# Œ N B

## Oesterreichische Nationalbank

# Focus on Austria

## 2 / 2002

# Contents

*In this study we use microdata to examine the effects of changes in external trade and migration on both wages and the mobility of the Austrian labor force. For men, migration and higher import growth mainly imply decelerating wage growth for blue-collar workers whereas no such changes were recorded in the white-collar group. Among the female workforce, industry stayers are the group most affected by wage losses as a result of higher imports and immigration. Changes in external trade have a major impact on the distribution of income. Men in the upper income quartile gain from increasing exports. By contrast, men in the lower income quartile are faced with slower wage growth. Women experience similar, but less significant effects. Blue-collar workers are more likely to be forced into unemployment when migration and imports are on the rise. Transition to unemployment proved to be very heterogeneous throughout all other groups. Our findings suggest that in the course of the eastward expansion of the EU, changes in external trade will hardly affect the labor market but may, if slightly, alter the distribution of income. Migration following EU enlargement, by contrast, is expected to generate more pronounced effects. Our results indicate that migration would chiefly dampen wage growth for blue-collar workers and female industry stayers and at the same time increase the risk of unemployment for men (blue- and white-collar workers). This effect, however, is not expected to be very large.*

*This study explores the implications of enlargement for the individual institutions and current decision-making procedures of the EU, as amended by the Treaty of Nice, with regard to both purely organizational issues and European economic governance. An analysis reveals that the EU's current institutional setup has yet to undergo further adjustments. In the light of today's institutional framework conditions, enlargement could lead to a gridlock in economic policy decision-making above all in the Council of the European Union. In the future, the Eurogroup, closer cooperation and the open coordination method could become more significant instruments facilitating economic policy reforms. For the relationship between fiscal and economic policies on the one hand and monetary policy on the other, this could translate into even greater pressure for monetary adjustment.*

*Basically, the banking system in Central and Eastern Europe has successfully evolved into a competitive financial sector since the onset of transition. The question is now how EU accession will affect the competition among banks in the new Member States. This study analyzes the dominant role of foreign banks in Central and Eastern European markets and looks at the profitability and efficiency of the system as a whole. Among other things, increasing competition as a consequence of EU accession will have an impact on margins; in a rapidly growing market, raising productivity reserves may help counterbalance a potential reduction in profits. In this respect, Central and Eastern European banks will become more flexible and efficient in the course of EU accession. At the same time, the banking system's intermediation capacity in these markets is expected to improve significantly in the near future.*

*Upon EU entry, the Eastern European bond markets will lose their emerging market status and will be integrated into Europe-wide bond benchmarks. This will open up new diversification options to European – and thus to Austrian – bond investors. As speculation about joining the euro area will continue to drive interest rates and bond yields in Eastern European countries down to euro area levels, interest rates and bond yields will continue to fall, and prices to rise, on their money and bond markets. In light of the Eastern European countries' low market capitalization compared to the more established European markets, the eventual inclusion of the accession countries in Europe-wide benchmarks will, on balance, entail only marginal liquidity effects for European financial markets (stock and bond markets). The stock market is in fact likely to show a continuous portfolio reallocation, as investment and diversification options will gradually expand and as accession country equity markets are likely to outperform other European equity markets. The Austrian stock market, a gateway to Eastern European markets, could serve investors as a substitute for direct (and riskier) investment in Eastern Europe and could temporarily attract additional liquidity.*

*EU accession countries in Central and Eastern Europe are using different exchange rate regimes, which in turn require different strategies for entering EMU. These exchange rate regimes also affect the trade and investment decisions of firms in the current EU Member States. The aim of this paper is to assess some of the effects the accession countries' exchange rate regimes exert on the euro area via trade and investment channels. The paper presents theoretical arguments and empirical findings that consider the impact of exchange rate volatility, the process of real appreciation and the possible effects of exchange rate crises in the accession countries on the euro area.*

*This study assesses the indicator quality of financial market prices for monetary policy, focusing principally on methods capable of mapping expectations in the euro area financial markets in a consistent manner. In this context, two EURIBOR instrument-based indicators are introduced: the yield curve, representing market participants' interest rate expectations, and — additionally — several indicators of uncertainty based on the prices for options on interest rates. The study explains how to calculate and interpret these indicators and examines their informative value. Moreover, it analyzes, in an exemplary manner, how market expectations change in the wake of monetary policy measures.*

The opinions expressed in the section "Studies" are those of the individual authors and may differ from the views of the Oesterreichische Nationalbank.

