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Quarterly Review of Economic Policy

Stability and Security.

Monetary Policy & the Economy provides analyses and studies on central banking and economic policy topics and is published at quarterly intervals.

Contents

Opinions expressed by the authors of studies do not necessarily reflect the official viewpoint of the Oesterreichische Nationalbank or of the Eurosystem.

Call for Applications – Visiting Research Program

The Oesterreichische Nationalbank (OeNB) invites applications from external researchers for participation in a Visiting Research Program established by the OeNB's Economic Analysis and Research Department. The purpose of this program is to enhance cooperation with
— members of academic and research institutions (preferably post-doc), and with
— central bank researchers[1]
who work in the fields of macroeconomics, international economics or financial economics and/or with a regional focus on Central, Eastern and Southeastern Europe.

The OeNB offers a stimulating and professional research environment in close proximity to the policymaking process. Visiting researchers are expected to collaborate with the OeNB's research staff on a prespecified topic and to participate actively in the department's internal seminars and other research activities. They are provided with accommodation on demand and have, as a rule, access to the department's data and computer resources and to research assistance. Their research output will be published in one of the department's publication outlets or as an OeNB Working Paper. Research visits should ideally last between 3 and 6 months, but timing is flexible.

Applications (in English) should include
— a curriculum vitae,
— a research proposal that motivates and clearly describes the envisaged research project,
— an indication of the period envisaged for the research stay, and
— information on previous scientific work.
Applications for 2012/13 should be e-mailed to
eva.gehringer-wasserbauer@oenb.at
by May 1, 2012.

Applicants will be notified of the jury's decision by mid-June. The next round of applications will close on November 1, 2012.

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[1] *Other than those eligible for the External Work Experience program established within the ESCB.*

Analyses

Growth Weakens Worldwide

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Josef Schreiner,
Maria Silgoner[1]

Substantial data revisions have shown that the U.S. recession in 2008 to 2009 was far more pronounced than originally estimated, and that the recovery has been slower than previously assumed. Leading indicators signal that growth will stay weak in the second half of 2011. With key interest rates already at a low level, monetary policymakers have resorted to new non-standard measures to support the economy.

Japan's economy has largely recovered from the severe consequences of the earthquake in March 2011. The reconstruction activities have given Japan's economy a boost, and global production chains have been largely reestablished. Japan's economic growth is likely to enter positive territory again already in the second half of 2011. For 2011 as a whole, the IMF sees Japanese GDP declining by 0.5%. Additionally, the strong appreciation of the Japanese yen may affect export growth. While China's economic growth has lost some steam, it will still come to some 9% in 2012.

Euro area growth slackened noticeably in the course of the first half of 2011. In the second quarter, real GDP edged up by only 0.2% on the previous quarter. Consumer spending diminished, and exports became the mainstay of growth. Euro area economic growth is anticipated to stay slow in the third quarter. Conditions in the labor market have been improving only hesitantly. The continued tension in the government bond market is creating uncertainty. Whereas Ireland's efforts to consolidate its government finances have resulted in a decline in yield spreads, the yields on Greek sovereign bonds rose to new heights in September 2011 following reports that the results of Greece's consolidation efforts have been insufficient.

In recent months uncertainties about the economic prospects in EU Member States in Central, Eastern and Southeastern Europe (CESEE) heightened significantly. The slowdown in growth in the second quarter of 2011 and the publication of adverse economic data for both Europe as a whole and the world economy lead to activity forecasts for the region having been revised downwards since early summer 2011. Price pressures, which were comparatively high in the first six months of 2011, passed their peak in the summer. In various countries the external position has gradually deteriorated of late. Thus the crisis-induced cyclical component of current account adjustment is slowly losing significance.

The Austrian economy continued to expand at a fairly robust pace in the first half of 2011 and, even at 0.7% growth in the second quarter, significantly outperformed Germany and the euro area as a whole. Meanwhile, however, there have been increasing signs of a sudden and substantive loss of economic momentum from mid-2011 onward. The weaker external environment and a high level of uncertainty in the corporate sector against the backdrop of the sovereign debt crisis have caused export and investment, previously the key growth drivers, to cool off visibly. For 2011 as a whole, GDP growth is still expected to average close to 3% given the strong start into the year. The outlook for growth in 2012, however, is rather weak, with the latest GDP growth projections, released in September 2011, lying within a range of 0.8% (Austrian Institute of Economic Research – WIFO) to 1.3% (Institute of Advanced Studies – IHS).

1 Global Economic Growth: Considerable Loss of Momentum

1.1 U.S. Recovery Slows Down

The results of the most recent data revision of U.S. GDP indicate that the cumulative decline in growth during the recession of 2008 to 2009 was substantially higher than originally calculated. Moreover, the recovery has turned out to be weaker than originally assumed. With quarter-on-quarter an-
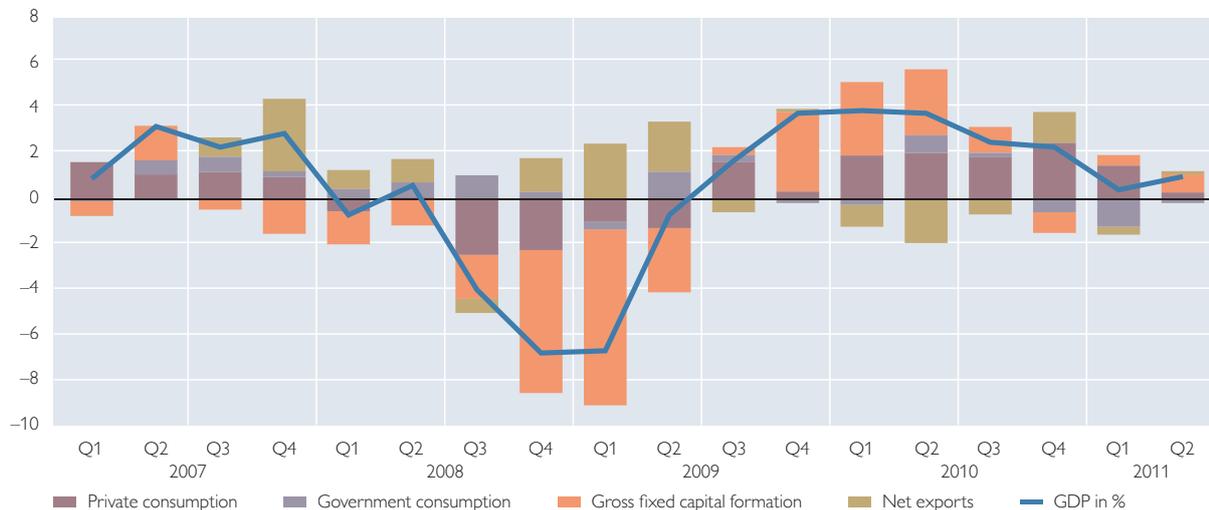
Chart 1

U.S.A.: Real GDP Growth

Contributions to GDP growth (quarter on quarter, seasonally adjusted, annualized) in percentage points

Private consumption   Government consumption   Gross fixed capital formation   Net exports   GDP in %

Source: Bureau of Economic Analysis.

nualized GDP growth at 0.4% in the first quarter of 2011 and at 1.3% in the second quarter, GDP growth has fallen short of expectations. Second-quarter growth was buoyed above all by investment. Consumer spending contributed considerably less to growth than in the first quarter, in particular on account of high energy prices.

Leading indicators signal that growth will remain tepid or weaken even further in the second half of 2011. For instance, the Industrial Purchasing Managers' Index has been just above the 50-point mark (below which a reading signals an oncoming contraction) since July. Over the summer, consumer confidence also slumped. Both indicators recovered slightly in September 2011. In light of these developments, the IMF in September 2011 sharply reduced its GDP growth forecast for the United States compared to June (2011: reduction by 1 percentage point to +1.5%, 2012: reduction by 0.9 percentage points to +1.8%.)

Anemic economic growth also weighs on the U.S. labor market. Since May 2011, the unemployment rate has hovered

just above 9%; employment figures have remained unchanged. Conditions in the real estate market remain problematic. Real estate prices (measured using the S&P/Case-Shiller Home Price Index) were 4.1% lower than one year earlier in July 2011. Downside risks will remain in the next few months, above all as a consequence of the continued high numbers of foreclosures, restrictive mortgage loan qualification requirements, declining disposable incomes and higher saving ratios.

For the first time in U.S. history, Standard & Poor's (S&P) lowered the country's long-term sovereign credit rating one notch from AAA to AA+ on August 5, 2011, outlook negative. S&P justifies its rating by citing the high budget deficit, which is cause for concern, the insufficient planned savings measures, and the controversy over raising the statutory debt ceiling, which has eroded confidence and which indicates that the consolidation of public finances will remain a contentious process. In the days following the downgrading of U.S. sovereign debt, surpris-

ingly, sales of U.S. Treasuries increased. This development may be linked to the growing uncertainty about other bond market segments or the portfolio shifts from stocks to bonds. Apparently, U.S. Treasuries are still considered a safe haven, especially considering that the two other big rating agencies, Moody's and Fitch, still rate the United States at AAA.

Inflation heated up to 3.8% in August 2011 on the back of higher energy prices. Since the beginning of 2011, core U.S. inflation has exhibited a rising trend. The most recent core inflation rate was measured at 2.0% (August). Nevertheless, the Federal Reserve System (Fed) left the Federal Funds Rate unchanged at 0% to 0.25% at its last meeting on September 21, 2011, the same level it has stood at for more than two-and-a-half years. To stimulate the economy, the U.S. central bank announced as early as in August 2011 that it would keep its key interest rate near zero through mid-2013, resorting to this unusual announcement to manage expectations after having largely exhausted monetary policy delivered through conventional channels.

At its meeting on September 20 and 21, 2011, the Fed decided to take another unconventional measure (dubbed "Operation Twist" after a similar measure taken in the early 1960s), namely to shuffle USD 400 billion of its portfolio from short-term bonds to long-term by July 2012 in an effort to keep long-term interest rates low. This measure is likely to be roughly as effective as the Fed's QE2 program to buy USD 600 billion in U.S. Treasury bonds, which ended June 30. Both measures – the long-term announcement of interest rate policy and Operation Twist – are controversial. In both cases, three of the ten voting members of the Federal Open Market Committee (FOMC) voted against the measure. No other

decision had been received with as much dissent since 1992.

1.2 Japan Recovers from the Impact of the Earthquake

The devastating earthquake that hit Japan on March 11, 2011, and the consequential output disruptions tipped Japan into a recession in the first half of 2011. Annualized second-quarter real GDP sank by 2.1%. Investment in reconstruction and rising exports are likely to return Japanese GDP growth back into positive territory in the third quarter, though. The Tankan Index, a quarterly survey of business sentiment among large Japanese manufacturers, recovered to –9 points in the third quarter of 2011, thus returning to the first-quarter value after having dropped to –18 points in the second quarter. In its fall World Economic Outlook (WEO), the IMF sees Japanese whole-year GDP contracting by 0.5% in 2011. Conversely, in 2012, Japan's economy could expand by 2.3%. Japan's chance of recovery, however, hinges to a great extent on the development of exports. However, the renewed appreciation of the Japanese yen since the beginning of April 2011 in connection with the U.S. and euro area debt crises has put a damper on these growth expectations more recently. The higher yen represents a risk for Japan's export-oriented industry and thus for the entire recovery path after the recession triggered by the earthquake. The Bank of Japan (BoJ) reacted to the strong currency in August 2011 by intervening in the foreign exchange market. The BoJ's action weakened the Japanese yen only temporarily, however. The currency soon rebounded.

After Standard & Poor's had downgraded Japan's credit rating in January 2011, citing the country's high public debt (2010: 220% of GDP), Moody's

followed in August, lowering its rating from Aa2 to Aa3. However, as some 95% of debt is held domestically and generally attracts very low yields, the immediate impact on refinancing costs is not very large.

At its last meeting, the BoJ left key interest rates at 0% to 0.1%. Core inflation (inflation excluding food and energy) ran to −0.5% in August 2011. The IMF expects rates of price increase to remain negative in 2012. Therefore, Japan will not reach its target of ending years of deflation anytime soon.

1.3 Chinese Growth Moderates at a High Level

The Chinese economy continues to grow at a brisk pace, with inflation remaining persistently high. Overall, China's real GDP surged by 9.7% year on year in the first quarter and by 9.5% in the second quarter of 2011. Industrial production soared by 13.5% on the previous month in August 2011. The newest UNCTAD (United Nations Conference on Trade and Development) data showed that in 2010, Chinese outward foreign direct investment (FDI) for the first time surpassed Japanese outward FDI. Chinese GDP, too, outpaced Japanese GDP in 2010. These figures underline the growing weight of the Chinese economy in the global economic system. But China's dynamic expansion does not come without problems. For example, inflation averaged 5.6% year on year from January through August 2011. In July, inflation peaked at 6.5% and eased marginally to 6.2% in August.

To bring inflation under control, the Chinese central bank has raised the minimum reserve ratio six times so far in 2011 and increased key interest rates three times in the same period. The risk of the Chinese economy overheating could diminish in the face of the rapid deterioration of the world economic outlook. For 2011, the IMF in its WEO forecasts Chinese growth of some 9.5%, followed by a dip to 9.0% in 2012. China's exchange rate system has come under pressure in the wake of the U.S. debt crisis and skittish financial markets. The Chinese government is considering a further easing of exchange rate policy.

2 Euro Area Growth Weakens
2.1 GDP Growth Slows Markedly in the Second Quarter of 2011

Euro area real GDP growth weakened markedly in the first half of 2011. After having expanded by 0.8% quarter on quarter in the first quarter of 2011, the euro area economy posted only 0.2% growth in the second quarter. Growth came to 1.6% compared to the second quarter of 2010. The slowdown had been expected, as performance in the first quarter was strongly influenced by catching-up effects after a harsh winter season. Consumer spending dropped compared to the previous quarter, a development foreshadowed by the decline in retail sales. The drop in spending can be traced on the one hand to required debt repayments by the households and the public sector as well as the contraction of real disposable incomes as a consequence of high commodity prices. On the other hand, uncertainty in connection with the debt crisis in some peripheral euro area countries may also have weighed on consumers' willingness to spend. Foreign trade made the biggest contribution to GDP growth.

The slump in economic growth in the second quarter of 2011 was most pronounced in Germany, where GDP growth tumbled from 1.3% in the first quarter to 0.1% in the second quarter. France posted zero growth in the second quarter following 0.9% in the first quarter of 2011. GDP hardly expanded in Italy or Spain, either. The euro area construction sector stagnated. Capacity

Chart 2

Euro Area: Components of Euro Area Real GDP Growth

Contributions to GDP growth (quarter on quarter, seasonally adjusted) in percentage points

Source: Eurostat.

Legend:
- Net exports (goods and services)
- Private consumption (households and nonprofit organizations serving households)
- Gross fixed capital formation
- Changes in inventories and statistical discrepancy
- Government consumption
- GDP in %
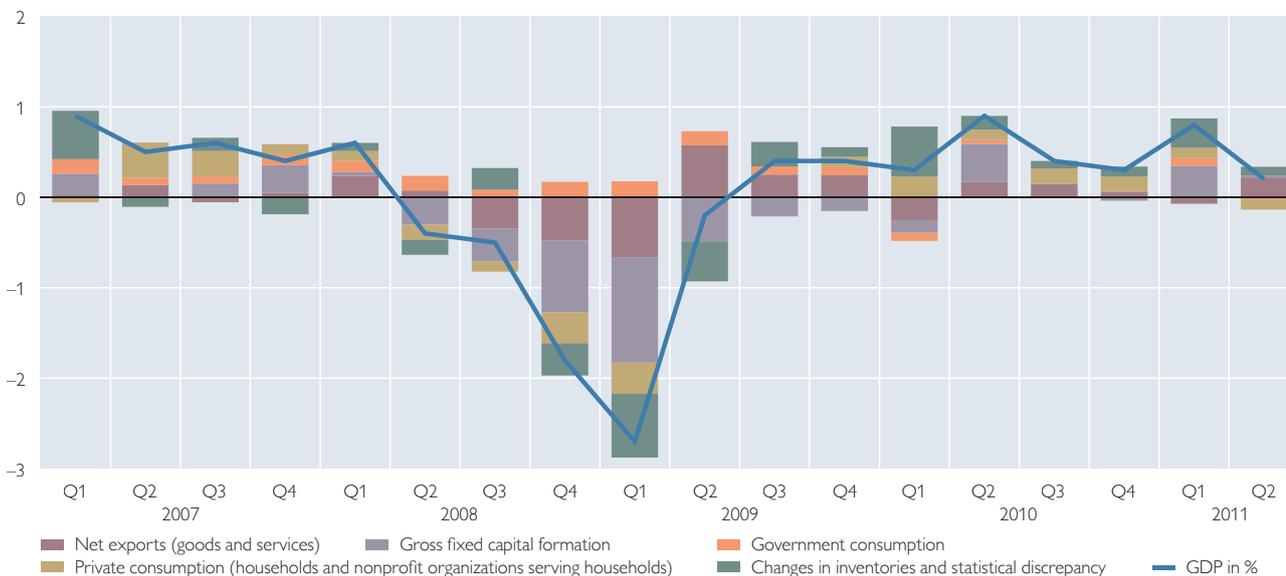
utilization shrank in the third quarter of 2011 and, at 80.9%, has slipped below the long-term average again.

2.2 Forecasts See GDP Growth Losing Pace in 2011 and 2012

In the third quarter of 2011, the pace of growth is anticipated to remain weak. Leading indicators and sentiment indicators signal a slowdown in GDP growth as early as in the third quarter of 2011. The Purchasing Managers' Index, for example, fell to 49.0 points in August 2011, which is below the 50-point mark separating expansion and contraction. In September, it deteriorated further to 48.5 points. The European Commission's Economic Sentiment Indicator fell to the lowest level since end-2009. Important national indicators such as the German Ifo Business Climate Index or the ZEW Index have been declining sharply recently.

In its fall WEO, the IMF forecasts GDP growth of 1.6% in the euro area for 2011 as a whole, down by 0.4 percentage points from the spring WEO. For 2012, the IMF expects euro area output to grow by only 1.1%. At the same time, the downside risks of the GDP forecasts for the euro area have increased. Uncertainty about the highly indebted euro area countries' ability to repay their debts is a key drag on reestablishing consumer and investor confidence. At the same time, the further development of U.S. economic activity represents a risk factor for euro area growth.

2.3 Sluggish Labor Market Recovery

The seasonally adjusted unemployment rate has more or less persisted at 10.0% since December 2010, some 0.2 percentage points below the peak measured during the financial crisis. However, this figure masks a continuous improvement in the labor market, as the participation rate has risen. Moreover, the number of hours worked is returning

to normal levels. During the recession, a reduction of working hours in individual cases prevented numerous layoffs. In the first half of 2011, the decline in construction employment was offset by job growth in the manufacturing and service sectors. Surveys indicated that employment growth should remain positive in the third quarter of 2011. A country-level comparison in the euro area shows that labor market developments are very heterogeneous across countries. Whereas the German unemployment rate has contracted by 1.9 percentage points from its high during the crisis to stand at 6.0% currently, joblessness is still on the rise in Spain and in Ireland, for example. Spain is faced with 21.2% unemployment, albeit with positive employment growth.

2.4 Important Decisions Taken to Ease the Debt Crisis in the Euro Area

Prior to summer 2011, it became apparent that the previously agreed bilateral financial support for Greece would not suffice to ensure the country's solvency in the short run. When the discussion about a possible restructuring of Greek debt came up, the risk premiums on Greek bonds climbed to record heights. The yield spread over

German government bonds stood at 1,500 basis points in July 2011.

These dynamics spread to Ireland and Portugal, although unlike Greece, these countries have scored success in their efforts to achieve fiscal consolidation. The contagion also spread to Italy and Spain. Following the decisions of the European Council of July 21, 2011, encompassing among other things a new assistance program to support Greece that includes private sector involvement and measures to increase the effectiveness of the European Financial Stability Facility (EFSF), Greek, but also Portuguese and Irish, sovereign yield spreads over German government bonds shrank.

Yet the decisions did not succeed in fully calming financial markets. Massive sales of Spanish and Italian government bonds caused these securities' yields to increase sharply, bringing them to record levels at the beginning of August 2011. To calm the bond markets and to ensure the full effectiveness of monetary policy decisions, the ECB reactivated the Securities Markets Programme (SMP) in August and purchased sovereign debt of countries with high bond spreads in the secondary market. As a consequence, the yield spreads of Spanish and Italian government bonds over German bonds narrowed.

Chart 3

Yield Spreads on Ten-Year Government Bonds

Basis points, compared to German government bonds

Source: ECB.

Greece's insufficient progress toward fiscal consolidation brought renewed doubts about Greek solvency in September 2011, and yield spreads shot up to over 2,000 basis points. Greece will be unable to refinance itself via the financial markets in the next few months. Conversely, Ireland's fiscal consolidation progress appears to have convinced the financial markets, and yields on Irish sovereign debt eased noticeably. The introduction of a debt brake in several countries, notably Spain, has decisively contributed to preventing a pronounced debt accumulation during the crisis, e.g. in Switzerland, but also in Sweden.

According to the IMF, the euro area deficit ratio will average 4.1% in 2011, which is 1.9 percentage points below the 2010 value, and will contract to 3.1% in 2012. The debt ratio, however, will not top out until at least in 2012.

2.5 Inflation Declines as Commodity Prices Abate

Euro area HICP inflation came to 2.5% in July and August 2011. These relatively high rates of price increase had their origins above all in surging commodity prices. The commodity price index of the Hamburg Institute of International Economics (HWWI) peaked in April 2011 and has since fallen by 8%. Core inflation (excluding energy and unprocessed food) stood at 1.5% in July and August. The rise in the HICP inflation rate to 3.0% in September (flash estimate) is attributable to statistical effects, e.g. the change in the method for the calculation of seasonal products, and to the increase in the VAT rate in Italy from 20% to 21%.

For 2012, the IMF forecasts inflation to sink to 1.5%. The longer-term inflation expectations (for 2016) peg inflation at 1.9%, a level that is in line with price stability. However, medium-term inflation developments are subject to upside risks related to higher commodity prices and indirect tax increases that might be taken to implement fiscal consolidation measures and that have not yet been factored in.

2.6 Short-Term and Medium-Term Money Market Rates to Decline

At its meetings at the beginning of April and at the beginning of July 2011, the Governing Council of the ECB adopted a key interest rate increase of 25 basis points to counteract risks to price stability. Thus, the interest rate on the main refinancing operations has run to 1.5% since July 13, 2011. To meet banks' needs for more liquidity, the Governing Council of the ECB decided at the beginning of August to conduct a six-month longer-term refinancing operation. Moreover, the Governing Council of the ECB announced at the beginning of October 2011 that two longer-term tender operations, one with a maturity of 12 months, one with a maturity of 13 months, would be conducted at the beginning of October 2011. All tenders will be conducted with full allotment for as long as necessary. Like during the height of the economic and financial crisis, banks redeposited a growing share of the liquidity allotted at the ECB's deposit window. This behavior is a sign of increased distrust among banks and of the difficulties banks have experienced in interbank refinancing. At the beginning of October, the Governing Council of the ECB decided to launch a new Covered Bond Purchase Programme along the lines of the program conducted in 2008. Purchases will be for an intended amount of EUR 40 billion, will begin in November 2011, and are expected to be completed by the end of October 2012.

The Euro OverNight Index Average (EONIA) has been relatively stable at

1% since the end of July 2011. Markets expect a cut in key interest rates in the next few months and thus a drop in the EONIA to 0.5% until the beginning of 2012. In the course of the summer, expectations for short- and long-term money market rates subsided markedly.

3 Economic Developments in EU Member States in Central, Eastern and Southeastern Europe

3.1 Economic Recovery Loses Momentum

In recent months uncertainties about the economic prospects in EU Member States in Central, Eastern and Southeastern Europe (CESEE) heightened significantly. Whereas in the first quarter of 2011 economic growth still accelerated at an average quarterly rate of 0.9%, more and more signs pointing toward an economic slowdown have emerged since the early summer. For instance, several high frequency, leading and confidence indicators have deteriorated of late. This is particularly true of industry, where the annual production rate has halved since the start of 2011 and reached approximately 5% of late, and confidence ratings have declined markedly.

This development was also reflected in the figures for the second quarter of 2011. Economic activity slowed down in most countries. The seasonally adjusted growth rates (quarter on quarter) in Hungary, Slovenia, Romania and the Czech Republic came to a mere 0.0% to 0.2%. However, the region as a whole was still able to benefit from the continued robust growth in Poland (+1.1% against the same quarter of the previous year).

Although net exports' contributions to growth already went down as a result of weaker international demand in the second quarter of 2011, the economy is

still being driven by the external sector and changes in inventories. Moreover, domestic demand has recently tended to pick up again. This is the case for Poland and the Baltic States, in particular, where private consumption as well as investments have boosted economic growth considerably. Of late, investment activity has slightly accelerated in the Czech Republic and Slovakia, too. This might mainly be attributable to the fact that a certain investment demand has built up because investment expenditure had been sinking for several quarters during the crisis. However, CESEE states with the weakest economic performance – i.e. Slovenia, Hungary, Romania and Bulgaria – report that domestic demand's contribution to growth is still consistently negative. In these countries hesitant lending, the necessity to further reduce household debt (and in the case of Slovenia, also corporate debt), the increased need to consolidate public finances and limp construction activity put brakes on economic growth.

Owing to the region's weak performance in the second quarter of 2011 and the negative data for Europe as a

Table 1

CESEE EU Member States: Economic Growth

	2009	2010	Q3 10	Q4 10	Q1 11	Q2 11
	Real GDP growth in % against the previous period, seasonally and working day-adjusted					
Bulgaria	−5.5	0.2	0.7	0.5	0.6	0.3
Estonia	−14.3	2.3	1.2	2.5	2.4	1.7
Latvia	−17.7	−0.3	1.1	0.8	1.1	2.0
Lithuania	−14.7	1.3	0.3	1.8	3.5	0.4
Poland	1.6	3.8	1.3	0.9	1.1	1.1
Romania	−7.1	−1.3	−0.2	0.4	0.5	0.2
Slovakia	−4.8	4.0	0.8	0.8	0.9	0.9
Slovenia	−8.0	1.4	0.3	0.5	0.1	0.1
Czech Republic	−4.1	2.3	0.8	0.5	0.9	0.1
Hungary	−6.7	1.2	0.8	0.2	0.3	0.0
CESEE total	**−3.4**	**2.1**	**0.7**	**0.6**	**0.9**	**0.6**
Euro area	**−4.3**	**1.8**	**0.4**	**0.3**	**0.8**	**0.2**

Source: Eurostat.

whole as well as for the global environment, activity forecasts have been deteriorating since early summer. It is true that the IMF currently expects economic activity in the region to accelerate from 2.2% in 2010 to approximately 3% in 2011, but as early as in 2012, it is assumed to lose momentum and to grow at a slightly reduced rate of 2.8%. Compared with the IMF forecast of April 2011 (when growth was still assumed to reach 3.5% in 2012), this represents a significant downward revision. In all CESEE countries but Estonia the economy is weakening. The balance of risks of this forecast is generally tilted to the downside; risks refer mainly to the uncertainties surrounding developments in the euro area.

3.2 Inflation Passed its Peak in Summer 2011

With the exception of the Czech Republic and Slovenia, price pressures in CESEE countries were comparatively strong in the first half of 2011 and sometimes even intensified later on. This development was first and foremost driven by price surges for food

items as a result of bad harvests in 2010. Furthermore, high prices for energy and other commodities and not least tax increases also pushed up inflation in a number of countries. The latter effect was particularly marked in Poland, Slovakia and Latvia, where VAT rates were all raised in early 2011.

Several central banks in the region have reacted to mounting inflationary pressure by increasing interest rates. For example, Magyar Nemzeti Bank (MNB) raised its policy rate by 25 basis points to 6% in January 2011. Narodowy Bank Polsky (NBP) increased its key policy rate in January, April, May and June 2011 in four steps of 25 basis points each to 4.5% most recently. Of the countries under review, Slovenia, Slovakia and Estonia are members of the Euro area for which the ECB raised key interest rates in April and July, respectively.

Price pressures were strongest in the summer of 2011. Since then, inflation has abated in most countries. On the one hand, this development owes to base effects (for instance in connection with the increase of VAT rates in Roma-

Chart 4

CESEE EU Member States: Inflation Developments

Annual change in %
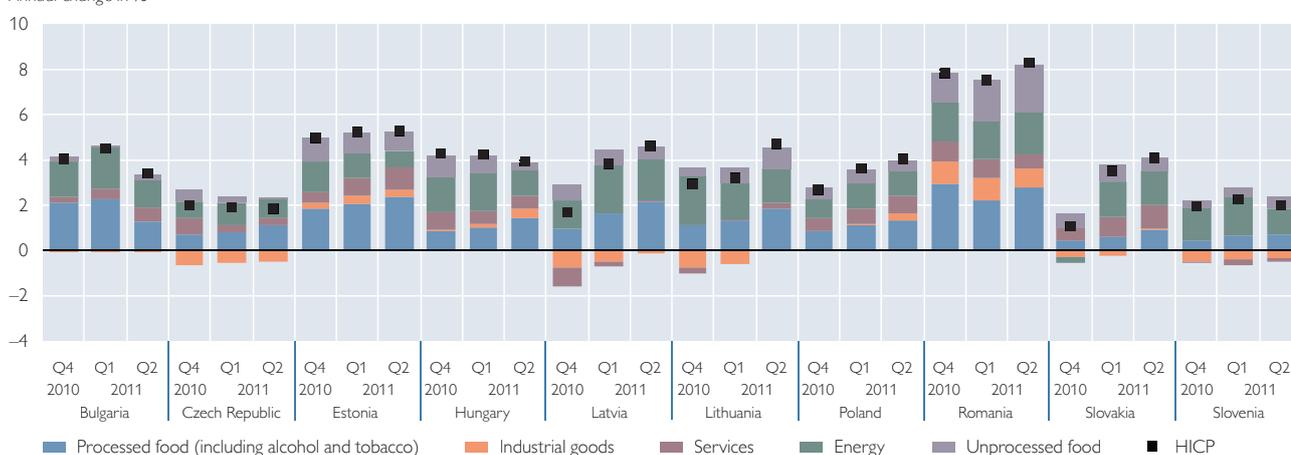
Source: Eurostat.

nia in July 2010). On the other hand, this year's harvests had a dampening effect on prices for food items. Combined with relatively moderate core inflation rates, only gradual improvements in the labor market and below-average capacity utilization ratios, these factors should contribute to running down inflation in 2012, too. Recent forecasts for 2012 predict prices to rise by about 3% at a regional average, compared with about 4% for 2011 as a whole.

