 90%), only Croatia substantially increased its relative importance, with aggregate lending growth exceeding 500%. In total, these seven countries' relative importance had dropped to 75.9% by year-end 2008.

Thanks to the prospect of EU accession in 2007 and exceptional (i.e. credit-driven) economic growth (including significant foreign direct investment inflows) Romania and – to a lesser extent – Bulgaria started to catch up with this group of seven. Direct lending to Romania from year-end 2002 to year-end 2008 increased almost fifteenfold, amounting to EUR 7.7 billion or 11.5 % of total cross-border lending to the region. Credit extended to Bulgaria by Austrian banks grew even slightly faster and stood at EUR 3.0 billion or 4.4 % of total direct cross-border lending to the region at end-2008. These enormous growth rates, albeit starting from low initial levels, were not matched by any other region. However, direct cross-border credit to other Southeastern European countries (not accounting for Bulgaria, Croatia and Romania) and Latvia also expanded at a rapid pace. In addition, direct lending to Belarus and Ukraine increased almost tenfold over the same time span.

This development to some extent mirrors the trend of indirect lending to the region, which has also been expanding rapidly in the NMS-2007, SEE and the CIS countries – at the expense of the relative weight of the NMS-2004. This would suggest that by and large the direct lending activities of Austrian

banks have accompanied the expansion of indirect lending. However, the comovement of direct and indirect lending is far from ubiquitous. In Russia for example, indirect loans expanded rapidly through both organic growth and new acquisitions, whereas direct lending decreased markedly in relative importance. The same applies for instance to Slovenia and Ukraine.

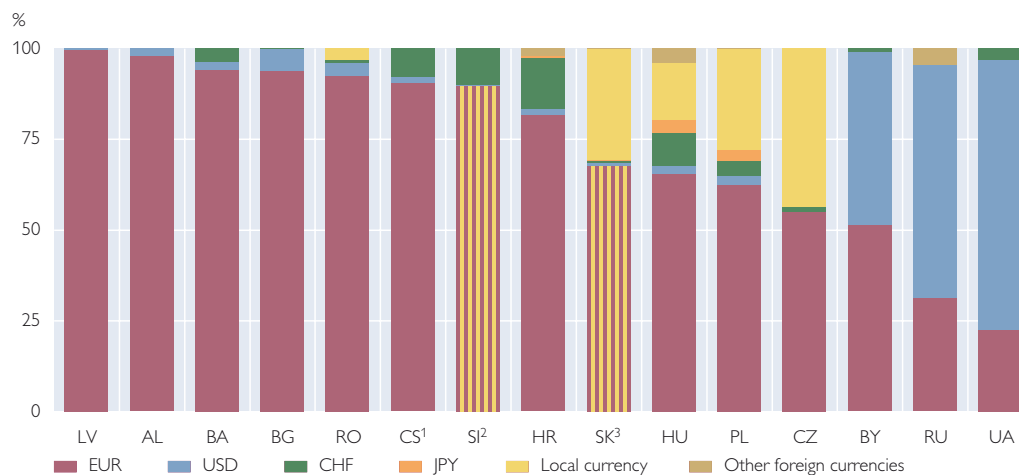
4.3 Direct Lending by Currency

A distinctive feature of direct cross-border lending by Austrian banks is the fact that most of it is denominated in foreign currency. At year-end 2008, 85.4 % of all direct loans to the region were granted in a currency other than the local one (see chart 3).¹⁸ In fact, direct lending in local currency has significant importance only in the Central European NMS.¹⁹ The breakdown by currency reveals the dominance of euro-denominated loans to SEE and to the NMS, whereas U.S. dollar-denominated loans are of relatively larger importance in the CIS. Lending in Swiss francs is not very prevalent, with the exception of Croatia, Hungary and Slovenia, and Japanese yen-denominated loans are granted to an even lesser extent to customers in Hungary and Poland. Yet not all of the direct lending in another currency than the local one is connected with foreign exchange risks. A 2008 survey among the five largest Austrian banks active in the region showed that banks estimate the “naturally hedged” share of foreign currency loans to be around 30% (or even higher in some countries).

¹⁸ As the denomination of loans is not reported to the central credit register this analysis is based on the complementary monetary statistics reported to the OeNB. For details, see chapter 3.

¹⁹ Czech Republic, Hungary, Poland and Slovakia. Surprisingly, the sectors that Austrian banks lend to in local currency vary significantly from country to country, with the notable exception of households, which receive hardly any local currency credit.

Chart 3

Cross-Border Lending by Currency at End-2008

Source: OeNB.

¹ CS includes ME and RS, the former of the two adopted the euro unilaterally.² SI joined the euro area on January 1, 2007.³ SK joined the euro area on January 1, 2009.

In terms of currency composition, there are marked differences between indirect cross-border loans and direct cross-border loans. To begin with foreign currency lending plays a significantly lesser role in indirect cross-border lending. End-2008 survey data show that only 47% of all indirect loans provided by Austrian subsidiaries are denominated in a foreign currency. Secondly, although the euro also dominates indirect cross-border loans (25% of all indirect loans), indirect lending in Swiss francs is much more prominent than it is in direct lending. All in all, Swiss franc lending accounts for some 9% of all loans of Austrian subsidiaries. Hungary, Croatia and Poland stand out particularly in this respect. As for the U.S. dollar, both indirect and direct loans show that it is mostly CIS countries, where lending in U.S. dollars is popular.

4.4 Direct Lending by Economic Sector

The sector breakdown of direct cross-border loans to the nonbank sector at year-end 2008 highlights the importance of nonbank corporates for all countries (see chart 4).²⁰ From a theoretical perspective this phenomenon is in line with standard moral hazard theory. It is easier to monitor large loans to the corporate sector than many small household loans. This, most likely, also explains the dominance of the former in the cross-border business despite some CESEE and CIS central banks' observations published in their financial stability reports according to which loans to households are often more profitable than loans to nonfinancial corporations and, in addition, often carry lower risk (e.g. because real estate is used as collateral).

²⁰ As for the denomination of loans, economic sectors are not further differentiated in the data reported to the Central Credit Register. Hence, this analysis is based on the complementary monetary statistics reported to the OeNB. For details see chapter 3.

Cross-Border Lending by Sector at End-2008

Source: OeNB.

5 Drivers of Direct Lending

If banks want to expand abroad, they will have to decide whether to enter a foreign market via a subsidiary or via direct cross-border lending. For a number of smaller and medium-sized Austrian banks there is certainly no choice but to lend directly, as they lack the necessary economies of scale. Size, liquidity and/or capital restrictions prevent them from establishing foreign affiliates (see Buch and Lipponer, 2007). Such restrictions do not apply for the biggest Austrian banks, however. In many cases direct cross-border credit is granted to countries where these banks already own a subsidiary. In this respect, we hope to shed some light on the question whether direct and indirect cross-border lending are substitutes or complements.

From a moral hazard and monitoring perspective, direct cross-border lending appears to be inferior to indirect cross-border lending, as the subsidiary's knowledge about the local market facilitates the bank's monitoring process, especially if soft facts need to be accounted for. If the geographic distance between the creditor and the

debtor is related to monitoring costs, cross-border lending via subsidiaries will again prove superior. However, certain subsidiaries may face restrictions on expanding their loan books. As shown by de Haas and Naaborg (2005), foreign bank affiliates in CESEE and the CIS are strongly influenced by the capital allocation and credit steering mechanisms of their parent banks. The presence of large exposure limits or a tight capital situation at any subsidiary may prompt the parent to extend cross-border loans directly rather than supplying additional capital. Other variables that might enter into banks' cross-border lending optimization include the economic integration of the creditor and the debtor country, the openness of the local banking market or various legal restrictions that hamper credit growth. All of these aspects are discussed in further detail in the following sections.

5.1 Neighborhood

In the literature, geographic distance has often been used as a proxy for the ability to monitor banks' loans (see Hauswald and Marquez, 2006, or

Petersen and Rajan, 2002). In the case of Austria we would therefore expect small and medium-sized banks (all banks except for the top six banks) to directly lend to Austria's immediate CESEE neighbors²¹ to a greater extent than large banks as monitoring costs are lower given close geographic proximity. The data in table 1 show that this has not always been the case for Austria, as about 60% of direct CESEE and CIS cross-border loans went to the four neighboring countries at end-2002, independent of the size of the banks.

Table 1

Direct Lending¹ to Austria's Neighboring Countries (CZ, HU, SI and SK)

	Direct lending to neighbors by top 6 Austrian banks ²		Direct lending to neighbors by other Austrian banks ³	
	%		%	
Q4 02	59,2	59,8	59,8	59,8
Q4 03	59,9	52,2	52,2	52,2
Q4 04	51,7	54,6	54,6	54,6
Q4 05	45,1	48,0	48,0	48,0
Q4 06	43,3	50,8	50,8	50,8
Q4 07	38,1	46,2	46,2	46,2
Q4 08	33,9	47,6	47,6	47,6

Source: OeNB.

¹ In % of total direct lending to CESEE.

² Top 6: Bank Austria, BAWAG, Erste Bank, Hypo Group Alpe-Adria, RZB and VBAG.

³ Without top 6.

While the relative importance of all four countries diminished in either case until end-2008, small and medium-sized banks saw their share of lending to neighboring countries drop by little more than 10 percentage points. At the same time the share of direct cross-

border lending of the top 6 Austrian banks to the four neighboring CESEE countries (in terms of total direct cross-border lending to CESEE and the CIS) almost halved to little over one-third. This is a clear indication of the expansive nature of large Austrian banks' CESEE and CIS business strategy.

As Austria's four neighboring countries appear to be the most economically advanced of the region (with the exception of the other NMS-2004), it has to be noted that in the case of Austria geographic proximity coincides with a higher level of economic development. In any case, chart 5 illustrates the presence of a neighborhood effect even more impressively. First, the chart shows aggregate direct cross-border lending to Austria's four CESEE neighbors at year-end 2008 in terms of total direct cross-border lending by province (represented by circles). Second, the light blue slices of the circles represent the share of direct cross-border lending to the four neighboring CESEE countries (in terms of total direct cross-border lending). Third, the chart provides information regarding individual customers' countries of residence (represented by the shaded columns).²² Both measures show the significant influence of geographic proximity (1) on whether an Austrian bank lends to the region at all and (2) on the positive effect of a common border of an Austrian province with a neighboring country to whose residents/corporates a bank extends credit.

²¹ Austria's immediate CESEE neighbors are the Czech Republic (CZ), Hungary (HU), Slovakia (SK), and Slovenia (SI).

²² All Austrian provinces are included in chart 5 with the exception of Vienna due to the fact that Vienna is home to all six large Austrian banking groups except Hypo Group Alpe Adria and that the majority of other larger medium-sized banks with an international focus are headquartered there. Consequently, observations of Vienna more or less reflect the aggregate Austrian banking systems' geographic diversification of direct cross-border lending. At end-2008, for banks registered in Vienna, nonbank direct credit extended to Austria's CESEE neighbors accounted for 14.4% of all cross-border lending (Austria: 14.7%). Hungary was the most important recipient with a share of 5.1% (Austria: 4.6%), followed by the Czech Republic with 4.8% (4.4%). Only Slovakia with 1.6% (3.2%) and Slovenia with 3.0% (2.4%) swap ranks in the two lists.

Neighborhood Effects of Cross-Border Lending at End-2008



Source: OeNB.

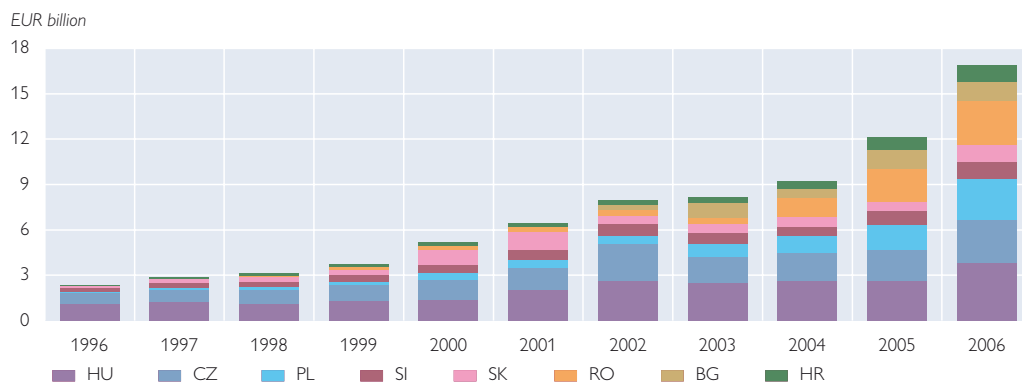
Banks headquartered in the westernmost provinces Vorarlberg and Tyrol hardly lend to Austria's neighboring countries at all (about 2 % of total direct cross-border lending in both cases). Going further east, however, there are increasing shares. Salzburg and Styria extend 11.4% and 13.4% of their respective total direct cross-border credit to the region, with Slovenia accounting for more than half of the respective shares. Upper and Lower Austria extend 18.7% and 22.9% respectively to neighboring CESEE countries, in both cases mostly to the adjacent Czech Republic. Small and medium-sized banks headquartered in Lower Austria are on aggregate also the only significant cross-border creditors of customers resident in Slovakia. In Austria's easternmost province, Burgenland, the bulk of the 26.5% of total direct cross-border credit extended to the region goes to customers in neighboring Hungary (90.0% at year-end 2008). Similarly, in Carinthia the lion's share of the 21.7% of total direct cross-border lending goes to customers in

neighboring Slovenia. In any case, these figures clearly show that geographic proximity is a major driving force of direct cross-border lending, at least for Austria's small and medium-sized banks.

5.2 Foreign Direct Investment

In the literature on indirect cross-border lending via subsidiaries it is well accepted that the degree of economic integration between the parent bank's home country and the country of residence of the subsidiary drives the location decision of international banks (see e.g. Focarelli and Pozzolo, 2003, or Dahl and Shrieves, 1999). We want to explore this issue for direct cross-border lending by means of data on Austrian nonfinancial FDI in CESEE and the CIS. Austrian nonfinancial corporations have been expanding into CESEE and the CIS quite aggressively during the last few years. Chart 6 shows the growth of Austrian nonfinancial outward FDI (at accounting value) from 1996 to year-end 2006, the last available data point. Initially, the large

Chart 6

Austrian Outward FDI Excluding Banks and Nonbank Financial Intermediaries

Source: OeNB.

neighboring economies Hungary and the Czech Republic dominated FDI, followed by the other Central European NMS-2004 (Poland, Slovenia and Slovakia). Hungary and the Czech Republic are still the main recipients of FDI to the region, but starting in the early 2000s Romania, Bulgaria and Croatia gained importance as investment targets for Austria's nonfinancial corporations as well.²³

One reason why a loan is extended by the Austrian parent's "house" bank could be the fact that a nonfinancial affiliate's capital structure and refinancing decision is steered by its Austrian parent company. These loans may even be associated with implicit or explicit guarantees by the Austrian parent company. To get a first insight whether this is indeed the case for Austrian companies, we perform a simple correlation analysis between year-on-year growth rates of FDI and direct cross-border credit expansion. Due to the shorter length of our time series for direct cross-border lending, we have to restrict our analysis to data points starting in 2002. To address the limited

number of growth rates per country and per point in time we pool across these two dimensions and compute the Pearson correlation coefficient for the whole dataset.