# Editorial

From today's perspective, the conclusion of the enlargement negotiations between the European Union (EU) and most of the accession countries appears to have come within reach. Even if some of the central issues – agriculture, and how to fund EU enlargement – have not been resolved yet, a 25-member EU is poised to be established in the medium term. Because of its close economic ties to Central and Eastern European countries (CEECs), Austria feels the repercussions of the enlargement process more strongly than other EU member countries, although trade and direct investment had already intensified substantially in the 1990s following the opening up of Eastern Europe. In other words, Austria has already experienced some of the changes which will be triggered by EU enlargement. Nevertheless, the relations with the accession countries will achieve a new quality once these countries have actually joined the EU.

In the light of these developments, the Oesterreichische Nationalbank has devoted considerable analysis efforts to the CEECs and has thus acquired considerable expertise in the field. This issue of the OeNB's quarterly Focus on Austria is dedicated to "EU Enlargement to the East: Effects on the EU-15 in General and Austria in Particular." The contributions treat important general macroeconomic aspects and also deal with specific monetary policy and financial market topics of special interest to central banks.

The first contribution, which is by Isabella Lindner and Karin Olechowski-Hrdlicka, covers the institutional impact of enlargement on economic and monetary policies and highlights possible implications for the structure of the EU and its individual institutions, bodies and forums. In addition, the authors analyze the pros and cons of various reforms of decision-making processes.

EU enlargement has various impacts on EU labor markets, above all as a result of changes in foreign trade and in migration flows. The wage structure in Austria and the mobility of Austrian labor is subject to potential adjustments resulting from EU enlargement. Like many other papers, the study by Helmut Hofer and Peter Huber comes to the conclusion that the effect of enlargement on EU labor markets will be rather small and will concentrate on particular segments, affecting mainly less-qualified labor.

Certainly of key interest from the viewpoint of a central bank are the effects of EU enlargement on the banking sector. In the CEECs they have been partly anticipated – rehabilitation and reorganization have already taken place – and partly they are still outstanding. In her study, Marianne Kager notes that CEE banks are quite small both in absolute and in relative terms, and that an above-average share of these banks is owned by foreign investors. The low degree of intermediation is also a feature peculiar to CEE banks. What it means is that for a number of reasons, such as low household incomes or funding through foreign parent companies, many potential bank customers have not acquired standard bank products such as a salary account, passbook savings account or a loan.

The CEE banking sector being so small, the possible effects on the EU's banking sector are to be considered low. However, Austria has a position apart because it has invested heavily in CEE. Altogether, Eastern enlargement will reduce the risks for Austrian banks in these countries and will drive up the growth potential. Owing to Austrian banks' strong presence in this market, the effects are not only significant for individual banks, but also have an impact on the entire Austrian banking sector.

Upon EU entry, the Eastern European bond markets will lose their emerging market status and will be integrated into general European bond benchmarks. The analysis by Edward Ludwig and Peter Schlagbauer of the impact of Eastern enlargement on stock and bond markets, which selects Poland, the Czech Republic and Hungary as examples, underlines the new, enhanced perspectives for investors and describes the possible effect on interest rate convergence and on EU bond markets. As market capitalization is low in the CEECs, the impact on Western European bond markets will be negligible. Much the same applies to stock markets, where CEE capitalization is also too low to produce any significant liquidity effects on Western European markets. Only Austria's stock market could receive an impulse in the wake of EU enlargement.

The study by Gabriel Moser, Wolfgang Pointner and Peter Backé examines different exchange rate strategies of accession countries on their way to Economic and Monetary Union (EMU) and highlights possible implications on the euro area. According to current wisdom, all accession countries are striving to join EMU in the medium term. The participation in EMU is in fact laid down in the Maastricht Treaty, which does not accord new EU Member States any freedom of choice in this matter. The current debate centers principally on the issue of when the best time to join is. In practice, the CEECs currently pursue widely different exchange rate regimes. The contribution analyzes the issue of what exchange rate strategy is best for the CEECs on their way to EMU and shows what challenges monetary policymakers face in this context.