3.3 Current Account Adjustment Phase Over in Many Countries

In all CESEE EU Member States, the crisis prompted a (sometimes significant) improvement in the external position. This uniform trend has given way to a larger heterogeneity as regards current account developments in the past few months. While countries like Bulgaria and Romania – who exhibit a somewhat slower economic growth – lack domestic demand and are therefore still able to benefit from improving current account balances, countries with stronger economic growth (Poland, the Baltic states) as well as the Czech Republic have registered deteriorating

current account balances in the past quarters. In addition to a pick-up in domestic demand, this can mainly be attributed to a rising income gap. In the wake of economic recovery, foreign-owned companies are back in the profit zone and re-transfer part of their profits to their parent companies. Thus the crisis-induced cyclical component of current account adjustment is slowly losing significance. However, part of the post-crisis currency adjustment was of a structural nature and should therefore have a longer-lasting effect. For instance, unit labor costs in the Baltic states have improved considerably against the euro area since mid-2009, which is why recent forecasts predict that in 2012 the average current account deficit in the region will still be 2% lower than pre-crisis GDP and will stabilize at around 3% of GDP.

On the payments side, portfolio investments (Poland, Slovenia) and foreign direct investments (Bulgaria, Czech Republic, Baltic states, Romania) are the key components. In times of heightened financial market volatility, the latter are of particular importance. While direct investments followed an upward trend in many countries in recent quar-

Chart 5

CESEE EU Member States: Current Account Developments

% of GDP, moving four-quarter average

Balance of trade   Net income   Transfers   Capital account   ◆ Current account and capital account
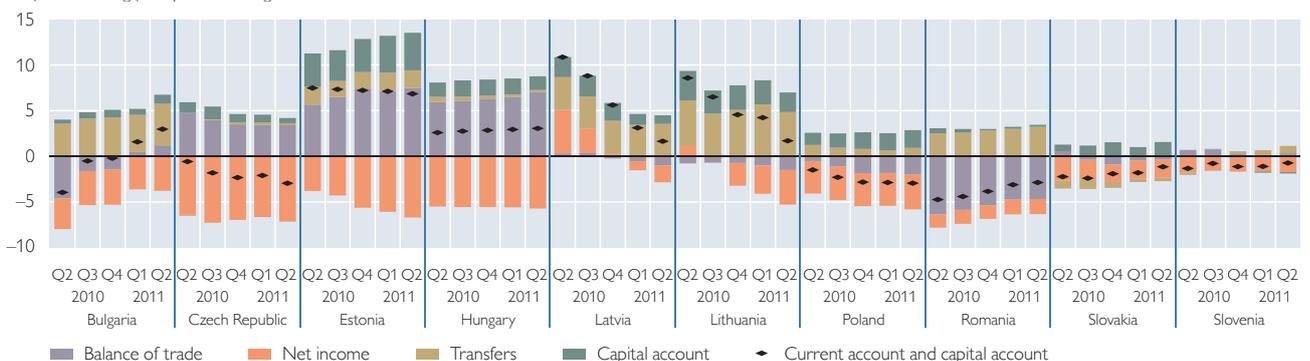
Source: National central banks.

ters, it is still too early to speak of a broad-based recovery taking place in the region. With the exception of Estonia (which seems to have benefited from the introduction of the euro in this respect), inflows of foreign direct investments into all CESEE countries are (sometimes significantly) lower than the average of the precrisis years. What is more, FDI inflows into several countries have either not yet managed to improve substantially from their lows (e.g. in Slovakia and Romania) or are still decreasing (e.g. in Poland and Bulgaria). This might owe to other emerging markets' having posted stronger growth rates in recent quarters and enjoying a better economic outlook in the medium run.

3.4 CESEE Countries Not Untouched by the Turmoil in International Markets

Stock markets in CESEE countries were severely hit by sell-offs in the past few weeks. Compared with prices at the beginning of July, losses of up to 25% (Hungary, Poland) were registered up to the first peak on August 10, 2011. Stock markets in the Baltic countries and in Slovenia fared slightly better (losses of about 10%). Only Slovakia was not substantially affected by the recent turmoil. Since then, some countries have suffered losses, some of them (e.g. Hungary) even substantial ones.

At present, stock market prices have reached the level of May/June 2010, when tensions were high owing to the Greek debt crisis. From a longer-term perspective, today only the indices in Estonia and Poland have regained the level they stood at prior to the bankruptcy of Lehman Brothers. In all other CESEE states stock markets were not yet able to recover from the severe losses they suffered in autumn/ winter 2008, and until to date prices are still up to 60% below their level

Chart 6

CESEE EU Member States: Stock Price Developments

Index: July 1, 2011 = 100
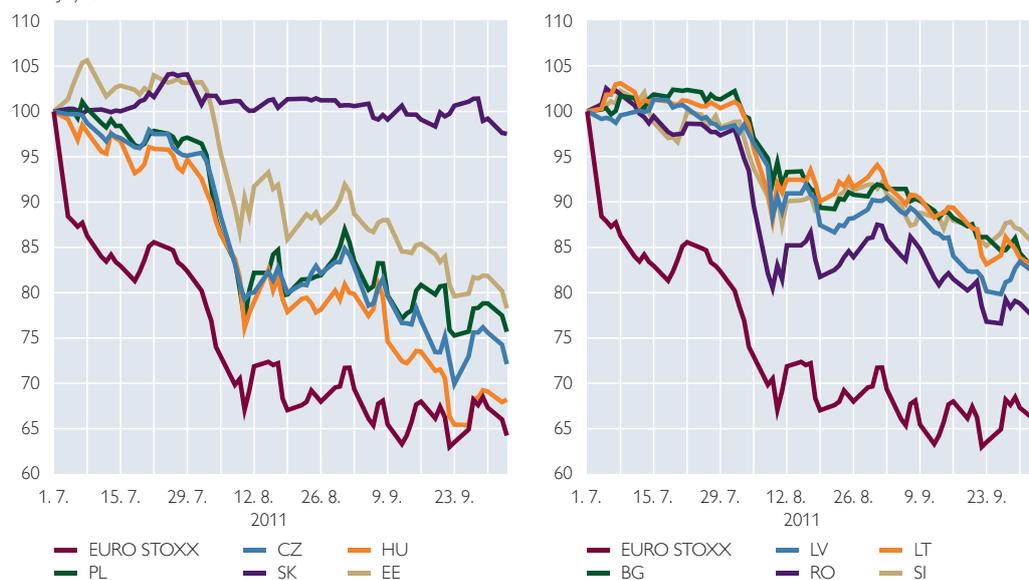
Source: Thomson Reuters.

of September 2008 (for instance in Bulgaria and Slovenia). In spite of these substantial price decreases, CESEE countries were slightly less affected by the current turbulences than countries in Western Europe. For example, the Dow Jones EURO STOXX lost 35% of its value against the beginning of July.

The current tensions in the financial markets and slightly gloomier economic prospects in CESEE countries have not yet influenced rating agencies' assessments for the region. On the contrary, ratings (Long-Term Foreign-Currency Sovereign Debt Ratings) for Bulgaria, Romania, Estonia and the Czech Republic were raised in July and August, 2011, respectively. From May to August 2011 the sovereign ratings for Hungary, Latvia, Lithuania and Slovakia improved.[2] Only the rating for Slovenia was downgraded in September 2011.

4 Austria: Marked Economic Slowdown in Mid-2011

4.1 First Full Release of National Accounts Data for the Second Quarter of 2011

The Austrian economy grew at a quarterly rate of 0.7% (in real terms, seasonally and working day-adjusted) in the second quarter of 2011 according to the first release of national accounts data for that period. At this rate, the Austrian economy significantly outperformed the euro area (+0.2%) and its most important trading partner, Germany (+0.1%).

Following changes in the methodological framework underlying the national accounts system, current national accounts data now exhibit a visibly higher degree of volatility than in the past, which complicates analysis. Unlike the flash estimate of GDP growth, the national accounts data on the demand components of GDP show exports to

Table 2

Real GDP and Demand Components
(in real terms; seasonally and working day-adjusted)

	GDP	Private consumption	Government consumption	Gross fixed capital formation	Exports	Imports	Total domestic demand (excluding inventories)	Net exports	Inventories	Statistical discrepancy
	Change on previous period in %						*Contribution to GDP growth in percentage points*			
Q1 10	−0.9	2.0	0.5	0.0	0.4	0.8	1.2	−0.2	−1.6	−0.3
Q2 10	1.4	−0.8	−0.5	0.6	5.6	5.1	−0.4	0.6	1.3	−0.1
Q3 10	1.4	1.7	−0.1	2.1	2.1	3.2	1.3	−0.4	0.4	0.1
Q4 10	0.6	−0.4	−0.2	1.8	0.7	−0.3	0.1	0.6	0.4	−0.4
Q1 11	0.8	−0.4	0.6	1.3	3.1	3.6	0.2	−0.0	−0.5	1.2
Q2 11	**0.7**	**0.4**	**0.8**	**0.9**	**0.1**	**0.3**	**0.5**	**−0.1**	**1.0**	**−0.8**
2008	1.4	0.8	4.4	0.6	1.3	0.0	1.4	0.8	−0.5	−0.3
2009	−3.8	−0.2	0.4	−8.3	−14.3	−13.9	−1.8	−1.2	−0.9	0.1
2010	2.3	2.2	−0.2	0.1	8.3	8.0	1.2	0.7	0.5	−0.1

Source: WIFO, OeNB.

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[2] *Hungary was upgraded (by Fitch) in June 2011. Recent developments — such as the weak economic performance in the second quarter, a higher than expected budget deficit and the announcement of controversial steps in favor of a government-backed redemption of loans in foreign currency by private households (to the detriment of banks doing business in Hungary) — have not yet been taken into consideration.*

have ceased to be the key engine of growth in the second quarter of 2011. Exports in fact virtually stagnated as a result of the global slowdown in growth. Investment, in contrast, remained strong, even though growth slowed down somewhat. The growth of private consumption turned positive again, after two quarters in negative territory. Given the volatile pattern of individual demand components and the high statistical discrepancy, the individual quarterly measures need, however, be interpreted with caution.

4.2 Austria's Economy Stagnates in Second Half of 2011

The Austrian economy kept growing at a strong pace until mid-2011 but is expected to stagnate in the second half of the year. The OeNB's latest economic indicator, released in October 2011, shows quarterly real GDP growth at 0.1% in the third quarter and at 0.0% in the fourth quarter of 2011 (seasonally and working day-adjusted). The reasons for the anticipated growth slowdown include the global economic downturn, the weakness of the domestic economy, the waning impetus of cyclical pillars of growth and a loss of confidence on account of the unresolved debt crisis.

Uncertainty about the future development of the global economy has undermined the confidence of both consumers and businesses. Bank Austria's Purchasing Managers' Index, for instance, signals a stagnation of industrial activity in Austria from mid-2011 onward. In the same vein, Austrian businesses now consider the intake of both domestic and cross-border orders to be significantly slower than just recently; the latest figures are below the long-term averages.

Exports have already been hit by the economic slowdown. Following dis-

proportionately high nominal growth of goods exports in the first quarter of 2011 (+5.0% seasonally adjusted, against the previous quarter), growth decelerated visibly in the second quarter, to just 1.1%. Measured against the second quarter of 2010, growth continued to be strong, however, at +12.0% (after +23.7% in the first quarter). The results of the OeNB's export indicator released in October 2011 suggest that in August goods exports were 0.6% lower in nominal terms than in May, but that they rebounded in September, being 3.4% higher again than in June. Quarterly export growth thus rose slightly, by 0.8%, in the period from July to September. Annual export growth, as evidenced by the the export indicator, was below the long-term precrisis average of approximately 8% in September 2011. Whereas the individual monthly indicators are subject to a relatively high degree of uncertainty on account of sizable working-day effects, the general downward trend to which they are pointing is in fact a very stable result.

Furthermore, the growth outlook has also deteriorated significantly for domestic demand. Investment would have had to accelerate at a much stronger pace during the economic upturn in order to support economic growth on a sustained basis, given the sharp contraction during the financial and economic crisis. The low level of gross fixed capital formation implies that the bulk of recent investment was aimed at retaining existing production capacity rather than expanding production capacity. Weaker external conditions and the high degree of debt crisis-related uncertainty in the corporate sector cause businesses to postpone investments further. This means that the momentum created by the two key engines of growth of the past few

months – strong industrial activity and robust exports – is going to be significantly lower than in the past, whereas the outlook bodes well for a higher contribution to growth from building construction.

In addition, another important cyclical pillar of growth is going to disappear, as the exceptionally strong inventory cycle will bottom out in the second half of 2011. The fact that the ratio of new order assessments and inventories has now been below the critical measure of 1 for four months in a row is a sign that restocking should be complete in the second half of 2011. Likewise, any growth impetus created by private consumption is going to be limited in the months ahead. Despite favorable developments in the labor market – close to 3.5 million dependently employed persons are a new employment record for

September – real disposable household income is going to rise only slightly. The necessary budgetary consolidation measures and the dynamics of inflation, which is still at an elevated level, leave little room for additional spending.

This notwithstanding, real GDP growth for 2011 as a whole will reach 2.9% owing to vigorous activity at the start of the year. At the same time, growth expectations for 2012 had to be revised downward significantly. Most recently the Austrian Institute of Economic Research (WIFO) and the Institute of Advanced Studies (IHS) have revised downward their forecasts for 2012 to 0.8% and 1.3%, respectively. Moreover, the risks to the growth forecasts continue to be overwhelmingly on the downside. Apart from global imbalances, these risks include the weakness of the U.S. economy and the unre-

Box 1

Results of the OeNB Economic Indicator of October 2011[1]

Following disproportionately strong growth in the first half of 2011, the Austrian economy stands to lose considerable momentum from the second half onward. The OeNB's latest short-term indicator results show quarterly real GDP growth at 0.1% in the third quarter and at 0.0% in the fourth quarter of 2011 (seasonally and working day-adjusted). Hence, the annual growth rates against the corresponding periods of 2010 are expected to lie at 2.2% in the third quarter and at 1.6% in the fourth quarter of 2011. For 2011 as a whole, GDP growth is still expected to average 2.9% given the strong start into the year.

Short-Term Outlook for Austria's Real GDP for the Third and Fourth Quarters of 2011 (seasonally and working day-adjusted)

2009				2010				2011			
Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Year-on-year quarterly change in %											
−5.0	−5.6	−3.9	−0.7	0.4	2.8	3.6	2.5	4.3	3.5	2.2	1.6
Quarterly change in %											
−1.9	−0.9	0.6	1.6	−0.9	1.4	1.4	0.6	0.8	0.7	0.1	0.0
Annual change in %											
−3.8				2.3				2.9			

Source: Results of the OeNB's Economic Indicator of October 2011, Eurostat.

[1] The next release of the OeNB's short-term indicator is scheduled for January 2012.

solved debt crises of several European countries.

4.3 Labor Market Growth Peaks in the Second Quarter of 2011

Austria's labor market still looks in excellent health thanks to the booming economy in recent quarters. Employment has grown dynamically: Payroll employment statistics showed an increase by more than 60,000 persons in September 2011 over the same month of 2010. Most of this growth was, however, achieved in the earlier quarters of the current year, as job growth has gradually lost momentum in recent months. Judging from the number of job vacancies, which has been contracting slightly since April, labor market growth may have peaked in the second quarter of 2011. Likewise, the number of temporary workers registered as unemployed, which anticipates general labor market developments by roughly one quarter, has been going up again since the beginning of the second quarter; this trend is likely to strengthen as the economy slows down in the months ahead.

Annual unemployment growth was back on the rise by a small margin, at a first glance, for the first time again in August 2011. In September 2011, the number of people registered as unemployed was also higher than a year earlier. However, this increase (+4,000 unemployed in September) masks an upward bias driven by two factors. First, persons participating in training events organized by the Austrian Public Employment Service (AMS) do not qualify as unemployed by definition. Given that in September 2011 the number of persons enrolled in AMS courses was lower by 7,500 than in September 2010, the unemployment count in fact decreased by 3,500 persons in that month when adjusted for AMS training

Chart 7

Unemployed Persons, Participants in AMS Training and Recipients of Means-Tested Income Support

Annual change in 1,000
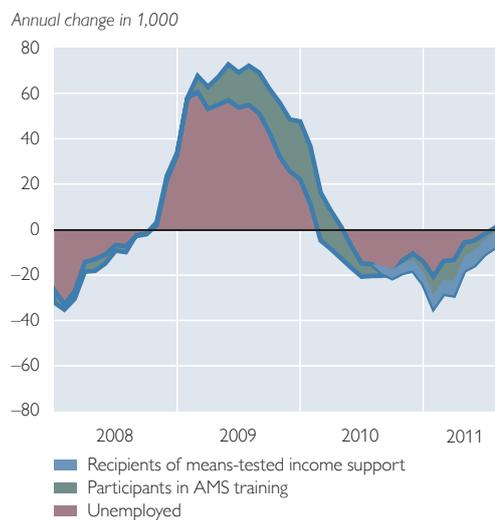
Source: Austrian Public Employment Service (AMS).

participants. Second, the unemployment statistics include all those recipients of means-tested income support – which replaced the former social assistance scheme in September 2010 – who are found to be able to work. This fact might have driven up the unemployment count of September 2011 – by as many as 6,400 persons at the utmost; the exact figure cannot be established as it is not known how many of those persons were registered as unemployed with the AMS before the regime change. Taking into account those two factors, unemployment in fact went down in September 2011 (the maximum number by which it may have gone down would be 9,900 persons).

4.4 Inflation in Austria Still Significantly Above Euro Area Average

HICP inflation remained at high levels during the summer months and reached 3.7% in August, slightly down from 3.8% in July. The major drivers of

inflation in August, as in 2011 so far, were the sharp rise in the prices for fuels, other sources of energy, and food. These three product groups accounted for two-fifths of the inflation rate. Moreover, travel and accommodation also created above-average inflationary pressures, whereas housing rental prices rose in line with headline inflation. Core inflation (HICP excluding energy and unprocessed food) meanwhile remained at 3.1% in August, the same as in July 2011. The OeNB now expects inflation to reach 3.3% in 2011 and 2.2%

in 2012. On current expectations, the Austrian inflation rate should go down continually in the remaining months of 2011 and in early 2012 (see chart 8). Within the euro area, only Estonia and Slovakia reported higher inflation rates than Austria in August 2011; in Luxembourg, Finland and Belgium inflation was as high or almost as high as in Austria. The euro area countries with the lowest inflation rates were Ireland, Slovenia and Greece. On balance, inflation averaged 2.5% in the euro area and 2.9% across all EU countries.

Chart 8

HICP Inflation and Contributions by Subcomponents

Annual change in percentage points for contributions to inflation   *Last observation: August 2011*
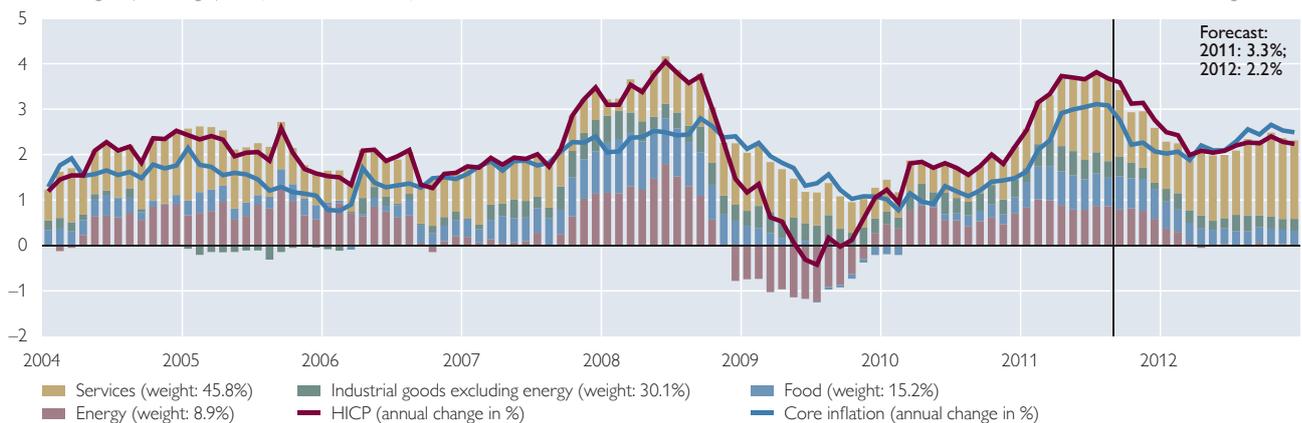
Source: OeNB, Statistics Austria.

Literature Review on the Economic Effects of the Euro on Austria

Christian Beer[1]

The possible impact of the euro on Austria has been widely discussed, as will be shown in this literature review, which focuses above all on the impact of the euro on inflation, foreign trade and economic growth. Not surprisingly, it has been quite difficult to quantify the (specific) impact of the euro, so that the academic literature contains only few hard-and-fast statements about the currency's impact on Austria. According to the findings of the literature, the purely economic impacts of the single currency appear not to have been very large – other European integration projects that partly relate to monetary union appear to have had a stronger influence on Austria's economy.

„Generally, it is easier to conduct *ex ante* studies on economic integration than to analyse the outcome *ex post*. This is also documented by the much larger number of *ex ante* studies" (Badinger and Breuss, 2011).

This contribution aims at presenting an overview of the academic literature on the economic impact of the euro on Austria, specifically on the effects on price stabilization and foreign trade as well as economic growth and employment. That is to say, any interactions between the single currency and the economic and fiscal policies of the euro area countries are left out of account. Although many consider the introduction of the euro a wider European policy project rather than an economic policy issue alone, this study does not cover the link between the single currency and European integration policy, either. Also, as ZEW (2008) contains a comprehensive analysis of the effect of the euro on business cycle synchronization, this topic is not covered in the present study. An additional qualification of this study is that – like the bulk of the academic papers it analyzes – it is limited to presenting the quantitative impact of monetary union without evaluating the pros and cons of monetary union. Indeed, this would require a (normative) yardstick such as the assumption of a specific welfare function.

As a starting point, the theory of optimal currency areas, or OCA theory (Mundell, 1961; McKinnon, 1963; Kenen, 1969), may serve as a theoretical basis for analyzing the effects of a monetary union, or of the costs and benefits of joining a monetary union. OCA theory was used to analyze the impact of a single European currency prior to the start of Stage Three of Economic and Monetary Union (EMU; compare e.g. European Commission, 1990).

OCA theory[2] postulates that the direct advantages of a monetary union are primarily microeconomic, such as the elimination of transaction costs, the reduction of exchange rate risk and volatility, and enhanced competition on account of greater price transparency. These advantages can have indirect effects on foreign trade as well as growth and employment. Lower transaction costs and reduced uncertainty may cause the volume of foreign trade and cross-border investment to expand, making it possible to allocate capital and resources more efficiently.

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[2] *For additional information on OCA theory, see also De Grauwe (2009a).*

Moreover, the increase in aggregate economic factor productivity and the reduction of the risk-adjusted rate of return may generate additional positive effects for growth and employment.

Apart from benefits, monetary union also entails costs for participating countries – by relinquishing monetary and exchange rate policy autonomy, they also lose an instrument to stabilize macroeconomic shocks. According to OCA theory, (1) the more symmetric the shocks that hit countries in a monetary union are, (2) the greater wage and price flexibility is, and (3) the more mobile the factors labor and capital are, the lower the costs of participating in a monetary union are. Additionally, the estimate of the costs of participation in a monetary union must take into account the extent to which autonomous monetary policymaking would be possible outside of monetary union, and the degree of this policy's effectiveness. Participation in Stage Three of EMU did not mean that the euro area countries switched from complete monetary policy autonomy to a common monetary policy, as prior to joining monetary union, coordination of exchange rates in the European Union (for example through the European Monetary System) already entailed restrictions, as did the peg of some countries' currencies to the Deutsche mark. Once EMU had been established, researchers focused more on the endogeneity of optimal currency areas (Frankel and Rose, 1998). The endogeneity theory postulates that the establishment of a monetary union in itself contributes to fulfillment of the OCA criteria, for instance because of its very effects on foreign trade.

To assess the economic impact of the euro, analysts must be aware that the developments in the euro area can be put down to more than just mone-tary union; much rather, they are the result of a range of factors partly inter-related with the consequences of mon-etary union. In addition to, and partly before, EMU, Europe underwent a number of other integration steps, such as the deepening of the Single Market and the integration of product markets. Economic developments in euro area countries were also influenced by di-verse, partly asymmetrical external shocks and the countries' respective economic and fiscal policies, which for the most part are still under the re-sponsibility of the EU Member States.

Another problem that must be con-sidered in econometric studies on the impact of the euro is what time to de-fine as the starting point of effects of the euro. On the one hand, conver-gence was a prerequisite for monetary union, so that effects of the euro may already have occurred even before Stage Three of EMU. On the other hand, the overall effects of the euro are an amalgamation of the effects of tran-sition to the third stage of EMU (1999) and those of the introduction of euro cash (2002). When moving to Stage Three of EMU, the national central banks transferred monetary policy sov-ereignty to the European System of Central Banks and irrevocably fixed the rate of conversion of their national cur-rencies into the euro. This eliminated exchange rate volatility and all uncer-tainties linked to exchange rate devel-opments. However, exchange rate-related transaction costs were not eliminated in full until euro cash was introduced in 2002. As Baldwin et al. (2008) established in connection with studies on the impact of the euro on foreign trade, the use of a single binary variable set to 1 from 1999 can, thus, distort the results of econometric stud-ies. In the case of Austria, the adoption of Stage Three of EMU in 1999 and the

introduction of euro banknotes and coins in 2002, moreover, occurred just a few years after the opening up of Eastern Europe in 1989 and EU accession in 1995. It may be assumed that all of these events had an impact on Austria's economy, so that it is difficult to isolate the impact of the euro.

Moreover, to assess the impact of the euro, an appropriate alternative scenario must be defined, and the economic development that would have taken place under this alternative scenario must be determined. To analyze the effect of the euro on Austria, the alternative scenario might be that under which Stage Three of EMU is assumed not to have occurred. Another scenario is the move to Stage Three by all current euro area countries except Austria. For both of these scenarios, the question arises what monetary and exchange rate policy Austria would have pursued, and what effect the other countries' monetary policy would have had on Austria. A large portion of the empirical work in this field calculates the impact of the euro by taking non-euro area EU Member States as a control group. However, it is questionable whether this approach can in fact resolve all the econometric problems that crop up in this connection.[3]

Given the usual time lag of scientific publications, hardly any studies have become available so far that take into account the possible effects of the financial and economic crisis on the assessment of the impact of the euro. The bulk of the academic publications analyzed in this contribution assesses the first 10 years of EMU's operation and thus looks at a period characterized by unusual macroeconomic stability ("the Great Moderation").

The remainder of this contribution is structured as follows: Price stability is examined in section 1, foreign trade in section 2, and economic growth and employment in section 3. Each section begins with a discussion of the theoretically expected impacts of a common currency. Finally, empirical studies are cited to show the actual impacts that occurred in Austria. Section 4 concludes. The annex summarizes the main results of the studies reviewed in this contribution in a table. Unless explicitly stated otherwise, "the impact of the euro" is understood to mean the combined impact of reaching Stage Three of EMU and introducing euro banknotes and coins.

1 Price Stability

Like most other euro area countries (Mongelli and Wyplosz, 2008), Austria has experienced low inflation rates since the introduction of the euro. From 1980 to 1989, the average rate of inflation came to 3.8% in Austria, from 1990 to 1998 to 2.3%, and from 1999 to 2010 to 1.7%; despite numerous shocks to inflation which occurred in the past ten years (such as animal diseases, crop failures, skyrocketing oil and other commodity prices). Even if inflation was mostly stable since the introduction of the euro, even slightly declining until 2007 to 2008, this development cannot be ascribed solely to EMU. In fact, inflation rates dropped worldwide, which may be ascribable to globalization and the higher competitive pressure it entails (Breuss, 2009), a global strengthening of central bank independence, greater competition in international trade, financial market deregulation, high current account surpluses in Eastern Asia and in the OPEC

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[3] On this problem and on the issue of counterfactual scenarios, see also Boltho and Eichengreen (2008).

countries (Boltho and Eichengreen, 2008). However, in assessing the development of inflation in the euro area, it must be taken into account that some euro area countries regularly posted high rates of price increase before joining EMU, and that it is an extraordinary achievement for the newly established ECB to have gained a reputation as a central bank that successfully maintains price stability (De Grauwe, 2009b).

A quantitative study on the effects of EMU on the development of inflation in Austria can be found in Windberger and Zeileis (2011). The authors use statistical procedures to show that Austria experienced a structural break in inflation developments in fall 1994. In their study, Windberger and Zeileis (2011) distinguish between two time periods, namely from February 1990 to September 1994 and from October 1994 to December 2010. During the first period, the average monthly rate of inflation in Austria came to 0.255%, during the second period to 0.135%; the variance of the inflation rate was higher during the second period (0.037 compared to 0.015). Windberger and Zeileis interpret this result as follows: It is the preparations for EMU that led to lower rates of inflation rather than participation in EMU per se, which did not have a structural impact on price developments. The authors saw a euro-linked structural break in the countries that had followed the Deutsche Bundesbank's monetary policy line prior to joining EMU only in the case of Luxembourg.

The results of Windberger and Zeileis (2011) indicate that Austria and other countries with low inflation before Stage Three of EMU benefited less from the successful stabilization of price levels by the ECB than the erstwhile high-inflation countries did. As the OeNB was already widely independent before Stage Three of EMU[4] – the central bank legislation provided for independence early on – participation in monetary union entailed only few additional credibility gains.