As it is unclear whether FDI has an immediate or lagged effect on direct cross-border lending, we calculate the Pearson correlation coefficient for contemporaneous growth rates (0.122, not significant at common inference levels), for growth rates with a one-year lag (0.415, significant at the 1 % level) and for growth rates with a two-year lag (-0.054, not significant at common inference levels). Although we observe positive correlations in both, the same year of and the year following the initial investment, suggesting that FDI by Austrian companies to CESEE and the CIS countries do indeed have a positive impact on direct cross-border lending, one has to consider that only the second – with a one-year lag – is statistically significant. Moreover, the scatter plots provided in chart 7 show the fairly unstable nature of this relation.

²³ Bulgaria, the Czech Republic, Croatia, Hungary, Poland, Romania, Slovenia and Slovakia are the only countries of our paper's sample for which time series of FDI data are available.

Relative Changes in FDI versus Cross-Border Lending (CBL)



Source: OeNB.

The evidence provided by the correlation analysis therefore suggests that the degree of economic integration between Austria and the respective CE-SEE and CIS country explains some of the variation in direct cross-border lending by Austrian banks across countries, although the results are far from unambiguous.²⁴

5.3 The Presence of a Subsidiary

Direct cross-border lending may also be affected by the presence of a bank's subsidiary in the respective country. On the one hand, there could be a substitution effect of direct and indirect cross-border lending, i.e. a bank that has no subsidiary in a country is forced to confine its cross-border lending to direct lending, whereas once a bank has established its subsidiary, the parent bank could channel most of its lending

through this subsidiary, e.g. for monitoring reasons. On the other hand, there could also be a complementary effect of having established a subsidiary, i.e. the bank's subsidiary acquires lending business for the parent, e.g. to circumvent its own large exposure rules.

To explore the interaction of direct and indirect cross-border lending, we start with a simple correlation analysis. For every point in time we compute average (volume-weighted)²⁵ year-on-year growth rates of indirect and direct cross-border loans for all those parent banks that have a subsidiary and of direct loans for those parent banks that do not have a subsidiary in any given country. We then pool across time and countries to compute the Pearson correlation coefficient for the whole dataset as well as for a dataset that we construct by cutting off at the 97.5% quan-

²⁴ To verify our results we have repeated the exercise replacing foreign direct investment with trade links (i.e. gross Austrian exports). However, due to potential endogeneity problems, we only report the analysis based on FDI. Nonetheless, the outcome based on trade links goes beyond the results of the FDI regressions, with positive correlations for all three lags (two of which are significant at the 1% level).

²⁵ Note that a simple average distorts the results as countries with very low total direct lending volumes show high volatility in lending growth rates.

Table 2

Correlation of Direct and Indirect Lending by Banks

	Direct lending by banks with subsidiaries	Direct lending by banks without subsidiaries	Indirect lending by banks with subsidiaries
Direct lending by banks with subsidiaries	1.000	0.035	-0.004
Direct lending by banks without subsidiaries	-0.027	1.000	0.192***
Indirect lending by banks with subsidiaries	-0.009	0.254***	1.000

Source: OeNB.

Note: *** indicates significance at the 1% level.

tile above and below average lending growth rates. Table 2 shows the correlation, with the upper triangular matrix depicting correlations based on the whole dataset and the lower triangular matrix those based on the reduced dataset.

These correlations indeed reveal that the presence of a subsidiary entails a different direct cross-border lending behavior. The behavior of banks without a subsidiary coincides more closely with the lending behavior of banks' subsidiaries in any given country than it does with the direct cross-border lending behavior of these subsidiaries' parent banks. The correlation matrix shows that the correlation of lending by banks without a subsidiary and lending by banks' subsidiaries in the same country is positive and highly significant whereas the direct cross-border lending behavior of banks that have no subsidiary is slightly negatively and insignificantly correlated with the direct cross-border lending behavior of banks that have a subsidiary.

Whether the difference in direct cross-border lending behavior of banks with and without subsidiaries is due to a substitution effect or a complementary effect with respect to the presence of a subsidiary cannot be answered conclusively based on these correlations, however. One way to explore the issue of substitution versus complementary

effect is an analysis of the impact of establishing a subsidiary on direct cross-border lending by the parent. To this end, we conduct an event study based on 22 instances where a bank that was already lending to a CESEE/CIS country directly entered the same country via a subsidiary. The time of entry is taken as the reference point in this experiment. We then calculate the average (volume-weighted) credit growth in direct cross-border lending for every quarter before and after the bank's entry. As the effect of direct cross-border lending growth rates exhibits a large volatility, we then take the growth rate averages over 0.5 year, 1 year and 1.5 years before and after the reference point. In a second step we look at a control group, which consists of the volume-weighted quarterly growth rates of direct cross-border loans of all other banks per country before and after the entry of a new Austrian subsidiary in any given country. Table 3 shows the results of this small experiment.

The result gives some indication that market entry via a subsidiary entails a complementary effect for direct cross-border lending by the parent to the respective country. Growth rates averaged over all banks and two quarters before and after the opening of a subsidiary are up from 19.2% to 23.1%. Although the growth rates of the con-

Table 3

Direct Lending Growth and the Establishment of a Subsidiary

Observation period before/after market entry	Market entry – sample of banks		Control group	
	Average growth rate of direct lending before market entry	Average growth rate of direct lending after market entry	Average growth rate of direct lending before market entry	Average growth rate of direct lending after market entry
	%	%	%	%
0.5 year	19.2	23.1	10.0	10.3
1 year	3.0	13.0	10.0	11.0
1.5 years	3.5	12.1	9.8	11.5

Source: OeNB.

Note: The growth rates are volume-weighted quarterly growth rates averaged either over 2 quarters, 4 quarters or 6 quarters before and after the establishment of a subsidiary. As some banks entered the market shortly after the beginning or shortly before the end of our observation period, the number of observations deviates from 22 (i.e. the number of newly-established subsidiaries in our sample during the observation period) and ranges from 13 to 21 observations in any given quarter.

control group also increase slightly, the increase is more pronounced for the sample of banks that entered a market.

5.4 Host Country Characteristics

Following the internal capital market theory of de Haas and van Lelyveld (2006a), cross-border lending is directed to more profitable countries and regions. Therefore we look at relationships between direct cross-border lending growth and macroeconomic variables on an exploratory basis.

In a first step we pool across groups of CESEE and CIS countries and compute the Pearson correlation coefficients of direct cross-border lending growth and several macroeconomic variables (see table 4). The pooled groups coincide with the NMS-2004, the NMS-2007 plus Croatia and the CIS countries of our country sample.²⁶ Statistical inference (i.e. determining significance level for the Pearson correlation coefficient) cannot rely on the standard statistics since the used time

series (mostly growth rates) are serially dependent.²⁷ As a consequence our results should be taken with caution.

The positive correlation of direct cross-border lending with present and lagged consumption growth is in line with economic theory and so is the positive correlation with wage growth. If nominal GDP growth is regarded as an overall measure of country-specific business attractiveness then the positive correlation of direct cross-border lending growth with present and lagged GDP growth rates supports standard credit portfolio theories, which state that credit commonly flows to profitable countries.²⁸ Unemployment, though most likely not significant, exhibits the expected negative sign.

The relatively high correlation of direct cross-border lending with past, present and future values of private domestic credit growth is in line with the overall rapid credit growth in CESEE and the CIS, which is largely driven by the private sector. Finally the

²⁶ Although statistical tests do not suggest that pooling is necessary, it helps solve two problems: First, pooling increases the small number of year-on-year growth rates per country. Second, and equally important, the quality of the macro economic data seems homogeneous among the chosen groups but heterogeneous across groups.

²⁷ See Mudelsee (2003). Constructing meaningful confidence intervals for our correlation analysis would require the application of bootstrapping methods, which are beyond the scope of this paper.

²⁸ See de Haas and van Lelyveld (2006b), among others.

Table 4

Correlogram of Host Country Specifics and Direct Lending Growth

		Corr(t-2,t) ¹	Corr(t-1,t)	Corr(t,t)	Corr(t+1,t)	Corr(t+2, t)	Countries included
Sample NMS-2004	GDP growth ²	0.48	0.48	0.48	0.48	0.51	CZ, HU, PL, SI, SK and LV
	Wage growth	0.45	0.46	0.43	0.45	0.51	CZ, HU, PL, SI, SK and LV
	Unemployment growth	-0.11	-0.11	-0.06	-0.07	-0.05	CZ, HU, PL, SI, SK and LV
	Consumption growth	0.59	0.56	0.59	0.61	0.63	CZ, HU, PL, SI, SK and LV
	Private credit growth	0.54	0.53	0.48	0.46	0.46	CZ, HU, PL, SI, SK and LV
	Financial intermediation growth ³	0.46	0.43	0.36	0.32	0.30	CZ, HU, PL, SI, SK and LV
Sample NMS-2007	GDP growth	0.27	0.22	0.17	0.14	0.06	BG, HR, RO
	Wage growth	0.20	0.21	0.23	0.25	0.27	BG, HR, RO
	Unemployment growth	-0.09	0.00	-0.04	-0.08	-0.25	BG, HR, RO
	Consumption growth	0.33	0.32	0.25	0.20	0.12	BG, HR, RO
	Private credit growth	0.32	0.26	0.21	0.16	0.18	BG, HR, RO
	Financial intermediation growth ³	0.23	0.17	0.14	0.11	0.19	BG, HR, RO
Sample CIS	GDP growth	0.32	0.24	0.25	0.11	0.06	BY, RU, UA
	Wage growth	0.18	0.20	0.14	0.16	0.08	BY, RU, UA
	Unemployment growth	-0.17	-0.38	-0.44	-0.40	-0.35	BY, RU, UA
	Consumption growth	0.24	0.27	0.27	0.15	0.08	BY, RU, UA
	Private credit growth	0.09	0.02	0.05	0.01	-0.02	BY, RU, UA
	Financial intermediation growth ³	-0.09	-0.12	-0.09	-0.06	-0.05	BY, RU, UA

¹ Correlation (macro variable(t), direct lending growth(t)).

² Growth rates on a year-on-year basis.

³ Financial intermediation growth = private credit growth/GDP growth.

positive linear relation with financial intermediation growth (measured by the private credit-to-GDP ratio) supports the hypothesis that direct cross-border lending goes to countries that experience a general convergence towards an equilibrium private credit-to-GDP level.

At the current stage of our research, the differences in correlations (i.e. with private credit growth and with cross-border direct lending) between groups cannot be analyzed with the simple statistical methods applied. For future research we plan to apply panel econometric methods.

In the pooled group framework we further analyze the impact of import (+) and export growth (+) as well as

gross fixed capital formation growth (+), inflation (~) and producer price index change (+) and finally growth in the average lending rate (-) on direct cross-border lending growth.²⁹

We have also explored the role of banking sector profitability and the quality of individual banks' direct cross-border loan book in Austrian banks' cross-border lending decisions. Yet growth rates in direct cross-border lending are unrelated to past, current and future profitability levels in CESEE and CIS countries as well as unrelated to average internal ratings reported to the Central Credit Register on a customer-by-customer basis. The same is true for real Austrian GDP growth.

²⁹ (+) refers to a positive correlation whereas (-) indicates a negative correlation. Finally a (~) denotes a correlation around 0.

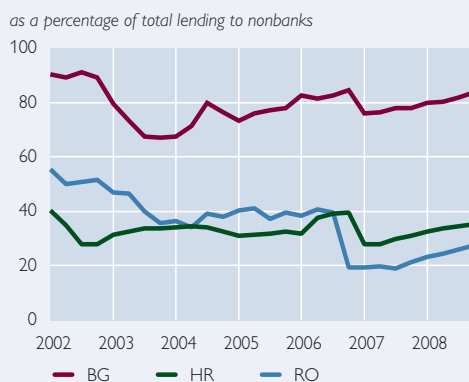
Lending Restrictions

Rapid credit growth in many CESEE and CIS countries has encouraged local authorities to implement a number of measures to restrict excessive credit growth. The range of these policy options can be broadly classified into monetary, prudential and administrative measures (see e.g. Hilbers et al., 2005). Monetary and administrative measures usually determine different forms of reserve requirements. These may include augmented reserve requirements for foreign currency lending, overall credit growth limits for banks as well as various forms of provisions if certain reserve requirements are not met. Prudential measures mainly include capital requirements like increased risk weights for specific loans or special loan-to-value ratios for mortgage loans, to name a few.

Based on Borio and Shim, 2007, who provide a detailed list of policy measures adopted in CESEE and the CIS, three countries stand out with respect to the pervasiveness of measures to curb excessive credit growth: Croatia, Romania and Bulgaria. On a scale of invasiveness Croatia is followed by Bulgaria and Romania. In Croatia authorities have been struggling to slow down rapid credit growth, especially foreign currency lending for a couple of years.¹ In 2008 Croatian banks faced a 75% loan-to-value ratio for housing loans and strict rules regarding the approval of new loans. Moreover, the authorities have imposed a series of sanctions to reduce foreign currency loans (on loans to unhedged borrowers and very high reserve requirements for foreign currency borrowing). In early 2007 the Croatian central bank (Hrvatska narodna banka, HNB) additionally tightened monetary policy by introducing credit ceilings (12% p.a.) and thus penalizing excessive bank lending by requiring banks to purchase low-yielding HNB bills on lending beyond the credit limits. The rate of purchase of compulsory HNB bills was set at 50% of the loans granted beyond the credit ceiling (75% as of January 2008). These measures were introduced from 2005 onwards, with their invasiveness increasing over time. Since 2005 Bulgaria and Romania have started to adopt similar reserve and capital requirements. In contrast to Croatia, however, the authorities have not introduced as severe measures to dampen foreign currency lending such as penalties for excessive credit growth.

In light of these policy measures it is of interest to take a closer look at direct cross-border lending growth in the three aforementioned countries in order to see whether direct cross-border lending has been used as a means to circumvent credit controls.

Direct Lending to Nonbanks



Source: OeNB.

Sectoral Growth Rates of Direct Lending – Bulgaria

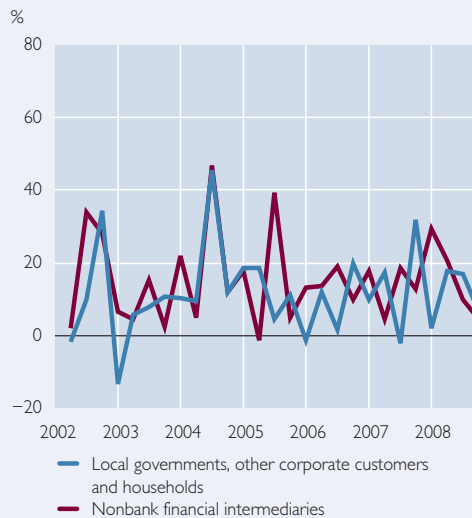


¹ See Gardó (2008) for a detailed analysis of policy measures in Croatia.