For the sake of completeness let me point out that this issue of Focus on Austria only contains part of the English-language version of the contributions in the special issue of Berichte und Studien 2/2002 on "EU Enlargement to the East: Effects on the EU-15 in General and Austria in Particular," notably the studies which cover topics of relevance for the EU countries, in particular Austria. The other studies – those with a strong thematic CEE focus – may be found in the OeNB's publication on Eastern Europe, the Focus on Transition, in the 1/2002 issue. The Focus on Transition also contains a literature survey which sheds light on the full range of studies dealing with EU enlargement and presents a succinct overview of the current state of knowledge about key issues. All three publications may be viewed on the OeNB's website at http://www2.oenb.at/pubs_p.htm.

This "joint venture" between different OeNB publications was a one-off event. Readers who have an ongoing interest in CEECs and their economic behavior may take note that the Focus on Transition is a semiannual publication which regularly reports on the most recent economic developments of CEECs and analyzes a broad range of questions related to the process of transition, accession and catching up. Although this process has made steady headway, it is far from having been completed, which gives ample room for further research on these topics.

Doris Ritzberger-Grünwald

# Reports

## Austria

**February 2002**

28   February 28, 2002, marks the end of the dual circulation period, during which both schilling and euro had legal tender status. However, the *Oesterreichische Nationalbank (OeNB)* will exchange unlimited amounts of schilling-denominated banknotes and coins (current series) against euro for an indefinite period.

**April 2002**

2   On April 2, 2002, the *Financial Market Authority* became operational as an independent body under the Financial Market Authority Act. This Act was passed in the summer of 2001 and amended in February 2002.

## European Union

**February 2002**

4   The *European Commission* presents a first progress report on the impact of EU enlargement on economic and social cohesion in Europe, which outlines the state of the debate on future cohesion policy for the period after 2006. The Commission stresses that cohesion policy should continue to target the least developed regions; besides, the funds to be allocated to this end should not fall below the 1999 and 2006 levels so as not to call the credibility of future cohesion policy into question.

5   The *European Parliament* adopts a motion for a resolution filed by MEP Karl von Wogau on the implementation of financial services legislation with an overwhelming majority. The President of the European Commission, Romano Prodi, underlines that the Commission respects the codecision procedure and the right of the European Parliament to information and transparency. In maintaining an institutional balance, the Commission aims to treat the European Parliament and the European Council equally.

7   Wim Duisenberg, the president of the *European Central Bank (ECB),* announces that he will resign from office on July 9, 2003.

9   The euro becomes the sole legal tender in *Ireland.*

12   The *Ecofin Council* meeting is dedicated to the following topics:
The Ecofin Council endorses the updated stability programs submitted by Greece, Spain, France, Ireland and Italy and the convergence program by the United Kingdom, which comply with the changes agreed with the Economic and Financial Committee, on the basis of the recommendations of the European Commission. In the case of Germany and Portugal, the Council unanimously adopts statements on the budgetary situation in these two countries. In the light of the commitments by the governments of Germany and Portugal to reduce their budget deficit, the Ecofin Council does not put the recommendation of the European Commission to vote and closes the early-warning procedures.
The Ecofin Council holds an orientation debate about the Broad Economic Policy Guidelines with a view to contributing to the Spanish Presidency's drafting of a "Key Issues Paper."

During the discussion about the enlargement of the *European Union (EU),* several Member States criticize the budgetary framework proposed by the European Commission. They call in particular for strict adherance to the Agenda 2000 agreed in Berlin, in other words, accession countries must not be granted agricultural direct payments. Besides, the Commission proposals envisage only little room for maneuver for the Ecofin Council, and the structural outlays are too high. The Commission should therefore revise its proposals. Chairman Rodrigo Rato announces that the common positions on agricultural, structural and budgetary policy will be adopted towards the end of the Spanish Presidency.

EU Commissioner Pedro Solbes reports on the state of the euro cash changeover.

14    The *EU Council* adopts five directives aimed at fully liberalizing the telecommunications market within the EU by spring 2003. The directives are designed to guarantee a level playing field and ensure low tariffs for consumers.

17    The *French franc* ceases to be legal tender following the introduction of the euro.

21    The *European Commission* publishes a report on the implementation of the 2001 Broad Economic Policy Guidelines. According to this report, macroeconomic policies passed the stress test even though the macroeconomic environment deteriorated considerably in 2001. Structural budgetary positions did generally not worsen, but several Member States are not yet fulfilling the "close to balance or in surplus" requirement of the Stability and Growth Pact. The pace of labor market reforms slowed down in 2001. While product markets integrated further in 2001, progress on the internal market for services was slow.