2 Foreign Trade

Traditional theoretical assumptions about the impact of a monetary union on foreign trade are that the volume of foreign trade will expand because transaction costs[5] (exchange costs) decline and because uncertainty about the development of exchange rates is eliminated. Because relative prices change as a consequence of the cut in transaction costs within the euro area, trade between euro area countries should theoretically expand at the expense of trade with non-euro area countries.

Flam and Nordström (2006) point out that even a fairly small reduction of transaction costs can have a powerful effect on foreign trade. Based on Yi (2003), they argue that transaction costs have to be paid every time export goods cross borders, and because foreign trade is internationally fragmented, several borders have to be crossed. The effects of a reduction in transaction costs may be nonlinear, as lower trade costs may lead to a further fragmentation of foreign trade.

The "new goods" hypothesis first presented in Baldwin and Taglioni (2004) offers an alternative explanation of the foreign trade effects of a monetary union. The rise in foreign trade is not primarily explained as a rise in the

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[4] For information about the effects of EMU on the OeNB's independence, see Gnan et al. (2005).

[5] The European Commission (1990) estimates the transaction costs at roughly half a percentage point of EU GDP as a whole.

trade of already traded goods (intensive margin), but rather by the expansion of foreign trade to new, previously locally traded products (extensive margin). The new goods hypothesis is based on the "new new trade" literature (Melitz, 2003), which allows heterogeneity of potential exporters and in which corporate productivity is an important determinant of foreign trade performance, so that only the most productive enterprises export.[6]

Baldwin and Taglioni (2004) use a theoretical model with market entry costs for exporters (compare Baldwin, 1998) and productivity differences between potential exporters to show that the less volatile exchange rates are and the lower trade barriers are, the higher the foreign trade volume is. As this model only provides for exports from companies above a certain threshold size, and the cut-off size varies with exchange rate volatility, a reduction of this volatility results not merely in higher exports per exporting company, but also causes more companies to export in the first place. Moreover, the effects of exchange rate volatility are not linear. Furthermore, lower transaction costs should entail a rise in foreign trade with all countries, though the effect is more pronounced for euro area countries.[7] Consequently, the new goods hypothesis can also explain the rapid onset of euro effects on foreign trade, because no changes in production structures are needed to export existing products. The hypothesis is also compatible with the observation that euro effects materialized even be-fore the introduction of euro notes and coins and the related reduction in transaction costs.

Numerous studies examine the effect of the euro on foreign trade, most of which rely on gravity models. This contribution discusses only a few representative studies and studies that explicitly present results for Austria. Rose (2000) is one of the first empirical studies about the trade effects of a monetary union. The result of this study is well known and has been cited widely, namely that a monetary union can result in an increase of up to 200% in trade flows. Rose (2000) provided the impetus for a sharp increase in research about the impact of a monetary union on foreign trade. Baldwin (2006a, 2006b) critically reviews Rose (2000) and other studies, citing the following reasons why only limited conclusions about the impact of the euro can be drawn from these studies: The monetary unions analyzed by Rose (2000) cannot be seen as representative of euro area countries. Baldwin (2006a, 2006b) in turn cautions that the analysis suffers from numerous econometric shortcomings, such as distortions due to the omission of variables, reverse causality (strong trade flows lead to a monetary union), and incorrect model specifications. Based on the literature he reviews, Baldwin (2006a) assumes a foreign trade effect of the euro of between 5% and 15%, citing 9% as the best estimate. Rose and Stanley (2005) conduct a meta-analysis of the impact of monetary union on foreign trade and, depending on the method used,

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[6] These results are confirmed by microdata collected and evaluated within the framework of the EFIGE project (Navaretti et al., 2011). Within the scope of the EFIGE project, a total of 14,162 firms were surveyed, 492 of which were in Austria. The questions largely refer to 2008 figures. The results show that exporting firms in all countries surveyed are larger, more productive and more innovative and have higher-skilled labor than nonexporting firms.

[7] An extension of the theoretical model to multiproduct firms can be found in Bernard et al. (2011); Bernard et al. (2007) contains a literature survey.

they estimate the rise to come to between 8% and 23%. Another meta-analysis (Havránek, 2010) does not rule out that the euro has hardly any effects, and that the positive results in the literature are the result of a publication bias.

Micco et al. (2003) and Faruquee (2004) contain results for Austria, but these scientific studies only cover the first years of EMU's operation. Micco et al. (2003) use IMF data from 1992 to 2002 and examine the impact of monetary union on foreign trade as a whole, i.e. exports and imports. For Austria, they calculate an intra-EU trade effect resulting from the introduction of the euro of 13.7%; the EU average is 12.6%. The strongest effect is in Spain (21.7%), the weakest in Greece (–2.4%). Micco et al. (2003) estimate the rise in Austrian trade with non-EU countries to expand by 8.8%. Hence, the euro effect in Austria is slightly above the EU average of 8.6%. Micco et al. (2003) calculate the highest rise in trade with non-EU countries for the Netherlands (21.7%) and the sharpest decline for Portugal (–3%). Faruquee (2004) comes to similar conclusions: He calculates a rise in intra-EU trade of 14.8% for Austria (EU average 14.4%), with the bandwidth ranging from 5.1% for Portugal to 20.9% for Spain. In extra-EU trade, Austria, with trade gains of 6%, is below the EU average of 8%. As in the study of Micco et al., Faruquee (2004) measured the strongest effects for the Netherlands (19.3%) and the smallest trade gains for Finland (2.1%).

Baldwin and Di Nino (2006) empirically examined the new goods hypothesis established in Baldwin and Taglioni (2004). In their empirical strategy, Baldwin and Di Nino (2006) take into account that the export and import data are censored, as only firms with a sufficiently low marginal cost find it profitable to export. The authors do not have access to the data required by the theory (bilateral trade data at the product level for individual firms),[8] so they use trade data from the Comtrade database (six-digit export data) for the period from 1994 to 2003. Tobit estimations quantify the overall impact of the euro on Austrian foreign trade at roughly 6%; the euro area average comes to about 4%, and the highest value was found for Spain (11%). Baldwin and Di Nino (2006) do not see any significant impact of the euro on external trade in the case of about half of the euro area countries. The rise in Austrian foreign trade according to Baldwin and Di Nino's results is the consequence both of a higher trade volume of firms that were active in foreign trade even before EMU, and of additional foreign trade in new product groups.

Based on a theoretical model drawn up by Casella (1996), Badinger and Breuss (2009) examine whether country size is relevant for the impact of the euro on foreign trade. They assume that the size of a country's own market is a key determinant of competitiveness. The decline in transaction costs and in exchange rate risk resulting from monetary union is tantamount to an increase in the "home market," which was relatively more pronounced for small countries. Moreover, it must be assumed that the euro area is not a fully integrated market (there are e.g. legal differences as well as cultural and language barriers between countries), oth-

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[8] Only few studies use firm-level microdata (e.g. Berthou and Fontagné, 2008; De Nardis et al., 2008; Esteve-Pérez et al., 2011), and these studies limited themselves to individual euro area countries. No such study is available for Austria.

erwise there would not be a difference between large and small countries in the degree of market expansion. As Badinger and Breuss (2009) consider the euro effects a result of the reduction of transaction costs, they espouse the traditional view and do not aspire to conduct a comprehensive analysis of the impact of EMU on foreign trade. Badinger and Breuss (2009) use a gravity model and compare a time period prior to the beginning of Stage Three of EMU (1994 to 1998) with a later period (2001 to 2005). Moreover, to take into account the importance of rising economies of scale in the model of Casella (1996) and to mitigate possible endogeneity problems, they also perform an analysis with sectoral data. The authors show that EMU raised small countries' foreign trade by 3% to 9% more than that of large countries, with the difference also depending on how large the size discrepancy between the countries is. This result is fairly robust over all estimates. The findings of Badinger and Breuss (2009) do not relate to Austria as such; much rather, the authors examine Austria by comparison to other countries, viewing Austria as small compared to Germany, Spain, France, Italy and the Netherlands and as large only by comparison to Ireland.

Its growing international importance has increasingly made the euro an invoicing currency even outside the euro area, which, according to Breuss (2009), greatly helped to facilitate trade with countries outside the euro area. Breuss (2009) sees a positive impact for Austrian foreign trade also in the elimination of the soft currency countries' option to devalue their currencies.

The euro could also have an impact on tourism through the same transmission channels as in the case of foreign trade. Gil-Pareja et al. (2007) analyzes this proposition using a panel data set of 20 OECD member countries for the period from 1995 to 2002. The authors conclude that the euro has led to an increase in tourism flows within the euro area and estimate the increase to come to about 6% for the euro area as a whole, with Greece posting the strongest expansion (around 25%) and the Austrian rise (6%) corresponding to the euro area average.

To sum it up, the calculated quantitative effects of the euro on foreign trade diverge strongly among the different studies. Apart from the problems discussed in Baldwin (2006a, 2006b), economic theory suggests that the impact of the euro on foreign trade differs by sector and even between different individual firms. Therefore, it would be desirable to use to a greater extent appropriately disaggregated microdata in studies on the impact of the euro on foreign trade (Baldwin et al., 2008).

All studies of this type are faced with the problem that the time series are quite short. Therefore, it cannot be ruled out that the effects of the euro on foreign trade have not fully unfolded yet, as suggested in Glick and Rose (2002). The authors use data from 1948 to 1997 to show that it can take more than 30 years for the impact of a monetary union on foreign trade to take full effect. Baldwin et al. (2008) point out that the effects of the euro on foreign trade may still increase if euro-related projects such as the Single Euro Payments Area are fully implemented, thus facilitating cross-border payments.

3 Economic Growth and Employment

A common currency may have a positive influence on economic growth and employment through other channels, apart from its indirect effects of greater price stability and stepped-up foreign

trade (European Commission, 1990; Barrell et al., 2008; Boltho and Eichengreen, 2008). A decline in real interest rates and in capital costs resulting from the elimination of exchange rate fluctuations and the decrease in uncertainty may lead to a rise in investment and stronger inflows of foreign direct investment. Enhanced price transparency through the use of a single means of payment may reinforce competition and in its wake the efficiency and effects of the Single Market. Additionally, a monetary union may strengthen financial market integration and thus contribute to more efficient international allocation of capital.

While numerous academic studies examine the effects of the single currency on foreign trade, only very few studies look into the impact of EMU on economic growth. One reason for this may be that growth effects are harder to estimate on the basis of the short time series available than trade effects.

Compared to the U.S.A. or to non-euro area EU countries, euro area economic growth has been low since the start of Stage Three of EMU. However, this development cannot be ascribed to monetary union. Much rather, it results from a wide variety of other factors, such as a combination of external shocks (e.g. commodity price developments) and tepid domestic demand during the first five years of EMU's existence (European Commission, 2004), positive country-specific developments outside the euro area (Wyplosz, 2006), and weak labor productivity growth (OECD, 2007).

Barrell et al. (2008) provides an analysis of the impact of the single currency on economic growth and em-

ployment covering the entire euro area. The authors use panel econometric methods as well as cointegration analysis in their study, and they examine not only the euro area, but also use Denmark, Sweden, the U.K. and the U.S.A. as a control group. Barrell et al. (2008) use hourly labor input adjusted by the skill level to analyze the direct impacts of monetary union on the development of employment. However, their research covers only the period up to 2004, as they use the EU KLEMS Database[9] for data on skill levels. Barrell et al. (2008) find EMU to have had positive effects on economic growth, most pronouncedly in the core countries (Belgium, France, Germany and the Netherlands). In the long term, according to Barrell et al. (2008), euro area membership can entail a GDP increase of around 2%. However, the authors find no statistically significant influence of EMU on economic growth in the euro area countries outside the core group cited above – such as Austria.

Barrell et al. (2008) also deal with the question of whether EMU had indirect effects on economic developments in euro area countries. In this connection, they analyzed the volatility of output and of real exchange rates and examined whether a reduction of volatility leads to higher growth by a rise in capital stock and hence on output. Using econometric estimates for the period from 1984 to 2006, Barrell et al. (2008) establish that EMU has led to a reduction of the volatility of output and of the real exchange rate in most euro area countries. However, apart from the Netherlands, Austria is the only country in which Barrell et al.

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[9] The aim of the EU KLEMS project was to establish a database with information on economic growth, productivity, job creation, capital formation and technological change for all EU Member States. O'Mahony and Timmer (2009) provide an overview.

(2008) find output volatility to have risen. But the decline in exchange rate volatility was also relatively small in Austria, coming to about half of the euro area average. This may be linked to the fact that before EMU, the Austrian schilling was pegged to the Deutsche mark so that its exchange rate against the Deutsche mark fluctuated very little. As a result, the output effects of EMU on Austria through this channel were low. Barrell et al. (2008) comes to the conclusion that it is not possible to unequivocally determine whether EMU had positive effects for small countries such as Austria or Finland.

Breuss (2009) finds that almost all economic indicators in Austria performed better than the euro area and the EU-15 averages in the period from 1999 through 2008. Real wages per employee and employment growth posted below-average growth. Breuss (2009) and Breuss (2010) perform model simulations of overall economic impacts to estimate the effects of the euro. Whereas Breuss (2009) uses the Oxford Economic Forecasting world macro model to estimate the impact of EMU during the period from 1999 to 2008, Breuss (2010) develops an integration model that allows for separation of the impacts of EMU from the effects of other integration steps, such as EU membership, and that calculates the effect of EMU on Austria from 1999 to 2010.

Both studies arrive at similar conclusions. Fiscal consolidation (reduced crowding-out of private investment, positive contributions to capital formation), fixed exchange rates and a rise in productivity had positive impacts on economic growth. Overall, the simulations showed that EMU led to an average increase in economic growth of 0.3 percentage points (Breuss, 2009) or

of 0.4 percentage points (Breuss, 2010) a year. Roughly $^1/_{10}$ percentage points resulted from fiscal consolidation. Having fixed its exchange rate, Austria could no longer revalue its currency, which had a positive impact on Austrian competitiveness, but, according to both studies of Breuss only little impact on GDP. In Breuss (2010), the integration model shows that EMU entailed a rise in R&D spending, indirectly exerting an influence on total factor productivity. Breuss (2010) sees the effect on economic growth at 0.4 percentage points a year. In Breuss (2009), stronger growth of total factor productivity in the wake of EMU results in an average GDP boost of 0.27 percentage points a year. Thus, monetary union takes effect on economic growth mainly through its impact on productivity. Breuss (2010) also finds that participation in EMU and the introduction of the euro created some 10,000 new jobs every year. Calculations using the integration model signal that EMU pared an average of 0.3 percentage points from the unemployment rate. Breuss (2009) and Breuss (2010) cite the ECB's monetary policy as being at the heart of the dampening effect of EMU: It may have been too restrictive for Austria, as it was conceived for the euro area as a whole. Evidence of this conclusion is that the average real interest rate in Austria has been 0.4 percentage points higher than the euro area average since EMU's foundation. However, Breuss (2009) also notes that the development of long-term interest rates is consistent with a strengthening of economic growth and the dampening of inflation in Austria.

Participation in EMU has also changed the Austrian economy's reaction to shocks. Breuss and Rabitsch (2009) as well as Breuss and Fornero (2009) examine this conclusion. The

first of these studies finds that Austria reacts more strongly to demand shocks and shocks to total factor productivity than other euro area countries. Additionally, EMU reinforces the impact of economic developments in other countries on Austria's economy. Based on these results, Breuss and Fornero (2009) develop a dynamic stochastic general equilibrium (DSGE) model and use data for the period from 1984 to 2007 to perform an estimation using Bayesian methods on this model. The model assumes three countries with characteristics like Austria (a small, open economy), the euro area (a large economy, Austria's major trading partner), and the rest of the world, proxied by the U.S.A., to examine how nominal and real shocks are propagated and to study the welfare costs (measured as lost steady state consumption) of nominal rigidities. The findings of Breuss and Fornero (2009) show that EMU increases the efficiency of allocation in the euro area and that welfare losses caused by nominal rigidities have declined. However, Austria is the only country in which EMU causes welfare costs to go up.

4 Conclusions

Even though Breuss (2009) comes to the overall conclusion that the expected growth bonus of the euro has failed to materialize, EMU has proved its advantage in acting as a shield, as it were, against the drawbacks of globalization. The euro has contributed at least to dampening the price increase of commodities invoiced in U.S. dollars and has provided for more stability during periods of international financial crises.

Reviewing developments since the start of Stage Three of Economic and Monetary Union, nearly all macroeconomic indicators show that Austria's economy has performed better than the euro area average (Breuss, 2009). The introduction of the euro has brought additional economic growth on the order of 0.4 percentage points a year for Austria (Breuss, 2010). EMU has had a positive impact on Austrian exports, and, as Badinger and Breuss (2009) show, EMU has enabled small countries (e.g. Austria) to achieve particularly high foreign trade gains. During the first years of EMU's operation, Austria posted low inflation rates. Austria did, however, feature a high degree of price stability even before the introduction of the euro, so that it benefited less from the positive effects of EMU on price level stability than the former high-inflation countries did.

The advantages for Austria of participating in a larger currency area were probably most pronounced in the spring of 2009 and in the summer of 2011: In spring 2009, Austria is likely to have benefited from the elimination of depreciation risk. It may be assumed that the perception of higher risk related to Austrian companies doing business in Central, Eastern and Southeastern Europe would have put the national currency under heavy devaluation pressure if it had not been for EMU. In the summer of 2011, Austria might have found itself in a position similar to that of Switzerland, had it not been for EMU, and massive appreciation would then have had a negative effect on the real economy.

An issue this contribution does not examine directly is the integration of financial markets as a result of the euro. EMU is likely to have contributed importantly to the integration of euro area financial markets (Lane, 2009). Stepped-up integration of financial markets may improve capital allocation efficiency and can broaden risk-sharing among euro area countries, thus mitigating the negative impact of heteroge-

neity in the euro area. However, in the light of the most recent crisis, the effects of capital market integration (such as the convergence of interest rates and lower financing costs for enterprises and sovereigns) are not to be seen as positive without qualifications.

The noneconomic impacts of the euro, such as the contribution of EMU to greater European integration, were not part of this study, either, but may well be more important than the economic impacts. To secure the potential noneconomic and economic advantages of EMU and of the euro, it would appear to make eminent sense to learn the right lessons from the crisis for the architecture of the euro area.

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Annex

Overview of the Discussed Effects of EMU on Austria

	Rise in %		
Foreign trade			
	M 03	F 04	
Intra-EU	13.7	14.8	
Extra-EU	8.8	6.0	
	B 06	G 07	
Overall effect	5–6	6.0	
Economic growth and employment			
	B 08	B 09	B 10
Economic growth (percentage points p. a.)	0.0	0.3	0.4
Employment (persons p. a.)			9,800
Unemployment rate (percentage points)			−0.3

Source and notes: M 03: Micco et al. (2003), F 04: Faruquee (2004), B 06: Baldwin and Di Nino (2006), B 08: Barrell et al. (2008), G 07: Gil-Pareja et al. (2007), B 09: Breuss (2009), B 10: Breuss (2010). G 07 refers to tourism.

Austria's Manufacturing Competitiveness

This study discusses Austria's manufacturing competitiveness and its influence on changes in the export market shares of domestic manufacturers. We first analyze price competitiveness over time and then conduct a constant-market-shares analysis in order to attribute changes in the export market shares of domestic manufacturers to their competitiveness on the one hand and international demand patterns on the other.

Austria's manufacturing industry seized the opportunity to expand to the east when the markets in Central, Eastern and Southeastern Europe (CESEE) opened up. Against this back-drop, domestic manufacturers were able to improve their price competitiveness between 1995 and 2004. They also gained export market shares from 2000 onward but lost some ground in 2005 and 2006. Since then, market shares and price competitiveness have remained broadly unchanged, which means that Austria has in fact done better than most other euro area countries. By historical comparison, the impact of the financial and economic crisis on Austrian manufacturers' export market shares and their competitiveness remained limited.

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In the wake of the financial and economic crisis, Austria's manufacturing output shrank by almost 14% in 2009, while goods exports contracted by some 18% in real terms (quarterly national accounts data, seasonally and working day-adjusted; Q2 2011 flash estimate) as a result of an unprecedented slump in global trade. Prior to the crisis, the role of export demand had somewhat faded from the spotlight in the economic policy discourse, and the in part very high export growth rates of Austria had often been explained with its ability to sustain and enhance its international competitiveness. But export growth is driven by both competitiveness and international demand (chart 1), which is why an improvement in international competitiveness must go hand in hand with an increase in export market shares. This article discusses how Austria's manufacturing competitiveness has changed over time and what role it played for the gain or loss of export market shares.

Firms can improve their overall competitiveness (chart 1) either by undercutting competitors' prices for the same good *(price competitiveness)* or by developing products for which there are no direct competitors *(non-price competitiveness)*. This study focuses on two main issues: The first is a descriptive analysis of the *price competitiveness* of Austrian manufacturers over time. Unlike non-price competitiveness, price competitiveness can be measured with numerous indicators, such as bilateral and effective exchange rates (deflated by various price and cost indicators, e.g. unit labor costs).[2] Given that an improvement or deterioration in price competitiveness does not necessarily cause changes in export market shares – as the degree of non-price competitiveness may be changing at the same time – our second main issue is an analysis of the *role* the *overall competitiveness* of Austrian manufacturers (chart 1) has played in shaping their export performance, using constant-market-shares analysis (CMSA).

Chart 1

Competitiveness, Market Shares and CMSA

CMSA: explains a country's market shares with developments in its exports markets (structural effect) and changes in its overall competitiveness

Export demand of trading partners (i.e. their import demand)

Overall **competitiveness** of Austrian firms relative to their competitors

Export performance of Austrian firms relative to their competitors

Result: **Market shares** of Austrian firms abroad

Price competitiveness

Non-price competitiveness

Selected indicators

- Export growth
- Trade balance
- Production and export structure
  – Countries
  – Products

- Market shares by regions (e.g. world, specific countries)
- Market shares by products

- (Effective) exchange rates
- Unit labor costs

- Proxies only
- Not quantified

Discussed in

| Section 2: descriptive analysis | Sections 4+5: descriptive analysis and as input | Section 3: descriptive analysis Sections 4+5: qualitative analysis | Sections 4+5: qualitative analysis | Sections 4+5 |

In CMSA, losses and gains of market shares can be traced back to changes in overall competitiveness, among other things, but CMSA does not distinguish between price and non-price competitiveness. If price competitiveness moves in the same direction as overall competitiveness, it can be assumed to either help or hinder goods exports. If they move in opposite directions, non-price competitiveness can be assumed to play the dominant role for the development of overall competiveness. The CMSA in this article covers 95% of Austria's goods exports. We also provide CMSA results for Austria's position in the euro area and the EU.

This study is structured as follows (see also chart 1): Since there is no uniform definition of international competitiveness, section 1 provides a brief overview of different competitiveness concepts and highlights the differ-

ences with traditional international trade theory. Section 2 gives a descriptive overview of developments in Austria's manufacturing industry, exports and export structure. Section 3 presents and discusses Austria's price competitiveness in international and historical comparison, by looking at common price competitiveness indicators and unit labor costs. Section 4 uses CMSA to establish the determinants of Austria's export performance. Changes in market shares can be traced back to developments in Austria's overall competitiveness on the one hand, and to structural changes in export demand (import demand by Austria's trading partners) on the other hand. Section 5 features a qualitative discussion of the relative role of price and non-price competitiveness in our CMSA results, and section 6 summarizes the main results.

1 What Is Competitiveness?

Traditional international trade theory focuses on cross-border trade *between countries* and assumes that *both sides* benefit from welfare gains as they utilize comparative advantages.[3] Yet *at the firm level* the situation is such that trading partners gain or lose market shares in line with changing competitiveness patterns *at the cost* of their competitors. The "race for competitiveness" may, nonetheless, indirectly cause international product trade to produce welfare gains for all economies involved by inducing a rise in productivity and product quality[4] – but this is not necessarily the case. At any rate, competitiveness is a *relative concept,* and it can be measured only in relation to others.

One of the most convincing classifications of competitiveness as defined in the literature was drawn up by the German Council of Economic Experts (2004). Following this classification, competitiveness can, first, only be reasonably discussed at *firm level,* as only firms can be forced off the market. An alternative approach is to widen the firm-level (or industry-level) focus to include *selected macroeconomic indicators,* such as effective exchange rates and price and wage developments, as the success of a firm or industry is linked to such external factors. Essentially, this approach concentrates on the *"ability to sell"* products in a competitive international environment. Ultimately, competitiveness can also be seen as *a country's ability* to succeed in international competition, as the competiveness of individual firms is influenced by a country's overall structure, including e.g. infrastructure and education levels. From this perspective, a country's competitiveness would be equivalent to its ability to achieve the highest income possible in the long run – or the ability to excel by the standards of a wide range of other indicators, as used for instance in competitive analyses of the World Economic Forum and the Bertelsmann Foundation.

The distinction between price and non-price competitiveness (as outlined in the introduction) is entirely consistent with the first two types of definitions outlined above and partly consistent with the third. This article concentrates mainly on the second definition ("ability to sell"). We look at trade in goods only; cross-border production processes, foreign direct investment and the relocation of production processes are not explicitly considered.

The perspectives for analysis and the implications for economic policy vary depending on the competitiveness definition used. The third definition, for instance, would require us to examine the effects of competitiveness on domestic welfare, as an improvement in international competitiveness could well imply negative tradeoffs for a country's macroeconomic development. In this contribution, macroeconomic effects are addressed only indirectly in section 3 and box 1.

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[3] In theory, a convergence of productivity levels could eliminate comparative advantages and thus make international trade obsolete (Samuelson, 2004). This argument is controversial, though.

[4] Remember, for instance, the discussion on the effects of a slightly overvalued Austrian schilling, which necessitated and promoted structural reforms.

Box 1

Competitiveness and Macroeconomic Developments

Low wages and rising exports: Model theory suggests that a country can only achieve a long-run external equilibrium if its international competitiveness – and thus its share of global exports – remains unchanged and if this equilibrium is accompanied by an internal equilibrium. A long-run decline in competitiveness would lead to a negative goods balance and is therefore unsustainable. This fact is especially salient for open economies, and thus affects small countries like Austria more than it does others. This is why small open economies need to take extra care to prevent their competitive position from deteriorating in the long run. However, a steady rise in the current account surplus is unsustainable, too, as it is incompatible with a long-run external equilibrium. Still, in the short to medium term, competitiveness gains can contribute significantly to raising the domestic income level.[1] These favorable effects are not bound to occur, though: If price competitiveness gains are achieved not by raising productivity but only by cutting relative domestic factor costs – above all wages – the positive export-driven growth effects may be all but offset by the negative impact on domestic demand.

High wages and rising exports: In the short term, wage levels that are considered too high can also lead to an increase in export activity as industrial enterprises relocate labor-intensive production processes abroad to avoid the high labor costs ("bazaar economy effect" in Germany; Sinn, 2001). As a result of the increasing internationalization of production processes, export levels rise while the domestic share of value added declines. Therefore, an increase in export figures does not necessarily go hand in hand with a rise in domestic value added and employment, given the tradeoff between income levels and export performance. Sinn even coined the term "pathological export boom" to describe a situation in which Germany's high export performance was achieved not despite but because of the country's high wage level (Sinn, 2006). While Sinn's hypotheses are controversial in the academic discussion, they highlight the fact that rising export growth is not necessarily indicative of higher competitiveness, and that the export (or import) of finished goods has lost ground to intra-industry trade across borders as the international division of labor expanded.

[1] However, recently another argument has also gained popularity, namely that members of a monetary union gain competi-tiveness at the expense of other, less competitive member countries.

2 Production and Export Structure of the Austrian Manufacturing Industry

Austria's economic structure changed considerably in the wake of the major political changes of the past two decades – the fall of the Iron Curtain, Austria's accession to the EU, the EU enlargement by CESEE countries, and the introduction of the single European currency. Located in a small open economy at the center of Europe, Austrian manufacturers were forced to constantly improve their competitiveness so as to remain competitive domestically and be able to expand to neighboring markets that were opening up.[5]

These circumstances are reflected in a rising (goods and services) *export share in GDP,* which jumped from just under 34% in 1995 to almost 60% in 2007 (chart 2). In absolute terms, exports outpaced imports for the first time in 1997; Austria has posted a current account surplus since 2001. Exports have become a major driver of growth. At the same time, the country has become more dependent on developments in the world economy. The contraction in Austria's GDP owing to the global financial and economic

[5] See Ragacs and Vondra (2009) for an analysis of the development of Austrian exports to CESEE countries.

crisis in 2009 was above all caused by the slump in global trade and its effects on domestic exports. These export losses have since been offset almost completely, though; by the second quarter of 2011, real goods exports had rebounded to just around 4% be-

low the peak value recorded in early 2008.

With a share of more than 70% in total exports, *goods exports* still play the dominant role. In recent years, however, the balance of services showed a surplus of some 5% of nominal GDP,

Total Exports

Annual change in %
Contribution in percentage points

Share of exports in GDP (right-hand scale)
GDP growth, real (left-hand scale)
Total export growth, real (left-hand scale)
Contribution of exports to GDP growth (left-hand scale)

Goods Exports

Annual change in %
Contribution in percentage points

Share of goods exports in total exports (right-hand scale)
Goods export growth, real (left-hand scale)
Contribution of goods exports to total export growth (left-hand scale)

Goods Balance and Net Goods Exports

% of GDP

Goods balance, total (left-hand scale)
Goods balance, euro area (left-hand scale)
Goods balance, non-euro area (left-hand scale)
Contribution of net goods exports to GDP growth (right-hand scale)

Manufacturing Industry Output

Annual change in %
Contribution in percentage points

Share of goods exports in GDP (right-hand scale)
GDP growth, real (left-hand scale)
Manufacturing output growth, real (left-hand scale)
Contribution of manufacturing to GDP growth (left-hand scale)

Source: Statistics Austria, Austrian Institute of Economic Research; quarterly national accounts data (flash estimate Q2 2011), authors' calculations.

while Austria's *balance of goods* was slightly negative except in 2006 and 2007. This deficit on the goods balance was attributable to developments in the euro area, as the goods balance with countries outside the euro area registered a surplus.