Sectoral Growth Rates of Direct Lending – Croatia



Sectoral Growth Rates of Direct Lending – Romania



Source: OeNB.

In Bulgaria and Croatia the proportion of direct cross-border lending in total lending decreased until 2004. Since then it has fluctuated around a relatively high fraction compared to other CESEE and CIS countries (see table 2), whereas Romania's direct cross-border lending structure seems to be dominated by idiosyncratic events.

According to the above figures, the growth rates of direct cross-border loans to NBs² do not seem to indicate that banks are bypassing restrictions on a large scale. In Romania and Bulgaria and to a lesser extent in Croatia, growth rates are highly volatile and the introduction of credit controls in these countries from 2005 onwards did not spur a surge in direct cross-border lending by Austrian banks.

A statistically significant difference in growth characteristics between direct cross-border lending to NBs and FIs cannot be established in the above-mentioned countries. The pooling of countries reveals a positive correlation (0.26) between growth rates of direct cross-border lending to NBs and FIs.

² See chapter 3 "Data" for a definition of nonbanks (NB).

6 Conclusions

Direct cross-border lending is an important component in the ongoing process of financial deepening in CESEE and the CIS. This paper investigates the characteristics as well as the determinants of Austrian banks' direct cross-border lending to CESEE and the CIS.

Regarding their characteristics, it is important to point out that direct cross-border lending has increased rapidly over the last few years, although its growth has lagged behind the growth

rates observed for indirect cross-border lending by Austrian banks. Direct cross-border loans have been growing particularly fast in the NMS-2007 as well as in SEE, and the bulk of these loans goes to corporates and is denominated in a foreign currency, with the euro taking a prominent position.

Regarding the economics of direct cross-border lending it is important to acknowledge its complex nature, which is influenced by a broad range of determining factors. Our analysis is a first

step towards understanding the role of geographic proximity and economic integration between the home and the host country as well as the importance of the presence of a subsidiary and the macroeconomic development of the host country in explaining direct cross-border lending. Based on a series of univariate analyses, we provide some evidence for the relevance of these factors. Especially small and medium-sized banks' direct lending behavior seems to be driven by a "neighborhood effect" as most of their lending to the region goes to adjacent CESEE countries.

Although data limitations have to be acknowledged, we have shown that economic integration measured by Austrian nonfinancial FDI as well as rising Austrian exports to CESEE and CIS countries are followed by an increase in direct lending to these countries. Moreover we have shown that the presence of a subsidiary indeed influences banks' direct cross-border lending patterns. More specifically, the direct cross-border lending behavior of banks without a subsidiary in any given country appears to resemble lending by banks with a subsidiary via this subsidiary in this country. In addition, the market entry in a country by means of a subsidiary also leads to an increase in the growth of direct lending. Thus direct cross-border lending and indirect cross-border lending seem to be complements rather than substitutes. In addition, host country factors such as GDP growth, private sector credit growth, financial intermediation growth and wage growth also appear to be associated with direct cross-border lending growth.

Furthermore we examine the role of domestic lending restrictions in a selection of CESEE and CIS countries and their effect on direct cross-border lending. Although our data do not allow any final conclusions, they indicate that there is no bypassing of restrictions on a larger scale regarding direct cross-border loans to nonbanks and nonbank financial institutions. However, circumvention of law is a complex issue, and given the aforementioned data restrictions, such acts of circumvention are likely to be difficult to detect.

Yet, we do not want to conclude without pointing out a number of important caveats to our analysis, the most important of which certainly relates to the fact that at this early point of our research we perform a series of univariate analyses only. A more sophisticated econometric analysis could potentially reveal different dynamics. Some of the above conclusions may even turn out to be spurious. However, an econometric analysis of the issue would have exceeded the scope of this paper and is therefore left to future research. Secondly, our analysis includes only Austrian banks' direct cross-border lending to CESEE and the CIS. Although Austrian banks account for about one-fifth of all lending to the region, the dynamics of direct cross-border lending may differ for banks resident in other countries. Finally, a potential selection bias in our lending data, which covers only lending above EUR 350,000 has to be acknowledged. Yet, we believe that the missing lending business is not materially relevant for direct cross-border loans.

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Banking and Financial Stability in Russia and the Euro Area amid International Financial Market Turbulences

This study was drafted during the preparation of the Fifth Joint High-Level Eurosystem – Bank of Russia Seminar hosted by the OeNB in Vienna on March 11–12, 2009. The first part of the study illustrates developments in the euro area, where the financial sector suffered to some extent from spillover effects from the first waves of the subprime crisis and later more substantially from the demise of Lehman Brothers. While rescue actions taken by national authorities and the ECB mitigated crisis effects, current challenges arise from a cyclical deterioration of credit quality and further adverse developments in global financial markets. The study highlights the considerable exposure of euro area banks to emerging Europe in general and their more modest exposure to Russia in particular. It then discusses developments in Russia: Embarking from a quite favorable macroeconomic environment, Russia was caught up in the global financial turbulences only in recent months, but the impact was heavy and exacerbated by structural weaknesses of the Russian economy. The Russian authorities' crisis response measures have been substantial and contributed to staving off a systemic banking crisis, but the sector remains fragile. The paper concludes with comments on lessons learnt: Confidence – which is the foundation of the financial system – needs to be restored. Structural and institutional problems have to be addressed adequately. Interbank markets should be made more resilient to shocks.

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JEL classification: E52, G18, G21, G28

Keywords: Banking system, contagion, crisis response measures, euro area, financial crisis, financial rescue package, financial stability, Russia

1 Introduction

This study was drafted in preparation for the Fifth Joint High-Level Eurosystem – Bank of Russia Seminar hosted by the Oesterreichische Nationalbank (OeNB) in Vienna on March 11–12, 2009.² The aim of the seminar series was to strengthen dialog and deepen relations between the Bank of Russia (CBR) and the Eurosystem, which have intensified in recent years. The Vienna seminar was attended by high-level representatives, including presidents and governors, of Eurosystem central banks and the CBR, as well as by representatives of the European Commission and

of the Government and the Federal Assembly of the Russian Federation. The program was divided into three sessions, the first of which was prepared by the CBR, the second by the ECB and the third by the OeNB.

OeNB Governor Ewald Nowotny welcomed participants and also addressed the seminar with a keynote speech on banking and financial stability in Russia and the euro area. Governor Nowotny stressed that it is a common challenge to restore confidence in financial institutions by credible recapitalization and loan loss recognition as well as to revive interbank markets and

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² The previous four high-level seminars were hosted by Suomen Pankki – Finland's Bank in Helsinki in 2004, the Bank of Russia in St. Petersburg in 2005, the Deutsche Bundesbank in Dresden in 2006 and the Bank of Russia in Moscow in 2007.

strengthen their resilience in times of stress. In his opening remarks, ECB President Jean-Claude Trichet emphasized that the financial crisis has hit both the euro area and Russia. In light of the common challenges, the most important task of policymakers in the euro area and Russia is to help resolve the crisis quickly and thoroughly, President Trichet underlined.

Session I was chaired by ECB Board Member Lorenzo Bini Smaghi and entitled “Current state of the Russian economy – challenges for monetary policy.” Sergey M. Ignatiev, Chairman of the Bank of Russia, held a keynote speech on this topic. He pointed out that the significant deterioration of the economic situation toward the end of 2008 had prompted the CBR to actively apply instruments of monetary policy and to take additional measures to strengthen liquidity in the banking sector. Notwithstanding the financial market turbulences, the CBR intends to persevere with efforts to bring about a gradual reduction of inflation. Seminar participants noted that both the euro area and Russia have been hit by the severe global economic slowdown as foreign demand for exports has declined and domestic demand has been negatively affected by worsening economic prospects and a tightening of financing conditions. They agreed that the outlook for the euro area and the Russian economy is surrounded by considerable downside risks. However, crisis response measures taken by the authorities in recent months should provide support to economic activity.

Session II, chaired by ECB President Trichet, dealt with “The impact of commodity price developments on domestic and global inflation.” In his keynote speech, ECB Deputy Director General Gilles Noblet pointed out that the sharp increases in commodity prices

until mid-2008, followed by substantial price declines, have exerted a considerable influence on consumer prices. Participants agreed that a good understanding of the nature and duration of these commodity price fluctuations, and of their impact on the medium- to long-term outlook for price stability, was essential for the conduct of monetary policy.

The focus of session III, chaired by the President of the Deutsche Bundesbank, Axel Weber, was “Banking and financial stability in Russia and the euro area in the context of international financial market turbulences.” Participants reviewed developments in the banking sector, focusing on the impact of the global financial crisis. They noted that, though developments in the euro area and Russia have been different in various respects, financial stability conditions have worsened significantly since the onset of the global financial turmoil. They also discussed the crisis response measures taken and planned by the respective governments to contain stability risks and restore confidence in the banking sector.

This study served as a background paper for Governor Nowotny’s above-mentioned keynote speech. Section 2 briefly outlines developments in the global economy, while section 3 focuses on the euro area, whose financial sector suffered to some extent from spillover effects from the first waves of the subprime crisis and later more substantially from the bankruptcy of Lehman Brothers. After reviewing rescue packages taken by national authorities, the study highlights the exposure of euro area banks to emerging Europe in general and to Russia in particular. Section 4 discusses banking sector developments in Russia. Amid a rather favorable macroeconomic environment, the global financial turbulences reached

Russia only in recent months, but the impact was heavy and exacerbated by structural weaknesses of the Russian economy. The paper continues by discussing Russian crisis response measures, their scope and effectiveness. Putting the latest figures into context, section 5 analyzes risks to financial stability in a scenario of continued stress with regard to both the euro area and to Russia. Finally, section 6 concludes with comments on lessons learnt.

2 Developments in the External Environment

The financial crisis has pushed the world economy into an abrupt downturn. All forecasts – whether from international organizations or national institutions – paint the same basic picture: a strong decrease of growth in 2009. Many countries will experience, or are already going through, a recession. At the same time, inflation – under the impact of the massive drop of energy and raw material prices and of worsening demand conditions – is expected to recede markedly. World economic recovery is not expected before 2010. However, major uncertainties relate to the depth of further repercussions of the financial crisis on the real economy, to the size of the impact of real economic developments on the financial sector and to the time of the turning point. In the euro area, annual GDP growth declined from 2.2% in the first quarter to –1.3% in the fourth quarter of 2008. According to the IMF's projections of January 2009, euro area GDP is expected to contract by about 2% in 2009. While robust Russian economic expansion in the first

half of 2008 (+8.0% year on year) had benefited from record-level oil prices, the change in the external environment, in particular the plunge of the oil price, contributed to a marked deceleration of growth in the third (–6.2%) and fourth (–1%) quarters. The IMF expects Russian GDP to contract by 0.7% in 2009.

3 Banking and Financial Stability in the Euro Area³

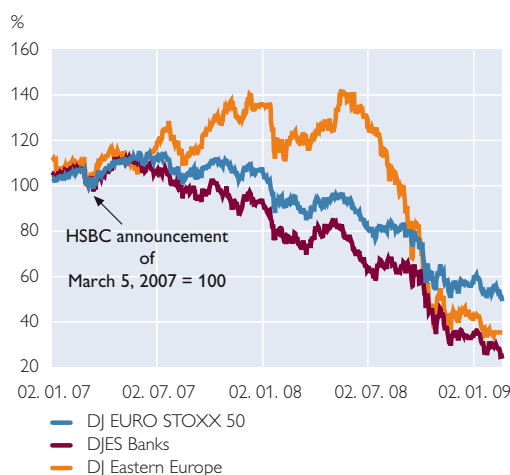
From the last High-Level Seminar until July 2007, macrofinancial conditions were very favorable. The financial sector's profitability was high, asset quality and asset prices were rising, volatilities in equity, bond, credit and foreign exchange markets were low by historical standards, and risk premiums were extraordinarily small ("pricing for perfection"). This trend may also have promoted high credit growth in some emerging economies. However, below the surface significant imbalances had been building up at various levels in the global economy and the global financial system.

Before the financial market turmoil began in July 2007, the financial conditions of large and complex banking groups (LCBGs) in the euro area had been generally strong. Banks had enjoyed improvements in fee, commission and trading income. Capital buffers were comfortable relative to regulatory requirements, but were slightly diluted due to higher risk-taking. Turning to structural banking developments, a continuation of the consolidation process and hence of market concentration, driven by the dynamic growth of certain banking groups with intense mergers and acquisitions (M&A) activi-

³ Our analysis is based on ECB publications including the ECB Financial Stability Reviews of June and December 2008 and the 2005, 2006 and 2007 reports on EU Banking Sector Stability and on EU Banking Structure.

Chart 1

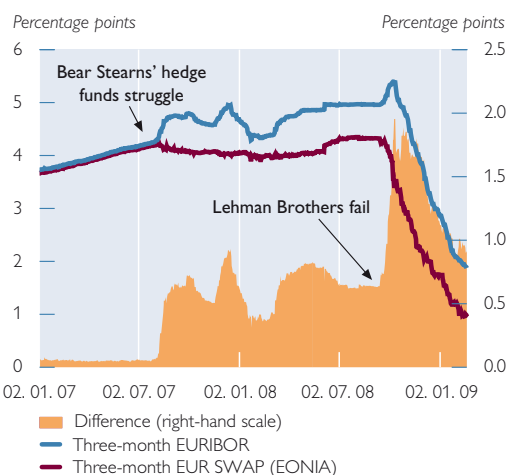
Stock Index Developments



Source: Bloomberg.

Note: Data as of February 20, 2009.

Three-Month Risk-Free and Interbank Rates



ties, was observed. A further noteworthy trend was the significant increase in the number of acquisitions by EU credit institutions of banks located in third countries.

3.1 Lehman Brothers' Default Raised Uncertainty and Counterparty Risk to Unmatched Levels

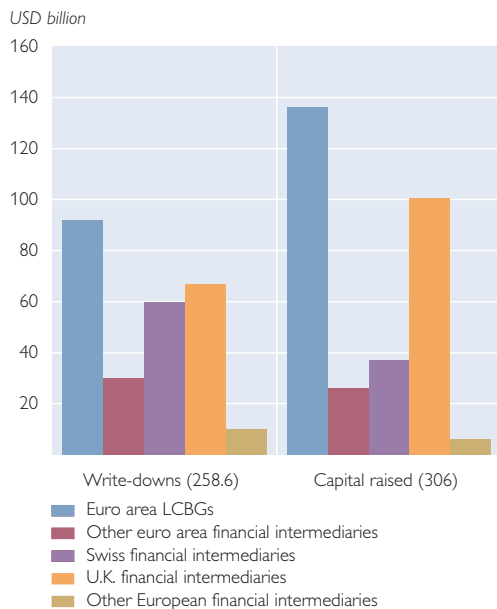
When the U.S. subprime crisis erupted in July 2007, its impact was initially limited to financial markets in industrialized economies and a few emerging markets. However, in September 2008, the failure of Lehman Brothers – the largest bankruptcy in U.S. history – marked the transition from financial turmoil to crisis (see chart 1). Increased concerns about counterparty risk and uncertainty about their own liquidity needs prompted banks to either hoard liquidity or lend funds only for a very short term at relatively high rates and/or against collateral. The default of Lehman Brothers also challenged the widely held view that any large bank that was thought to be too large or too

interconnected to fail would be supported by the public authorities. This triggered a sharp increase in EURIBOR-EONIA spreads across all maturities. In this environment, euro area banks were forced to make more frequent use of the ECB marginal lending facility. At the same time, amounts placed on the deposit facility rose significantly, implying significant impairment of the redistribution of interbank liquidity.