27    *Guernsey and Jersey* pledged their commitment vis-à-vis the Organisation for Economic Co-operation and Development (OECD) to enhance the transparency of their tax systems.

28    Given the end of the dual circulation period, the *national currencies of Austria, Belgium, Finland, Greece, Italy, Portugal and Spain* cease to be legal tender.

**March 2002**

1    At the opening of the Convention on the future of the *European Union (EU),* which aims at working out proposals for institutional reforms, José Maria Aznar, President of the European Council, quotes the creation of an "effective Europe" as one of the EU's most prominent goals, stating that "the entry into circulation of the euro must be understood as a point of departure and not of arrival." Items on the agenda of the inaugural meeting are the rules of procedure, the timetable of meetings and the equality of accession country representatives.

Two months after the cash changeover, the euro has now become sole legal tender in the twelve euro area countries.

4    At the *Eurogroup meeting,* members discuss the economic situation in the Eurogroup countries and developments related to the introduction of euro notes and coins.

5   The *Ecofin Council* focuses on a number of key issues. In preparation of the European Council of Barcelona, finance ministers debate strategies for reviving the European economy. Moreover, the Council adopts Denmark's Convergence Programme on the basis of a recommendation by the European Commission. Further topics include: the Commission's final report on the advantages and disadvantages of globalization; expectations in the International Financing for Development Conference in Monterrey; the discharge of the Commission for the budget of the financial year 2000 and approval of the budget guidelines for 2003; the Green Paper on the criminal-law protection of the financial interests of the Community and the establishment of a European Prosecutor; an update on the euro changeover process as well as proposals for the creation of a Euro-Mediterranean Bank (EMB) and administrative cooperation in tax matters.

7   The *European Commission* files a complaint at the World Trade Organization (WTO) on U.S. special tariffs on steel.

8   In *Sweden,* opinion polls for the first time indicate a majority of 47% in favor of the introduction of the euro; 34% of the Swedish population oppose it and 18% are indifferent.

9   The *euro* replaces the Deutsche mark as legal tender in *Kosovo.*

12   At its 17th meeting in Brussels, the *EEA Council* welcomes the outcome of the Laeken European Council and underlines the common objective of a simultaneous accession of new members to the EU and the European Economic Area (EEA) in order to secure the homogeneity and smooth functioning of the EEA.

13   The *Commission*-ordered study "EU-U.S. Monetary Relations after the Introduction of the Euro" deals with the economic and monetary implications of the euro cash changeover. According to this study, the introduction of euro notes and coins did not have any fundamental impact on the currency relations between Europe and the U.S.A. and did not reduce Europe's dependence on U.S. economic developments. The study further indicates that, at an exchange rate of about 90 U.S. cents to the euro, the euro is undervalued by 25% to 30% against the U.S. dollar and might become an alternative anchor currency for nonmember countries in the future.

The *Austrian Mint (Münze Österreich AG, MÖAG)* issues the first Austrian euro gold coin "Religious Orders and the World" with a face value of EUR 50.

14   The *European Ombudsman,* who safeguards citizens' rights, called upon Romano Prodi, President of the European Commission, to instigate an investigation against Finland for refusing to circulate 1 and 2 cent coins.

15/16 The *Barcelona European Council* largely seeks to maintain the momentum in implementing the long-term economic targets of the European Council of Lisbon, highlighting its intention to simplify and consolidate the Lisbon strategy to render the implementation process more effective. Three Council reports are dedicated to areas requiring special attention, namely active employment policy, the integration of financial markets and the liberalization of network industries. The Key Issue Paper pre-

sented by the Ecofin Council on budget policy and the coordination of economic policies is accepted as the basis of the Broad Economic Policy Guidelines; in addition, fiscal policy coordination measures are to be reinforced, the overall euro area policy mix is to be analyzed systematically and statistics are to be improved.

At their 2003 spring meeting, the Council and the Commission are to present reports on pension reforms, the health care system and care for the elderly.

Furthermore, all Member States will aim at raising their average levels of public development assistance to a minimum of 0.33% of the EU's GDP by 2006.

The European Council calls upon the Commission to present a report on the consequences of "Basel II" for all sectors of the European economy with particular attention to small- and medium-sized enterprises.