The share of *manufacturing* in GDP is below 20%, and its average contribution to GDP growth was around 30% in the period from 1995 to 2010. The crisis-related slump in exports translated into a marked decline in manufacturing output, which contracted by almost 14% in 2009 (Q2 2011 flash estimate). The export orientation of Austria's man-

ufacturing industry is also shown by the large share of export firms. In the period from 1997 to 2006, exporting firms accounted for around 56.5% of Austrian firms (Pöschl et al., 2009).

Tables 1 and 2 show the structure and development of the Austrian export goods industry broken down by industries and destination countries. The *breakdown by industries* reveals some structural shifts over time. "Machinery and transport equipment," "Manufactured goods," "Chemicals and related products," and "Miscellaneous manufactured articles" account for the lion's share of Austria's goods exports. This

Table 1

Austria's Goods Exports by Industries over Time

	1995	2000	2005	2010	1995–2000	2000–2005	2005–2010	2008	2009	2010
	Share in total exports in %				*Average annual growth in %*			*Year-on-year growth in %*		
Total exports FOB	100.0	100.0	100.0	100.0	11.0	7.8	3.3	2.5	−20.2	16.7
Food (SITC 0)	3.3	3.6	4.2	5.2	14.7	9.5	8.1	15.4	−9.3	8.6
Beverages and tobacco (SITC 1)	0.7	1.1	1.9	1.5	20.3	18.4	0.2	−11.2	−11.3	6.5
Crude materials (SITC 2)	4.1	3.4	3.0	3.4	7.0	5.1	4.2	−3.5	−19.4	24.6
Fuels and electricity (SITC 3)	1.0	1.3	4.6	3.2	11.1	37.1	3.2	28.7	−26.3	17.7
Oils, fats and waxes (SITC 4)	0.1	0.1	0.1	0.2	13.5	6.2	14.2	66.5	−25.4	33.6
Chemicals and related products (SITC 5)	9.2	9.2	9.8	13.0	11.2	8.7	9.6	6.3	−6.1	16.9
Medicinal and pharmaceutical products (SITC 54)	2.3	2.8	3.8	5.7	14.7	13.8	13.7	9.9	10.6	11.9
Manufactured goods (SITC 6)	29.1	23.5	22.3	23.0	7.3	6.6	4.5	4.4	−26.3	19.3
Paper (SITC 64)	6.3	4.6	3.7	3.4	7.1	3.4	0.5	2.8	−14.0	9.2
Iron and steel (SITC 67)	5.7	4.2	5.7	5.6	7.1	13.3	6.6	13.6	−38.9	23.1
Manufactures of metals (SITC 69)	5.0	4.4	4.4	5.0	7.6	6.2	6.1	4.7	−26.5	19.1
Machinery and transport equipment (SITC 7)	39.0	43.9	41.6	37.8	13.2	7.2	0.4	−2.1	−24.3	17.2
Power-generating machinery and equipment (SITC 71)	5.8	5.2	4.9	5.5	8.1	5.5	6.0	−3.8	−9.8	19.8
Machinery specialized for particular industries (SITC 72)	5.7	5.4	5.3	5.2	9.3	7.5	3.1	5.4	−32.3	14.3
General industrial machinery and equipment (SITC 74)	6.4	5.6	5.9	6.1	9.3	7.4	4.5	5.6	−23.0	9.0
Electrical machinery (SITC 77)	7.5	8.8	7.3	7.3	13.5	6.0	2.4	1.8	−21.9	27.6
Road vehicles (SITC 78)	7.3	9.9	11.8	8.0	19.4	10.9	−3.6	−11.1	−35.8	20.3
Miscellaneous manufactured articles (SITC 8)	13.3	13.0	11.9	11.8	10.1	5.2	3.2	3.7	−11.4	9.0
Miscellaneous manufactured articles, n.e.s. (SITC 89)	5.3	5.8	5.2	5.4	10.8	4.4	4.4	4.7	−8.5	10.9
Commodities and transactions not classified elsewhere (SITC 9)	0.1	0.8	0.5	1.0	71.8	43.9	20.5	2.9	−5.0	89.4

Source: Statistics Austria, authors' calculations.

Note: The FOB (free on board) value refers to the value of (customs-cleared) goods at the point of exit from the exporting country, i.e. the ex works price inclusive of transportation, insurance and loading costs up to the frontier of the exporting country's customs territory. N.e.s. means "not elsewhere specified."

share declined from 91% in 1995 to 86% in 2010, which means that the range of export goods has increased in that period.

The share of "Machinery and transport equipment" was more or less as high in 2010 as in 1995, namely 38%, but had already been well above 40% at the turn of the millennium. The importance of "Manufactured goods" declined by 6.1 percentage points, whereas that of "Chemicals" increased by 3.2 percentage points between 2005 and 2010. This rise can be mostly attributed to the above-average growth in exports of "Medicinal and pharmaceutical products" over the entire period under review, which was the only large industry that continued to expand even during the crisis year 2009. The sectors hit hardest

by the crisis were "Manufactured goods" (primarily "Iron and steel" and "Manufactures of metals") as well as "Machinery and transport equipment" (above all "Machinery specialized for particular industries" and "Road vehicles.") When world trade recovered in 2010, these sectors quickly made up for the ground they had lost – in May 2011, "Machinery and transport equipment" and "Manufactured goods" again reached the levels recorded in September 2008.

A look at *exports by destination* shows considerable shifts in the structure of export markets. Between 1995 and 2010, Austrian exports to the CESEE region (country sample comprising 29 countries) rose from 14% to 21%, those to the EU-10 increased from 11% to 16%.[6] By contrast, the share of exports to

Table 2

Austria's Goods Exports by Destinations over Time

	1995	2000	2005	2010	1995–2000	2000–2005	2005–2010	2008	2009	2010
	Share in total exports in %				*Average annual growth in %*			*Year-on-year growth in %*		
Total exports	100.0	100.0	100.0	100.0	11.0	7.8	3.3	2.5	−20.2	16.7
Europe	87.0	85.5	83.8	82.1	11.0	7.3	2.9	2.6	−21.1	16.0
Asia	6.6	5.9	6.6	8.8	7.9	10.7	8.9	9.4	−10.9	19.3
America	4.6	6.8	7.4	7.0	16.2	11.0	2.0	−3.7	−22.0	25.8
Africa	1.2	1.2	1.2	1.3	6.0	10.8	5.6	−6.2	−9.2	3.8
EU-27	77.2	74.7	73.2	70.5	10.8	7.1	2.6	2.0	−21.5	16.0
Euro area (EA-17)	63.0	57.8	56.3	54.1	9.7	6.9	2.5	1.3	−19.5	16.1
EU-10 (NMS)	11.2	13.5	14.5	15.8	15.3	9.4	4.9	8.9	−26.3	14.5
CIS (12)	1.8	1.5	2.6	3.5	7.4	24.0	11.5	17.4	−30.7	20.3
CESEE (29)	14.2	16.5	19.3	21.3	14.7	11.3	5.4	10.0	−26.7	14.1
Germany	38.4	33.4	31.8	31.6	8.6	6.1	3.0	1.6	−16.7	18.3
Italy	8.8	8.7	8.6	7.8	12.3	8.3	1.8	−1.4	−24.8	13.0
Switzerland	5.8	6.8	4.9	5.1	12.2	3.0	4.0		−4.1	18.5
U.S.A.	3.0	5.0	5.6	4.5	18.0	11.7	−1.1	−9.9	−22.4	22.9
France	4.4	4.4	4.2	4.2	10.4	7.0	3.1	7.0	−16.2	22.9
Czech Republic	2.7	2.9	3.1	3.8	12.7	9.5	7.1	7.7	−22.1	20.8
Hungary	3.6	5.0	3.4	3.1	15.5	1.4	0.0	5.2	−30.8	14.7
United Kingdom	3.3	4.4	4.1	3.0	17.1	6.4	−2.1	−9.0	−22.1	15.6
China	0.8	0.7	1.3	2.6	10.4	20.9	16.6	14.4	7.5	39.2
Poland	1.4	1.6	2.0	2.5	16.8	12.1	9.1	8.6	−25.2	12.1

Source: Statistics Austria, authors' calculations.

Note: Export countries are ranked by their share in Austrian exports in 2010.

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[6] *See Francois and Wörz (2011) for an analysis of structural changes in CESEE countries between 1995 and 2007.*

Europe (the EU) declined from 87% to 82% (77% to 71%) in the same period. In a 2010 ranking of Austria's top ten export markets, Germany – which accounts for 30% of the country's exports – is still number one by a large margin, followed by Italy and Switzerland. Still, in recent years, Austria managed to expand its exports to large emerging economies like China, Turkey, Brazil, India or South Africa. In 2010, China was already one of Austria's ten most important export markets. This means that the Austrian export industry was able to diversify both in terms of export goods and export markets. Given the strong export orientation of the Austrian economy, both aspects are essential to limiting the country's vulnerability to sectoral or regional external shocks.[7]
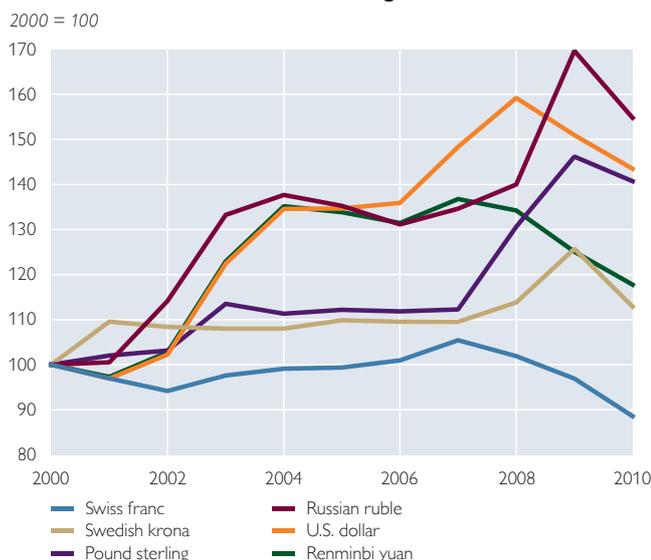
3 Price Competitiveness of the Austrian Manufacturing Industry

In addition to distinguishing between price and non-price competitiveness, the literature also breaks down price competitiveness into price competitiveness in the narrow sense of the word and cost competitiveness. While the first category focuses on the pricing of finished goods, the second focuses on production costs. Naturally, the two are by no means independent of each other, as low production costs make it possible to sell at a low retail price – cost competitiveness has an influence on price competitiveness. In the following, we will first focus on an international comparison of price competitiveness in the narrow meaning of the term, and then we will discuss the underlying
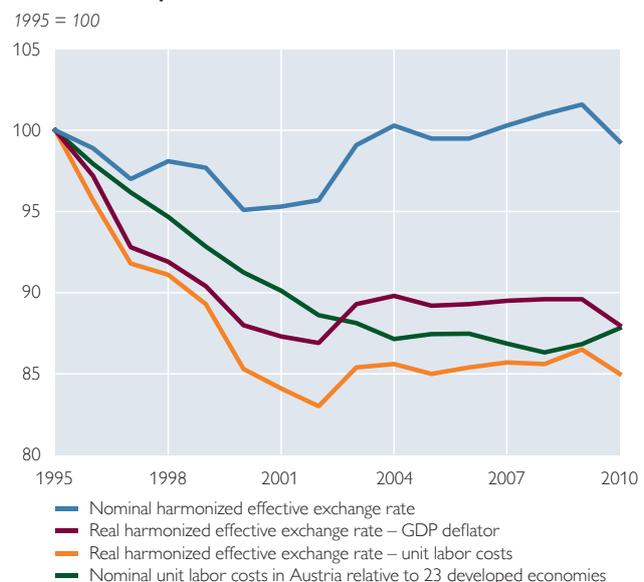
Chart 3

ECB Bilateral Reference Exchange Rates and Selected Competitiveness Indicators for Austria

Selected Bilateral Reference Exchange Rates of the ECB

2000 = 100

Selected Competitiveness Indicators

1995 = 100

Legend (left chart):
- Swiss franc
- Swedish krona
- Pound sterling
- Russian ruble
- U.S. dollar
- Renminbi yuan

Legend (right chart):
- Nominal harmonized effective exchange rate
- Real harmonized effective exchange rate – GDP deflator
- Real harmonized effective exchange rate – unit labor costs
- Nominal unit labor costs in Austria relative to 23 developed economies

Source: Reference rates and harmonized exchange rates: ECB ("harmonized competitiveness indicator", small country sample, see footnote 11); unit labor costs: European Commission (AMECO); authors' calculations.

Note: Bilateral reference rates in direct quotation (e.g. USD/EUR); a rise in effective exchange rates denotes a loss in competitiveness.

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[7] *The experience of the global economic crisis also underscores this point. In 2009, Austria's exports to the EU and the U.S.A. contracted by 22%, respectively; those to Switzerland declined only slightly (–4%). In contrast, Austria even exported more goods (+8%) to China than it had in 2008.*

factors of unit labor costs, which affect cost competitiveness.

Chart 3 gives an overview of common indicators of price competitiveness. The left panel shows selected bilateral reference exchange rates for the euro, while the right panel depicts the nominal effective exchange rate of the euro from an Austrian perspective (weighted by Austria's trading partners), two ECB competitiveness indicators and unit labor costs in Austria over time.

3.1 Bilateral Nominal Exchange Rates

Exchange rate changes can be interpreted as losses or gains in competitiveness: Depreciation makes a country's exports cheaper and imports more expensive. Depreciation is commonly assumed to have a positive effect on a country's trade balance.[8] Chart 3 shows that, in the period from 2000 to 2010, the Swiss franc was the only reference currency to appreciate against the euro. The euro appreciated against all other currencies in that period, which reduced the price competitiveness of Austrian exports.

During the financial and economic crisis – more specifically, in 2009 – the euro even appreciated quite sharply against the pound sterling, the Russian ruble and the Swedish krona. At the same time, it depreciated against the U.S. dollar and thus also against the renminbi yuan. In 2010, problems regarding the sustainability of public finances in several euro area countries caused the euro to depreciate against all reference currencies.

Changes in bilateral exchange rates (e.g. USD/EUR) say only little about relative changes of a country's competitiveness. Simulations for Austria with the OeNB's macroeconomic model (Austrian Quarterly Model) show that, excluding the effects on Austria's trading partners, an appreciation of the euro against the U.S. dollar by 10% causes GDP to contract by just 0.11 percentage points after three years compared with the baseline scenario. This effect roughly doubles if we consider the effects on Austria's trading partners in the euro area. The low elasticity of Austrian exports to changes in bilateral exchange rates can be ascribed above all to the fact that the country is part of the monetary union, which means that the lion's share of domestic exports is not affected by exchange rate changes, and to the fact that the U.S.A. accounts for just a small share in Austria's total exports (table 2).

3.2 Effective Exchange Rates

Bilateral exchange rates do not consider the relative importance of a country's trading partners. By contrast, *effective exchange rates* capture changes in a currency's value against a currency basket, i.e. they reflect the weight of a country's trading partners.[9] The simplest type, *nominal effective exchange rates,* does not consider relative price or cost changes between trading partners, whereas *real effective exchange rates* also take into

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[8] *Empirically, it is essential to distinguish clearly between short-term and long-term effects. The so-called J-curve describes the effects of currency depreciation over time. Because of differences in the reaction velocity of imports and exports, currency devaluation first causes net exports to decline and then to rise in the long run. Empirical evidence of the J-curve effect is mixed, though. In the long run, the trade balance can improve only if the sum of the demand elasticities for a country's exports and imports is greater than 1 (Marshall-Lerner condition). See Ritzberger-Grünwald and Wörz (2010) for a recent discussion of the J-curve effect, the Marshall-Lerner condition and an overview of the current empirical literature.*

[9] *By using double exports weights, it is also possible to take third-market effects into account. See Hahn et al. (2001), Köhler-Töglhofer et al. (2006) and Köhler-Töglhofer (1999) on the computation of effective exchange rates and double weights.*

account price and cost developments in the individual countries. Typically, these exchange rates are deflated by an indicator of consumer price developments, the GDP deflator, or unit labor costs.

In this study, we use ECB effective exchange rates for comparability reasons.[10] The ECB constructs *harmonized competitiveness indicators* for the manufacturing industry of each euro area country (nominal effective exchange rate indices deflated by various price and cost indices for each Member State based on bilateral data on trade in manufactured goods).[11]

Chart 3 (right panel) shows the most important *competitiveness indicators for the Austrian manufacturing industry* over time: the nominal effective exchange rate of the euro and the ECB's harmonized competitiveness indicators (real effective exchange rates of the euro for Austria) deflated by the GDP deflator and unit labor costs. A rise in effective exchange rates is equivalent to a loss in price competitiveness.

The nominal effective exchange rate for Austria, while subject to some volatility, remained broadly stable between 1995 and 2010. Austria nonetheless gained in price competitiveness during that period because its real effective exchange rate was improving – particularly between 1995 and 2002 and when deflated by unit labor costs. Following a temporary deterioration after 2002, Austria's price competitiveness has since remained fairly unchanged. In the second half of the 1990s, the Austrian manufacturing industry had been able to raise productivity considerably and

therefore profited from the effects of European integration and the opening of Eastern European markets.[12] These special effects wore off gradually from the early 2000s, and productivity growth slowed. Another dampening effect came from exchange rate developments between 2002 and 2004 (chart 3).

Chart 4 compares long-term developments in Austria's price competitiveness – measured by the ECB's internationally comparable real harmonized competitiveness indicator – with that of other euro area countries. This comparison reveals that Austria has performed very well since 1995:
– Together with Germany, France and Finland, Austria belongs to the small group of euro area members that managed to *improve their long-term competitiveness between 1995 and 2010* (Austria: around +12%).
– Moreover, in terms of long-term improvements in price competitiveness, Austria is outranked only by Germany (around +23%).
– As mentioned earlier, Austria's price competitiveness improved above all between 1995 and 2002 and remained *broadly unchanged from 2004* (except in 2010). A euro area comparison shows that this is still a favorable result: Only one country (Germany) recorded markedly better results than Austria, and only three other countries (Finland, France and Italy[13]) recorded similar results.
– All other euro area countries posted in part dramatic losses in competitiveness. The countries that feature

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[10] *See ECB (2000) and ECB (2005) on the methodology used.*

[11] *The ECB computes most competitiveness indicators for two country groups, one small sample (euro area countries and 20 trading partners) and one large sample (euro area countries and 40 trading partners). We use the small sample as some of the indicators used in this article are not computed for the large sample.*

[12] *See Köhler-Töglhofer et al. (2006) for a detailed analysis of developments in Austria's price competitiveness.*

[13] *In Italy, however, competitiveness deteriorated sharply between 1995 and 2003.*

most prominently in the current economic policy discussion – Greece, Ireland, Spain, Portugal, and Italy – witnessed losses in price competitiveness between around 10% and 20% from 1995 onward. Price competitiveness in Ireland even deteriorated by more than 30% until 2007. Losses in price competitiveness were especially striking in Estonia and Slovakia, at more than 60% and 80%, respectively, which was mainly attributable to the massive eco-

nomic catching-up process in these countries.[14]

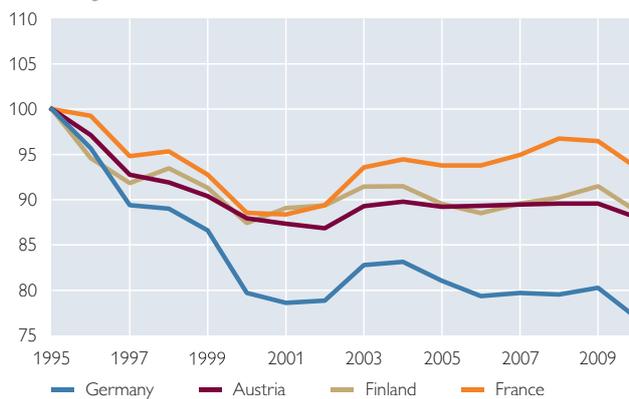### 3.3 Determinants of Cost Competitiveness

Chart 3 (right panel) also compares the evolution of unit labor costs in Austria with an average of 23 developed countries (AMECO database). Above all the indicator deflated by unit labor costs highlights that the price competitiveness of Austria's manufacturing sector improved sharply until

Chart 4

Real Harmonized Competitiveness Indicator, Deflated by GDP Deflator

Gains in Competitiveness
Cumulated growth rates, 1995 = 100

Germany   Austria   Finland   France

Unchanged Competitiveness
Cumulated growth rates, 1995 = 100

Slovenia   Netherlands
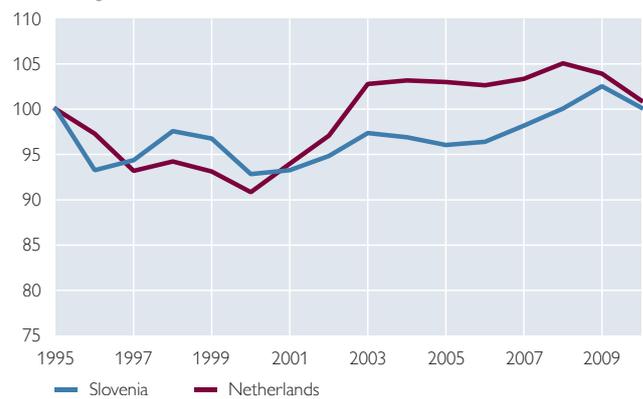
Losses of up to 20%
Cumulated growth rates, 1995 = 100

Portugal   Luxembourg   Cyprus
Greece   Spain   Ireland
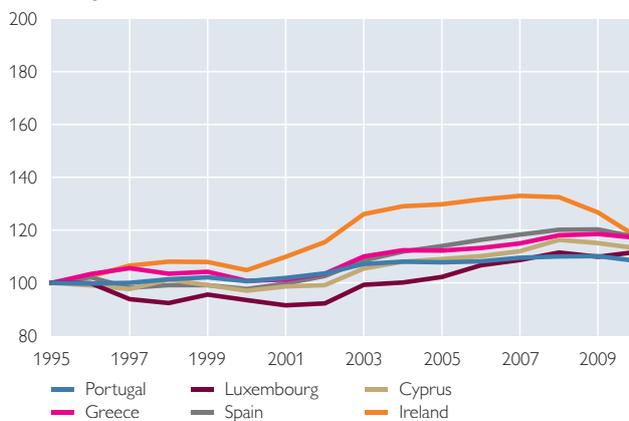
Losses above 20%
Cumulated growth rates, 1995 = 100

Italy   Slovakia   Estonia
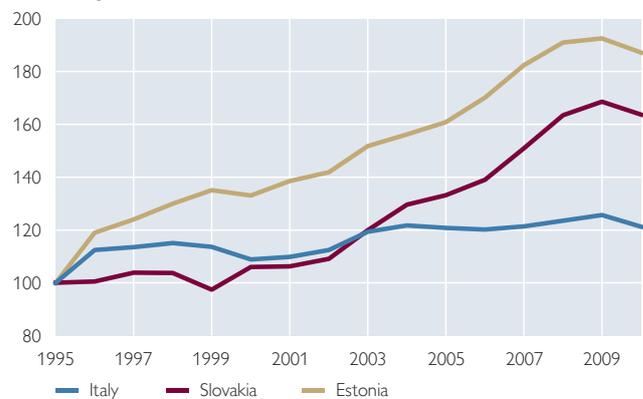
Source: ECB, authors' calculations.

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[14] *These losses occurred despite positive (qualitative) structural changes in the two countries (see e.g. Dulleck et al., 2005; Ito and Okubo, 2010).*

2002. The determinants of this rise in cost competitiveness are of special interest. By definition, *real unit labor costs* fall when nominal wages decline or nominal labor productivity increases (box 2). Moreover, real unit labor costs are identical to the adjusted labor share in GDP, and thus also indicative of the degree to which compensation is

productivity based (box 2). This means that – ceteris paribus – competitiveness improves when the adjusted labor share declines.

Chart 5 shows real unit labor costs, nominal wages, nominal labor productivity and manufacturing employment in Austria and selected other countries over time.[15] *Real unit labor costs* in

Determinants of Cost Competitiveness in Manufacturing

Real Unit Labor Costs/Adjusted Labor share

2000 = 100

Employment

2000 = 100

Nominal Labor Productivity
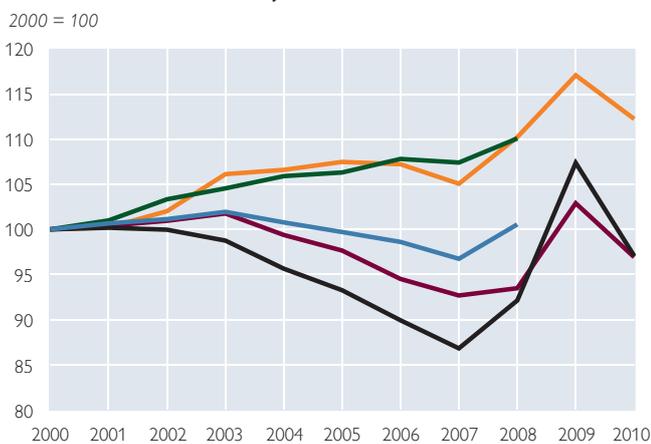
2000 = 100
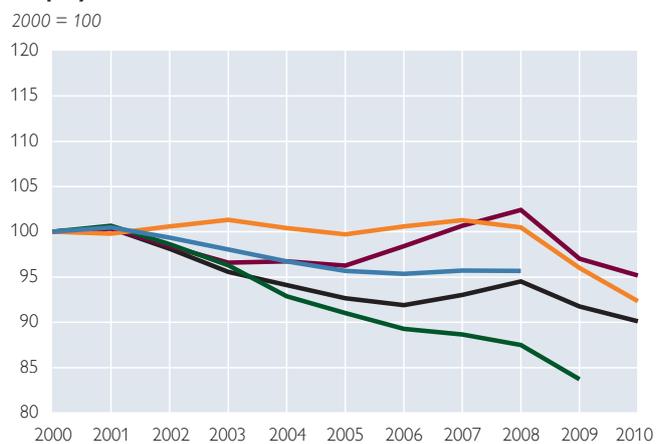
Nominal Per-Capita Wages

2000 = 100

EA-16   Germany   Austria   France   Italy
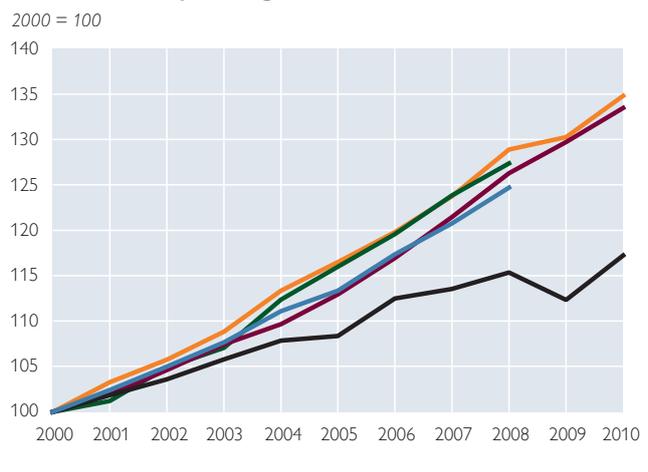
Source: European Commission (AMECO), authors' calculations; panel on employment: euro area-16 excluding the Netherlands.

[15] *For reasons of comparability, the data were obtained from the AMECO database (see References). Distortions may occur due to national differences in the handling of full-time equivalents. All euro area countries except Spain, France, Italy, the Netherlands and Austria record per-capita employment and not full-time equivalents in their employment statistics. During the crisis, above all Germany and Austria relied on short-term working arrangements, so that the employment figures for Austria understate employment developments when compared with Germany, but not when compared with Italy and France. Differences in the share of temporary agency work across countries are another source of distortions in the data.*

Box 2

Real Unit Labor Costs and Productivity-Based Wages

Real unit labor costs (ULCʳ) in manufacturing are defined by the relation of the real wage bill (WBʳ) per employee (PE) to real gross value added (Yʳ) per total employment (TE):[1]

$$ULC^r = \frac{WB^r / E}{Y^r / TE}$$

We calculate the wage bill by multiplying the average wage per employee and the number of employees. Then we deflate wages and gross value added by the producer price index, p_y, so that real unit labor costs can be written in the following form:

$$ULC^r = \frac{WB^r / E}{Y^r / TE} = \frac{w^n E / E}{Y^n / TE} \frac{p_y}{p_y} = \frac{w^n}{Y^n / TE} = w^n * \text{Prod}^{-1}$$

Hence, unit labor costs will drop in real terms as nominal wages decreases and as nominal labor productivity increases.

Productivity-based compensation implies that nominal wages rise or fall exactly in line with the sum of the changes in prices and productivity. If this is the case, the adjusted labor share of an industry remains constant. The labor share (LS) is defined as the quotient of an industry's nominal wage bill and its nominal value added, or $LS = WB^n / Y^n$. The labor share is adjusted so as to single out changes that arise from changes in the employment structure alone. If we adjust the labor share by the composition of employment (payroll and self-employed), the adjusted labor share (LS$_a$) can be written as

$$LS_a = \frac{WB^n}{Y^n} \frac{TE}{E} = \frac{w^n E}{Y^n} \frac{TE}{E} = w^n * \text{Prod}^{-1} = LSK^r$$

The adjusted share is therefore identical to real unit labor costs.

[1] *Nominal variables are indicated with an n, real variables with an r. See Marterbauer and Walterskirchen (2002) for relations between the labor share and real unit labor costs.*

the Austrian manufacturing industry – and hence the adjusted labor share – increased slightly between 2000 and 2003 and then declined markedly until 2007. That year, real unit labor costs were some 7% below the level observed in 2000. When the crisis started to unfold in 2008, unit labor costs first stagnated and then rose markedly in 2009. In 2010, they declined again to just below the 2000 level. Germany recorded very similar developments, but unit labor costs fell even faster than in Austria. In contrast, in France and Italy, unit labor costs increased almost every year until 2009. In 2010, unit labor costs in Italy were around 12% higher than in 2000. In the euro area as a whole, unit labor costs in 2008 were at the same level as in 2000.

While the evolution of nominal wages was rather inconspicuous in Austria compared with other countries, *labor productivity* rose markedly. Labor productivity can be improved either by cutting employment using existing technology or by keeping employment constant and upgrading the technology used. Even though Austria recorded more favorable employment developments than the reference countries, its manufacturing productivity rose much faster, which means that technological

advances must have played an important role in raising productivity. Germany was the only other country to record quite similar productivity developments up until 2007, but from 2008, productivity declined much more sharply in Germany than it did in Austria.