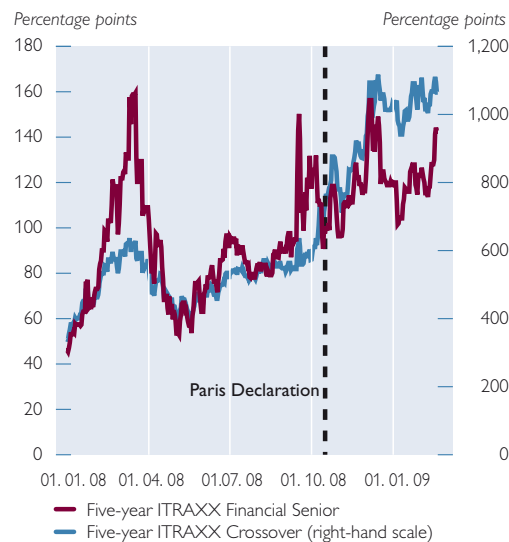
Major wholesale funding markets have been under increased pressure; even covered bonds have been adversely affected. Until the beginning of 2009, no major covered bond issuance took place. In the first three quarters of 2008, the volume of new European securitization issuance fell by 9.4% (year on year) to EUR 343.5 billion, while at the same time deal sizes increased and the share of issuances with the highest ratings went up to 84% from 68% in September 2007. In the fourth quarter, however, issuances went up by EUR 367.6 billion to reach a total of EUR 711.1 billion in 2008.

Chart 2

Write-Downs and Capital Raised



Credit Default Swap Spreads



Source: Bloomberg.

Note: Data as of February 20, 2009.

According to market observers, the majority of securitizations are being retained, presumably for repo purposes in central bank liquidity schemes. Thus, the public securitization market remained frozen.

3.2 Loss of Confidence not only among Financial Market Participants

After the failure of Lehman Brothers, many euro area banks became subject to the risk of being hit by a loss of confidence in, and speculation about, their liquidity or solvency positions, especially those that relied on wholesale funding and on big structured credit portfolios. In late September 2008, two large euro area banks with large-scale cross-border activities came under intense market pressure. In Germany, too, a major commercial property lender faced severe funding problems. As a result, heightened uncertainty among the general public drove up cash

demand. Mutually reinforcing dynamics became important drivers of market developments as leveraged investors including hedge funds were forced to unwind loss-making positions.

3.3 Financial Crisis Impairs Profitability

As a result of the intensified financial turmoil, the profitability of euro area banks fell significantly in the second half of 2008. Net profits decreased strongly year on year, and some banks even posted outright losses. In a remarkable development, the decline in quarterly earnings accelerated over the last quarters of 2008. This drop can be traced back mainly to write-downs of exposures to securities affected by the financial market turmoil and losses by proprietary trading units (chart 2) as well as to rising loan loss provisions. The development of CDS spreads shows that the intensification of the financial turmoil and the deteriorating macrofi-

nancial environment have driven up risk premiums for the financial sector and for nonfinancial issuers with weak credit ratings.

3.4 Comprehensive Rescue Actions to Mitigate Crisis Effects

In the course of the crisis, both monetary and fiscal policymakers intervened on the basis of their statutory roles in the Eurosystem. Faced with money market disruption, the ECB increased the frontloading of liquidity in its main refinancing operations (MROs) in the second half of September 2008 by allotting even larger amounts in excess of the benchmark amount. On October 8, 2008, it announced that MROs would henceforth be carried out through fixed-rate tender procedures with full allotment and that the width of the corridor formed by the marginal lending facility and the deposit facility would be narrowed symmetrically from 200 to 100 basis points.⁴ Moreover, on October 15, 2008, the Governing Council of the ECB decided to carry out all longer-term refinancing operations (LTROs) through fixed-rate tender procedures with full allotment and to extend the list of eligible collateral. In addition, the ECB decreased its interest rates on main refinancing operations from 4.25% to 1.5% between October 8, 2008 and March 11, 2009. The ECB has also taken coordinated action with other national central banks in order to improve the smooth functioning of the money and swap markets, as foreign currency funding had dried up. The ECB entered into swap agreements with the Federal Reserve, the Swiss National Bank and Danmarks Nationalbank and into repo agreements

with Magyar Nemzeti Bank and Narodowy Bank Polski.

At the euro area level, the heads of government agreed on a framework and an action plan to support banks on October 12, 2008. This plan involved measures that included a strengthening of deposit guarantee schemes, offering government guarantees for bank debt issuance and providing capital injections to systemically important banks. This framework was fully endorsed by the European Council at its meeting on October 15 and 16, 2008. In line with the framework, more than EUR 2.0 trillion have thus far been pledged by euro area governments to guarantee banks' new debt issuance, support their recapitalization or purchase their assets.

3.5 Rescue Packages Foster Gradual Improvement in Money Markets

The announcement, adoption and in-cipient implementation of the rescue packages has contributed to safeguarding banking sector stability; there has been no bankruptcy of a major financial institution. The rescue measures, in combination with other measures taken by central banks, have fostered a gradual improvement in the money market and reduced systemic risk. However, it is too early to draw conclusions on the effectiveness of the rescue packages because of the lagged effect of measures and the unavailability of timely data. It has to be borne in mind that even with the rescue measures in place, the supply of bank lending to the real economy cannot realistically mean a return to the situation before the crisis, when credit was plentiful and risk was underestimated.

⁴ With effect from January 21, 2009, this corridor was widened again to 200 basis points to restore the interbank market.

The financial turmoil has triggered a debate on the future regulatory framework at the global level, which is based on many elements including (1) the extension of the coverage of regulation to all components of the financial system that are relevant for its stability, (2) the strengthening of prudential requirements for credit institutions and (3) the reduction of the potential procyclicality of capital requirements and accounting standards as well as an increasing transparency of structured credit products and ratings. Several public and private sector initiatives, among them the G-20, the Financial Stability Forum and the Institute of International Finance, have actively contributed to the debate.

3.6 Markets' Higher Capital Requirements Are Met with Government Capital Injections

Not least because of the high uncertainty regarding the value of banks' assets, markets require that banks have capital ratios that are significantly above the regulatory minimum also because of the high uncertainty regarding the value of banks' assets. The deleveraging activities of banks and their support through capital injections by national governments led to a small rise in solvency ratios. In the case of euro area LCBGs, both the capital adequacy and the tier-1 ratio were on average at their pre-crisis levels at the end of 2008, but their ranges widened. Furthermore, recapitalizations raised discussions about possible market distortions and the quality of injected capital. This led to clarifying communications by, and approval procedures with, the European Commission to ensure the harmonization of national rescue operations, causing some delay in their implementation. Some banks are hesitant to accept government support, which

may be related e.g. to the fear of a negative stigma for banks that are in relatively good financial condition or to the attractiveness of financial rescue packages.

3.7 Rescue Packages Contributed to Increased Sovereign Risk Premiums

The implications of the rescue packages (and broader fiscal stimulus measures) for the supply of sovereign debt have been reflected in widening yield spreads and disappointing auction results. These developments highlight the need for governments to take the long-term sustainability of public finances into account when devising and implementing rescue and stimulus measures (see table 1).

3.8 Some of the Identified Risks Materialized

In their background paper for the last High-Level Seminar, Korhonen and Winkler (2005) pointed out several risks to the euro area banking system which have since materialized to some extent. Their paper highlighted, for instance, the vulnerability of euro area banks to liquidity and credit risks. Furthermore global imbalances came to the fore as predicted (i.e. heightened exchange rate risks, a reduction of banks' profits and a repricing of risks). However, it remains to be seen whether banks have adequately provided for lower credit quality in home markets.

3.9 Exposures to the U.S.A. and the U.K. Prevail and Entail Further Contagion Risks

An early lesson to be learned from the U.S. subprime crisis was certainly that contagion from other banking sectors and global financial markets is an important source of risk for euro area financial stability. According to the

Table 1

A Comparison of Crisis Response Measures, Banking Sector Assets, Government Debt Ratios and Outstanding Amounts of Short-Term Debt

	Euro area	AT	BE	CY	DE	ES	FI	FR	EL
Rescue packages in EUR billion									
Capital injection	239.1	15	18.4	–	80	–	4	43	5
Asset purchases/swaps	98	–	–	–	–	50	–	–	8
Guarantees/loans/credit lines	1922.5	75	90.8	–	499.8	100	50	374.8	15
Rescue packages in % of GDP									
Capital injection	2.6	5.3	5.3	–	3.2	–	2.1	2.2	2.0
Asset purchases/swaps	–	–	–	–	–	4.6	–	–	3.3
Guarantees/loans/credit lines	20.8	26.4	26.0	–	20.1	9.1	26.3	19.1	6.1
Banking sector assets as of December 2008									
Total assets in EUR billion	31,807	1,068	1,279	119	7,893	3,374	396	7,698	465
% of GDP	343	376	366	705	317	307	208	393	190
Government debt in % of GDP									
GDP in 2008	9,261	284	349	17	2,489	1,098	190	1,958	244
Budget deficit in 2008	–1.3	–0.6	–0.5	1	0	–1.6	5.1	–3	–2.5
Government debt 2008	66.6	57.4	86.5	48.2	64.3	37.5	31.6	65.4	93.4
Short-term debt securities, outstanding amount as of December 2008 in % of GDP									
Government	6.1	0.9	13.8	2.8	1.9	4.9	3.9	8.2	2.7
Financial institutions	8.1	6.5	3.7	3.4	6.1	6.7	12.4	20.4	0.9
Nonfinancial institutions	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1

Source: ECB, Eurostat, government announcements and OeNB calculations.

Table 1 cont.

A Comparison of Crisis Response Measures, Banking Sector Assets, Government Debt Ratios and Outstanding Amounts of Short-Term Debt

	IE	IT	LU	MT	NL	PT	SI	SK
Rescue packages in EUR billion								
Capital injection	10	20	2.9	–	36.8	4	–	–
Asset purchases/swaps	–	40	–	–	–	–	–	–
Guarantees/loans/credit lines	485	–	0.1	–	200	20	12	–
Rescue packages in % of GDP								
Capital injection	5.4	1.3	7.8	–	6.3	2.4	–	–
Asset purchases/swaps	–	2.5	–	–	–	–	–	–
Guarantees/loans/credit lines	260.0	–	0.3	–	34.0	11.9	32.0	–
Banking sector assets as of December 2008								
Total assets in EUR billion	1,744	3,700	1,274	42	2,225	483	49	50 ¹
% of GDP	935	233	3,408	740	378	288	131	77
Government debt in % of GDP								
GDP in 2008	187	1,585	37	6	589	167	38	66
Budget deficit in 2008	–5.5	–2.5	2.7	–3.8	1.2	–2.2	–0.2	–2.3
Government debt 2008	31.6	104.1	14.1	63.1	48.2	64.3	21.8	28.8
Short-term debt securities, outstanding amount as of December 2008 in % of GDP								
Government	0.0	9.3	–	6.4	12.2	8.7	0.2	–
Financial institutions	14.2	0.1	–	0.0	3.9	1.5	0.0	–
Nonfinancial institutions	–	0.1	–	0.0	0.0	0.1	–	–

Source: ECB, Eurostat, government announcements and OeNB calculations.

¹ Figure taken from the 2007 BSC Structural Report.

BIS, the United Kingdom and the United States together accounted for more than half of euro area banks' consolidated foreign claims at end-2008, and offshore centers for another 7.5%. These exposures refer not only to traditional lending activities but also to investment banking, proprietary trading and asset management. A lot of bad news have already been priced into these markets, but the following risks still prevail:

- *Persistent economic weakness and a further deterioration of housing markets.* Adverse developments could not only increase delinquency ratios further and weaken credit demand, but might also continue to depress real estate prices and hence collateral values.
- *Prolonged risk aversion of investors and issuers.* This could continue to depress noninterest income, decrease efficiency and necessitate further downsizing. The resulting high volatility may pose a potential burden for banks' profits.
- *Counterparty risks vis-à-vis hedge funds and insurance companies.* Both the hedge fund and the insurance industry act, inter alia, as important counterparties in derivatives trades, but as they have recently experienced substantial pressures (e.g. hedge funds received redemption calls and faced tighter bank lending conditions; insurance companies may have suffered a marked decline in the value of investments), their outlook is highly uncertain.

3.10 Euro Area Banks Exposed to Emerging Europe Face Severe Challenges

Aside from banking activities in the economically developed countries, traditional banking activities in emerging markets in general, and in Central,

Eastern and Southeastern European (CESEE) countries (mainly non-euro area EU Member States) in particular, have become increasingly important. At end-September 2008, euro area banks' consolidated claims vis-à-vis CESEE (including Turkey) amounted to about 13.6% of total foreign claims or 9.6% of euro area GDP according to BIS data. However, exposures to CESEE economies vary significantly across euro area banking sectors. In most cases, risks are contained because of the small size of the exposures (compared to claims on the U.S.A. and the U.K.), but a prolonged crisis in this region would constitute a serious additional burden for euro banks that are already stressed.

Sharply increased risk aversion and deleveraging activities and, in particular, the malfunctioning of international foreign exchange swap markets dried up liquidity not only in banks' funding markets but also in government bond markets. Together with rising expectations of recession in the CESEE region's main export markets, this put several currencies under depreciation pressure. Local policymakers and supervisors intervened with regulatory, monetary and fiscal measures. In certain cases, the International Monetary Fund (IMF), the World Bank, the EU and the ECB stepped in and provided assistance.

There are several challenges for euro banks with respect to their CESEE business:

- *Adverse funding conditions.* Excessive lending growth rates, especially in foreign currencies, have increased the ratio of nonbank loans to nonbank deposits in several countries and aggravated currency as well as maturity mismatches. However, even if the lending boom was partly financed by the external borrowing

(from their parent banks) of euro area banks' subsidiaries, the latter continue to be predominantly locally funded.

- *Relatively low levels of loan loss provisions.* The recent credit boom in CESEE took place in a very benign economic environment. Banks may therefore have underestimated credit risks (especially under fixed exchange rate regimes in some smaller countries).
- *Relatively low tier-1 capital ratios.* Banks' focusing on shareholder interests has led to high lending growth rates and high returns on equity, but also to weaker capital buffers.
- *Relatively high goodwill.* Tightening competition pushed up prices of acquisitions and hence led to material goodwill in banks' balance sheets.

On the one hand, both direct and indirect lending by foreign banks to CESEE countries has been beneficial to borrowers and lenders (and their respective countries of residence) alike and has entailed positive externalities for third parties. On the other hand, the involvement of foreign banks means that CESEE economies are vulnerable to problems that a foreign bank may suffer from its exposure in other countries inside or outside this region. Factors that could magnify contagion effects on other CESEE countries and on the home country itself are basically the centralized (capital and liquidity) management of subsidiaries by parent banks, the large asymmetry in foreign exposures between home and host countries, the concentration of funding sources and the often very short maturity of foreign claims. These strong linkages make coordinated responses of home and host countries vital.