18  The *European Commission* publishes the first Eurobarometer Report, drawn up in October 2001 by questioning 12,000 citizens in 13 accession countries (Bulgaria, Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, the Slovak Republic, Slovenia and Turkey). According to the report, the majority of citizens in the accession countries has a positive impression of the EU and 65% consider an EU membership of their respective country to be historically and geographically justified.

20  *Sveriges Riksbank* raises its repo rate by 0.25 percentage point to 4%, on the grounds that the inflation forecast for the next one or two years exceeds its inflation target.

21  The *ECB* reports a net profit of EUR 1.822 billion for 2001, of which EUR 1.458 billion are to be transferred to the national central banks and EUR 364 million are to be allocated to the ECB's general reserve fund.

29  The period during which the *OeNB* exchanges legacy currencies for euro free of charge ends on this day. The OeNB will exchange current schilling notes and coins for an unlimited period of time.

**April 2002**

2  The *European Commission* informs the Austrian government in writing that it considers the existing government guarantees for specific public credit institutions (state mortgage banks, with the exception of the Salzburg State Mortgage Bank and some savings banks) as state aid that distorts competition. The Austrian government is called on to comment on the preliminary opinion of the European Commission.

10  The *European Union (EU)* is intent on securing a stronger position in the International Monetary Fund (IMF). EU ministers of finance discuss bundling European seats and votes on the IMF's Executive Board. The EU has come to consider the heterogeneous representation of its interests in the IMF a growing problem. For example, the euro area has no official status with the IMF; the ECB has only observer status.

12–14  In the framework of the informal *Ecofin Council* in Oviedo, Bank of Greece Governor Lucas Papademos is nominated for the post of ECB Vice-President.

Furthermore, discussions center on international financial topics, such as the new Basel Capital Accord, which is currently under discussion. The need to push forward developments is underlined so that the Accord may go into effect at the end of 2002.

There is unanimous consent about the need to step up efforts to improve cooperation among financial supervisory authorities throughout the EU and to develop uniform standards for rating companies and for accounting.

Another important issue is that of European representation in international financial institutions. The Ecofin Council reiterates its wish that concrete proposals be developed.

The extended *Eurogroup* examines the economic situation and the policy mix within the euro area. The international economic outlook for 2002 is assessed on a carefully optimistic note; the medium-term prospects for the EU economy is viewed as positive. However, strict budget discipline must be maintained.

15/16 At its third plenary session, the *EU Reform Convention* deals with specific topics related to EU responsibilities, above all the vertical distribution of competences. Chairman Valéry Giscard d'Estaing does not draw any conclusions from the debate, which is characterized by a basic consensus. He recalls that the discussion about the delimitation of competences and the range of instruments the EU uses to implement its competences is on the agenda for the Convention in May.

18 The *Governing Council of the ECB* has no objections to the appointment of Lucas Papademos, Governor of the Bank of Greece, to the post of ECB Vice-President. After the European Parliament has submitted an opinion, Lucas Papademos may be officially appointed by the EU heads of state or government. Lucas Papademos is to start his eight-year term June 1, 2002.

24 The *European Commission* publishes its spring forecast, in which it assesses economic prospects for the euro area as follows:

After having contracted in the fourth quarter, the economy seems to be recovering slowly, as signaled by the return of consumer and investor confidence. GDP growth is anticipated to come to 1.4% in 2002 and to rise to 2.9% in 2003. Despite a temporary surge in unemployment in 2002 – unemployment is stated as coming to 8.5% – employment growth will continue in 2002 at 0.3%. Inflation is projected to amount to 2.2% in 2002 and to 2.0% in 2003. The general government deficit in the euro area is forecast to post a deficit of –1.5% in 2002, and of –1.2% in 2003.

25 *Sveriges Riksbank* raises its repo rate by 0.25 percentage point to 4.25% from May 2, 2002, citing higher inflationary expectations. This step follows a repo rate hike of 0.25 percentage point in March 2002.

**May 2002**

6   The *Eurogroup* discusses the overall economic situation, Portuguese fiscal policy and the current wage bargaining rounds (in Germany, the Netherlands and Spain) as well as the possibility of the Ecofin Council providing a contribution to the Convention on the future of the European Union.