Overall, wage moderation (more specifically, a declining labor share in value added) certainly had a significant impact on Austria's manufacturing competitiveness, but it was by no means the only reason for the favorable development. What also mattered were productivity gains that resulted from stronger technology growth in Austria relative to its trading partners.

4 CMSA, Market Shares and Overall Competitiveness

Section 3 focused on the evolution of Austria's price competitiveness. This section addresses the role its overall competitiveness – i.e. price and non-price competitiveness – played in the gain or loss of market shares by Austrian exporters. Economic growth in Austria – like in any other highly developed country – is lower than the global average, as this average includes emerging market economies, which are in a catching-up process. Accordingly, we might expect global import demand to rise and Austria's market shares to decline over time. In addition, more and more countries are entering international markets but limiting imports to their own domestic markets. This would also serve as an explanation of dropping market shares. However, domestic exports have been growing at higher rates than domestic GDP. In some periods, Austria's export industry

managed to not only keep its market shares but even expand them (see below for details).

An analysis of constant market shares (CMSA) provides information on the factors underlying a country's export performance. Gains or losses in market shares that are not due to growth developments in the export market as a whole or specific market segments are ascribed to changes in price and non-price competitiveness (overall competitiveness, see chart 1).[16]

Changes in a country's export shares according to CMSA (box 3) can be broken down into the following effects: First, the difference between the growth rates of Austrian and global exports[17] *(total effect)* can be decomposed into a structural and a competition effect. While the *structural effect* describes gains or losses in market shares that can be attributed to structural changes in export demand for Austrian products, with competitiveness remaining constant, the *competition effect* covers the impact of price and non-price competitiveness. Second, the structural effect can be broken down into a market- and a product-related component, which allows us to analyze the reasons underlying this effect. While the *market effect* describes Austria's export performance in certain markets, the *product effect* captures the total performance of individual goods categories. In this contribution, we use CMSA to analyze the development of Austrian exports in the global market, the EU and the euro area.

4.1 Data Material Used

The analysis below for the period 2000 to 2009/10 uses two different data

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[16] *Constant market shares and unchanged competitiveness over time correspond to a long-term equilibrium as described in box 1.*

[17] *This comparison is also possible for other markets.*

sources. Our first data source is the *UN Comtrade database*[18], which contains global import and export data and was used to analyze changes in the *global share* of Austrian exports. The data set covers Austrian (global) goods exports (2000 to 2009) based on seven one-digit goods categories according to SITC Rev. 3.[19] This way, 90% (83%) of all goods exported by Austria (the world) are taken into consideration on average across all years. Goods that do not enter the analysis directly (beverages and tobacco, fuels and energy, as well as other unspecified goods) are assigned to a residual category. We analyze Austrian exports to 49 countries, with export shares ranging from 31% (Germany) to 0.1% (Chile) in 2009. This allows us to assign 95% (90%) of all Austrian (global) exports to specific countries on average over time; all other countries are included in an aggregate.

Between 2000 and 2008, Austria's (global) exports rose by 170% (148%) in nominal terms; in 2009, they dropped by 24%, respectively, owing to the financial and economic crisis. The share of Austrian exports in global exports was 1.02% in 2000, peaked at 1.24% in 2004 and came to 1.11% in 2009.

Given that UN Comtrade data are expressed in U.S. dollars for all countries, exchange rate changes also have an impact on our CMSA results, as market shares are over- or understated as a result of sharp exchange rate movements.

Our second data source[20] is the *European Commission's Comext database,*[21] which we use for analyzing Austria's market position in the EU and the euro area.[22] In this database, exports are expressed in euro, which reduces the impact of exchange rate changes in our CMSA results. This data set contains Austria's goods exports to the EU and all imports by EU-27 countries. The data – which are available for the period from 1999 to 2010 – are also used to analyze Austria's exports to the euro area. Exports are assigned to ten different product categories (in line with SITC Rev. 4)[23]. The Eurostat Comext database (unlike the UN Comtrade database) explicitly includes exports of "Mineral fuels."

4.2 Main Results

Chart 6 presents the main CMSA results on the international position of Austrian manufacturing (indexed to the year 2000). The left panel shows the market shares of Austrian manufacturing (total effect) over time and a breakdown into a structural effect and a competition effect, while the right panel shows a decomposition of the structural effect into market and product effects.

In the period from 2000 to 2004, Austrian exporters recorded gains in market shares, which started shrinking again from 2005 but remained broadly unchanged in the crisis year 2009. The competition effect was less pronounced but followed the same pattern over the

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[18] *United Nations Commodity Trade Statistics Database, freely accessible at http://comtrade.un.org/ (retrieved on August 10, 2011).*

[19] *See http://unstats.un.org/unsd/cr/registry/regcst.asp? Cl=14 (retrieved on September 28, 2011).*

[20] *UN Comtrade and Eurostat Comext data are not fully identical with Austrian national accounts data because different methods are used to compile the data.*

[21] *This is the Eurostat database on external trade for the EU and its Member States. See http://epp.eurostat.ec.europa.eu/newxtweb/ (retrieved on September 28, 2011).*

[22] *Comparing the analysis results based on both databases allows us to test the results for consistency and to gauge the impact of exchange rate effects.*

[23] *See http://unstats.un.org/unsd/trade/sitcrev4.htm (retrieved on September 28, 2011).*

Box 3

Constant Market Shares Analysis (CMSA)

The analysis of constant market shares goes back to the pioneering work of Tyszynski (1951) and was developed further by Richardson (1971a, 1971b) and Milana (1988). Skriner (2009) provided a comprehensive discussion of the theoretical aspects of CMSA, while Widodo (2010) highlighted the differences between the various approaches and contributed an in-depth analysis of the competition effect. CMSA is now a standard tool for explaining international competitiveness. Examples of recent applications are Skriner (2009) for Austria, Deutsche Bundesbank (2006) for Germany, and ECB (2005) for the euro area.

Our analysis is based on simple transformations and expansions of changes (d) in Austria's world market shares (Austrian exports, X^{AT} / global exports, X^W):

$$\frac{d\left(X^{AT}/X^W\right)}{X^{AT}/X^W} = \frac{dX^{AT}}{X^{AT}} - \frac{dX^W}{X^W} = \sum_i \sum_j \frac{X_{ij}^{AT}}{X^{AT}} \frac{dX_{ij}^{AT}}{X_{ij}^{AT}} - \sum_i \sum_j \frac{X_{ij}^W}{X^W} \frac{dX_{ij}^W}{X_{ij}^W} \tag{1}$$

The percentage change in Austria's world market shares thus corresponds to the difference between the growth rates of Austrian and global exports. It can be broken down into the sum of exports to all countries i and all products j. We expand the equation by the identical terms

$$+\sum_i \sum_j \frac{X_{ij}^{AT}}{X^{AT}} \frac{dX_{ij}^W}{X_{ij}^W} - \sum_i \sum_j \frac{X_{ij}^{AT}}{X^{AT}} \frac{dX_{ij}^W}{X_{ij}^W}$$

which allows us to transform and reinterpret equation 1 as follows:

$$\frac{d\left(X^{AT}/X^W\right)}{X^{AT}/X^W} = \underbrace{\sum_i \sum_j \left(\frac{X_{ij}^{AT}}{X^{AT}} - \frac{X_{ij}^W}{X^W}\right)\frac{dX_{ij}^W}{X_{ij}^W}}_{\text{structural effect}} + \underbrace{\sum_i \sum_j \left(\frac{dX_{ij}^{AT}}{X_{ij}^{AT}} - \frac{dX_{ij}^W}{X_{ij}^W}\right)\frac{X_{ij}^{AT}}{X^{AT}}}_{\text{competition effect}} \tag{2}$$

The structural effect quantifies changes in world market shares based on industry and regional specialization in combination with shifts in the world market structure. In contrast, the competition effect describes developments that are independent of market and industry growth. By rewriting the double sum, we can decompose the structural effect into

— a market effect $\sum_i \left(\frac{X_i^{AT}}{X^{AT}} - \frac{X_i^W}{X^W}\right)\frac{dX_i^W}{X_i^W}$

— a product effect $\sum_j \left(\frac{X_j^{AT}}{X^{AT}} - \frac{X_j^W}{X^W}\right)\frac{dX_j^W}{X_j^W}$ *and*

— a mixed effect (structural effect minus market and product effects).

The market effect denotes the regional distribution of exports, while the product effect captures the influence of product differentiation. The mixed effect represents differences between individual industries regarding the geographical focus of exports and can be considered a residual (negligible in this case).

entire period. The market effect was the dominant factor in the evolution of the structural effect, as demand growth in Austria's export markets was quite dynamic in a global comparison. A look at the product effect reveals a weakness, though: The goods Austria exported in the period under review do not belong to the fast-growing industries on a global scale.
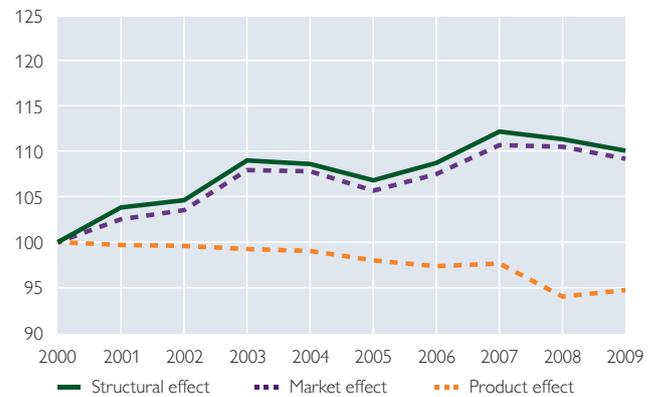
Chart 6

CMSA

Decomposition of the Market Shares

2000 = 100

Legend: Market shares — Structural effect — Competition effect
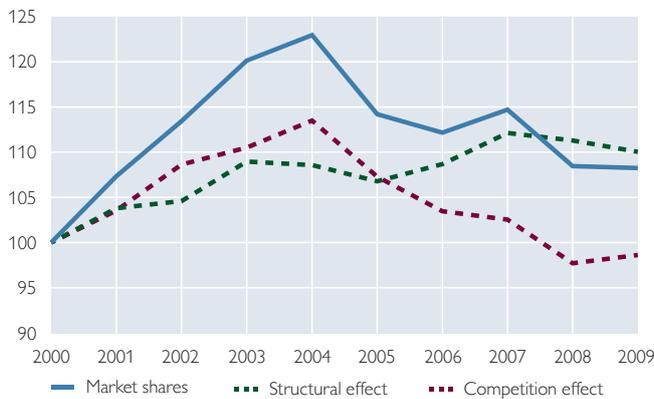
Decomposition of the Structural Effect

2000 = 100

Legend: Structural effect — Market effect — Product effect

Source: UN Comtrade, authors' calculations.

The market effect and the product effect can be broken down by countries (or country groups) and products. For reasons of clarity, we decided to present the effects based on three periods reflecting the distinct developments in market shares described above (chart 7):

— In the period from *2001 to 2004,* the Austrian export industry posted considerable gains in market shares. While losing ground in the Anglo-American region, Austria managed to expand significantly in its main export markets, Germany, Italy, and Switzerland, as well as the CESEE countries. Looking at the product range, Austrian exports of "Chemical products" declined, but a marked rise was recorded for "Manufactured goods" and "Machinery and transport equipment."

— In the second period, from *2005 to 2007,* the market effect again indicates an increase in market shares in Germany (between 2003 and

2008), but also in Italy, Switzerland and the CESEE countries (above all, the Czech Republic, Hungary, Romania, Slovenia and Slovakia). This period was also again characterized by a loss of market shares in the Anglo-American region and Asia (most notably China). As to the product effect, the tendencies observed in the first period continued: Austrian exporters were again able to expand their market shares in "Manufactured goods" and "Machinery and transport equipment" but lost ground in "Crude materials" and "Chemical products." Like in the first period, products that were assigned to the residual category contributed significantly to the negative effect.

— While Austria's market shares remained almost unchanged during the *financial and economic crisis,*[24] the dynamics observed earlier reversed. Austrian exporters lost some ground in Germany, Italy, Switzerland and

[24] *The financial and economic crisis caused GDP in Austria to contract only in 2009 (when looking at annual figures). On a quarterly basis, however, the economy contracted from the third quarter of 2008 to the second quarter of 2009 (flash estimate for Q2 2011). This is why we analyzed developments in the period of 2008 to 2009 separately. Please note that the total effects have to be smaller, as this period is shorter and effects are summed over the years.*

the CESEE countries, but gained market shares in the U.S.A. Looking at the product effect, the market shares gained earlier in "Manufactured goods" and "Machinery and transport equipment" were lost again. Products that are not explicitly covered seem to have had no influence in the third period.[25]

These results are corroborated by the analysis results based on Eurostat *Comext* *data* on Austria's export position in the EU and the euro area[26] (chart 8), and they are qualitatively consistent with the findings of Skriner (2009).[27]

Our analysis shows for all *three country samples* (world, EU, euro area) and the entire period under review *(2000 to 2009)* that Austria's neighbors in Central, Eastern and Southeastern Europe gained importance for the domestic export industry. The sharp

Chart 7

CMSA: Decomposition of the Structural Effect
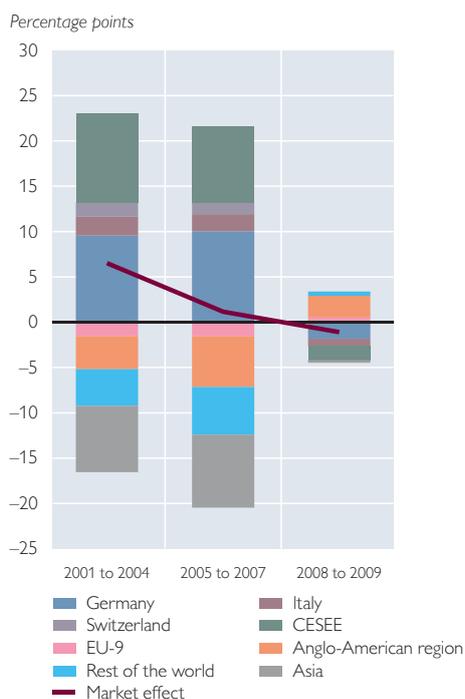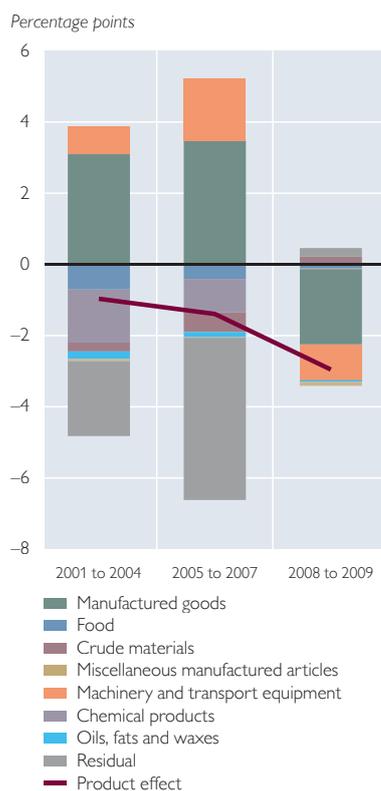
Source: UN Comtrade, authors' calculations.

[25] This impression is misleading, however: These products make a considerable negative contribution in 2008 – which is probably due to the sharp rise in oil prices – but their effect is even stronger and positive in 2009, so that the overall effect is slightly positive.

[26] Detailed results on the EU and the euro area can be found in the annex.

[27] Skriner (2009) conducted a CMSA on Austria based on OECD data for a panel of 13 countries between 1990 and 2006 (SITC Rev.3). The data on goods exports are converted to euro, partly adjusted and smoothed with a HP filter to eliminate short-term volatility. Naturally, the results are less volatile, but – despite the differences in the country samples – they are very similar in terms of tendency and direction of the overall effect as well as the competition, product and market effects.

increase in market shares in Germany comes as a surprise – Austria gained more market shares there than in any other country. Hungary, Italy and the Czech Republic follow by a wide margin. China and the U.S.A are at the other end of the spectrum, with the loss in market shares in these two countries being as high as the gains observed in Germany.

5 CMSA, Price and Non-Price Competitiveness

Based on our analysis of traditional price competitiveness indicators (section 3) and the CMSA results reported in section 4, we can now discuss, at least qualitatively, the role price competitiveness has played in shaping the export performance of Austrian manufacturers over time. One key result of the CMSA was that we can quantify the contribution of overall (i.e. price and non-price) competitiveness to changes in market shares. If price competitiveness improves or worsens along the lines of overall competitiveness (as established with the CMSA exercise), this indicates that price competitiveness either helped or hindered manufacturing exports. If price competitiveness patterns diverge from the changes in overall competiveness, then non-price competitiveness can be assumed to have played the dominant role.[28]

The top left panel in chart 8 compares the market shares of Austrian goods exports in world trade as well as in trade with other EU and euro area countries. While developments were broadly similar, Austria's market shares in Europe declined more sharply from 2004 than its global market shares. This is consistent with the findings

reported in section 2 that Austria's export share in the EU has dropped in recent years.

The top right panel in chart 8 shows the inverse of Austria's real effective exchange rate vis-à-vis all euro area countries and 20 other trading partners deflated by unit labor costs (the ECB's harmonized competitiveness indicator, see section 3). Using the inverse – where a rise indicates an improvement in competitiveness – makes it easier to compare the results with the competitiveness effect established through CMSA for the global, EU and euro area data sets, which are also depicted in this panel. This comparison highlights the stability of the results – the tendencies are identical for all three country groups. The differences between the EU and the euro area are remarkable, though. In the euro area, the structural effect remained relatively constant and developments were dominated by the competition effect, whereas in the EU, the structural effect (market effect due to the dynamic CESEE countries) was stronger and the competition effect was weaker than in the euro area.[29]

Both price and overall competitiveness improved between 2000 and 2002, which makes it impossible to single out the effects of non-price competitiveness, as the role of specific effects is unclear. The real effective exchange rate remained almost unchanged between 2003 and 2008, while Austria's competitiveness declined markedly between 2003/04 and 2008. This means that non-price competitiveness must have deteriorated in that period. In the crisis year 2009, price competitiveness dropped above all due to a considerable rise in unit labor costs. Austria's competitive posi-

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[28] With this method, it is impossible to determine whether or not the effects of price and non-price competitiveness are lagged.
[29] See the annex for detailed results.

Chart 8

Austria's Market Shares

2000 = 100

- EA-17
- EU-27
- World
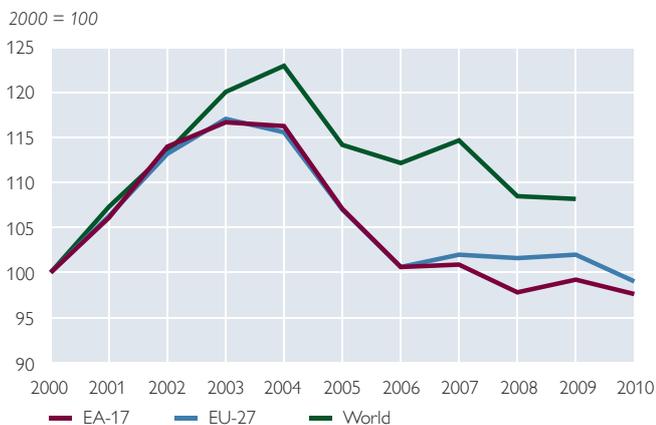
Competition Effect (CMSA) and Price Competitiveness

2000 = 100, competition effect   *2000 = 100, competition indicator*

- Competition effect (CMSA) – EA-17
- Competition effect (CMSA) – EU-27
- Competition effect (CMSA) – world
- Inverse of the harmonized competitiveness indicator – ULC

Market Effect

2000 = 100

- EA-17
- EU-27
- World

Product Effect

2000 = 100

- EA-17
- EU-27
- World
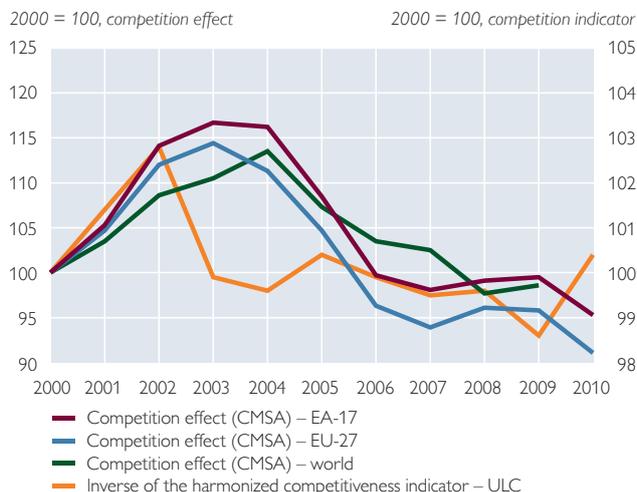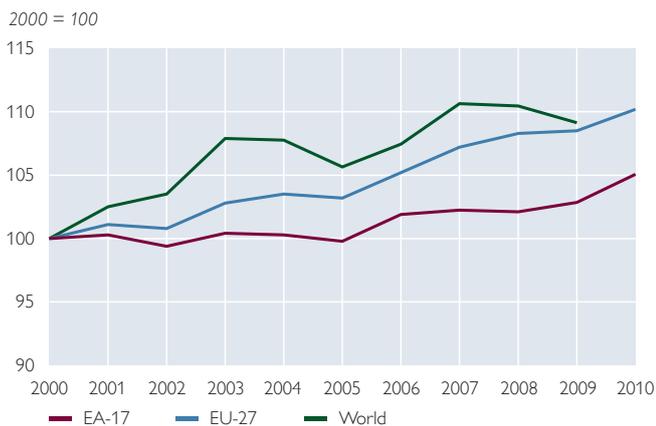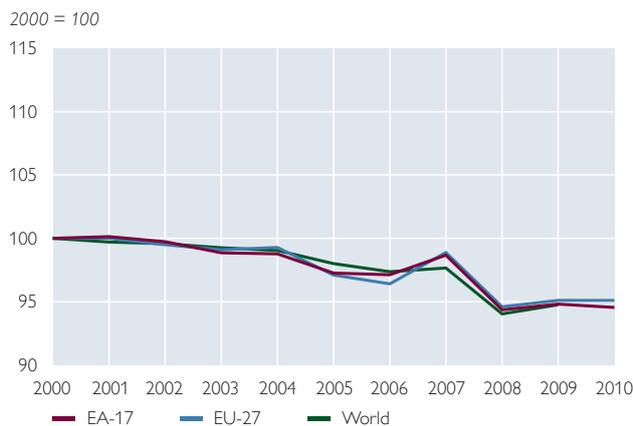
Source: UN Comtrade, Eurostat Comext, ECB, authors' calculations (results for Austria vis-à-vis the respective economic areas).

tion remained relatively constant, how-ever, which suggests that non-price competitiveness had a positive impact on overall developments that year. A (lagged) negative effect of the loss in price competitiveness on market shares was not observed until 2010. All in all, when compared to developments between 2000 and 2007, the crisis seems to have had a remarkably moderate effect on Austria's export market shares in the (post-)crisis years 2008 to 2010.

6 Conclusions

Austria's export industry was very quick to respond to the opening up of markets in Central, Eastern and South-eastern Europe; Austria was thus among the few euro area countries that quickly seized the opportunity to expand to this region. Against this backdrop, the country's international competitiveness improved markedly until the turn of the century; real effective exchange rates dropped until 2002, and relative unit labor costs even declined until 2004 – so that Austrian

exporters achieved considerable gains in market shares. However, this trend reversed in 2005 and 2006, when Austrian exporters' market shares declined, and between 2007 and 2010 their market shares remained broadly unchanged in trade with other EU and euro area countries. While market shares rose and fell in sync with gains and losses of price competitiveness, and especially decreases and increases in unit labor costs, improvements in non-price competitiveness helped cushion the impact of changes in price competitiveness. This means that the period of above-average growth in Austria's booming export industry had come to an end even before the economic crisis hit. Still, Austria managed to keep its market shares, thus doing better than most other euro area countries. In addition, employment and productivity remained high by international comparison; unlike many other countries, Austria was able to keep manufacturing employment steady almost until the outbreak of the crisis.

During the financial and economic crisis, however, Austria faced a considerable breakdown of exports as its export industry had targeted above all industries that were hit especially hard. Still, these losses have been largely recouped over the past 1½ years. During and shortly after the crisis, Austria's international competitiveness declined mainly due to a rise in unit labor costs, but this decline was only small compared with long-term patterns. Even market shares remained relatively unchanged by historical comparison. Following a temporary sharp decline during the crisis, productivity has since reached a new historical high. The crisis-related setback in demand may ultimately even have had a positive effect on the country's future competitive position: For one thing, Austrian export firms stepped up their diversification in terms of products and export markets, which had a significant positive impact even during the crisis and will likely reduce the vulnerability of Austrian exports to future exogenous shocks. And for another thing, firms in Austria (unlike in many other countries) made great efforts to keep employment stable during the crisis. These efforts were supported by accompanying economic policy measures, so that human capital losses were limited.

Still, in light of the global framework conditions and recent developments, world trade dynamics will remain a source of considerable uncertainty for a small open economy. Austrian exporters and economic policymakers are facing a major challenge: They have to continue diversifying in terms of export markets and product range, and they have to work on improving the country's international competitiveness on an ongoing basis.

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Annex

Overview of Results

Evolution of Austria's Exports and Market Shares

	Austria's export growth			Export growth			Change in Austria's export market shares		
	Euro area	EU	World	Euro area	EU	World	Euro area	EU	World
2000	15.39	16.00	7.43	23.68	23.79	14.49	−8.29	−7.79	14.49
2001	7.26	7.79	4.43	1.12	1.49	−2.92	6.14	6.30	−2.92
2002	5.47	5.60	9.96	−1.92	−0.89	4.28	7.39	6.49	4.28
2003	4.15	4.06	22.08	1.81	0.59	16.17	2.34	3.47	16.17
2004	8.66	8.17	24.17	8.93	9.48	21.83	−0.27	−1.31	21.83
2005	1.82	2.61	6.22	9.78	10.03	13.34	−7.96	−7.42	13.34
2006	6.60	7.87	13.97	12.67	13.85	15.76	−6.06	−5.98	15.76
2007	7.60	8.16	16.71	7.32	6.76	14.44	0.28	1.40	14.44
2008	1.92	4.07	9.99	5.01	4.45	15.44	−3.08	−0.38	15.44
2009	−18.67	−20.49	−23.71	−20.15	−20.87	−23.52	1.47	0.39	−23.52
2010	16.30	16.02		17.95	19.00		−1.66	−2.99	

Decomposition of the Changes in Market Shares

	Competition effect			Structural effect		
	Euro area	EU	World	Euro area	EU	World
2000	−4.77	−5.30	2.55	−3.53	−2.49	−7.06
2001	5.25	4.72	3.54	0.89	1.58	7.34
2002	8.39	6.99	4.91	−1.01	−0.50	5.67
2003	2.26	2.14	1.73	0.08	1.34	5.91
2004	−0.36	−2.72	2.70	0.09	1.41	2.34
2005	−6.70	−5.93	−5.48	−1.25	−1.49	−7.12
2006	−8.03	−8.04	−3.56	1.97	2.06	−1.79
2007	−1.61	−2.50	−0.90	1.89	3.91	2.27
2008	0.98	2.34	−4.71	−4.06	−2.72	−5.45
2009	0.40	−0.34	0.94	1.08	0.72	−0.19
2010	−4.24	−4.91		2.58	1.92	

Decomposition of the Structural Effect

	Market effect			Product effect			Mixed effect		
	Euro area	EU	World	Euro area	EU	World	Euro area	EU	World
2000	−1.11	−0.04	−9.61	−2.98	−2.86	−3.78	0.56	0.41	−0.31
2001	0.30	1.15	3.80	0.14	−0.03	−0.30	0.46	0.47	1.60
2002	−0.90	−0.36	0.76	−0.41	−0.46	−0.11	0.30	0.32	−0.10
2003	1.03	1.98	4.18	−0.87	−0.40	−0.34	−0.08	−0.24	0.27
2004	−0.12	0.70	−0.36	−0.09	0.15	−0.22	0.30	0.56	−0.02
2005	−0.51	−0.27	−1.64	−1.54	−2.17	−1.05	0.80	0.94	1.38
2006	2.12	1.90	1.77	−0.13	−0.74	−0.65	−0.02	0.90	0.70
2007	0.32	1.98	3.16	1.60	2.61	0.30	−0.03	−0.68	−0.10
2008	−0.14	0.98	−0.74	−4.38	−4.32	−3.71	0.45	0.63	3.14
2009	0.73	0.18	−1.13	0.48	0.50	0.76	−0.13	0.05	−0.69
2010	2.16	1.60		−0.27	−0.05		0.69	0.37	

Source: UN Comtrade, Eurostat Comext, authors' calculations.

Note: Results for Austria vis-à-vis the respective economic areas. See box 3 for a detailed description of the respective effects.

Product Effect

World	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Food	0.03	−0.07	−0.12	−0.30	−0.23	−0.13	−0.11	−0.17	−0.16	0.06
Crude materials	0.02	0.03	0.00	−0.10	−0.17	−0.11	−0.20	−0.26	−0.23	0.45
Oils, fats and waxes	0.05	0.00	−0.06	−0.09	−0.07	−0.01	−0.04	−0.09	−0.15	0.10
Chemical products	−0.05	−0.12	−0.34	−0.54	−0.49	−0.42	−0.27	−0.25	−0.18	0.15
Manufactured goods	0.90	−0.31	0.39	1.03	1.99	0.80	1.26	1.41	0.87	−2.98
Machinery and transport equipment	0.18	−0.04	0.04	0.20	0.56	0.63	0.56	0.56	0.38	−1.39
Miscellaneous manufactured articles	0.04	0.00	−0.01	−0.06	0.01	−0.03	0.01	0.01	−0.01	−0.10
Residual	−4.95	0.20	−0.01	−0.48	−1.82	−1.78	−1.86	−0.93	−4.22	4.46
Product effect	−3.78	−0.30	−0.11	−0.34	−0.22	−1.05	−0.65	0.30	−3.71	0.76

Source: UN Comtrade, SITC Rev. 3. The residual covers the difference between the sum total and the sum of the 7 goods categories; authors' calculations.