3.11 Euro Area Banks Have Boosted Lending to Russia, in Particular Cross-Border and Often at Short Maturities

While foreign banks' total involvement is relatively smaller in Russia than in other countries of the region, it consists mainly of more unstable direct cross-border lending by nonparent banks (to banks and nonbanks in Russia). During the period of benign global credit and liquidity conditions before the outbreak of the crisis, Russian banks and nonbanks increased their foreign liabilities – both market instruments and syndicated loans – swiftly and substantially (see also below). These relatively cheap funds have been provided to a considerable degree by large euro area banks. At the end of 2008, foreign banks (from 24 BIS reporting countries) held consolidated claims on Russia of EUR 163 billion or 14% of Russian annual GDP. Approximately three-quarters of this amount consisted of direct cross-border loans. Consolidated claims of euro area banks amounted to roughly 10% of Russian annual GDP, or 1.3% of the annual euro area GDP. At the same time, Russian banks and enterprises have also found rising investment opportunities in the euro area.

Particularly in the context of the current international economic crisis, however, one should not forget the real economic links between the euro area and Russia and their potential repercussions. An aggravated downturn in the euro area economy may have negative spillover effects on its trading partners' real economies and, consequently, also on their financial stability.

4 Banking and Financial Stability in Russia⁵

After the 1998 crisis, Russian banking recovered only hesitantly. Toward the middle of the current decade, however, some important and long-awaited advances were achieved as regards the upgrading of prudential supervision, steps toward introducing the International Financial Reporting Standards (IFRS) and the creation of a general mandatory deposit insurance scheme.⁶ Moreover, in mid-2006, the CBR removed all remaining capital controls and the Russian ruble became fully convertible. In the second half of the decade, swift expansion of banking activities resumed in a favorable environment characterized by high economic growth (by almost 7% p.a. on average; see table A1 in the annex), continuously rising oil prices and prudent macroeconomic policies.

The speed of the expansion of banking activity reached a climax just before the impact of the U.S. subprime crisis made itself felt in Russia in the late summer of 2007 (see chart 3). Lending to enterprises and particularly to households has been the driving force of this expansion. The share of foreign exchange deposits in total deposits followed a downward path (dedollarization) and arrived at 20% in mid-2007 (see table A2 in the annex). With credit demand steadily outstripping deposit growth, banks increasingly resorted to – relatively cheap – foreign borrowing to finance their lending activities. Taking up funds abroad had become cheaper

thanks to the country's improved credit ratings, an abundance of liquidity on the world markets and persistent nominal appreciation pressures on the Russian ruble. Thus, banks' external debt as a percentage of their total liabilities grew from about 15% at end-2004 to 23% at end-2007 (and 25% in mid-2008, of which about one-third was short term).

Attracted by the buoyant economy, the credit boom and high profitability, inward banking FDI started to get off the ground. The share of majority foreign-owned credit institutions in total banking sector assets almost doubled from 8% at end-2004 to around 15% in mid-2007 (coming to 19% by end-September 2008). Yet various institutional/structural difficulties have remained. One shortcoming has been the uneven distribution of liquidity and insufficient functioning of the interbank market, as pointed out by Korhonen and Winkler (2005).⁷

4.1 Spillover Effects from International Financial Turbulences since August 2007

Private sector capital inflows into Russia have become more volatile since the summer of 2007 (see chart 3), reflecting the impact of the U.S. subprime crisis and the ensuing global financial turmoil. Interest rate levels on the domestic interbank loan market, which took some of the strain from the contraction of inflows, were pushed up (see chart 4). However, overnight lending rate levels remained negative in real

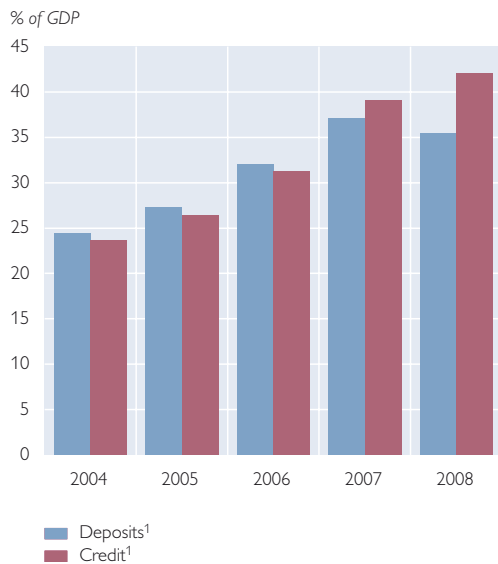
⁵ Our analysis is principally based on CBR data and publications.

⁶ However, further advances from compliance-oriented to risk-oriented accounting, valuation and supervision practices are still needed.

⁷ In the Russian interbank market, only a few banks have tended to act as liquidity providers and many second-tier credit institutions typically lack adequate collateral and therefore face difficulties in refinancing themselves through the market or the monetary authority. In stress situations like the one that affected several banks in 2004 – and again in 2007 and 2008 – liquidity can quickly dry up, forcing some market players to sell their assets.

Chart 3

Deposits and Credit as a Percentage of GDP



Source: Bank of Russia (CBR).

¹ Excluding interbank deposits or credit, respectively.

Net Capital Flows to the Private Sector



terms. The CBR contributed to calming down the situation by quickly and repeatedly supplying liquidity. An end-2007 surge in government spending also helped ease liquidity strains. However, the sharp rise of inflation since the fall of 2007 has complicated the CBR's banking stabilization policy. Pushed by significantly increasing food and energy prices, consumer price inflation rose to 11.9% at end-2007 and to above 15% in mid-2008 (year on year). From the fall of 2007 to the summer of 2008, the monetary authority had to steer a middle course between the opposing goals of monetary policy and bank soundness.

4.2 Strong Impact of Aggravation of Global Crisis since September 2008

The drastic worsening of the U.S. and global financial crises in September 2008 gave rise to expectations of a

worldwide downturn and sent the oil price plummeting.⁸ Together with the immediate global deleveraging process of financial institutions (in particular hedge funds), this led to a plunge of the Moscow stock exchange (RTS) index by almost 75% from its heights reached earlier in the year until mid-October. The outflow of previously accumulated foreign capital inflows and the stock market downturn had a destabilizing impact on the Russian economy in general and the financial sector in particular, given their specific vulnerability as characterized by

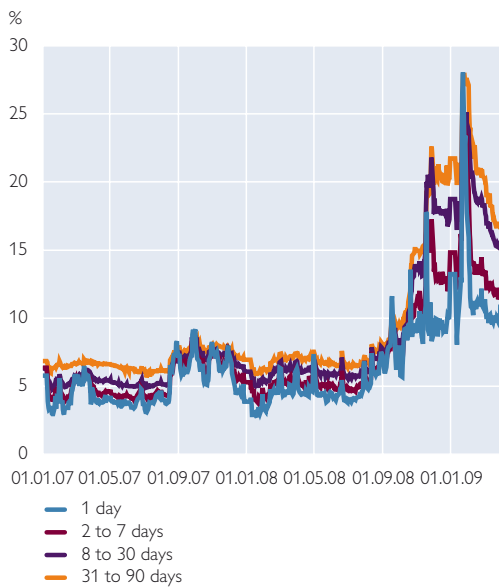
- the sizeable accumulated external debt (to nonparent sources) of Russia's banking sector and private nonbanks (shares of total private sector debt and banking sector debt in Russia's total external debt at end-September 2008: 92% and 37%, respectively) heightened depen-

⁸ Crude oil prices (Urals grade) declined from an average monthly price of USD 129 per barrel in July 2008 to USD 69 in October and USD 38 in December.

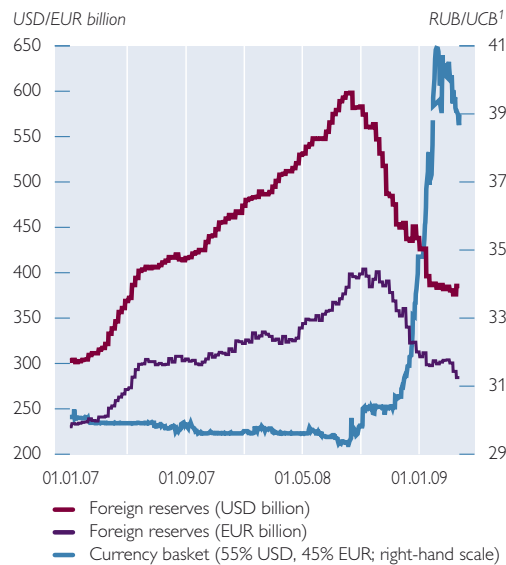
⁹ Total deposits started to contract in real terms in October 2008.

Chart 4

Interbank Interest Rates



Foreign Reserves and Russia's Currency Basket



Source: Thomson Reuters, Bank of Russia (CBR).

¹ UCB=unit of currency basket (55% USD, 45% EUR).

- dependence on debt-creating capital inflows, given the low net FDI inflows into the Russian economy and its banking sector (the latter totaling 1.4% of GDP in the first half of 2008),
- the exposure of the Russian banking sector to the stock market through extensive leveraging and the widespread but risky practice of pledging corporate shares to raise cash (*repo stock loans*), which led to sizeable margin calls (often triggering fire sales) as the value of credit collateral declined.

The sudden stop of capital inflows hit an already fragile interbank market, whose overnight lending rates reached double digits in mid-September 2008 and repeatedly spiked in the following months, indicating a liquidity squeeze. The liquidity situation of credit institutions deteriorated markedly and exerted pressure on their capitalization.

This is true particularly of medium- and smaller-sized institutions, which often have limited deposit bases and insufficient liquid assets for use as collateral. Some of them grew illiquid and had to close down.

The oil price dive, massive capital outflows and the stock market plunge unleashed downward pressures on the Russian ruble, which increased the currency risk in banking activities. This added to concerns about the illiquidity of some banks. Deposit withdrawals gathered momentum, further aggravating the liquidity squeeze.⁹ Redollarization tendencies re-emerged and accelerated.

4.3 Crisis Response Measures: Scope and Effectiveness

The CBR immediately and massively responded to accelerating capital outflows by intervening in the foreign exchange market in defense of the Russian

⁹ Total deposits started to contract in real terms in October 2008.

ruble. Consequently, Russian foreign reserves (including gold), which had almost reached USD 600 billion in early August 2008, fell back to USD 485 billion by end-October. Expressed in euro, however, foreign reserves moved much less and remained more or less stable at around EUR 380 billion to EUR 385 billion, owing to exchange rate movements during these weeks (see chart 4). In the second half of September and the first half of October 2008, the Russian authorities issued a number of strong measures to inject liquidity, shore up financial markets and support the economy. Major elements of these measures included:

- a temporary placement of public-sector deposits (from the federal budget) in selected banks,
- a cut of reserve requirements to provide liquidity,
- a pledge of official foreign reserves (RUB 1,300 billion, equaling USD 51 billion or EUR 36 billion) to extend foreign currency loans to help repay and service enterprises' and banks' external liabilities,
- the provision, by the government and the CBR, of long-term financing of RUB 950 billion (EUR 27 billion) in subordinated loans to the largest (mostly state-owned) banks, and
- the provision of government support for companies traded on the stock market.

Moreover, in the first three weeks of October 2008, three mid-sized credit institutions were bailed out by the state. The authorities certainly aimed at ruling out any popular impression that a crisis of the dimension of the 1998 crisis (including multiple bank runs etc.) could again take place. The total amount of money pledged, provided or disbursed by the authorities in their crisis response measures is estimated to

amount to about EUR 150 billion (or around 13% of Russian GDP). Additional measures, including loans and capital injections to state-owned banks totaling about EUR 20 billion to EUR 30 billion, are currently being discussed.

4.3.1 Problems of Implementation of Crisis Response Measures

While the Russian financial sector appeared to have at least temporarily stabilized by late October 2008, the implementation of the above-mentioned measures and policies faced some serious problems.

- *Sluggish implementation:* Some of the liquidity-boosting measures announced in mid-September and thereafter, particularly government assistance to industrial corporations, do not appear to have been implemented as swiftly and comprehensively as planned.
- *Insufficient "trickle-down effect:"* While the large, mostly state-owned banks targeted to receive financial support were also expected, or even required, to on-lend money to smaller illiquid banks, the on-lending mechanism has not worked well, given that most of the smaller institutions do not possess adequate collateral. The CBR reacted by providing short-term loans via auctions without requiring collateral.
- *Financial leakages:* Official financial assistance in some cases was reported not to have been lent on, but to have been converted into foreign currency (thus adding to pressure on the Russian ruble's exchange rate) and shipped abroad. The monetary authorities have attempted to counter financial leakages through administrative control measures.

4.3.2 Further Deterioration of External Environment, CBR Opts for Controlled Devaluation

The continued global slowdown and pessimism depressed oil and staples prices. This price slide, in turn, fueled expectations that the country's long-standing current account surplus could soon turn into a potentially sizeable deficit, which intensified pressure on the Russian currency. While the CBR has continued to run down its reserve assets in defense of the national currency, in mid-November it opted for a controlled devaluation policy, while somewhat tightening foreign exchange controls (e.g. by putting limits on foreign exchange swap market volumes).

By January 2009, this strategy had already led to more than 20 incremental widening steps of the Russian ruble's currency corridor vis-à-vis its U.S. dollar/euro basket (55% U.S. dollar and 45% euro). Over time, the widening steps became larger and more frequent. However, each time the corridor was widened, the spot rate quickly fell to the new, weaker limit of the corridor. The policy approach of gradual devaluation seems to have maintained devaluation expectations and, hence, fueled the flight into the U.S. dollar, which, in turn, led to further interventions. As a result, net capital outflows of the private sector (of which a sizeable part probably stemmed from the build-up of external assets by resident entities) are estimated to have reached around EUR 99 billion in the fourth quarter of 2008 (see chart 3). Thus, despite the substantial depreciation of the Russian ruble, official reserve assets continued

to decline swiftly (see chart 4).¹⁰ On January 23, 2009, after another substantial corridor widening, the CBR declared its corridor widening exercise completed, at least for the next months. For the time being, the Russian ruble has been fluctuating above the new lower limit, but has touched it at least once.¹¹ Overall, the Russian currency depreciated by about 50% against the U.S. dollar (or by around 25% against the euro) from early August 2008 to early March 2009.¹² In the same period, official reserve assets, expressed in U.S. dollars, shrank by more than one-third from their height of early August 2008 to reach USD 381 billion. (Expressed in euro, they declined by about one-quarter to EUR 302 billion in the corresponding period.)

4.4 Banking Sector on the Brink

The impact of the international financial crisis on the Russian banking sector has not yet been fully reflected in the available monthly banking indicators. Following the swift expansion of the banking sector in recent years, aggregate balance sheet growth declined in the second half of 2008. The slowdown of banking expansion appears to have been largely triggered by the further slowdown, then stagnation, then decrease of household deposits; this movement, in turn, is probably attributable to two factors which are described in the following.