7   The Broad Economic Guidelines are on the agenda of the *Ecofin Council.* Commissioner Pedro Solbes states that the four main challenges to EU economic policymakers are maintaining macroeconomic stability, improving the use of human resources, achieving higher productivity growth and sustainability. The Ecofin Council reaches agreement on the proposed directives on market abuse and financial conglomerates. Furthermore, the Council discusses the taxation of interest income and adopts a mandate for the Economic and Finance Committee for future work on financial stability and supervision in the EU.

8   The *Austrian Mint (Münze Österreich AG)* issues the first 5 euro coin. The shape of the nine-sided coin is an absolute novelty. The silver commemorative is dedicated to the 250th anniversary of Schönbrunn Zoo in Vienna.

9   The President of the *European Central Bank (ECB),* Willem Duisenberg, receives the International Charlemagne Prize of Aachen on behalf of the euro. The renowned prize has been awarded for outstanding achievements towards European integration since 1950; this year is the first time that the prize goes to the product of a political decision rather than to a personality or an institution.

15   In its Public Finance Report, the *European Commission* calls upon the Member States to pursue prudential fiscal policies in order not to put at risk the objectives formulated at Lisbon. Germany, France, Italy and Portugal are asked to step up their fiscal consolidation efforts.

16   In Frankfurt, *Willem Duisenberg* accepts the "European Banker of the Year Award" on behalf of the Governing Council of the ECB.

18   A survey by the *European Commission* shows that the majority of Europeans is happy with the new currency; approval ranges from 49% in Germany to 86% in Belgium. Austria ranks third, ahead of Germany and Spain, with 65% of the population having a positive attitude towards the euro.

20   The governor of *Sveriges Riksbank,* Urban Backström, announces that he will step down from his post at the end of the year.

22   The *European Commission* presents its first contribution to the European Convention. The paper envisages, among other things, improvements in the coordination of economic policies demanding that the Commission have a right of proposal instead of being only entitled to give recommendations in its assessments of the stability and convergence programs, an adjustment of the functioning of the Eurogroup and a stronger involvement of the European Parliament, which currently does not have a formal role in the coordination of economic policies. The Commission also suggests that the euro area would derive a great advantage if the European Commission assumed its external representation — after

intense consultations with and the approval of all institutions and bodies concerned – at a given point in time.

According to the *European Commission's* Convergence Report, Sweden is not yet prepared to join Monetary Union, although the government is planning to hold a referendum on this question already in 2003. The reasons for this assessment are fluctuations in the exchange rate of the Swedish currency and the fact that the Swedish central bank's independence is not adequately safeguarded by law.

23  According to a study presented by *Commissioner for Enterprise and Information Society, Erkki Liikanen,* the EU still lags behind the U.S.A. in terms of productivity. The study shows that the EU reached only 78% of U.S. productivity in 2001; Austria recorded 89%, ranking fifth in Europe. While U.S. labor productivity climbed by an annual 1.9% between 1995 and 2001, Europe achieved an annual growth rate of merely 1.2%.

27  The *Governing Council of the ECB* agrees on a Code of Conduct for its members, which emphasizes that the members of the Governing Council "shall act in the general interest of the euro area" and "shall observe the highest standard of ethical conduct." The members shall not seek or take instructions from any government of a Member State or from any other body.

# Economic Outlook for Austria from 2002 to 2004 (Spring 2002)

## 1  Summary

Gerhard Fenz,
Martin Spitzer

Editorial close:
May 17, 2002

Until recently, most forecasters still expected a rapid economic revival in the U.S.A. and in Europe. Meanwhile, however, these expectations have proved to be somewhat overoptimistic. Opinion polls still indicate rather subdued sentiment and fluctuating confidence, both of consumers and of nonfinancial corporations. Other indicators, however, point toward a vigorous upswing in the Austrian economy, after the downtrend in the second half of 2001. External demand, which gradually picked up in early 2002, and the still favorable financing conditions are expected to support Austrian businesses' investment activities. The increase in inventories at the beginning of the year gave an additional impetus to GDP growth. Supported by stable consumer demand, this development substantially accelerated economic activity during the first half of 2002. But given the growth slump in mid-2001, real GDP is still set to grow by no more than 1.1% in 2002. Following the initial impetus gained from