EU-27	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Food	−0.23	−0.12	−0.04	−0.06	−0.10	−0.13	−0.12	−0.10	−0.08	0.04	−0.09
Beverages and tobacco	0.00	0.01	0.00	0.00	0.02	0.01	0.02	0.05	0.01	−0.02	0.03
Crude materials	0.03	0.00	0.01	0.00	0.00	0.00	−0.02	0.00	0.00	0.05	0.16
Mineral fuels	−3.91	0.14	0.30	−0.34	−1.05	−2.55	−1.62	0.08	−3.20	4.39	−3.00
Animal and vegetable oils, facts and waxes	0.02	−0.02	−0.04	−0.01	−0.03	−0.03	−0.06	−0.01	−0.09	0.07	−0.04
Chemical products	−0.63	−0.22	−0.29	−0.10	−0.45	−0.54	−0.48	−0.32	−0.09	0.30	−0.58
Manufactured goods	2.03	0.02	−0.18	−0.04	1.08	0.59	1.63	1.23	−0.24	−2.94	2.33
Machinery and transport equipment	0.40	0.01	−0.17	−0.02	0.46	0.27	0.47	0.54	−0.16	−1.40	0.93
Miscellaneous manufactured articles	0.30	0.05	0.02	0.00	0.04	0.04	0.09	0.09	0.02	−0.10	0.09
Other unspecified goods	−0.86	0.09	−0.07	0.16	0.18	0.19	−0.67	1.05	−0.49	0.10	0.11
Product effect	−2.86	−0.03	−0.46	−0.40	0.15	−2.17	−0.74	2.61	−4.32	0.50	−0.05

Source: Eurostat Comext, SITC Rev. 4.; authors' calculations.

Euro area-17	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Food	−0.19	−0.10	−0.03	−0.05	−0.05	−0.09	−0.07	−0.05	−0.04	0.01	−0.05
Beverages and tobacco	−0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.05	0.01	−0.01	0.02
Crude materials	0.17	−0.02	−0.01	0.00	0.08	0.04	0.06	0.04	0.01	−0.13	0.39
Mineral fuels	−4.55	0.24	0.32	−0.38	−1.02	−2.74	−1.72	0.22	−3.57	4.87	−3.22
Animal and vegetable oils, facts and waxes	0.02	−0.02	−0.04	−0.01	−0.04	−0.03	−0.06	−0.01	−0.09	0.08	−0.05
Chemical products	−0.77	−0.26	−0.38	−0.12	−0.53	−0.70	−0.56	−0.41	−0.10	0.37	−0.71
Manufactured goods	2.23	−0.10	−0.25	−0.04	1.08	0.62	1.77	1.26	−0.25	−3.26	2.53
Machinery and transport equipment	0.27	0.03	−0.22	0.05	0.38	0.31	0.33	0.46	−0.10	−1.33	0.77
Miscellaneous manufactured articles	0.33	0.06	0.00	0.01	0.04	0.04	0.11	0.08	0.03	−0.10	0.09
Other unspecified goods	−0.48	0.30	0.21	−0.32	−0.04	0.99	0.00	−0.05	−0.27	−0.02	−0.05
Product effect	−2.98	0.14	−0.41	−0.87	−0.09	−1.54	−0.13	1.60	−4.38	0.48	−0.27

Source: Eurostat Comext, SITC Rev. 4.; authors' calculations.

Note: Results for Austria vis-à-vis the respective economic areas.

Market Effect

	2000			2001			2002			2003			2004			2005		
	World	EU	EA	World	EU	EA	World	EU	EA	World	EU	EA	World	EU	EA	World	EU	EA
Australia	−0.03			0.07			−0.09			−0.13			−0.13			−0.09		
Belgium and Luxembourg	−0.06	−1.30	−1.76	−0.05	−0.20	−0.27	−0.12	−0.26	−0.36	−0.29	0.06	0.08	−0.35	−0.60	−0.80	−0.19	−0.68	−0.93
Brazil	−0.04			0.00			0.06			−0.01			−0.12			−0.08		
Bulgaria	0.05	0.08		0.02	0.02		0.02	0.00		0.08	0.02		0.07	0.03		0.07	0.01	
Canada	−0.37			0.24			−0.01			−0.23			−0.35			−0.33		
Chile	−0.04			0.01			0.01			−0.05			−0.06			−0.07		
China	−0.85			−0.24			−0.61			−1.25			−1.61			−0.88		
Croatia	0.01			0.13			0.18			0.36			0.19			0.14		
Czech Republic	0.27	0.70		0.31	0.41		0.74	0.13		0.13	0.13		0.71	0.48		0.34	0.19	
Cyprus	0.00	−0.01	−0.02	0.00	−0.01	−0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	−0.01	−0.02	0.00	−0.01	−0.02
Denmark	0.00	−0.15		0.00	−0.02		0.00	−0.05		−0.01	0.05		−0.02	−0.08		−0.01	−0.10	
Egypt	0.01			0.00			0.00			0.00			0.00			−0.01		
Estonia	−0.01	−0.04	−0.06	0.00	0.00	−0.01	0.00	−0.01	−0.01	0.00	−0.01	−0.01	0.00	−0.02	−0.02	0.00	−0.02	−0.03
Finland	0.00	−0.15	−0.21	0.00	0.02	0.02	0.00	0.00	0.01	0.01	−0.02	−0.03	0.00	−0.06	−0.08	−0.01	−0.10	−0.14
France	−0.04	−1.95	−2.66	0.01	0.00	0.00	−0.01	0.37	0.50	−0.07	−0.09	−0.12	−0.09	−0.52	−0.71	−0.06	−0.51	−0.70
Germany	1.56	5.32	6.58	−0.74	0.20	0.25	0.22	−1.04	−1.30	5.51	0.70	0.87	4.57	1.68	2.11	2.07	2.05	2.55
Greece	0.00	−0.19	−0.26	0.00	0.01	0.01	0.00	0.04	0.06	0.04	−0.09	−0.12	0.01	−0.04	−0.05	0.00	−0.02	−0.03
Hong Kong	−0.54			0.15			−0.08			−0.31			−0.45			−0.26		
Hungary	0.49	1.77		0.23	0.42		0.46	0.30		0.99	0.25		0.89	0.57		0.29	0.33	
India	−0.05			0.03			−0.09			−0.17			−0.27			−0.34		
Indonesia	−0.04			0.02			0.00			−0.01			−0.14			−0.10		
Ireland	−0.04	−0.44	−0.59	−0.01	−0.04	−0.05	−0.01	0.03	0.04	−0.02	0.24	0.32	−0.07	−0.06	−0.08	0.00	−0.08	−0.12
Israel	−0.05			0.03			0.00			−0.01			−0.06			−0.03		
Italy	0.38	0.37	0.35	−0.04	0.04	0.04	0.21	−0.02	−0.02	0.94	0.02	0.02	0.96	0.26	0.30	0.38	0.18	0.19
Japan	−0.99			0.38			0.15			−0.56			−0.77			−0.52		
Latvia	0.00	−0.01		0.00	−0.01		0.00	0.00		0.01	0.00		0.01	−0.01		0.00	−0.01	
Lithuania	0.00	−0.03		0.00	−0.03		−0.01	−0.02		−0.01	−0.01		0.00	−0.02		0.00	−0.05	
Luxembourg		−0.05	−0.07		−0.03	−0.04		0.01	0.01		−0.02	−0.03		−0.04	−0.06		−0.01	−0.02
Malaysia	−0.27			0.12			−0.08			−0.05			−0.28			−0.09		
Malta	0.00	−0.03	−0.05	0.00	0.02	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mexico	−0.63			0.16			0.00			−0.03			−0.32			−0.25		
Netherlands	−0.13	−1.33	−1.80	0.02	0.08	0.11	0.01	0.03	0.03	−0.14	−0.05	−0.07	−0.24	−0.56	−0.76	−0.12	−0.85	−1.17
Norway	0.00			0.01			−0.01			−0.03			−0.05			−0.03		
Poland	0.04	−0.01		0.02	0.00		0.08	0.00		0.20	0.00		0.24	−0.02		0.12	−0.01	
Portugal	0.00	−0.18	−0.25	0.00	−0.02	−0.03	0.00	0.04	0.05	−0.04	0.02	0.02	−0.08	−0.05	−0.07	0.04	−0.11	−0.15
Romania	0.11	0.15		0.10	0.09		0.10	0.05		0.27	0.09		0.35	0.23		0.24	0.27	
Russia	0.03			0.09			0.06			0.12			0.21			0.22		
Saudi Arabia	−0.02			−0.01			−0.01			−0.04			−0.05			−0.09		
Sweden	0.00	−0.35		0.00	0.15		0.01	0.00		0.01	−0.05		0.00	−0.11		−0.01	−0.15	
Switzerland	0.15			0.11			0.16			0.64			0.65			0.34		
Serbia	0.02			0.06			0.08			0.13			0.10			−0.03		
Singapore	−0.38			0.25			−0.01			−0.27			−0.45			−0.26		
Slovenia	0.01	0.29	0.36	0.01	0.06	0.08	0.12	0.04	0.05	0.44	0.10	0.13	0.48	0.32	0.41	0.23	0.34	0.43
Slovakia	0.13	0.30	0.37	0.14	0.18	0.23	0.13	0.07	0.09	0.40	0.15	0.19	0.36	0.24	0.31	0.19	0.19	0.24
Spain	0.01	−0.75	−1.06	0.00	−0.06	−0.08	0.00	−0.03	−0.05	0.03	−0.16	−0.23	−0.07	−0.43	−0.59	−0.05	−0.44	−0.62
Thailand	−0.15			0.00			−0.04			−0.16			−0.21			−0.23		
Turkey	0.01			0.04			−0.03			−0.03			−0.02			−0.04		
Ukraine	0.00			0.01			0.01			0.03			0.04			0.02		
United Kingdom	−0.09	−2.03		0.00	−0.16		−0.06	−0.02		−0.10	0.66		−0.18	−0.49		−0.10	−0.65	
U.S.A.	−2.79			0.93			−0.27			−1.18			−2.12			−1.50		
Rest of the world	−1.15			−0.10			−0.30			−0.90			−1.39			−0.90		
Market effect	−5.53	−0.04	−1.11	2.51	1.15	0.30	0.97	−0.36	−0.90	4.25	1.98	1.03	−0.12	0.70	−0.12	−1.97	−0.27	−0.51

Source: UN Comtrade, Eurostat Comext; authors' calculations.

Market Effect

	2006			2007			2008			2009			2010		
	World	EU	EA	World	EU	EA	World	EU	EA	World	EU	EA	World	EU	EA
Australia	−0.07			−0.10			−0.13			0.10					
Belgium and Luxembourg	−0.15	−0.53	−0.72	−0.25	−0.39	−0.54	−0.23	−0.31	−0.43	0.41	1.17	1.57		−0.95	−1.27
Brazil	−0.10			−0.15			−0.20			0.14					
Bulgaria	0.08	0.07		0.09	0.13		0.09	0.04		−0.20	−0.15			0.04	
Canada	−0.25			−0.19			−0.15			0.41					
Chile	−0.04			−0.06			−0.08			0.10					
China	−1.04			−1.16			−1.05			0.64					
Croatia	0.18			0.21			0.21			−0.34					
Czech Republic	0.52	0.46		0.57	0.39		0.56	0.32		−0.74	−0.71			0.83	
Cyprus	0.00	−0.01	−0.01	0.00	−0.01	−0.02	0.00	−0.01	−0.02	0.00	0.02	0.03		−0.01	−0.01
Denmark	−0.01	−0.12		−0.01	−0.05		0.00	−0.04		−0.01	0.18			−0.09	
Egypt	0.00			−0.01			−0.03			0.02					
Estonia	0.05	0.02	0.03	0.00	−0.01	−0.02	0.00	0.01	0.01	0.00	0.04	0.05		−0.04	−0.05
Finland	−0.01	−0.13	−0.18	−0.01	−0.06	−0.09	−0.01	−0.04	−0.05	0.02	0.24	0.33		−0.13	−0.18
France	−0.05	−0.45	−0.62	−0.07	−0.44	−0.62	−0.13	−0.40	−0.55	0.16	1.20	1.62		−0.97	−1.30
Germany	4.40	3.76	4.74	3.57	1.47	1.88	3.05	1.05	1.36	−4.85	−3.81	−5.14		4.90	6.39
Greece	−0.01	−0.11	−0.15	0.00	−0.08	−0.11	0.01	−0.08	−0.11	−0.02	0.13	0.18		0.02	0.03
Hong Kong	−0.30			−0.25			−0.14			0.22					
Hungary	0.46	0.50		0.60	0.37		0.41	0.19		−0.84	−0.83			0.57	
India	−0.28			−0.26			−0.52			0.24					
Indonesia	−0.02			−0.09			−0.28			0.16					
Ireland	−0.04	−0.08	−0.11	−0.05	−0.06	−0.08	0.01	0.08	0.11	0.08	0.23	0.31		−0.01	−0.01
Israel	−0.02			−0.05			−0.04			0.05					
Italy	0.73	0.31	0.33	0.77	0.15	0.17	0.49	0.05	0.06	−1.30	−0.37	−0.50		0.33	0.40
Japan	−0.49			−0.29			−0.82			1.12					
Latvia	0.01	−0.02		0.01	−0.01		0.00	0.00		−0.01	0.04			−0.03	
Lithuania	0.00	−0.04		−0.01	−0.03		−0.01	−0.05		0.03	0.12			−0.09	
Luxembourg		−0.06	−0.08		0.02	0.02		−0.03	−0.03		0.06	0.08		−0.01	−0.01
Malaysia	−0.13			−0.10			−0.06			0.15					
Malta	0.00	−0.01	−0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	
Mexico	−0.30			−0.19			−0.17			0.40					
Netherlands	−0.19	−0.89	−1.22	−0.23	−0.54	−0.75	−0.24	−0.66	−0.90	0.33	1.40	1.88		−1.68	−2.24
Norway	−0.03			−0.04			−0.01			0.02					
Poland	0.24	0.03		0.35	0.08		0.38	0.06		−0.41	−0.12			0.14	
Portugal	−0.02	−0.15	−0.20	−0.03	−0.06	−0.09	−0.03	−0.07	−0.09	0.06	0.22	0.30		−0.11	−0.15
Romania	0.29	0.41		0.49	0.40		0.24	0.14		−0.53	−0.46			0.25	
Russia	0.33			0.41			0.27			−0.29					
Saudi Arabia	−0.05			−0.05			−0.08			0.06					
Sweden	−0.01	−0.18		−0.01	−0.14		0.00	−0.03		−0.01	0.32			−0.40	
Switzerland	0.43			0.47			0.44			−0.47					
Serbia	0.09			0.15			0.09			−0.13					
Singapore	−0.34			−0.18			−0.36			0.41					
Slovenia	0.28	0.33	0.42	0.46	0.40	0.52	0.28	0.22	0.29	−0.58	−0.59	−0.79		0.48	0.63
Slovakia	0.43	0.41	0.52	0.41	0.32	0.41	0.31	0.21	0.27	−0.37	−0.37	−0.50		0.45	0.59
Spain	−0.01	−0.44	−0.61	−0.02	−0.28	−0.39	0.00	−0.02	−0.03	0.10	0.98	1.31		−0.50	−0.67
Thailand	−0.09			−0.11			−0.22			0.25					
Turkey	−0.07			−0.09			−0.08			0.14					
Ukraine	0.03			0.08			0.08			−0.10					
United Kingdom	−0.18	−1.17		−0.05	0.39		−0.02	0.36		0.22	1.22			−1.41	
U.S.A.	−1.23			−0.54			−0.73			2.47					
Rest of the world	−1.28			−1.08			−1.26			1.49					
Market effect	1.72	1.90	2.12	2.96	1.98	0.32	−0.17	0.98	−0.14	−1.19	0.18	0.73		1.60	2.16

Source: UN Comtrade, Eurostat Comext; authors' calculations.

European Financial Supervision: The Long Road to Reform

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The financial crisis has shown the inadequacy of financial market regulation and supervision in the EU. As the integration of Europe's financial market progressed, market participants continued to be supervised nationally and the scope of regulation remained mainly limited to microprudential aspects. Leading experts therefore called for financial supervision to be integrated at EU level and for regulators to place a greater emphasis on systemic risk. Following lengthy negotiations, the Council of the European Union and the European Parliament have since approved a reform based on proposals made by the European Commission. The legislative process for implementing the reform – in fact a good example of how legislative decision-making procedures work under the provisions of the Lisbon Treaty – highlighted the political interests of the parties involved and the differences between them. The new supervisory architecture that came into force on January 1, 2011, was designed to sustain financial stability.

Like all markets, financial markets have to be embedded in a suitable institutional framework[2] in order to function. The purpose of this framework is to assure that treaty requirements are fulfilled and that market participants can compete on a level playing field. Such a framework has the key aims of ensuring consumer protection and financial stability, particularly by preventing financial market crises and panics with a systemic dimension. Other problems that may arise in financial markets are the asymmetry of information between borrowers and lenders and negative external effects, since the difficulties encountered by one financial market participant can undermine confidence in other market participants whose actions are sound.[3] More recently, for example, the collapse of Lehman Brothers in September 2008 shook confidence so profoundly that activities on the interbank market came to a virtual standstill. Aside from the advantages that smoothly function-ing financial markets hold for a modern economy, avoiding instability moreover entails substantial cost savings. Laeven (2011) estimates that financial crises have led to average cumulated output losses of 33.7% of GDP since 1970 and caused sovereign debt to rise by 26.2% of GDP on average.

The current financial and economic crisis has exposed substantial weaknesses in this institutional framework. The assumption that self-regulation would suffice to discipline the markets, and that "light touch" supervision would safeguard financial stability proved to be misguided.[4] Supervisory structures focusing exclusively on the national market were no longer adequate in light of the increasing amount of cross-border activity of financial institutions. This created a need for extensive reforms of financial supervision at the European and the international level in order to eliminate these weaknesses.

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[2] *Here, institutions are understood to be rules created by society to structure political, economic and societal interactions (North, 1991).*

[3] *See Baltensberger (2005).*

[4] *See the Turner Review published by the U.K.'s Financial Services Authority (2009).*

This article outlines the ensuing reform at EU level, from the assessment of the existing problems and the description of the legislative process through to the introduction of a new supervisory framework. It focuses in particular on the interaction between the legislative bodies of the EU involved in the process: the European Commission, the Council of the EU and the European Parliament. This interaction was key in shaping the new financial supervisory structure yet took place, in part, "behind closed doors." Hence this paper aims at highlighting how the new regulations were adopted. Moreover, the underlying legislative process merits a closer look as such, given its relevance for both monetary policy and financial markets. The article is based on draft proposals and minutes of meetings as well as on interviews with members of the EU Council and of the European Parliament who participated in informal negotiations during the legislative process. The insights thus gained should make the motives and intentions of the parties involved as well as their contributions to the outcome of the reform more transparent. The paper is not intended to assess the institutions that evolved from this reform process, because such an assessment would be premature at the current juncture.

The article is structured as follows: Section 1 briefly outlines the causes of the crisis, focusing mainly on the weaknesses in the supervisory structures that used to be in place. Section 2 describes the proposals put forward by groups of experts which resulted in a number of draft regulations and draft directives proposed by the European Commission. These draft proposals, which are discussed in section 3, formed the basis for the ordinary legislative procedure, which ultimately led to the creation of the new European System of Financial Supervisors (ESFS), the new European supervisory authorities and the European Systemic Risk Board (ESRB). This legislative procedure is outlined in section 4. Section 5 reports on the initial measures taken by the new financial market supervisors and evaluates the entire process. Section 6 summarizes and draws conclusions.

1 The Lessons of the Crisis for Financial Supervision

There is already extensive (and growing) literature on the causes of the financial market crisis and its transmission across the globe.[5] The De Larosière report (High-Level Group on Financial Supervision in the EU, 2009) and the Turner Review (Financial Services Authority, 2009) also provide key policy recommendations regarding regulation and supervision. The identified causes for financial crisis include macroeconomic factors, inadequate risk management by market participants and regulatory authorities, and misjudgments by credit rating agencies – as well as weaknesses in the existing supervisory framework and in both microprudential and macroprudential supervision.[6]

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[5] *Blanchard (2009) provides a brief overview of the triggers and amplification mechanisms of the crisis. De la Dehesa (2010) identifies 12 types of market and government failures that led to the financial crisis. Laeven (2011) provides a comprehensive review of the current literature on the crisis and on possible solutions. Johnson and Kwak (2010), for example, give a broader overview of the current problems on the financial market, particularly in the United States. Kindleberger and Aliber (2005) and Reinhart and Rogoff (2009) provide systematic analyses of major financial market crises in recent centuries.*

[6] *See the De Larosière Report (2009), p. 7ff.*

The primary objective of microprudential supervision is to monitor individual financial institutions and ensure that they do not default, thus protecting both the institution itself and its customers. By contrast, macroprudential oversight aims to identify risks to the entire financial system and prevent negative effects for the whole economy.

Microprudential supervision has not kept pace with the progressive integration of the financial markets. Within the EU, cross-border bank activities had increased substantially in the years prior to the crisis. Supervision, meanwhile, remained divided along strict national lines. The powers of supervisory authorities varied across countries, both in terms of how audits were carried out and in terms of the options for sanctioning institutions found to have deficiencies, and this created a breeding ground for regulatory arbitrage. Furthermore, cooperation between the supervisory authorities was not always adequate, particularly for cross-border banking groups. In addition, EU requirements were not always consistently applied and implemented. The so-called Lamfalussy process launched as early as 2001 in order to foster convergence in national supervisory practices across the EU, while having entailed improvements in many areas, had failed to effectively solve the underlying problems. One of the outcomes of the Lamfalussy process was the creation of three "level 3 committees":
– the Committee of European Securities Regulators (CESR),
– the Committee of European Banking Supervisors (CEBS),

– and the Committee of European Insurance and Occupational Pensions Supervisors (CEIOPS).
These three committees, essentially administrative networks of national supervisors installed to prepare legislative and implementing measures at the expert level were also tasked with harmonizing supervisory activities within the EU – but they could issue only recommendations that were not binding for the individual members. In addition, the committees had no effective tools for arbitrating or mediating between the "home" and "host country" supervisors in conflicts over a bank's cross-border activities, or in cases of non-compliance or malcompliance with EU law.

Another problem was the lack of supervision at the macroprudential level. The supervisory authorities focused on the individual institutions, particularly on banking institutions, thus taking little account of systemic risk. However, the origins of the current financial crisis – most notably the rising real estate prices in the U.S.A. – and previous crises show that deviations of asset prices from their fundamentally justified levels are often contributing factors. Last but not least, the increase in cross-border financial market activities simplified the transmission of financial shocks.[7]

The fact that macroprudential oversight was defective is somewhat surprising given that the importance of the macroeconomic setting in the onset of financial crises was far from unknown[8] and that the potential systemic risks arising from externalities in the finan-

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[7] See Allen et al. (2011), chapter 2, for a comprehensive overview of the effects of cross-border bank activities on financial market stability.

[8] See Kindleberger and Aliber (2005); the first edition of this book was published as early as 1978.

cial sector had long been a topic of research.[9] The De Larosière report therefore cites ineffective early warning mechanisms for detecting macroprudential risk as one of the root causes of the financial crisis.

2 The Basis of the European Supervisory Reform

The financial and economic crisis highlighted the need to reform the European financial supervision architecture, a need that was voiced on a number of occasions also by the Oesterreichische Nationalbank (OeNB). In several press releases in 2008[10] the OeNB recommended establishing a decentralized European System of Banking Supervisors, based on a roadmap with defined milestones and timelines. The OeNB argued that progress toward a fully integrated internal market and the evolution of cross-border banking groups had rendered the national supervisory structures insufficient, making it necessary to "Europeanize" supervision.

To initiate the reform of the European supervisory framework, the European Commission appointed a high-level expert group chaired by Jacques de Larosière. In February 2009 this group presented its report ("High Level Group on Financial Supervision in the EU," or "the De Larosière report"), which analyzes the causes of the crisis and contains 31 recommendations concerning both the supervision and the regulation of the financial markets. The recommendations comprise a comprehensive list of specific strategies for correcting weaknesses in regulation and supervision. The key proposals outlined in the De Larosière report include introducing a European Systemic Risk Council for monitoring macroprudential risk; strengthening the national supervisors; and transforming the level 3 committees into independent authorities that have binding mediation powers over banks with cross-border activities and are authorized to adopt binding supervisory standards and technical decisions. Moreover, the report called for harmonizing regulatory and supervisory powers further. Another key requirement specified in the report was to expand the tasks of the ECB and the ESCB in macroprudential oversight, in line with the financial stability mandate of central banks. The recommendations in the De Larosière report were received favorably among other experts.[11]

In its Communication for the Spring European Council of 2009, the European Commission[12] welcomed the recommendations outlined in the De Larosière report and announced an ambitious reform of the European financial system for that very year. The Communication stated that the Commission would "present a European financial supervision package" before the end of May 2009 and that the legislative changes to adopt these proposals would follow in the autumn. The aim of the reform was to ensure that all financial market participants would be subject to appropriate regulation and supervision, grounded in the values of accountabil-

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[9] See the survey by De Bandt and Hartmann (2002).

[10] www.oenb.at/de/presse_pub/aussendungen/2008/2008q4/masterplan_europaeisches_bankenaufsichtssystem. jsp#tcm:14-155036 and
www.oenb.at/de/presse_pub/aussendungen/2008/2008q4/pa_20081113_gouverneur_nowotny_spricht_ sich_in_bruessel_fuer_europaeisches_modell_der_bankenaufsicht_aus.jsp#tcm:14-180447 (both retrieved on October 4, 2011).

[11] See Acharya (2009) and Goodhart and Schoenmaker (2009).

[12] See European Commission (2009a).

ity, integrity, transparency and consistency.

On May 27, 2009, the European Commission[13] published its ideas regarding a reform of the European financial supervisory architecture, proposing the creation of a European Systemic Risk Council (ESRC) and a European System of Financial Supervisors (ESFS). The European Commission stated that the task of the ESRC would be to monitor and assess potential threats to financial stability ("macroprudential oversight"). The ESFS, on the other hand, would be responsible for supervising individual financial firms ("microprudential supervision") and would consist of a network of national financial supervisors working in tandem with the new European Supervisory Authorities to be created from the existing level 3 committees. The European Council approved this Communication in its meeting on July 18 and 19, 2009, and expressed its support for reforming financial supervision despite resistance from some countries (section 4).[14] On this basis, in September 2009 the European Commission published a comprehensive first legislative package on the new supervisory architecture.

3 The Legislative Package for Supervisory Reform

On September 23, 2009, the European Commission adopted a package of five legislative proposals[15] for establishing a European System of Financial Supervisors (ESFS) consisting of three European Supervisory Authorities (ESAs) – the European Banking Authority (EBA), the European Securities and Markets Authority (ESMA) and the European Insurance and Occupational Pensions Authority (EIOPA) – and the national financial supervisors; and for creating a European Systemic Risk Board (ESRB). In addition, a regulation was published entrusting the European Central Bank with specific tasks with regard to the day-to-day running of the ESRB. To ensure the smooth functioning of the ESFS, the existing financial services directives had to be adapted in a way that the new powers of the financial supervisory authorities are adequately reflected; this was achieved through two omnibus Directives, passed in October 2009 (Omnibus I) and January 2011 (Omnibus II). As the proposals of the European Commission serve as the basis for the legislative process, these proposals for the new bodies shall be described in greater detail in the following.

3.1 Regulation Establishing a European Systemic Risk Board

The ESRB was designed to be an early warning system for detecting systemic risk. It would be an independent body to be set up under the auspices of the ECB without legal personality, and its seat was to be in Frankfurt am Main. It would be responsible for macroprudential oversight of the financial system within the EU and for identifying and assessing systemic risks to financial market stability. To achieve this, it should be able to issue risk warnings and recommendations for remedial action and, where appropriate, make them public. These warnings and recommendations might be addressed to the EU as a whole, or to one or more

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[13] See European Commission (2009b).

[14] www.euractiv.com/financial-services/eu-leaders-back-financial-supervision-overhaul/article-183341 (retrieved on July 18, 2011).

[15] See European Commission (2009c and 2009d).

Member States, or to one or more of the national supervisory authorities and the ESAs. The ESRB's recommendations would not be legally binding, but the addresses would have to provide adequate justification for inaction should they not act on the recommendations ("act or explain"). The ESRB was to be composed of a General Board, a Steering Committee, an Advisory Technical Committee and a Secretariat. The General Board would take the decisions necessary to ensure the performance of the tasks entrusted to the ESRB. The Steering Committee would assist in the ESRB's decision-making process by

preparing its meetings. The Chair and first Vice-Chair of the ESRB should be elected for a term of five years by and from among the members of the General Board, who are also members of the General Council of the ECB. The Secretariat, to be based at the ECB, was to be tasked with providing the ESRB with analytical, statistical, administrative and logistical support. Moreover, the ESRB was to be assisted by an Advisory Technical Committee.

Each member of the General Board with voting rights would have one vote. Votes would be taken by simple majority; a quorum of two thirds of members with voting rights would be required for any vote to be taken by the General Board. In the event of a tie, the Chair would have the casting vote. Decisions to make public warnings or recommendations would have to be obtain at least two thirds of the General Board's votes.

3.2 Regulations Governing the ESAs

The European Supervisory Authorities were designed to be responsible, in particular, for promoting harmonized regulations, consistent supervisory practices and consistent implementation. They would be independent authorities with legal personality, based in Frankfurt am Main (EIOPA), London (EBA) and Paris (ESMA).