The period until August 2008 was characterized by households' sensitive reaction to rising inflation and increasingly negative real interest rates. The crisis-prone period starting in the fall

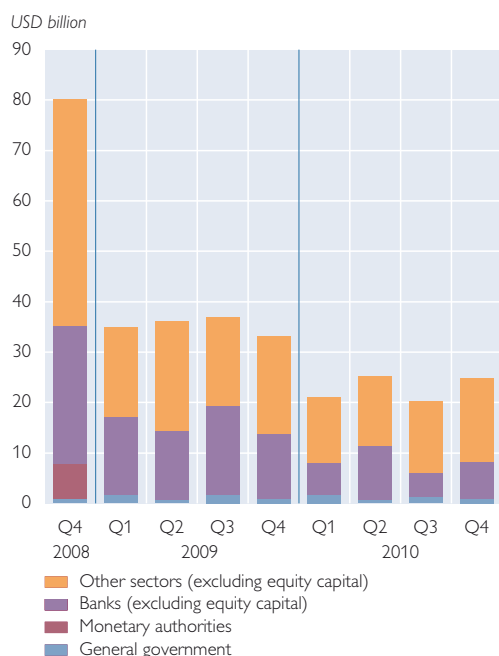
¹⁰ Citing the unrelenting erosion of foreign reserves, Standard&Poor's had downgraded Russia's long-term sovereign foreign currency debt rating by one notch from BBB+ to BBB (outlook negative) already in early December.

¹¹ According to CBR calculations, an exchange rate at the lower limit of the corridor (about RUB 36 per U.S. dollar or RUB 47 per euro) would approximately correspond to an oil price of USD 41 per barrel.

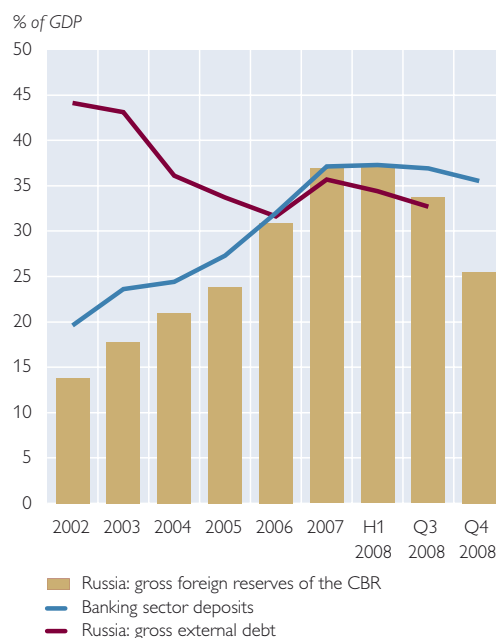
¹² In real effective terms, the Russian ruble depreciated by 12% in the seven months to end-February 2009.

Chart 5

Repayment Schedule of Russia's External Debt (Including Interest Payments)



Russia's Gross Foreign Reserves as a Shock Absorber



Source: Bank of Russia (CBR).

of 2008 (liquidity problems, Russian ruble depreciation pressures) saw total deposits – measured in Russian rubles – shrink by about 7% between end-September and end-November due to withdrawals. In December 2008, deposits measured in Russian rubles picked up again – a move which was partly attributable to valuation effects, however. Moreover, while Russian ruble deposits have dropped significantly since September 2008 (despite higher interest rates), foreign currency-denominated accounts have expanded. The crisis thus abruptly reversed the decline of dollarization of bank deposits, which had already been halted by rising inflation in the second half of 2007: During the second half of 2008, the share of foreign exchange deposits (mostly denominated in U.S. dollar) in

total deposits climbed by 11 percentage points to almost one-third (see table A2).¹³

Moreover, in banks' balance sheets, substantial disbursements of financial assistance are reflected in a substantive rise of loans and other funds banks received from the CBR. During the second half of 2008, their share in total bank liabilities grew from near zero to 12%.

As of end-2008, the total credit volume reached a record level of 42% of GDP. Credit growth slowed down in the fourth quarter of the year (falling to +0.7% month on month in December 2008, despite valuation effects which increased the credit stock, in Russian ruble terms, during that month). At the same time, the credit-to-deposit ratio continued to rise until

¹³ The loan structure about-faced as well: While the share of foreign exchange-denominated loans in total loans had steadily declined to 21% in June 2008, it reversed to 25% in December.

November 2008, when it reached 124%, before decreasing in December (see table A2). The real economy's downturn, which has been observed in Russia since late 2008 (contracting industrial production), has a deteriorating impact on loan quality.

In conjunction with the sizeable external debt of banks (a high share of which is short term), these developments point to considerable vulnerabilities of the Russian banking system, in particular if the adverse environment banks currently operate in persists or deteriorates further.

5 Risks to Financial Stability in a Scenario of Continued Stress

A longer and deeper than expected worldwide recession would worsen creditworthiness of borrowers further and also dampen credit demand. Banks in the euro area and in Russia would suffer from a substantial deterioration of the quality of their loan books and would possibly be confronted with a solvency crisis. In addition, adverse developments in the foreign exchange market may lead to indirect credit risk for banks through foreign currency borrowers that have no hedges in place.

In Russia, uncertainty regarding the exchange rate (another drop of the oil price implying a deteriorating current account may necessitate further depreciation) could erode domestic confidence in both the currency and the banking system. Should the population become more reluctant to switch from Russian ruble to foreign exchange deposits and prefer to increase their foreign exchange cash holdings outside banks instead, the liability side of banks' balance sheets could be severely hit. On top of this, Russia remains saddled with

improperly functioning interbank markets. Therefore, liquidity risk continues to present a problem. At the same time, solvency issues could increasingly come to the fore if adverse conditions prevail for an extended period of time.

In the euro area, the need for government interventions to maintain financial stability and stimulate real economies may lead to an inhomogeneous increase of debt issuance by euro area governments, causing a divergence of sovereign credit spreads. While write-downs triggered by valuation losses of subprime mortgage-related securities can be expected to taper off, the mark-downs on other structured finance products – including U.S. consumer asset-backed securities (ABS) and European mortgage-backed securities (MBS) – could increase. In the event of a breakdown of a large euro area bank, the consequences would again depend on the reactions of the national governments. Nationalization may reduce banks' willingness to sustain their activities in noncore markets. Negative spillover effects cannot be ruled out in such a scenario.

Euro area banks that hold claims on Russian banks and nonbanks in the form of direct cross-border loans may want to limit or reduce this exposure if their own financial situation deteriorates and/or the economic situation in Russia worsens. Thus, Russian banks' access to external refinancing would remain tightly circumscribed. While Russian banks' scheduled debt service payments¹⁴ should be manageable as such, a combination of deposit withdrawals and restricted access to external funding (in particular for debt roll-over) could eventually lead to a distinct crisis situation. In such a setting, much

¹⁴ According to CBR information, these payments will total USD 58.5 billion in 2009 and USD 16.6 billion in the first half of 2010. Debt servicing is not front-loaded, but more or less evenly distributed over time.

would depend on whether major Russian banks would continue being viewed as a safe haven in an environment of stressed medium-sized banks. Moreover, the Russian authorities' capabilities to continue propping up the sector with their reserve holdings could be put to the test (see chart 5).

6 Conclusions – Lessons Learnt

The U.S. subprime crisis hit euro area banks early and directly, albeit to a moderate extent, through their exposure. After the bankruptcy of Lehman Brothers, however, the unfolding international financial and economic crisis had a substantial impact on both the euro area and Russia. Russia was affected initially through the outflow of foreign capital and subsequently through the deterioration of economic fundamentals (driven by the collapse of the oil price) and structural problems in the banking sector, despite relatively strong shock-absorbing factors. Though developments have been different in various respects, considerable risks have emerged for the euro area as well as for Russia:

Confidence, which is the foundation of the financial system, has to be restored. Investor and depositor confidence certainly constitute key requirements for sound financial deepening. Credible recapitalization programs can play a crucial role in restoring confidence in the euro area and Russia. Further careful monetary policy actions are needed in Russia, as persisting pressure on the

Russian currency, even after an already substantial depreciation, could still trigger a loss of confidence and a banking crisis. More generally, confidence is also key to ensure the sustainability of cross-border funding, which over the past months has proved to be a key channel of contagion.

Structural problems have to be addressed adequately. The crisis has shown policymakers quite plainly that the supervisory architecture has not kept pace with market developments. An adequate supervisory framework has to be developed in order to further deepen financial integration. In Russia structural problems relate to connected lending, weak risk management, inadequate internal controls, insufficient risk orientation in accounting and supervision practices, modest corporate governance and an imperfect rule of law.

Interbank markets should be made more resilient to shocks. Amid the crisis, central banks started to act as general providers of liquidity, even though their toolboxes had not been equipped for this task. For this reason it is still worth exploring whether a stronger institutionalization of interbank markets by establishing clearing houses could be useful. In Russia, the current crisis may set the stage for a market shake-out in which many medium-sized or smaller credit institutions might be forced to exit or be taken over by larger competitors, thereby leaving the sector stronger than it was.

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Annex

Table A1

Macroeconomic, Monetary and Financial Indicators for Russia (2002–2008)

	2002	2003	2004	2005	2006	2007	2008 ¹
GDP growth (real, %)	4.7	7.3	7.2	6.4	7.4	8.1	5.6
CPI inflation (year-end, %)	15.1	12.0	11.7	10.9	9.0	11.9	13.3
Exchange rate (annual average, RUB/USD)	31.35	30.69	28.81	28.3	27.34	25.58	24.81
Exchange rate (annual average, RUB/EUR)	29.65	34.69	35.81	35.22	34.08	35.01	36.41
Refinancing rate (year-end, %)	21	16	13	12	11	10	13
Broad money (M2, year-end, growth in %)	32.4	50.5	35.8	36.8	48.8	47.5	1.7
Broad money (M2/GDP in %, year-end)	19.7	24.3	26.0	27.9	33.8	40.2	–
Budget balance (general government, % of GDP)	0.9	1.3	4.5	8.1	8.4	6.0	4.9
Current account balance (% of GDP)	8.4	8.2	10.1	11.1	9.8	6.1	5.9
Net private capital inflows (% of GDP) ³	–2.3	–0.4	–1.5	0.1	4.3	6.3	–7.8
– of which FDI (% of GDP)	–0.1	–0.1	0.3	0.1	0.7	1.0	0.4
– of which bank-related (% of GDP)	0.7	2.4	0.6	0.8	2.8	3.6	–3.4
Gross external debt (year-end, % of GDP)	44.1	43.1	36.1	33.7	31.6	35.7	32.7 ⁴
– of which: private debt (% of GDP) ⁵	13.9	18.5	18.3	22.9	26.6	32.2	30.1 ⁴
– of which: bank debt (% of GDP)	4.1	5.8	5.5	6.6	10.3	12.7	12.0 ⁴
Net international investment position of the banking sector (% of GDP)	1.0	–1.4	–1.9	–2.7	–6.0	–9.0	–6.0 ⁴
Gross foreign reserves of the CBR (year-end, % of GDP)	13.8	17.8	21.0	23.8	30.9	36.9	25.5

Source: Bank of Russia (CBR), *wiiv*.

¹⁾ Preliminary data or estimates.

²⁾ A minus sign („–“) corresponds to a net outflow.

³⁾ September.

⁴⁾ Nongovernment sector (including banks).

Table A2

Banking Sector-Related Indicators for Russia (2002–2009)

	2002	2003	2004	2005	2006	2007 (first half)	2007	2008 (first half)	2008 ¹	January 2009 ¹
Ratio of balance sheet total to GDP (%)	38.3	42.1	41.7	44.8	51.9	59.0	61.0	61.3	67.5	–
Share of foreign-owned banks ² in total assets (%)	8.1	7.4	7.6	8.3	12.1	14.0	17.2	18.6	18.7	–
M2 growth (annual, in real terms, %) ³	15.0	34.4	21.6	24.9	36.5	41.4	31.8	14.0	–10.2	–18.2
Ratio of deposits ⁴ to GDP (%)	19.6	23.6	24.4	27.3	32.0	35.4	37.1	37.3	35.5	–
Deposit growth (annual, in real terms, %) ³	16.7	31.3	19.7	27.7	33.7	36.9	26.9	18.2	6.3	10.3
Household deposits (annual real growth, %) ³	32.1	31.8	16.7	25.7	26.6	28.1	21.0	15.3	1.1	5.2
Share of foreign exchange deposits in total deposits (%)	–	28.9	27.2	28.1	23.4	20.4	20.9	21.8	32.7	41.3
Ratio of credits ⁴ to GDP (%)	17.1	21.0	23.7	26.4	31.3	34.6	39.0	41.4	42.0	–
Credit growth (annually, in real terms, %) ³	18.2	33.8	28.9	27.7	35.2	37.7	36.4	33.9	19.6	21.1
Share of lending to households in total credit (%)	–	9.0	13.3	18.4	22.3	–	23.1	23.1	23.0	21.9
Share of foreign currency loans in total loans (%)	34.8	32.8	27.1	28.0	24.5	22.2	22.6	21.4	24.6	26.5
Credit-to-deposit ratio (%)	87.2	89.0	97.1	96.7	97.8	97.7	105.1	111.0	118.4	120.8
Return on equity (ROE, %)	18.0	17.8	20.3	24.2	26.3	–	22.7	19.5	13.3	–
Capital adequacy (%)	19.1	19.1	17.0	16.0	14.9	16.8	15.5	14.8	16.8	16.1
Liquidity: share of highly liquid assets in total assets (%)	22.3	20.6	17.1	15.2	13.6	13.0	12.1	10.7	14.5	–

Source: Bank of Russia (CBR), Goskomstat.

¹ Preliminary data.

² Credit institutions majority-owned by foreign banks.

³ CPI-deflated.

⁴ Excluding interbank deposits or credits, respectively.

Note: Deposit and credit data are based on Russian ruble-denominated volumes and therefore include changes in stock that are due to valuation effects, in particular exchange rate effects.

Annex of Tables

Annex of Tables

International Environment	Table
<i>Exchange Rates</i>	A1
<i>Key Interest Rates</i>	A2
<i>Short-Term Interest Rates</i>	A3
<i>Long-Term Interest Rates</i>	A4
<i>Corporate Bond Spreads</i>	A5
<i>Stock Indices</i>	A6
<i>Gross Domestic Product</i>	A7
<i>Current Account</i>	A8
<i>Inflation</i>	A9
 The Real Economy in Austria	
<i>Financial Investment of Households</i>	A10
<i>Household Income, Savings and Credit Demand</i>	A11
<i>Financing of Nonfinancial Corporations</i>	A12
<i>Insolvency Indicators</i>	A13
<i>Selected Financial Ratios of the Manufacturing Sector</i>	A14
 Financial Intermediaries in Austria	
<i>Total Assets and Off-Balance-Sheet Operations</i>	A15
<i>Profitability on an Unconsolidated Basis</i>	A16
<i>Profitability on a Consolidated Basis</i>	A17
<i>Sectoral Distribution of Loans</i>	A18
<i>Foreign Currency-Denominated Claims on Domestic Non-MFIs</i>	A19
<i>Loan Quality</i>	A20
<i>Market Risk</i>	A21
<i>Liquidity Risk</i>	A22
<i>Solvency</i>	A23
<i>Assets Held by Austrian Insurance Companies</i>	A24
<i>Assets Held by Austrian Mutual Funds</i>	A25
<i>Assets Held by Austrian Pension Funds</i>	A26
<i>Assets Held by Austrian Severance Funds</i>	A27
<i>Transactions and System Disturbances in Payment and Securities Settlement Systems</i>	A28

Cutoff date for data: May 27, 2009

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.