Table 1

### OeNB Spring 2002 Forecast for Austria – Key Results

|  | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| *Annual change in % (real)* | | | | |
| **Economic activity** | | | | |
| Gross domestic product (GDP) | +1.0 | +1.1 | +2.4 | +2.6 |
| Imports of goods and services | +3.6 | +3.2 | +5.9 | +6.4 |
| Exports of goods and services | +5.5 | +3.2 | +6.4 | +7.0 |
| Private consumption | +1.3 | +1.4 | +1.9 | +2.3 |
| Government consumption | −0.2 | +0.2 | +1.2 | +0.5 |
| Gross fixed capital formation | −1.5 | +0.6 | +3.6 | +3.6 |
| *% of nominal GDP* | | | | |
| Current account balance | −2.2 | −2.6 | −2.4 | −2.3 |
| *GDP percentage points* | | | | |
| **Contribution to real GDP** | | | | |
| Private consumption | +0.7 | +0.8 | +1.1 | +1.3 |
| Government consumption | −0.0 | +0.0 | +0.2 | +0.1 |
| Gross fixed capital formation | −0.4 | +0.1 | +0.8 | +0.8 |
| Domestic demand (excl. changes in inventories) | +0.3 | +1.0 | +2.1 | +2.2 |
| Net exports | +1.0 | +0.0 | +0.4 | +0.4 |
| Changes in inventories | −0.3 | +0.3 | −0.1 | +0.0 |
| *Annual change in %* | | | | |
| **Prices** | | | | |
| Harmonized index of consumer prices | +2.3 | +1.6 | +1.6 | +1.7 |
| Private consumption expenditure (PCE) deflator | +2.3 | +1.6 | +1.7 | +1.7 |
| GDP deflator | +1.8 | +0.8 | +1.6 | +1.5 |
| Unit labor costs (whole economy) | +2.0 | +1.2 | +0.5 | +0.6 |
| Compensation per employee (at current prices) | +2.8 | +2.6 | +2.4 | +2.7 |
| Productivity (whole economy) | +0.8 | +1.4 | +1.9 | +2.1 |
| Compensation per employee (at 1995 prices) | +0.4 | +1.0 | +0.7 | +0.9 |
| Import prices | +2.2 | +1.4 | +1.0 | +1.3 |
| Export prices | +1.6 | +1.3 | +1.0 | +1.3 |
| Terms of Trade | −0.6 | −0.1 | −0.0 | −0.0 |
| *%* | | | | |
| **Labor market** | | | | |
| Unemployment rate (Eurostat definition) | 3.6 | 3.9 | 3.7 | 3.6 |
| *Annual change in %* | | | | |
| Payroll employment | +0.5 | +0.1 | +0.9 | +0.9 |
| *% of nominal GDP* | | | | |
| **Budget** | | | | |
| Government debt | 61.7 | 60.8 | 58.5 | 56.2 |
| Budget balance | +0.1 | −0.2 | −0.2 | +0.2 |

*Source: OeNB spring 2002 forecast.*

external trade, households' rising disposable income will carry a further economic upswing, resulting in real GDP growth of 2.4% and 2.6% in 2003 and 2004, respectively.

Private consumption will remain the mainstay of the Austrian economy. Households' disposition to smooth their consumption level leads to a relatively stable growth of household consumption expenditure. Household consumption will again pick up momentum in the course of 2002, as inflation will remain low. Dynamic employment gains expected for 2003 and 2004 will further accelerate growth.

Business expectations have been increasingly optimistic since the beginning of 2002, as international conditions improved. In combination with favorable financing conditions, this leads us to expect a surge in investment in plant and equipment. The continued unfavorable development in the construction sector should also – slowly – improve. On the back of households' reviving income situation, the construction sector will rebound slightly as of mid-2002 and expand at a moderate pace in 2003 and 2004.