The main tasks of the ESAs would include:
— developing common regulatory and supervisory standards (guidelines, recommendations and technical standards);
— ensuring that EU law was applied consistently, by issuing recommendations to the national supervisors in cases where there appeared to be a breach of EU law (if the national authority in question did not follow the recommendation, the Commission might issue a formal opinion; if

Table 1

Organizational Structure of the ESRB

CHAIR
ESRB chair
ESRB vice chair
(the ESRB chair and vice chair are elected by the members of the General Board, who are also members of the General Council of the ECB)

GENERAL BOARD
With voting rights:
President of the ECB
Vice-President of the ECB
All ESCB governors
1 European Commission representative
Chairpersons of the 3 ESAs
Without voting rights:
1 high-level representative per Member State of the competent national supervisory authorities
President of the Economic and Financial Committee (EFC)

STEERING COMMITTEE
ESRB chair
ESRB vice chair
1 European Commission representative
Chairs of the 3 ESAs
President of the EFC
5 members of the General Board (who are also members of the General Council of the ECB)

ADVISORY TECHNICAL COMMITTEE
1 NCB representative each of all EU Member States
1 ECB representative
1 representative each of the competent national supervisory authority
1 representative each of the 3 ESAs
2 European Commission representatives
1 EFC representative

Source: OeNB.

the national authority did not comply with this formal opinion, the ESA might then adopt decisions addressed directly to individual financial institutions);

— adopting binding decisions addressed to national supervisors and firms in emergency situations[16] and in the event of disagreements between national supervisory authorities;

— the direct supervision of institutions operating throughout the EU (e.g. credit rating agencies).

The ESAs would be composed of a Board of Supervisors (as the actual decision-making body), a Management Board, a Chairperson, an Executive Director and a Board of Appeal. In addition, the three ESAs would share a Joint Committee.

To prevent the ESAs' decisions from having any fiscal impact on national budgets, a safeguard clause was to be implemented which would empower the Member States to contest the decisions taken by the ESAs in emergency situations or when settling disagreements. Regarding the voting modalities, the draft proposals of the European Commission required the Board of Supervisors to adopt technical standards, issue guidelines and recommendations and take decisions in relation to financial provisions by (weighted) qualified majority voting. A qualified majority would also be required for EU Council decisions on whether ESA decisions concerning the safeguard clause were to be maintained or revoked. All other decisions would be taken by simple majority, based on the "one member – one vote" principle.

4 How Agreement Was Reached on the Supervisory Package

The European Parliament, the European Commission and the Member States represented in the Council of the European Union are all involved in the EU legislative process. At the level of the Council, the economics and finance ministers (Ecofin) were responsible for dealing with the supervisory reform; in the European Parliament, the dossier was examined by the Committee on Economic and Monetary Affairs (ECON). The presidency of the Council, which rotates every six months, was held by Sweden when the European Commission made its legislative proposals. Spain took over the presidency at the beginning of 2010 and Belgium held the presidency when the regulations were adopted in the autumn of 2010.

Table 2

Organizational Structure of the EBA

BOARD OF SUPERVISORS
With voting rights:
Heads of the national banking supervisory authorities
Without voting rights:
EBA chair
1 European Commission representative
1 ECB representative
1 ESRB representative
1 representative each of the other ESAs
1 representative of the respective NCB (optional)
MANAGEMENT BOARD
EBA chair
1 European Commission representative
4 members of the supervisory body
CHAIRPERSON (full time)
EXECUTIVE DIRECTOR (full time)
BOARD OF APPEAL

Source: OeNB.

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[16] *It should be noted that the European Commission adopts decisions determining the existence of an emergency situation either independently or at the request of the ESAs, the EU Council or the ESRB.*

Box 1

The EU's Ordinary Legislative Procedure

Since the Lisbon Treaty came into force in December 2009, the EU's ordinary legislative procedure has been the co-decision procedure, in which the Council of the European Union and the European Parliament are equal co-legislators, with the Parliament and the Council working like a dual chamber system. Legislative proposals may, as a rule, be put forward only by the European Commission, i.e. the Commission has the "right of initiative" to submit proposals – once adopted by the college of 27 Commissioners – to the Council and the European Parliament. Alongside the co-decision procedure, the consultation procedure and the consent procedure still exist, but are used only occasionally. In the consent procedure the European Parliament has the power to accept or reject but not amend legislative proposals from the Council, whereas in the consultation procedure the European Parliament is only entitled to provide an opinion.

The co-decision procedure essentially works as follows: The European Parliament (i.e. the relevant committee) is the first to act; it delivers a position on, and proposes amendments to, the legislative proposal. If the Council of the EU subsequently adopts the proposal amended in the light of the Parliament's position, the proposal is deemed to have been adopted into EU law at first reading. If the Council adds its own amendments to the proposal, however, it goes to a second reading during which the European Parliament may then adopt the draft proposal, as amended by the Council, and the proposal will become EU law. Parliamentary amendment or rejection of the draft proposal as amended by the EU Council requires an absolute majority (50% of all members of the European Parliament (MEPs), i.e. 369 votes). If the European Parliament has introduced amendments, the EU Council can subsequently adopt the act by double majority (by qualified majority from 2014 onwards) if the European Commission has incorporated all the amendments into its amended proposal, or unanimously if this has not been done. If the Council of the EU rejects the European Parliament's position again, a Conciliation Committee consisting of 27 representatives of the Member States (usually the Permanent Representatives of the Member States to the EU) and 27 members of the European Parliament (including a Vice-President of the European Parliament, the chair of the relevant parliamentary committee and the rapporteur) is convened. The European Commission is also represented on the Conciliation Committee but has no voting rights. If the Conciliation Committee cannot agree on a joint text, the act is deemed not to have been adopted and the procedure ends. If it does agree on a joint text, the Council of the EU and the European Parliament must accept the act (this time with simple parliamentary majority), and it is deemed to have been adopted at the third reading.

Certain deadlines apply for the individual steps in the ordinary legislative procedure (box 1); for example, the European Parliament has three months to approve or reject the Council position at the second reading. Fully exploiting all of the legal possibilities would considerably prolong the legislative procedure. However, most of the dossiers entering into the co-decision procedure are adopted at the first reading. To speed up the process, negotiations between the Council of the EU, the European Commission and the European Parliament already take place during the first reading. These informal "trialogues" are based on mutual agreement; they are not mentioned in the Treaty on the Functioning of the European Union (TFEU). The trialogues bring together the current Council presidency, the European Parliament's rapporteurs and the chair of the relevant parliamentary committee. These "mediators" (relais actors) are becoming increasingly important and can have a considerable impact on the legislative process. Hix and Høyland (2011) point out that the greater efficiency in the legislative process goes

hand in hand with reduced transparency, as the trialogue negotiations take place "behind closed doors." Häge and Kaeding (2007) argue that the European Parliament has an advantage over the EU Council in the trialogues because the Council does not have enough resources for lengthy negotiations that extend to a Conciliation Committee and therefore has a greater incentive to bring the legislative process to a close at an earlier stage. The European Commission is likewise represented in the trialogues and can help the European Parliament and the EU Council to reach a common position. If need be, the European Commission can swiftly clarify technical details, thus speeding up the negotiations. As the European Commission is represented in all key bodies involved, it has a very clear overview of how the negotiations are progressing: the European Commission participates in and makes declarations at the European Parliament's sittings and is also present at the meetings of the Council of the EU, thus gaining insights into the opinions expressed there and into how the current presidency of the Council is reporting back to the other Member States on the trialogue negotiations.

4.1 Negotiations within the Council of the EU

Based on the European Commission's Communication on European Financial Supervision of May 27, 2009, the Ecofin Council approved conclusions on June 9, 2009, after a round of strained negotiations, in preparation for a meeting of the European Council. These conclusions largely corresponded to the Commission's Communication. Key amendments affecting macroprudential

oversight included the renaming of the European Systemic Risk Council (ESRC) to European Systemic Risk Board (ESRB), the question of who was to chair the General Board (the President of the ECB, as requested by European Commission; or the President of the ECB or alternatively a central bank governor, as requested by the Council of the EU) and the question of how many central bank members of the ESRB should be on the Steering Committee in addition to the Chair and the Vice-Chair, which was particularly important for the national central banks (whether it should include five additional central bank governors represented on the ESRC, as requested by the Commission; or only two central bank governors represented on the ESRB, as requested by the Council). Reaching a compromise among the Member States proved more difficult when it came to matters of microprudential supervision.

The Ecofin Council failed to reach an agreement on three points:[17] First, the question of whether disagreements among national supervisory authorities should be resolved through a binding decision by the ESAs. Second, whether the ESAs should be given direct responsibility for specific entities with a pan-European dimension (e.g. credit rating agencies). Third, whether the ESAs should have, in crisis situations, the power to adopt specific emergency decisions (e.g. prohibiting short selling). Although a majority of the Member States were in favor of this approach, a few were against it as they believed it would impinge on Member States' fiscal responsibilities.[18] The Ecofin Council eventually called on the European Commission to ensure that the legis-

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[17] See Federal Ministry of Finance, Germany: Monthly Report June 2009, p. 34 (in German only).

[18] See Conclusions of the 2,948th Ecofin Council meeting (June 9, 2009), p. 14.

lative proposals presented in the autumn of 2009 would not impinge on Member States' fiscal sovereignty.

Once the European Commission had published the legislative package governing the new supervisory architecture on September 23, 2009, the Member States immediately started negotiations, with those on macroprudential supervision making decidedly more progress than those on microprudential supervision. The ERSB regulation (and the corresponding Council decision) was discussed in the "Working Party on Financial Services" on September 28, October 7 and October 12, 2009, and in the Permanent Representatives Committee (Coreper)[19] on October 14, 2009. The intention was, among other things, to come to an agreement on a general approach at the Ecofin meeting on October 20, 2009.[20] The most controversial subjects in the negotiations were the voting modalities applicable to the General Board (Article 10 in conjunction with Article 16.5 and 18.1) and the composition of the Steering Committee.[21] With respect to the voting modalities for issuing recommendations and making public warnings or recommendations, some Member States were in favor of a simple majority as envisaged in the European Commission's proposal, whereas others pushed for a majority of two thirds. There were also discussions regarding whether there should be five (as in the European Commission's proposal) or two members of the General Council of the ECB on the Steering Committee. A text was agreed upon on

October 21, 2009: it was decided that a two-thirds majority should be required in the above-mentioned cases and that there should be five representatives of the General Council of the ECB on the Steering Committee, of which three should represent euro area countries and two non-euro area countries.

At its meeting on October 20, 2009, without prejudice to ongoing national parliamentary procedures, the Ecofin Council reached broad agreement on the substance on the legislative texts concerning macroprudential oversight.[22] The Ecofin Council invited the presidency of the Council of the EU to start negotiations with the European Parliament on the ESRB regulation with a view to reaching an agreement at the first reading. It also took note of the need for further political negotiations before a final agreement could be reached on the complete package in December 2009.

The negotiations on microprudential supervision proved to be far more lengthy and contentious. In particular, the new EU authorities' direct powers of intervention (Article 10(3) and Article 11(4)), which allowed them to adopt binding decisions addressed to individual financial institutions were found to be controversial, as was the question of whether and over which cross-border financial institutions the new EU authorities should have direct and exclusive supervisory powers. Other points of controversy were the voting modalities (Article 29) for settling disagreements, as some Member States were in favor of discarding the "one member –

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[19] *Coreper comprises the heads of mission of the EU Member States, the Permanent Representatives. It is a forum for representing the interests of the individual Member States vis-à-vis the other Member States and EU institutions and reaching compromises.*

[20] *See Coreper's public report to the Ecofin Council dated October 15, 2009.*

[21] *See the Secretariat's public report to Coreper dated October 9, 2009.*

[22] *See conclusions of the 2,967th Ecofin Council meeting (October 20, 2009), p. 8.*

one vote" principle for qualified majority voting, where the number of votes given to each Member State is weighted according to its population;[23] as well as the "safeguard clause" (Article 23), which stipulates that a Member State can contest a decision adopted by the EU authority under Articles 10 or 11 that is addressed to the national supervisory authority if this decision impinges on the Member State's fiscal responsibilities. The wording of the negotiated document agreed upon in preparation for the Ecofin Council meeting of December 2, 2009, was supported by 21 delegations;[24] 5 delegations[25] refused their support – particularly concerning the safeguard clause and the voting modalities – even after several rounds of negotiations. The negotiated document, therefore, did not contain a reference to the EU authorities' direct powers of intervention over individual financial institutions in emergency situations and in the event of disagreements between the competent authorities of different Member States. However, further adaptations to the text allowed the Ecofin Council to come to an agreement on the general approach that microprudential supervision should take. In other words, it was possible to start negotiations with the European Parliament.

4.2 The Position of the European Parliament

In ECON, "rapporteurs" examined the European Commission's respective legislative proposals, with advice from the other political groups' "shadow rapporteurs." The following members of the European Parliament were named as ECON's rapporteurs for the draft regulations:

– José Manuel García-Margallo/Spain (Group of the European People's Party – EPP) on the EBA,
– Sven Giegold/Germany (Group of the Greens/European Free Alliance – EFA) on the ESMA,
– Peter Skinner/United Kingdom (Group of the Progressive Alliance of Socialists and Democrats – S&D) on the EIOPA and
– Sylvie Goulard/France (Group of the Alliance of Liberals and Democrats – ALDE) on the ESRB.

Therefore all four of the European Parliament's major political groups were involved in this dossier from the outset. ECON's aim was not only to reverse the amendments that the Council of the EU had introduced to the proposal of the European Commission but also to go further than the proposal itself.[26]

On November 23, 2009, the MEPs met for their first exchange of views on the supervisory package in ECON, and the rapporteurs subsequently presented their draft reports on February 23, 2010. In the intervening period they had held a number of meetings to broadly coordinate their positions in order to reach a common stance. When the draft reports were presented, the EBA rapporteur, José Manuel García-Margallo, clearly stated that it was out

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[23] In accordance with Article 16(4) of the Treaty on European Union (TEU) and Article 3 of the Protocol (No. 36) on transitional provisions.

[24] See Corepor's public report to the Ecofin Council dated November 27, 2009.

[25] Germany, France, Italy, the Netherlands and the United Kingdom.

[26] See the the joint declaration by Jean-Paul Gauzès (EPP), Udo Bullmann (S&D), Sylvie Goulard (ALDE), Sven Giegold (the Greens/EFA) "Europäisches Parlament wird sich gegen die Verwässerung der neuen Aufsichtsbehörden stellen" of December 2, 2009 (in German only) and www.europarl.europa.eu/en/headlines/content/20100910FCS81938/012/html/Parliament-gives-green-light-to-new-financial-supervision-architecture (retrieved on October 4, 2011).

of the question for the European Parliament to accept the amendments by the Council that fell short of the De Larosière report's recommendations, which he considered to be highly pragmatic already. The European Parliament supported the idea of strengthening the European supervisory framework by giving the EBA legally binding powers.

When presenting her report, the ESRB rapporteur, Sylvie Goulard, stated that the Chair of the ESRB should not be elected by the General Board as proposed by the European Commission but that the President of the ECB should chair the ESRB ex officio because he or she would have the necessary high profile and stood ready to represent the ESRB in the international arena.[27] Furthermore, rather than being supported by an Advisory Technical Committee composed of NCB/ECB representatives, as proposed by the Commission, the ESRB should be able to draw on the expertise of an Advisory Scientific Committee of independent experts.

The consistency between the draft reports shows that the process of coordination among the rapporteurs was effective. This is illustrated by the provisions on elaborating technical standards: the European Commission had stipulated that the ESAs should present their standards to the Commission for endorsement and that the Commission would be able to amend the envisaged standards where the Community interest so required. In contrast, all three ECON reports were in line with the new concept of implementing acts, laid down in the Implementing Acts Regulation made under Articles 290 and 291 TFEU, which provide for the adoption of technical standards by delegated or implementing acts. In this respect the European Commission should, in both cases, be bound by drafts produced by EBA insofar as it would only be allowed to amend those drafts following renewed consultation, subject to strict deadlines and subject to explanations. Moreover, both the European Parliament and the EU Council should have the power to veto the adoption of technical regulatory standards according to Article 290 TFEU, thus significantly curtailing the decision-making powers of the European Commission. The areas for which technical standards may be developed are to be defined in the relevant legislation.[28] These and other amendments are specified in almost identical wording in all three of the draft reports on the ESAs.

The MEPs were able to propose amendments to the legislative texts in ECON until March 11, 2010. A total of 798 amendment proposals were made for the EBA draft, 635 for the ESMA draft, 572 for the EIOPA draft and 244 for the ESRB draft. A vote was taken on all of these amendment proposals on May 3, 2010. ECON's joint position,

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[27] Some non-euro area Member States were far from enthusiastic about this stance; for example, the Economist reported as early as June 2009 that the U.K.'s HM Treasury "dislikes the idea of the ECB's president chairing what would be the EU's macroprudential overlord."

[28] See recital 12 of Directive 2010/78/EU: "Matters subject to technical standards should be genuinely technical, where their development requires the expertise of supervisory experts. The technical standards adopted as delegated acts should further develop, specify and determine the conditions for consistent harmonisation of the rules included in basic instruments adopted by the European Parliament and the Council, supplementing or amending certain non-essential elements of the legislative act. The technical standards adopted as implementing acts should set conditions for the uniform application of legally binding Union acts. Technical standards should not involve policy choices."

which was based on a broad majority,[29] was to propose an integrated system of financial market supervision organized as a network of national and EU supervisory authorities. It specified that all three EU authorities and the ESRB should be based in Frankfurt am Main, thus improving communication and enabling more efficient cooperation, particularly in crisis situations.

The ECON draft reports expanded the powers of the ESRB and the ESAs. In its original draft the European Commission had given itself the power to determine an emergency situation (i.e. a serious threat to financial stability); the ECON drafts, on the hand, stipulated that the ESRB should be conferred with this power.

The drafts defined protecting depositors and investors as one of the EBA's tasks. The EBA draft therefore stipulated that a European Deposit Guarantee Fund should be established. It also proposed the creation of a European Banking Stability Fund to finance the rescue interventions or orderly winding-up of financial institutions facing difficulties. These two requirements are also based on the De Larosière report's recommendations.

The European Parliament supported giving the ESAs direct powers of intervention over national authorities and, in particular, financial institutions. The ECON draft also envisaged that the ESAs should have a mediation role to solve conflicts between national supervisors and, as a last resort in situations where the competent national supervisory authorities do not come to an agreement, adopt decisions. ECON considered that this would significantly strengthen the European supervisory framework and that the national authorities would have a greater incentive to reach a more rapid agreement. The EBA was also to be given the power to temporarily prohibit or restrict certain types of transactions. Such powers were requested also for ESMA, which should moreover have the power to intervene in financial institutions and remove executives.

Compared with the EU Council, ECON also took a very different approach to the issue of the budgetary impact of decisions (the aforementioned safeguard clause). ECON specified that if a Member State considered that an EBA decision impinged directly and in a significant manner on its fiscal responsibilities, it should carry out an impact assessment and present this to the EBA, the European Commission and the European Parliament within ten working days after notification of the decision.[30] In cases where the EBA maintains its decision, the EU Council should be able to revoke this decision by qualified majority. In neither of these cases would the votes of the Member State concerned be taken into consideration. ECON also decided that EBA's decisions should generally be taken by simple majority, with each member having one vote (and by qualified majority in the areas proposed by the European Commission). This served to underscore the fact that EBA is a body of experts and that the heads of the national supervisory authorities are represented and have voting rights in EBA by virtue of their expertise rather than in order to represent the interests of the individual Member States.

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[29] ECON approved the report on the EBA regulation by 37 of all 42 votes, the report on the ESRB by 34 of 38 votes, that on ESMA by 31 of 35 votes and that on EIOPA by 29 of 34 votes.

[30] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:331:0120:0161:EN:PDF; p. 71 (retrieved on October 4, 2011).

4.3 Reaching a Compromise through Trialogue Negotiations

In early May 2010, immediately after ECON had voted on the reports, the trialogue negotiations between the European Parliament, the Council and the European Commission began.[31] The European Parliament was represented by the chair of ECON, Sharon Bowles, and the rapporteurs; the Spanish presidency of the Council led the discussions on the Council's behalf. The European Commission also participated in the discussions. It proved difficult to reach a compromise: the ESAs' direct powers of intervention over financial institutions, their role in the colleges of supervisors and the additional powers for ESAs called for by the European Parliament (particularly the prohibition of certain transactions) were particular subjects of contention. The European Parliament's rapporteurs had agreed from the outset that they would only negotiate on the proposals as a package. Despite belonging to different political groups, they presented the Council of the EU with a joint European Parliament position.

On May 26, 2010, the European Commission published a Communication supporting the establishment of ex ante bank resolution funds. The Communication expressed the European Commission's intention to present legislative proposals on both crisis management and resolution funds by early 2011. Preparations for reforming the deposit guarantee schemes were already underway, and on July 12, 2010, the European Commission published a proposal for a Directive which gave the EBA a role in supervising deposit guar-antee schemes. This obviated the need to negotiate the European Parliament's demands to this effect any further.

The negotiations between the Spanish presidency of the Council and the European Parliament did not reach a conclusion and were continued from July onwards by the Belgian presidency. As a way of signaling to the European Parliament that it had to be possible to reach a timely agreement, on July 13, 2010, the Member States in the Ecofin Council agreed a new political orientation by common accord to guide the presidency of the Council's negotiations.[32] Votes on the ECON reports on financial market supervision were put on the agenda for the European Parliament's plenary in early July. This heightened the pressure on the Council to approve the proposed compromise, since otherwise the proposal would have to go to a second reading, substantially prolonging the process of implementation. On July 7 the European Parliament plenary approved all of the amendments requested by ECON. However, the plenary abstained from the final vote for all of the proposals in accordance with Rule 57 of the European Parliament's Rules of Procedure; without this legislative resolution the draft proposals do not pass into law, meaning that further negotiations were possible at the first reading.[33] All the proposed amendments received majorities of over 600 votes in the plenary, which was also a way of signaling to the Council that it would be easy to obtain the quorum of 359 votes needed to amend the Council's position.

Having continued into the European Parliament's summer recess, the

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[31] 18 meetings were scheduled for May and June.

[32] See Federal Ministry of Finance, Germany: Monthly Report August 2010, p. 34.

[33] The European Parliament used this tactic again in the spring of 2011 during the negotiations on reforming economic governance and the Stability and Growth Pact.

trialogue negotiations reached a conclusion in early September. The trialogue agreed to keep the EBA seat in London, the ESMA seat in Paris, and the EIOPA seat in Frankfurt am Main, as defined in the original draft of the European Commission and in the Council's position. However, it specified that these seats and the ESAs' powers should be reviewed after three years and possibly expanded, and that cooperation between the ESAs should be coordinated via a Joint Committee, which was to meet at least once every two months. The trialogue agreed that the European Parliament would be entitled to veto the appointment of ESA chairpersons and that the ESRB would be part of the ESFS (the ESAs, the national financial supervisors and the Joint Committee of the ESAs). The main objective of the ESFS would be to ensure that financial sector rules are applied consistently and to safeguard financial market stability and consumer protection.

The Council retained the right to determine an emergency situation, as it

had requested. The ESRB or the ESAs can make confidential recommendations to the Council. The ESRB remained a body of experts that monitors and assesses systemic risk and can issue recommendations or warnings on a case-by-case basis but does not take decisions. This significantly reduces the ESRB's effectiveness, as, according to Kindleberger and Aliber (2005, p. 92) *"[t]he historical record provides little support for the view that statements from government officials have much of an impact in dampening euphoria. [...] The likelihood that investors and speculators would heed the warning of a government official when asset prices are increasing at annual rates of 20 to 30 percent a year is not especially high."*

As urged by the Council of the EU, the safeguard clause which Member States can invoke against ESA decisions that impinge on their fiscal responsibilities was retained (section 4.1). However, in the recitals the Regulation clearly states that this safeguard clause should not be abused and that the decision in question must have a significant or material fiscal impact.[34]

The Council managed to push through its requests on key issues such as the seat of the authorities, the safeguard clause and the power to determine crisis situations. For its part, the European Parliament succeeded in expanding the ESAs' powers. The ESAs now have a stronger role in the colleges of supervisors and have more comprehensive functions in the fields of consumer protection, financial transactions and resolution and insolvency procedures. Furthermore, the ESAs are tasked with helping to strengthen the European system of national deposit guarantee schemes and to develop

Chart 1

The New European Supervisory Architecture
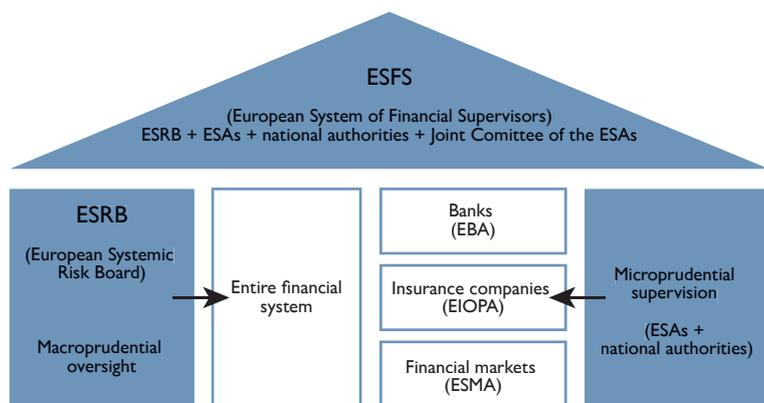
Source: OeNB.

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[34] One of the points raised in the parliamentary debate was that minor costs, such as the costs of officials traveling to ESA meetings, should not be relevant for purposes of the safeguard clause.

a European system of bank resolution (including funding arrangements). The final Regulation also reinforced the European dimension by awarding the ESAs direct powers of intervention over national authorities and financial institutions. The European Parliament succeeded in its wish for the ESRB to be chaired by the President of the ECB ex officio; moreover the Advisory Scientific Committee of independent experts that it had proposed has been set up alongside the originally envisaged Advisory Technical Committee.

After the trialogue had reached an agreement, the new supervisory architecture in its current form was adopted by the European Parliament on September 22, 2010, and confirmed by the Ecofin Council on November 17, 2010. This meant that the Regulation was implemented on time and that the ESAs were able to start work on January 1, 2011.

4.4 Assessing the Legislative Procedure

Regarding the balance of power among the parties participating in the trialogue, it should be pointed out[35] that the theory posited by Häge and Kaeding (2007) (see above) of the European Parliament having an advantage over the EU Council because it gains increasing influence during more lengthy procedures is not entirely valid in this case, as all the legislators were under significant time pressure. It was intended from the outset of the negotiations that the new supervisory architecture would be in place by January 1, 2011. Any delays would have caused meant reputational losses of all participants. As the Council of the EU had already adopted a common position in December 2009 and the European Par-

liament did not vote on the proposal until May 2010, the Council might have been able to blame the Parliament for such delays.

Participants in the trialogue process noted that the Spanish and Belgian presidencies took rather different approaches to leading the negotiations. The Spanish presidency of the Council led the negotiations with the European Parliament mainly at attaché level, whereas under the Belgium presidency the responsible minister usually took part in the trialogue. The participants considered the inclusion of a high-ranking political representative crucial, as this increased the negotiating leeway under the Belgian presidency. Attachés are technical experts, but a member of the Ecofin Council may be better able to assess what political concessions the other Member States might be prepared to make to the European Parliament. The European Commission was likewise represented by high-ranking officials (a Commissioner or Director General) in the trialogue negotiations.

Belgium's experience in the financial crisis might have been one reason why it showed such strong political commitment in the supervisory reform. In September 2009 the Belgium government had been forced to buy up shares worth EUR 4.9 billion in the distressed bank Fortis and had thus suffered at first hand the bitter consequences of having an insufficiently integrated supervision of cross-border banks in the EU.

Together, Christian Democrats and Social Democrats have a vast majority in both the European Parliament and the Council. However, the differences of opinion during the negotiations hardly ever ran along party lines; the real divides were between the institu-

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[35] This assessment is based, among other things, on interviews with participants in the negotiation process.

Table 3

Requests and Final Regulation (ESRB and EBA)

	Position of the European Commission	Position of the European Parliament	Position of the Council of the EU	Final Regulation
Seat of the ESAs	like the level 3 committees	Frankfurt	Commission position	Commission position
Seat of the ESRB	Frankfurt	Frankfurt	Frankfurt	Frankfurt
Chair of the ESRB	to be elected by the General Board/by members of the Governing Council of the ECB	President of the ECB	Commission position	President of the ECB
Number of additional NCB members in the Steering Committee (other than ESRB chair and/or vice chair)	5	4	5	4
Advisory Scientific Committee of the ESRB	–	+	–	+
Power of direct intervention by EBA at national authorities	+	+	+	+
Power of direct intervention by EBA at financial institutions	yes – 1) consistent application of Community law, 2) action in emergency situations, 3) settlement of disagreements between national authorities	Commission position	yes – consistent application of Community law	Commission position
EBA: Development of binding technical standards (to be adopted by the European Commission)	+	in the form of regulatory technical standards and implementing technical standards	Commission position (subject to additional consultation of EBA regarding items amended or rejected)	in the form of regulatory technical standards and implementing technical standards
Tasks of EBA with regard to consumer protection, financial activities, resolution and liquidation procedures, the European deposit insurance scheme	–	+	–	+
Power to determine emergency situations	European Commission	ESRB	Council	Council
Role of EBA in the college of supervisors	Observer	Lead	Observer	Lead
Safeguard clause	Council may revoke/maintain ESA decisions when settling disagreements/in emergency situations by qualified majority – ESA decisions are upheld if the Council does not take a decision	Safeguard clause only in emergency situations; Council may uphold ESA decisions by simple majority or reject them by qualified majority (Member State involved has no vote)	*Settling disagreements:* Council may maintain ESA decisions by a majority of the votes cast; ESA decisions are terminated if the Council does not take a decision; *emergency situations:* Member State may notify the ESA, European Commission and Council not to implement the ESA decision – suspension of the ESA decision – Council may revoke ESA decisions by simple majority; suspension of the ESA decisions are terminated if the Council does not take a decision (the Member State involved has a vote in both cases)	Council position
Voting modalities	General principle: "one member – one vote"; Art. 7, Art. 8, Chapter VI: qualitative majority voting	Commission position	Commission position, but panel procedure for settling disagreements between competent authorities in cross-border situations; adoption of panel decision by simple majority (subject to agreement of the blocking minority).	Council position

Source: OeNB.

tions. Given the EU's two-chamber system, it is less surprising that the MEPs agreed on and maintained a common position throughout the negotiations despite belonging to different political groups. Hix and Høyland (2011) point out that the European Parliament almost always presses for more European integration than the EU Council in legislative proposals. The European Parliament wished to strengthen the European level and its own competences, while members of the Council, who represent national governments, often focus primarily on retaining their country's sovereign powers.