Table A1

Exchange Rates

	2005	2005	2007	2008	2005	2006	2007	2008
Year					2 nd half			
	Period average (per EUR 1)							
U.S. dollar	1.24	1.26	1.37	1.47	1.21	1.28	1.40	1.41
Japanese yen	136.86	146.06	161.25	152.35	137.51	149.97	162.87	144.16
Pound sterling	0.68	0.68	0.68	0.80	0.68	0.68	0.69	0.82
Swiss franc	1.55	1.57	1.64	1.59	1.55	1.58	1.65	1.12
Czech koruna	29.78	28.34	27.75	24.97	29.49	28.18	27.37	24.73
Hungarian forint	248.06	264.20	251.31	251.70	248.71	267.71	252.35	249.78
Polish zloty	4.02	3.89	3.78	3.52	3.96	3.90	3.72	3.54
Slovak koruna	38.59	37.20	33.77	31.27	38.57	36.84	33.50	30.33
Slovenian tolar ¹	239.56	239.60	239.64	239.64	239.56	239.60	239.64	239.64

Source: Thomson Reuters.

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

Table A2

Key Interest Rates

	2005		2006		2007		2008	
	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31
	End of period, %							
Euro area	2.00	2.25	2.75	3.50	4.00	4.00	4.00	2.50
U.S.A.	3.25	4.25	5.25	5.25	5.25	4.25	2.00	0.25
Japan	0.001	0.004	0.027	0.275	0.605	0.459	0.572	0.103
United Kingdom	4.75	4.50	4.50	5.00	5.50	5.50	5.00	2.00
Switzerland ¹	0.25–1.25	0.50–1.50	1.00–2.00	1.50–2.50	2.00–3.00	2.25–3.25	2.25–3.25	0.00–1.00
Czech Republic	1.75	2.00	2.00	2.50	2.75	3.50	3.75	2.25
Hungary	7.00	6.00	6.25	7.50	7.75	7.50	8.50	10.50
Poland	5.00	4.50	4.00	4.00	4.50	5.00	6.00	5.00
Slovak Republic	3.00	3.00	4.00	4.75	4.25	4.25	4.25	2.50
Slovenia ²	4.00	4.00	3.25	3.50	4.00	4.00	4.00	2.50

Source: Eurostat, Thomson Reuters, 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

	2005	2006	2007	2008	2005	2006	2007	2008
Year					2 nd half			
<i>Three-month rates, period average, %</i>								
Euro area	2.19	3.08	4.28	4.63	2.22	3.35	4.55	4.60
U.S.A.	3.57	5.20	5.30	2.92	3.97	5.40	5.25	2.81
Japan	0.09	0.31	0.73	0.85	0.09	0.44	0.81	0.86
United Kingdom	4.70	4.80	5.95	5.49	4.59	4.97	6.23	5.19
Switzerland	0.80	1.51	2.55	2.57	0.83	1.73	2.74	2.36
Czech Republic	2.01	2.30	3.10	4.04	1.95	2.50	3.52	4.01
Hungary	7.02	6.99	7.88	8.92	6.18	7.74	7.69	9.65
Poland	5.29	4.21	4.74	6.36	4.61	4.20	5.16	6.60
Slovak Republic	2.93	4.32	4.34	4.15	3.02	4.93	4.33	4.00
Slovenia ¹	4.03	3.58	4.28	4.63	4.02	3.54	4.61	4.60

Source: Thomson Reuters.

¹ From 2007 onwards: see euro area.

Table A4

Long-Term Interest Rates

	2005	2006	2007	2008	2005	2006	2007	2008
Year					2 nd half			
<i>Ten-year rates, period average, %</i>								
Euro area	3.41	3.83	4.31	4.24	3.30	3.91	4.42	4.23
U.S.A.	4.54	4.88	4.80	4.22	4.50	4.86	4.76	3.98
Japan	1.37	1.74	1.67	1.49	1.39	1.76	1.68	1.47
United Kingdom	4.39	4.45	5.00	4.49	4.25	4.53	4.94	4.33
Switzerland	2.10	2.52	2.93	2.90	2.01	2.55	3.06	2.56
Czech Republic	3.54	3.80	4.30	4.63	3.47	3.90	4.55	4.52
Hungary	6.60	7.12	6.74	8.24	6.30	7.32	6.72	8.53
Poland	5.22	5.23	5.48	6.07	4.94	5.40	5.70	6.12
Slovak Republic	3.52	4.41	4.49	4.72	3.36	4.69	4.63	4.93
Slovenia	3.81	3.85	4.53	4.61	3.71	3.95	4.63	4.70

Source: Eurostat, national sources.

Table A5

Corporate Bond Spreads

	2005	2006	2007	2008	2005	2006	2007	2008
Year					2 nd half			
<i>Period average, percentage points</i>								
Spreads of 7- to 10-year euro area corporate bonds against euro area government bonds of same maturity								
AAA	0.12	0.18	0.27	0.70	0.10	0.19	0.34	0.86
BBB	0.98	1.24	1.26	3.55	1.06	1.25	1.51	4.51
Spreads of 7- to 10-year U.S. corporate bonds against U.S. government bonds of same maturity								
AAA	0.14	0.33	0.65	2.09	0.17	0.38	0.87	2.65
BBB	0.76	1.03	1.50	4.16	0.81	1.14	1.87	5.20

Source: Merrill Lynch via Thomson Reuters.

Table A6

Stock Indices¹

	2005	2006	2007	2008	2005	2006	2007	2008
	Year				2 nd half			
	Period average							
Euro area: EURO STOXX	294	357	416	314	309	367	417	269
U.S.A.: S&P 500	1,207	1,311	1,477	1,221	1,228	1,339	1,492	1,082
Japan: Nikkei 225	12,421	16,124	16,984	13,592	13,399	16,044	16,455	10,730
Austria: ATX	2,996	3,938	4,619	3,358	3,326	3,934	4,601	2,695
Czech Republic: PX50	1,256	1,479	1,776	1,358	1,361	1,482	1,814	1,139
Hungary: BUX	19,018	22,515	26,097	19,742	21,130	22,544	27,347	16,747
Poland: WIG	29,568	43,090	58,995	40,659	32,292	46,247	60,473	34,135
Slovak Republic: SAX16	437	403	422	431	452	400	434	412
Slovenia: SBI20	4,676	5,223	9,822	7,558	4,535	5,697	11,544	5,986

Source: Thomson Reuters.

¹ EURO STOXX: December 31, 1986 = 100, S&P 500: December 30, 1964 = 100, Nikkei 225: March 31, 1950 = 100, ATX: January 2, 1991 = 1000, PX50: April 6, 1994 = 100, BUX: January 2, 1991 = 100, WIG: April 16, 1991 = 100, SAX16: September 14, 1993 = 100, SBI20: January 3, 1994 = 100.

Table A7

Gross Domestic Product

	2005	2006	2007	2008	2005	2006	2007	2008
	Year				2 nd half			
	Annual change in %, period average, seasonally adjusted quarters							
Euro area	1.7	2.9	2.6	0.8	2.1	3.1	2.4	-0.4
U.S.A.	2.9	2.8	2.0	1.1	2.9	2.4	2.6	-0.1
Japan	1.9	2.0	2.4	-0.6	2.6	2.0	2.1	-2.3
Austria	2.9	3.4	3.1	1.8	3.4	3.3	2.8	1.0
Czech Republic	6.3	6.8	6.0	3.2	6.7	6.9	5.8	1.8
Hungary	4.0	4.1	1.1	0.5	4.0	3.8	0.6	-0.5
Poland	3.6	6.2	6.6	4.8	4.2	6.7	6.7	4.0
Slovak Republic	6.5	8.5	10.4	6.4	7.3	8.9	11.8	4.9
Slovenia	4.3	5.9	6.8	3.5	4.9	6.8	6.5	1.4

Source: Eurostat, national sources.

Table A8

Current Account

	2005	2006	2007	2008	2005	2006	2007	2008
Year					2 nd half			
	% of GDP, cumulative							
Euro area	0.3	0.2	0.2	-0.8	-0.2	0.2	0.6	-1.0
U.S.A.	-5.8	-5.9	-5.2	-4.6	-6.2	-6.1	-5.1	-4.7
Japan	3.6	3.9	4.8	3.2	3.7	4.0	4.7	..
Austria	2.1	2.5	3.3	3.3	0.3	2.1	2.4	2.8
Czech Republic	-1.3	-2.6	-3.2	-3.1	-2.7	-4.3	-4.9	-4.7
Hungary	-7.5	-7.6	-6.5	-8.4	-7.6	-6.8	-5.9	-9.5
Poland	-1.2	-2.7	-4.7	-5.5	-1.6	-3.0	-4.6	-5.1
Slovak Republic	-8.4	-7.0	-5.4	-6.6	-9.6	-7.2	-6.7	-6.6
Slovenia	-1.7	-2.5	-4.2	-5.5	-2.8	-4.5	-6.4	-6.2

Source: Eurostat, European Commission, Thomson Reuters, 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

	2005	2006	2007	2008	2005	2006	2007	2008
Year					2 nd half			
	Annual change in %, period average							
Euro area	2.2	2.2	2.1	3.3	2.3	2.0	2.4	3.1
U.S.A.	3.4	3.2	2.8	3.6	3.8	2.9	3.2	3.5
Japan	-0.3	0.3	0.0	1.4	-0.4	0.5	0.2	1.6
Austria	2.1	1.7	2.2	3.2	2.0	1.7	2.6	3.0
Czech Republic	1.6	2.1	3.0	6.3	1.9	1.8	3.8	5.4
Hungary	3.5	4.0	7.9	6.1	3.4	5.5	7.2	5.3
Poland	2.2	1.3	2.6	4.2	1.5	1.4	3.1	4.0
Slovak Republic	2.8	4.3	1.9	3.9	2.9	4.2	1.9	4.2
Slovenia	2.5	2.5	3.8	5.6	2.5	2.4	4.6	4.7

Source: Eurostat.

The Real Economy in Austria

Table A10

Financial Investment of Households

	2005	2006	2007	2008 ³	2005	2006	2007	2008 ³
Year					2 nd half			
Transactions, EUR million								
Currency and deposits ¹	5,431	7,322	12,828	13,801	2,175	4,565	5,604	5,777
Securities (other than shares) ²	1,520	1,485	3,755	5,304	651	641	1,847	2,782
Shares (other than mutual fund shares)	2,677	3,036	284	1,145	662	750	696	538
Mutual fund shares	3,761	2,078	-422	-4,807	2,224	380	-1,033	-3,014
Insurance technical reserves	5,679	5,304	3,426	3,059	2,435	2,927	1,133	895
Total financial investment	19,068	19,225	19,871	18,502	8,147	9,263	8,247	6,978

Source: OeNB.

¹ Including loans and other assets.

² Including financial derivatives.

³ Preliminary data.

Table A11

Household Income, Savings and Credit Demand

	2005	2006	2007	2008
Year				
Year-end, EUR billion				
Net disposable income	147.5	155.4	162.2	..
Savings	14.6	16.9	19.0	..
Saving ratio in % ¹	9.9	10.9	11.7	12.4
MFI loans to households	111.27	115.48	123.24	129.80

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

	2005	2006	2007	2008	2005	2006	2007	2008
Year					2 nd half			
Transactions, EUR million								
Securities (other than shares)	4,253	2,704	4,429	2,918	3,191	1,557	2,977	2,012
Loans	6,652	6,687	13,155	11,318	3,919	4,574	5,658	4,385
Shares and other equity ²	60,647	9,043	15,975	6,812	2,916	2,251	6,626	2,393
Other accounts payable	603	728	56	1,566	-703	170	-321	-39
Total debt	72,155	19,162	33,615	22,614	9,323	8,552	14,940	8,751

Source: OeNB.

¹ Preliminary data.

² Including other equity of domestic SPE held by nonresidents (data are included from 2005 onwards).

Table A13

Insolvency Indicators

	2005	2006	2007	2008	2005	2006	2007	2008
	Year				2 nd half			
	<i>EUR million</i>							
Default liabilities	2,426	2,569	2,441	2,969	1,392	1,468	1,290	1,860
	<i>Number</i>							
Defaults	3,203	3,084	3,023	3,270	1,651	1,537	1,475	1,651

Source: Kreditschutzverband von 1870.

Table A14

Selected Financial Ratios of the Manufacturing Sector

	2004	2005	2006	2007
	<i>Median, %</i>			
Self-financing and investment ratios				
Cash flow, as a percentage of turnover	8.25	7.95	8.05	7.83
Investment ratio ¹	1.89	1.75	1.90	1.81
Reinvestment ratio ²	59.15	57.14	65.08	69.41
Financial structure ratios				
Equity ratio	14.97	16.67	17.99	23.02
Risk-weighted capital ratio	20.40	22.34	23.12	28.76
Bank liability ratio	39.85	37.44	35.96	30.49
Government debt ratio	9.18	8.96	9.72	9.15

Source: OeNB.

¹ Investments x 100 / net turnover.

² Investments x 100 / credit write-offs.

Financial Intermediaries in Austria¹

Table A15

Total Assets and Off-Balance-Sheet Operations

	2005		2006		2007		2008	
	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31
<i>End of period, EUR million</i>								
Total assets on an unconsolidated basis	697,505	725,761	765,258	797,758	859,343	899,542	971,976	1,069,100
of which: total domestic assets	463,815	479,817	493,966	504,237	518,713	548,515	581,756	692,566
total foreign assets	233,690	245,943	271,292	293,521	340,630	351,027	390,220	376,535
Interest rate contracts	1,266,274	1,247,825	1,278,429	1,360,613	1,450,249	1,689,633	1,513,399	1,722,585
Foreign exchange derivatives	245,677	240,564	264,876	279,686	369,009	347,248	393,964	512,882
Other derivatives	15,916	17,731	21,751	20,103	21,067	19,381	22,075	21,680
Derivatives total	1,527,867	1,506,120	1,565,056	1,660,402	1,840,325	2,056,262	1,929,438	2,257,148
Total assets on a consolidated basis	789,045	847,627	874,322	927,751	1,037,390	1,073,258	1,161,704	1,175,646

Source: OeNB.

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

Table A16

Profitability on an Unconsolidated Basis

	2005	2006	2007	2008	2005	2006	2007	2008
	1 st half				Year			
<i>End of period, EUR million</i>								
Net interest income	3,547	3,562	3,568	3,978	7,094	7,170	7,399	8,248
Income from securities and participating interests	1,125	1,198	1,387	1,470	2,700	2,878	3,521	7,193
Net fee-based income	1,903	2,169	2,453	2,157	3,941	4,301	4,710	4,218
Net profit/loss on financial operations	333	446	361	-55	642	688	290	-812
Other operating income	621	686	758	826	1,333	1,581	1,592	1,710
Operating income	7,530	8,062	8,527	8,376	15,710	16,618	17,512	20,557
Staff costs	2,418	2,624	2,654	2,870	5,036	5,451	5,468	5,776
Other administrative expenses	1,628	1,706	1,800	1,880	3,332	3,516	3,703	3,952
Other operating expenses	776	838	843	757	1,694	1,828	1,678	1,688
Total operating expenses	4,822	5,168	5,297	5,507	10,063	10,795	10,849	11,416
Operating profit/loss	2,708	2,894	3,230	2,869	5,647	5,823	6,663	9,141
Net risk provisions from credit business ¹	1,610	1,637	1,257	1,867	2,014	1,845	2,012	4,201
Net risk provisions from securities business ¹	-101	-723	-404	-180	-408	-2,875	-430	2,801
Annual surplus ¹	2,887	3,931	4,702	3,766	3,879	3,957	4,787	1,891
Return on assets ^{1,2}	0.39	0.49	0.51	0.36	0.53	0.50	0.53	0.18
Return on equity (tier 1 capital) ^{1,2}	8.0	8.6	7.4	6.0	11.1	9.5	8.20	2.8
Interest income to gross income (%)	47	44	42	48	45	43	42	40
Operating expenses to gross income (%)	64	64	62	66	64	65	62	56

Source: OeNB.

¹ Data referring to the first half of the year 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 (FSI) for Austria (see also www.imf.org). The tables below have therefore been expanded to include FSI as computed by the OeNB for banks operating in Austria.

Table A17

Profitability on a Consolidated Basis

	2005	2006	2007	2008	2005	2006	2007	2008
	1 st half				Year			
	<i>End of period, EUR million</i>							
Operating income	10,259	11,713	13,929	16,811	21,153	23,993	28,118	33,642
Operating expenses	6,490	7,225	8,184	8,054	13,389	14,758	17,041	16,531
Operating profit/loss	3,769	4,489	5,745	5,617	7,765	9,235	11,071	7,855
Result before minority interests	2,471	3,712	4,087	3,805	5,341	8,696	8,015	1,100
Return on assets ¹	0.59	0.83	0.83	0.62	0.63	0.94	0.74	0.09
Return on equity (tier 1 capital) ¹	14.5	17.8	16.7	14.1	15.7	22.5	16.3	1.9
Interest margin to gross income (%)	63	60	61	54	62	62	64	57
Operating expenses to gross income (%)	63	62	59	67	63	62	61	77

Source: OeNB.

¹ As from 2008 on, operating expenses refer to staff costs and other administrative expenses only.² End-of-period result expected for the full year before minority interests as a percentage of expected total assets and expected tier 1 capital, respectively.³ All figures represent the ratio of total operating expenses to total operating income.

Note: Due to changes in reporting, the comparability of consolidated values as from 2008 with earlier values is limited.

Table A18

Sectoral Distribution of Loans

	2005		2006		2007		2008	
	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31
	<i>End of period, EUR million</i>							
Nonfinancial corporations	111,334	108,944	114,171	116,078	118,012	121,992	127,711	133,608
of which: foreign currency-denominated loans	16,109	14,604	14,006	12,586	10,501	9,884	10,667	12,134
Households ¹	100,375	107,561	109,255	111,404	114,998	117,601	119,778	124,221
of which: foreign currency-denominated loans	30,401	33,316	34,395	34,266	33,383	32,279	34,758	38,182
General government	30,192	29,141	29,856	28,662	27,296	26,303	26,795	25,073
of which: foreign currency-denominated loans	2,074	2,160	2,159	1,862	1,489	1,603	1,736	1,652
Other financial intermediaries	15,131	19,365	20,523	22,001	20,758	21,646	22,032	25,770
of which: foreign currency-denominated loans	2,030	3,216	3,491	3,353	3,142	2,930	3,079	3,529
Foreign nonbanks	66,163	69,273	74,014	80,985	88,217	103,983	113,057	125,694
of which: foreign currency-denominated loans	28,140	28,534	29,280	31,378	33,961	38,027	39,182	42,600
Nonbanks total	323,195	334,283	347,820	359,129	369,282	391,524	409,372	434,366
of which: foreign currency-denominated loans	78,754	81,830	83,331	83,445	82,476	84,723	89,421	98,096
Banks	199,908	201,117	218,833	230,320	264,854	263,344	313,897	363,123
of which: foreign currency-denominated loans	58,368	56,915	62,313	62,467	70,077	69,652	84,560	108,405

Source: OeNB.

¹ Sector "Households" consists here of the sectors "Households" and "Nonprofit institutions serving households".

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

	2005		2006		2007		2008	
	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31
	<i>End of period, % of total foreign currency-denominated claims on domestic non-MFIs¹</i>							
Swiss franc	89.1	89.0	89.9	90.8	90.0	88.7	88.8	86.4
Japanese yen	5.5	3.9	3.0	2.8	2.8	3.6	3.3	5.5
U.S. dollar	4.8	6.3	6.5	5.5	5.4	5.1	6.1	7.0
Other foreign currencies	0.6	0.8	0.6	0.9	1.8	2.6	1.8	1.1

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% for every year.

Table A20

Loan Quality

	2005		2006		2007		2008	
	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31
	<i>End of period, % of claims</i>							
Specific loan loss provisions for loans to nonbanks	3.2	3.1	3.1	2.9	2.7	2.4	2.3	2.2
Nonperforming loans	x	2.6	x	2.1	x	1.7	x	..
	<i>End of period, % of tier 1 capital</i>							
Nonperforming loans	x	52.6	x	39.0	x	25.5	x	..

Source: OeNB.

Table A21

Market Risk¹

	2005		2006		2007		2008	
	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31
<i>End of period, EUR million and %, respectively</i>								
Interest rate risk								
Basel ratio for interest rate risk, % ²	6.4	6.6	6.3	5.6	5.2	4.5	4.5	3.9
Capital requirement for the position risk of interest rate instruments in the trading book	810.3	703.0	792.6	737.3	980.0	1,082.6	856.9	953.1
Exchange rate risk								
Capital requirement for open foreign exchange positions	97.3	93.3	101.8	75.2	89.1	74.1	99.7	110.3
Equity price risk								
Capital requirement for the position risk of equities in the trading book	71.1	95.9	94.0	101.0	211.6	180.6	204.8	187.1

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. As long as reporting is according to Basel II mutual funds and nonlinear option risks are included in the data according to their risk categories.

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 large securities trading book, interest rate instruments of the trading book are not included in the calculation.

Table A22

Liquidity Risk

	2005		2006		2007		2008	
	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31
<i>End of period, %</i>								
Short-term loans to short-term liabilities	69.7	65.4	67.4	66.2	70.1	64.0	69.8	67.0
Short-term loans and other liquid assets to short-term liabilities	120.8	115.8	117.7	115.0	118.7	109.9	112.7	109.0
Liquid resources of the first degree: 5% quantile of the ratio between available and required liquidity of degree ¹	171.8	178.6	173.0	152.4	134.4	140.0	140.2	149.4
Liquid resources of the second degree: 5% quantile of the ratio between available and required liquidity of degree	121.7	118.5	118.7	111.5	114.1	110.2	113.1	113.5

Source: OeNB.

¹ Short-term loans and short-term liabilities (up to 3 months against banks and non-banks). Liquid assets (quoted stocks and bonds, government bonds and eligible collateral, cash and liquidity reserves at apex institutions). 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 ratio between available and required liquidity surpassed by 95% of banks on the respective reporting date.

Table A23

Solvency

	2005		2006		2007		2008	
	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31
	<i>End of period, eligible capital and tier 1 capital, respectively, as a percentage of risk-weighted assets</i>							
Consolidated capital adequacy ratio	11.9	11.3	12.0	11.3	12.1	11.6	11.0	11.0
Consolidated tier 1 capital ratio	8.2	7.7	8.5	7.8	8.5	8.1	7.7	7.7

Source: OeNB.

Table A24

Assets Held by Austrian Insurance Companies¹

	2005		2006		2007		2008	
	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31
	<i>End of period, EUR million</i>							
Cash, overnight and other deposits at domestic banks	2,472.0	2,570.3	3,217.6	2,359.0	1,867.0	2,256.5	4,209.3	3,589.3
Domestic debt securities	9,238.3	9,309.1	9,839.7	10,237.4	10,605.7	10,795.3	11,166.1	12,148.7
of which: domestic banks	7,518.9	7,646.5	8,021.3	8,415.5	8,642.3	8,710.4	9,067.9	9,838.9
Equity securities and other domestic securities	19,387.3	21,207.8	21,753.8	23,575.2	21,161.1	24,487.7	22,358.1	21,359.2
Loans	5,932.9	5,723.5	4,701.3	4,304.4	3,663.7	3,410.1	3,330.5	3,727.3
of which: domestic banks	205.6	366.1	406.5	467.7	502.2	573.0	652.4	684.4
Domestic equity interests	3,927.8	3,965.4	4,314.8	4,448.3	4,589.9	5,089.8	5,606.2	7,925.3
Real estate	3,339.5	3,287.9	3,117.6	3,117.7	3,046.6	3,038.4	3,016.4	3,168.3
Foreign assets	22,964.2	25,057.8	26,439.2	28,703.1	30,999.6	33,145.2	35,017.1	35,011.1
of which: debt securities	17,002.0	18,230.2	19,333.4	20,360.5	21,161.1	22,150.1	24,227.7	24,095.5
Custody account claims on deposits on reinsurers	x	2,163.6	x	2,136.1	x	2,142.5	x	..
Other assets	4,361.4	4,048.1	5,198.9	4,191.5	4,935.9	4,251.6	5,200.8	4,173.5
Total assets	73,433.1	77,333.4	80,339.0	83,072.6	85,623.8	88,617.1	91,580.8	92,579.4

Source: OeNB.

¹ Semiannual data exclusive of reinsurance transactions, based on quarterly returns.

Table A25

Assets Held by Austrian Mutual Funds

	2005		2006		2007		2008	
	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31
<i>End of period, EUR million</i>								
Domestic securities	43,052	47,031	46,422	49,593	49,882	47,304	42,087	37,737
of which: debt securities	20,545	20,350	18,302	17,632	15,892	14,938	13,774	14,765
equity securities	22,507	26,681	28,120	31,961	33,990	32,366	28,313	22,972
Foreign securities	91,472	100,368	102,875	109,306	112,817	105,233	92,872	75,501
of which: debt securities	64,635	68,054	69,481	70,280	71,374	66,473	61,809	55,941
equity securities	26,837	32,314	33,394	39,026	41,443	38,760	31,063	19,560
Other assets	7,984	9,286	10,232	9,961	11,622	13,108	13,956	14,127
Total assets	142,509	156,685	159,530	168,860	174,320	165,646	148,915	127,364
of which: foreign currency	28,085	32,694	32,699	36,797	38,078	35,048	28,830	19,482

Source: OeNB.

Table A26

Assets Held by Austrian Pension Funds

	2005		2006		2007		2008	
	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31
<i>End of period, EUR million</i>								
Domestic securities	9,744	10,112	10,074	10,742	10,901	10,773	10,650	9,705
of which: federal treasury bills and notes	0	0	0	0	0	0	0	0
debt securities	96	98	89	116	147	137	124	142
mutual fund shares	9,579	9,949	9,921	10,589	10,722	10,603	10,499	9,543
other securities	69	65	64	37	32	33	27	20
Foreign securities	727	1,006	1,010	1,224	1,426	1,473	1,085	972
of which: debt securities	69	74	81	73	91	140	96	111
mutual fund shares	645	906	903	1,113	1,299	1,321	980	851
other securities	13	26	26	38	36	12	16	10
Deposits	95	113	150	173	270	282	449	790
Loans	94	94	99	93	124	158	157	154
Other assets	196	224	220	264	249	238	262	332
Total assets	10,856	11,549	11,553	12,496	12,970	12,924	12,592	11,936
of which: foreign currency	272	312	327	555	601	620	462	312

Source: OeNB.

Table A27

Assets Held by Austrian Severance Funds

	2005		2006		2007		2008	
	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31
<i>End of period, EUR million</i>								
Total direct investment	129.4	158.7	228.7	295.6	415.5	598.3	832.7	1,062.2
of which: euro-denominated	122.5	153.8	223.3	288.4	390.5	579.6	816.8	1,043.4
foreign currency-denominated	x	x	x	x	x	x	x	x
accrued income claims from direct investment	2.0	3.2	2.4	4.2	4.6	8.6	11.4	16.5
Total indirect investment	382.3	537.8	658.1	832.5	949.3	1,023.8	1,019.7	1,076.4
of which: total of euro-denominated investment in mutual fund shares	370.4	490.4	608.1	781.4	877.0	963.8	983.3	1,038.7
total of foreign currency-denominated investment in mutual fund shares	11.9	47.4	50.0	51.1	72.3	60.0	56.2	37.7
Total assets assigned to investment groups	511.7	696.5	886.5	1,128.1	1,364.8	1,622.1	1,852.3	2,138.6
of which: foreign currency-denominated	16.9	49.1	52.4	54.2	92.7	70.8	60.7	40.0

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

	2005		2006		2007		2008	
	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31	June 30	Dec. 31
<i>Number of transactions in million, value of transactions in EUR billion</i>								
HOAM.AT								
Number	x	x	x	x	x	x	1.6	1.1
Value	x	x	x	x	x	x	2,360.2	4,363.5
System disturbances	x	x	x	x	x	x	1	4
Securities settlement systems								
Number	0.8	1.1	1.7	1.3	1.8	1.1	1.0	1.0
Value	157.3	152.5	267.1	181.5	330.0	269.8	255.4	247.0
System disturbances	0	0	0	0	0	0	0	0
Retail payment systems								
Number	197.4	214.9	216.5	232.0	237.8	253.9	255.0	272.9
Value	15.5	15.6	16.9	18.4	18.3	18.6	20.0	21.7
System disturbances	12	29	25	33	3	17	0	16
Participation in international payment systems								
Number	5.9	6.1	7.5	9.3	10.2	11.0	12.3	12.7
Value	562.0	565.4	702.2	766.6	868.9	1,077.5	997.2	997.5
System disturbances	5	3	1	3	1	0	0	0

Source: OeNB.

Note: ARTIS/TARGET has been replaced by HOAM.AT on 19th November 2007. Data refer to specific six month period.

Notes

Abbreviations

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

Legend

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

Discrepancies may arise from rounding.

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Monetary Policy & the Economy quarterly

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econ.newsletter quarterly

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

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three to four issues a year

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

Working Papers

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The OeNB's Working Paper series is designed to disseminate, and provide a platform for discussing, findings of OeNB economists or outside contributors on topics which are of special interest to the OeNB. To ensure the high quality of their content, the contributions are subjected to an international refereeing process.

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annual

The Economics Conference hosted by the OeNB is an international platform for exchanging views and information on monetary and economic policy as well as financial market issues. It convenes central bank representatives, economic policymakers, financial market players, academics and researchers. The conference proceedings comprise all papers presented at the conference.

Conference on European Economic Integration (Conference Proceedings)

annual

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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

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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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