5 Initial Experience with the New Supervisory Structure

As an agreement was reached on time,[36] the ESAs and the ESRB were able to begin their work on schedule, on January 1, 2011. The main focus in the first few months was on setting up the institutions. In February 2011 the chairpersons of the three ESAs were elected; the European Parliament's role was confined to hearing the designated candidates. The internationally renowned experts Andrea Enria (EBA), Stephen Maijoor (ESMA) and Gabriel Bernardino (EIOPA) were elected as the chairpersons of the supervisory authorities. In the spring of 2011 the ESRB elected Mervyn King, Governor of the Bank of England, and the EBA chair Andrea Enria as the Vice-Chairs to the ESRB Chair.

According to information provided by the European Commission in the spring of 2011, the ESAs might eventu-

ally be staffed with up to 350 employees.[37] As defined in the underlying regulations, there will be a review three years after the regulations entered into force to evaluate, among other things, whether the resources of the supervisory authorities are adequate.

In the first few months of its existence, one of the EBA's most high-profile activities was carrying out the EU-wide bank stress test. The capital position of 91 banks in 21 Member States was assessed against certain simulated shocks. The EBA coordinated the implementation of the tests, the ECB created the macroeconomic scenarios and the national supervisory authorities examined the effects on the banks in their countries. The stress test included several rounds of peer reviews to ensure that the results were consistent. The EBA then published recommendations to the national supervisory authorities of countries in which a bank's core tier 1 ratio was below the threshold in the test scenarios.[38]

In response to the stress test, Hampl and Tomšík (2011) criticized the influence of supranational authorities on national budgets, a concern already raised by some of the Member States during the negotiations on the supervisory reform. In the current system the EBA makes decisions that can entail substantial costs (e.g. recapitalizing banks). If no private investors can be found, these expenses usually have to be financed from the national budgets, as sufficient funds are not available at the EU level. This means that finance ministers, who are held to political account by their countries' taxpayers,

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[36] *It was important to come to an agreement in September 2010, as otherwise the lead times involved with the legislative process (e.g. translating the Regulations into all 22 EU languages) might have made it impossible for the supervisory authorities to start operations in January. The Regulations were published on December 15, 2009 in the Official Journal of the EU.*

[37] *See Barnier (2011).*

[38] *See European Banking Authority (2011).*

have to implement decisions made by authorities that are only very indirectly answerable to taxpayers. Nonetheless, integrated financial markets require integrated supervision, otherwise there is a danger of regulatory arbitrage. The new legal provisions governing the crisis management arrangements for cross-border banks, which envisage the creation of a European crisis fund with sufficiently large resources, could form part of the solution to this problem.

6 Conclusions

The financial crisis has clearly illustrated the inadequacy of the existing financial supervisory structure in Europe. A high-level group of experts developed proposals addressing the main challenges of supervisory reform, such as the identification of systemic risk, supervisory responsibility for cross-border financial institutions and the powers of the supervisory authorities. Many of these proposals were taken up by the European Commission and incorporated into a package of legislative proposals.

Under the EU's ordinary legislative procedure, the Council and the European Parliament had to agree on a common legislative text; first the different interests of the Member States were weighed up in the Council and then those of the various political groups in the European Parliament. The negotiations between the European Parliament, the Council and the European Commission were highly strenuous given that the Council and the European Parliament took very different po-

sitions regarding the new ESAs. While the EU Council was in favor of the EU authorities having more of a coordinating role in the supervisory process, the European Parliament wanted the new institutions to have far-reaching powers, with a view to protecting consumers and investors. The proposal to give the EU authorities direct powers of intervention over national supervisors and financial institutions was also controversial.

After lengthy negotiations, the Council and the European Parliament agreed on a supervisory reform; the final legislation is a compromise which brings together certain requests from both sides. The legislative process illustrated the preferences of the institutions involved; the Member States in the Council wanted to retain their sovereign rights and the European Parliament strove to strengthen the EU level, and thus its own powers. Supervisory decisions can entail substantial costs, and the question of political accountability for these expenses was therefore key. In view of their budgetary sovereignty, the Member States were able to push through the inclusion of certain rights to contest the ESAs' decisions.

The reform of financial supervision has equipped the EU with institutions that are better able to react to the challenges of an integrated financial market. Now it is up to the new financial supervisory authorities and the ESRB to demonstrate in practice that they are capable of fulfilling the legislators' expectations.

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Event Wrap-Ups

Analyzing the Macroeconomy: Dynamic Stochastic General Equilibrium Modeling versus Agent-Based Modeling

Martin Summer[1]

Dynamic Stochastic General Equilibrium (DSGE) models have become one of the main work-horses of macroeconomic analysis. Their impact has been particularly strong within the central banking community, where policy analysis, policy simulation as well as forecasting are based on this class of models. More recently, these models have received a fair amount of criticism both from within and from outside the academic community. In this debate, agent-based models have frequently been discussed as potential competitors to DSGE models for modeling the macroeconomy. Like DSGE models, agent-based models describe economic behavior at the individual level; unlike DSGE models, agent-based models use the simulation capacity of modern computing technology to analyze the aggregate implications of individual behavior, enabling the analysis of a wide range of behavior, the description of fairly complex institutions as well as the study of system dynamics both out of and in equilibrium. In a research workshop held at OeNB on June 15 and 16, 2011, these competing modeling strategies were contrasted with each other to contribute to the discussion about the relative merits and problems of both approaches.

When economists try to understand phenomena like growth, unemployment, distribution, inflation and financial stability – in short the macroeconomy – they try to do so using models and abstractions that try to see through the stunning complexity of economic reality. Within the social sciences, this use of formal modeling is with few exceptions quite unique to economics. It has given the field a fairly technical nature, and thinking in terms of formal models has become a proudly cherished skill of many economic researchers. The traditional models used by economists have recently become contested by alternative approaches that rely very much on computer simulations and that have their origins in research on complexity and complex systems mainly in the field of physics, biology and other sciences. From the perspective of these contestants, the economy is very much like a living system in general: It is a complex, dynamic, adaptive system. According to Gintis (2009)[2], such a system "consists of a large population of similar entities who interact through regularized channels (e.g. networks, markets, social institutions) with significant stochastic elements, without a system of centralized organization and control. A complex system is adaptive if it undergoes an evolutionary process of reproduction, mutation and selection." At this level of abstraction, many economists would recognize their modeling efforts as trying to achieve a deeper understanding of exactly these kinds of systems. The debate then seems to deal with the question of which modeling tools are likely to be most effective at making a complex system like the economy comprehensible. To focus the debate, the workshop tried to shed light in particular on models of the macroeconomy that would roughly fit into the framework of so-called dynamic stochastic general equilibrium (DSGE) models – a model class particularly popular among central banks – and papers that take an agent-based approach to macroeconomic modeling.

In his opening remarks, *Peter Mooslechner, Director of the Economic Analysis and Research Department of OeNB,* tried to put the debate into perspective by framing the issues along the lines of microfoundations and equilibrium analysis. For reasons that are arguably quite intrinsic to the theoretical features of general equilibrium modeling, the DSGE models used in practice end up in a form where the macroeconomy is explained as the result of the solution to a very complex decision problem in a very simple economic environment. Agent-based models, while also building on descriptions of individual behavior, end up at the other end of the spectrum: In an agent-based model, individuals solve very simple decision problems in a very complex environment that no individual understands in its entirety. In his view, general equilibrium analysis has become particularly popular in macroeconomics because it is one of the few system theories that economics has developed. Clearly, the simultaneous interaction of many key markets rather than the partial analysis of single markets in isolation are at the heart of the key problems in macroeconomics. Moreover, general equilibrium theory offered the attractive feature of linking economic aggregates to theories of individual behavior at a time when the economics community no longer accepted the modeling of economic aggregates without so-called microfoundations. Using a framework that was dynamic rather than static, stochastic rather than deterministic and based on general rather than partial equilibrium analysis was clearly attractive for researchers. As became clear in the discussion at the workshop, the agent-based models seem, however, to be haunted by some old problems economists have been struggling with in their models for a long time; most im-

portantly the question of what could be a useful and coherent theory of expectations.

On the issue of equilibrium thinking, Mooslechner pointed out that equilibrium analysis in economics comes from the attempt to have a parsimonious description of system behavior that takes human reasoning into account. While DSGE models provide a sophisticated and elaborate description of equilibrium, they have never been able to develop this theory into a dynamic process description of how equilibrium is reached and how the system behaves out of equilibrium. Agent-based models, by simulating the full system dynamics, show the full system behavior. If there is an equilibrium state in an agent-based model, the simulation shows how the equilibrium is reached and allows the analysis of adjustment and of out-of-equilibrium behavior. The system dynamics are endogenously driven by agent behavior and do not simply rely on exogenous shocks. In this respect, agent-based models seem to take up some themes that were of crucial importance in earlier macroeconomic analysis, in particular in Keynesian macroeconomics, where distinctions between the short, medium and long run played an important role. While it is true that agent-based models describe the full system dynamics, the presentations showed that their very complexity also makes it difficult to understand at a deeper level how the system works.

Obviously, both approaches have a few open questions. What, then, were the answers given at the workshop?

The Diversity of Agent-Based Models

The first day of the workshop gave the floor to some prominent researchers from the agent-based modeling com-

munity, with discussants coming mainly from more mainstream economic research. While three papers presented gave a more general methodological perspective on what agent-based models are and what they look like, one paper took up some more specific research questions from financial economics which could be contrasted with a traditional macro paper studying financial crisis and macroprudential policies.

The presentations made clear that agent-based modelers are not working within a single model class. Researchers seem to be using agent-based models with quite different goals in mind. The presentations by *Herbert Dawid, University of Bielefeld* ("Agent-Based Computational Modeling and Macroeconomics") and *Domenico Delli Gatti, University of Milan* ("Macroeconomics from the Bottom Up"), suggested, for instance, that the main aim is the construction of models that, in contrast to models commonly used in economics, incorporate more institutional details, more detailed descriptions of individual behavior up to even realistic spatial and topographical structures that act as constraints for trading relationships, in short: More detailed and thus (hopefully) more realistic models of the economy.

J. Doyne Farmer, Santa Fe Institute, suggested in his presentation that traditional economic models were not good enough to lead to a correct qualitative understanding of economic interactions, to reproduce stylized facts in the data and to be useful in time series forecasting. Despite some past achievements, according to Farmer, the agent-based models are not yet particularly good enough, either, along all of these dimensions, but hold out the promise of eventually leading to better models than those that have been used so far in

traditional economics. His overview presentation was colored by the competitive ambition to make agent-based models part of the standard tool kit of economic modelers. This spirit of a modeling contest should be attractive to the economists who frequently lecture about the socially beneficial role of competition.

Finally, *Quamrul Ashraf, Williams College,* presented a paper coauthored with Boris Gershman and Peter Howitt ("Banks, Market Organization and Macroeconomic Performance") that was geared strongly to the better understanding of a traditional and deep problem in economic theory, namely: Which process and what institutional structure would be able to bring about equilibrium prices? The agent-based approach allows for describing and simulating such a process and for studying its properties in specific applications.

How Do Equilibrium Prices Come About?

Given its close relation to models used in the DSGE tradition, the paper by Ashraf, Gershman and Howitt is thus perhaps most suitable for a direct comparison at a methodological level with the DSGE paper about "Financial Crisis and Macroprudential Policies" presented by Gianlucca Benignio from the London School of Economics. Both papers deal with aspects of the financial system and financial crisis.

Benignio's paper is a good representative of how economists traditionally set up their models. The research question asked in the paper is whether a competitive market allocation of credit would lead to an amount of borrowing in the economy as a whole that deviates from a socially optimal allocation. The main finding is that if individuals at some stage in their life face a binding borrowing constraint due to collateral

requirements, this will distort the market allocation of credit in a way that there can be both over- and underborrowing in equilibrium compared to a socially optimal allocation. For macroprudential policies, the paper concludes that a financial transaction tax and capital controls would be unsuitable instruments to achieve a socially optimal allocation and are thus potentially harmful. How do arguments like this work in principle?

To contrast agent-based models with DSGE models, it is perhaps useful to briefly discuss how arguments are principally modeled. First, the aggregate behavior of consumption, credit and labor supply (demand) is derived from the solution to an intertemporal optimal decision problem of households with complete and consistent preferences over sequences of consumption and leisure. Borrowing is constrained by collateral requirements that may occasionally impede agents from borrowing as much as they would like. It is assumed that the economy will at each point in time be in equilibrium, meaning that prices and wages adjust to balance the supply of and the demand for goods and labor. This allocation is then compared to the allocation a planner would choose respecting the same collateral constraints. Unlike the agents, a planner would anticipate the aggregate economic effects of the binding collateral constraints and would value wealth differently than the agents. This creates a wedge between the market allocation and the planner solution. In an economy without production, the agents will always borrow more than the planner solution would imply. With production, the interaction between different markets can also lead to under-

borrowing. To identify which case is "typical," the parameters of the model are calibrated. This means that the parameters, e.g. the elasticity of labor supply and the share of labor in production, etc., are set to specific numerical values known from the empirical literature. In a next step, the particular policies are simulated for these particular parameter values. For this calibration, the authors find that typically, underborrowing would occur.

In a DSGE model, it is implicitly assumed that equilibrium is the appropriate concept to look at macroeconomic aggregates. The dynamics and the institutions that would bring about prices that balance supply and demand at each point in time remain unspecified. An unsatisfactory conceptual feature of this approach is that competitive equilibrium – while always described as a model of decentralized, competitive market exchange – at a model level is really quite undistinguishable from a planned economy. If exchange only occurs at equilibrium prices, a strong element of coordination of optimal plans is required; these plans have to be steadily adjusted to allow supply and demand to balance – as if a central clearing institution were solving an intricate fixed-point problem.

It is no accident that this ambiguity of the competitive equilibrium concept fueled an academic debate about socialist planning during the 1930s. Oskar Lange and Abba Lerner,[3] two leading figures in this debate, argued that a state-run economy could be as efficient as a planned economy if only the planner used the same type of price system as in a market economy.

The most famous opponent of Lange and Lerner, Friedrich Hayek, argued

[3] Lange, O. and F. M. Taylor. 1938. On the Economic Theory of Socialism. University of Minnesota Press.
Lerner, A. 1945. Economic Theory and Socialist Economy. In: Review of Economic Studies 2. 51–61.

that the debate misses an essential and deep feature of a market economy. In a famous paper published in 1945, Hayek wrote: "… what is the problem we wish to solve when we try to construct a rational economic order? If we possess all the relevant information, … the problem which remains is purely one of logic … This, however, is emphatically not the economic problem which society faces … The problem of a rational economic order is determined precisely by the fact that the knowledge of circumstances of which we must make use never exist in concentrated of integrated form, but solely as the dispersed bits of incomplete and frequently contradictory knowledge which all separate individuals possess."[4]

What this citation from Hayek suggests is that a model of market exchange must be able to capture two fundamental facts: First, real trades and exchange occur bilaterally, and second, out of equilibrium, there is no common price vector for the economy which agents can take as a parameter for their own decisions. Only through production, consumption, exchange and observing the behavior of others can the system of prices emerging from bilateral exchange perhaps converge to something like a publicly known vector of equilibrium prices.

Ashraf, Gershman and Howitt took this idea as a starting point for their paper. While also concerned with financial markets and macroprudential issues, their model starts from a fundamentally different price formation process.

Instead of relying on a fictitious auctioneer to bring about equilibrium prices, this paper has built in a specific mechanism by which prices emerge: The basic idea derived from Howitt and Clower (2000)[5] is that a self-organizing network of business firms takes on the role of the Walrasian auctioneer. The mechanism of exchange is based on the fact that all trade occurs through a network of specialized business firms which adjust the prices for the products and inputs to a complex and competitive environment that they do not understand in its entirety. Consumers and business firms use simple, opportunistic rules of behavior and adapt to what is going on in their local environment. Since setting up and operating a business firm is costly, the entry and exit of firms causes the aggregate variables of the system to fluctuate over time. When no entry and exit occurs and prices are allowed to be flexibly adjusted in every period, the system has a theoretical steady-state equilibrium where almost all gains from trade are exhausted and the economy works at full capacity. When entry and exit occurs, the system shows an endogenous dynamics very much resembling an ordinary business cycle with some exceptional situations where the whole system spirals out of control and breaks down. This is a setup that allows not only the system in equilibrium but also its out-of-equilibrium behavior and properties to be studied.

This is something that the agent based model is able to deliver and that general equilibrium models have consistently failed at. When Franklin Fisher published a research monograph in the series of the econometric society in 1983 on the topic "Disequilibrium

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[4] Friedrich Hayek. 1945. *The Use of Knowledge in Society. In: American Economic Review. 519–530.*

[5] Howitt, P. and R. Clower. 2000. *The Emergence of Economic Organisation. In: Journal of Economic Behavior and Organisation 41(1).*

Foundations of Equilibrium Economics,"[6] he had to report that research had not made much progress on these issues during the past 40 years. It seems that the same could be said today. So here is an area where the agent-based models really allow the frontier to be pushed a bit further because it permits for studying an economic system at a macroscopic level in and out of equilibrium.

In their paper, Ashraf, Gershman and Howitt build on a model with this price formation process by a self-organized network of business firms to study a stylized model of banking and to examine how banking and finance impact on the mechanism of exchange and the entry and exit of firms. They find some conflicts between micro- and macroprudential goals in regulation as well as familiar boom-bust cycles in which financial institutions exacerbate both booms and busts.

In combining the model with data, the agent-based model proceeds in a fairly similar way to the DSGE model presented by Benignio. The parameters – a much larger set in the case of the agent-based model – are calibrated and the model is simulated using this calibration. This leads to a particular system behavior for individual runs and on average across many runs, and it suggests certain properties of the system.

Thus, while at a certain level both approaches are fairly abstract and stylized, the agent-based model has a price formation process which – while based also on theoretical reasoning only – is much more in line with the fundamental facts of market exchange. But is this

important? Could it not be the case that an abstract analysis of equilibrium captures the salient qualitative properties of the economy as well as a model that has an explicit built-in price formation process? Only research will eventually be able to answer this question. The fact that agent-based models provide a tool that allows for a meaningful investigation not only of applications but of questions about the theoretical foundation of economic theory is certainly one of the attractive aspects of these models.[7]

Are Agent-Based Models More Realistic Models of the Macro-economy?

On the first day of the workshop, three additional programmatic presentations by agent-based modelers all advocated agent-based models on the grounds that they allow for a higher degree of realism in modeling economic systems. At first sight, this claim raises some deeper issues about the ultimate purpose of modeling.

One might argue to the contrary that the goal of modeling is not more realism, but higher abstraction to be able to qualitatively understand whatever phenomenon happens to be in the focus of analysis. Of course, once we have achieved a deeper qualitative understanding of a phenomenon, we would like to reach a level of quantitative understanding, perhaps even a prediction, that makes use of the insights gained. So, as J. Doyne Farmer put it nicely during the discussion, every modeling exercise comprises a scien-

[6]   *Fisher, F. M. 1983. Disequilibrium Foundations of Equilibrium Economics. Econometric Society Monographs 6. Cambridge University Press.*

[7]   *My use of Benignio and Ashraf, Gershman and Howitt to discuss the issue of equilibrium price formation does not do justice to the excellent discussions of both papers by Paul Pichler (Benignio) and Piergiorgio Alessandri (Ashraf, Gershman, Howitt), who more specifically took issue with the details of both models.*

tific aspect as well as an engineering aspect. Obviously, both aspects should matter in economics. Now, do agent-based models contribute more to the scientific or to the engineering aspect of economics? The presentations did not provide a fully clear answer, but the effort to construct more realistic models seems to be leaning more toward the engineering aspect.

Herbert Dawid, University of Bielefeld, gave a general presentation of the EURACE@unibi model, an agent-based simulation platform that can be used for policy evaluation at a European level. The model can reproduce stylized facts about macroeconomic data and other empirical facts like the size distribution of firms. In a policy simulation, different simulation batches are run for different policy interventions, and then the evolution of key economic variables is analyzed. Such simulations provide insights into policy questions like "what are the effects of labor market integration in the EU" and "what migration patterns between old and new EU member states might one expect as a result of these policies."

J. Doyne Farmer, Santa Fe Institute, gave an extensive overview of agent-based models, their past achievements and some of the general open issues. For Farmer, the key question is whether we are able to model the complexity of the real world. He believes that for many issues we face in economics, agent-based models will eventually turn out to be much more suitable than models based on conventional economic theory. Farmer believes that only agent-based models will eventually do this job well enough to be useful in an engineering sense, citing weather prediction as his frequently used role model.

Finally, *Domenico Delli Gatti, University of Milan,* presented a macro

model with fairly standard basic building blocks – households, firms, banks, government and a central bank. In its model of behavior and in its abstinence from equilibrium thinking, it is, however, clearly and importantly different from a standard economic macro model.

It seemed that the discussants of these papers, who were all from mainstream macroeconomics, were not persuaded that there was much to be gained by adding agent-based models to their modeling toolbox.

Michael Reiter, Institute for Advances Studies, Vienna, in his discussion of Herbert Dawid's presentation pointed out that the attempt to include heterogeneity, local interactions, incomplete markets and bounded rationality can all be handled within the framework of mainstream economics. The really unresolved open question in Reiter's view was how the dynamics of expectations can be modeled beyond mechanical learning rules. In his view, agent-based models have nothing to contribute to push the frontier here, since they use rather myopic and mechanical expectations mechanisms. The particular assumptions made in agent-based models seemed to him to be as stylized as the assumptions in the DSGE literature, and he found no criterion according to which he could judge the importance of assumptions about including particular frictions and deviations from rationality rather than others.

In a similar vein, *Karl Walentin, Sveriges Riksbank,* observed in his discussion of Domenico Delli Gattis paper that all the building blocks and interactions in this particular agent-based macro model are very much like those of any DSGE model, with the exception that agents follow different rules of behavior. He found no compelling arguments based on a priori reasoning

or empirical facts for the particular way in which the behavior is chosen, and found it remarkable that the rules of behavior neither change nor that there is any learning dynamics concerning the behavioral rules in place. He observed that too often, if agent-based modelers choose the DSGE model as an object of critique, they attack a straw man, and that the differences in the ability to model heterogeneity, incomplete markets and frictions between the two model classes are too often exaggerated.

J. Doyne Farmer, too, was confronted by his discussant Mike Wickens, University of York, with the question of on what grounds the merits of an agent-based model would ultimately be judged. Based on J. Doyne Farmer's distinction between engineering and science, he took a clear stance that ultimately economic models must be useful in the engineering sense. According to Farmer, precisely this may be the merit of a more detailed model which is built – in his words – with the help of a lot of "plumbing" and sometimes lacks of mathematical elegance. Farmer conceded, however, that agent-based models have yet to prove that they can do a good job as engineering tools. He personally seemed convinced that they would be eventually be able to do so, provided enough research resources in this direction are mobilized.

Surprisingly, the debate, despite the clearly voiced refusal by the mainstream economists to be persuaded by their competitors, was not really hard-hitting, and in the end the audience was left with the skillful and interesting presentation of two views of modeling the economy without much of a controversial discussion.

The reluctance to engage in an open battle of arguments beyond the contribution by the assigned discussant went both ways. For instance, when, *Frank Smets, ECB,* presented a standard DSGE model in which unemployment arises as a result of market power in the labor market on the second workshop day, he was confronted with a sweeping critique by his discussant, Axel Leijonhufvud, UCLA, in which the discussant concluded that the techniques and concepts applied in Smet's paper were "hopelessly inadequate" as a strategy to come to a deeper understanding of unemployment as well as the financial crisis and its aftermath. This critique, presented in a carefully crafted argument, was left standing in the room without much defense from the speaker, not to mention controversial debate in the audience.

The question of what advantages and disadvantages a more detailed model would have remained unresolved. If we had a model that would be able to reproduce any stylized fact about the economy, would this be a good model? Would it help our understanding of how the economy works? Is criticizing DSGE models really criticizing a straw man, or are there deeper issues that will not be settled with a bit of broader and deeper scholarship of the modern mainstream macro literature? All these questions, obvious and interesting as they might seem for such a workshop, remained essentially on the table.

Modeling Learning and Expectations

Expectations, and the correct modeling of expectations, seem to be one of the big conundrums of both agent-based and mainstream models. The workshop therefore gave some room to papers that come down straight to the matter of expectations and expectation dynamics.

The difficulty in coming to terms with modeling the expectations of economic agents lies in the problem of taking human reasoning correctly into account. While in the macroeconomic literature of the 1960s and 1970s, it was often assumed that expectations are merely adaptive reactions to macroeconomic aggregates, this form of expectation modeling was already then regarded as unsatisfactory because it implied that it was possible to "fool all of the people all of the time." In the subsequent rational expectations literature, this form of expectation formation was given up, and the concept of equilibrium thinking was pursued to its ultimate consequences. In a model where the agents know the model structure and know that prices will adjust to balance supply and demand, the only consistent way of reasoning takes this mechanism into account and forms expectations consistent with the model.

While this description of expectation formation by human subjects seems so obviously false that it does not even deserve further elaboration or debate, it is nevertheless hard to give up this way of reasoning once one has accepted the otherwise standard framework of general equilibrium thinking. Rational expectations are intimately connected to the conceptual framework of general equilibrium analysis in which trade always occurs at a publicly known vector of equilibrium prices. In this highly centralized mechanism of exchange, a rational expectations model almost conceptually enforces itself upon the modeler. If, on the other hand, the world is truly decentralized, as in Hayek's vision of the economic role of the price system or in Howitt and Clower's agent-based model of exchange, all expectations have to be adaptive because the true model of the

economy is unknowable. The whole debate about expectations and expectations dynamics, while seemingly a scholastic debate among insiders, therefore has a deeply conceptual dimension.

Liam Graham's paper "Learning, Information and Heterogeneity" takes up these issues by proposing three departures from a standard macro model. It suggests that equilibrium analysis does not necessarily require rational expectations. Agents are heterogeneous, have limited information and have to learn the structure of the economy. In these assumptions of imperfect information and the inability to form model-consistent (rational) expectations, Graham's models share features of some of the agent-based models. While imperfect information is important for the behavior of the aggregate economy, the inability to form rational expectations has only a minor impact on the properties of economic aggregates. Still, the economy converges to equilibrium. Discussant Markus Knell found this relative minor impact of learning behavior on the aggregate economy surprising and raised the question how far this result could have to do with other structural features of the model.

The question of model-consistent expectations kept popping up during the discussion of Paul De Grauwe's paper "Booms and Busts in Economic Activity: A Behavioral Explanation." De Grauwe presented a model where agents can switch between two behavioral rules in an otherwise standard DSGE monetary macro model: Either they can form expectations according to some fundamental analysis of the economy, or they can follow a trend. Depending on the share of agents behaving according to some particular rule, it becomes more costly for an

agent to stick with this particular rule, and he might eventually decide to switch. This creates boom-and-bust behavior with sharp asymmetries because during the boom the two groups form expectations that go into opposite directions while in busts all expectations point into the negative downward direction. While this model had many more interesting features and some problems, which were addressed by the discussant, Stefano Neri, it mainly led to a discussion of whether the agents who stick to the behavioral rules are rational. It was criticized in the general discussion that if the agents knew the structure of the model, both fundamentalists and trend followers would take this into account and form their expectations model-consistently and thus differently. Is this just sophistic splitting of hairs, or is there more to the discussion? One could argue that if the model really had such a simple structure and the macro economy and monetary policy could be described by the system of three equations as in the paper, then indeed the question why agents do not form model-consistent expectations has some legitimacy. Only in a truly complex environment does the assumption that expectations follow some adaptive process gain plausibility.

Bringing the Models to the Data: Problems and Unresolved Issues

A recurring debate during the workshop centered on how the models are validated empirically. This seems to be an unresolved issue more generally and is apparently not taken seriously enough in both approaches. From an empirical side, both camps seem to be satisfied if the model can somehow reproduce some stylized facts seen in the data. Both models "calibrate" parameters and then use simulations.

But does this capture the empirical challenges?

Let us start with equilibrium models first. Bringing an equilibrium model to field data always works with the auxiliary assumption that we observe data that are generated by equilibrium of the underlying economy. However, this auxiliary assumption cannot be verified independently using the field data. In this case, we look at the macroeconomy through a concept we cannot independently verify from the data we have. In such a setting, the whole exercise of calibration is also less convincing, as the analogy to the sciences suggests. If we calibrate a thermometer, we define 0 degrees Celsius as the freezing point of water and 100 degrees Celsius as the boiling point. The scale in between is determined by the theory of how mercury expands when temperatures rise. This theory is, however, independently verified using experimental data from the lab. Thus calibration only makes sense once we know that we have a reliable model of the problems we want to analyze. Equilibrium models do not pass this test.

But the same is true for the calibration of an agent-based model. To make calibration empirically useful, we would have to know that the agent model we use for the analysis is the right lens through which we look at the economy. But we need an independent source of data to gain some confidence that this is the case.

Thus, from an empirical point of view, both models seem to share a fundamental conceptual difficulty that impedes the empirical validation of the models with field data. The independent sources by which the tools and models we use to look at the world are verified in the sciences are experiments. The empirical validation of equilibrium models of markets is based

on research that has not progressed far yet,[8] nor are there many results in the agent-based literature, either. While these empirical issues were not discussed much at the workshop, they seem to be a field where both approaches show — at least structurally — similar gaps.

Conclusions

Economic modelers are currently experiencing competition from other modeling approaches. The competitors have by now achieved enough interesting results that an experiment like this workshop that brought together DSGE modelers and agent-based modelers in one program worked very well. The debate could have been a bit fiercer and hard-hitting, though. While economists need to work harder on their conceptual foundations, agent-based modelers in all their justified critique of standard economic models and their assumptions seem to underestimate the intricacies of concepts like equilibrium and expectations formation. It looks as if both approaches could learn from each other. A few more research workshops and a serious debate about some of the deeper conceptual issues may well be useful to realize the gains from this exchange.

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[8] *See, for instance, Bossaerts for a discussion of equilibrium asset pricing: Bossaerts, P. 2002. The Paradox of Asset Pricing. Princeton University Press.*

Notes

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