Chart 1

**Real GDP Growth in Austria**

*Change against the previous period in %*



Quarterly growth rates, annualized
Annual growth rates

*Source: OeNB spring 2002 forecast.*
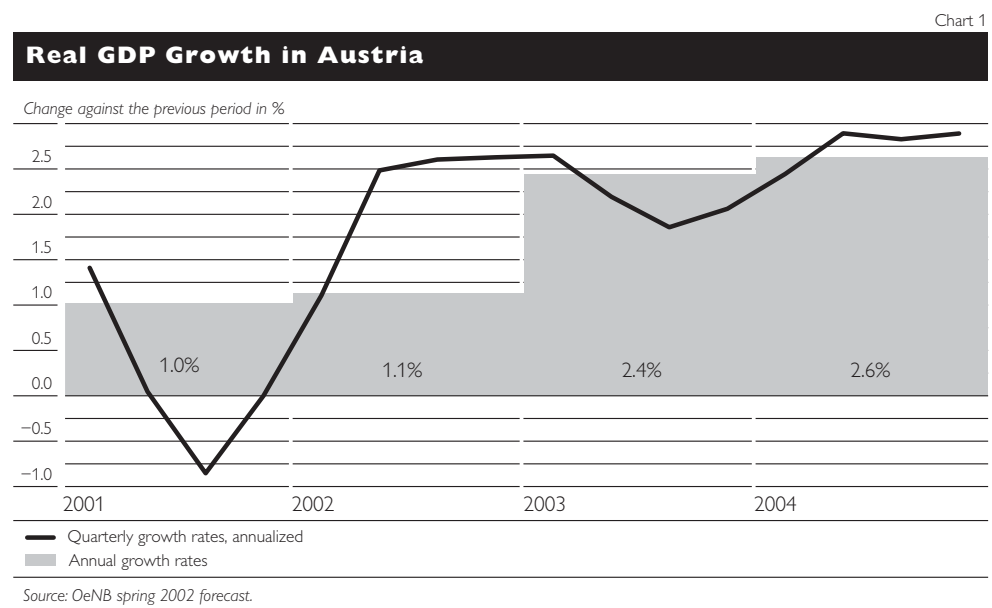
As global macroeconomic conditions brighten, real exports will accelerate significantly in 2002, despite the lackluster economic recovery in Germany. The momentum of quarterly growth rates in 2002 illustrates that economic revival chiefly relies on exports of goods and services, investment in plant and equipment and an expansion of inventories. In the past, real import growth generally developed in parallel with real exports. But in 2002, real imports are set to grow faster than exports as inventories expand, investment in plant and equipment augments and consumer demand remains stable. Net exports will, therefore, not contribute to GDP growth in 2002. In 2003 and 2004, Austrian export markets will chalk up higher gains than domestic demand and price competitiveness is expected to remain favorable, causing exports to again pick up more strongly than imports. This will translate into a net export contribution to GDP growth of 0.4 percentage point in both 2003 and 2004.

Experts forecast a slight deterioration of the current account for 2002, as the import share of investment in plant and equipment and in inventory is relatively high. The vigorous export growth envisaged for 2003 and 2004, however, will counteract this development. The positive trend in tourism leads us to expect an improvement of the balance on services in 2002. The current account deficit will thus moderately widen to 2.6% of GDP in 2002 and then return to 2.3% in 2003 and 2004. It is interesting to note that the entire current account deficit of the year 2004 will be attributable to the balances on the income and transfer accounts. For the first time since 1993, however, the balance on goods and services should be even in 2004.

Low productivity gains and rising unit labor costs will markedly dampen the demand for labor in 2002. As a consequence, payroll employment will merely rise by 0.1%. Assuming moderate pay hikes, shrinking nonwage labor costs and a much more buoyant economic growth, demand for labor is expected to be clearly on the rise again in 2003 and 2004, driving up payroll employment by 0.9% in both years. The momentum of labor supply remains weak over the entire forecast horizon. The predicted developments of employment and labor supply result in a 3.9% rise in the unemployment rate (Eurostat definition) in 2002 and a decline to 3.7% and 3.6% in 2003 and 2004, respectively. As the economy recovers, productivity growth will again accelerate over the forecast period. Unit labor costs will grow at a slower pace, thus supporting the competitiveness of the Austrian economy.

Inflation will have declined substantially by mid-2002. The assumed oil price developments and the rise in domestic demand lead us to expect that inflationary pressures will augment slightly in the second half of 2002. All told, the inflation rate of 2002 will come to 1.6%. Over the remainder of the forecast horizon, HICP inflation will stabilize at about 1.6% or 1.7%. The moderate development of energy prices offsets the demand side-induced greater inflationary pressure caused by more vigorous economic activity and higher household income.

At a surplus of 0.1% of GDP thanks to unexpectedly high tax revenues, the government sector already managed to reach the target of a balanced general government budget in 2001. For both 2002 and 2003, however, the OeNB predicts a narrow deficit of 0.2%. While the 2002 deficit is largely ascribable to the weak economic situation and the introduction of child-rearing benefits, the OeNB expects that the assumed decrease in nonwage labor costs together with higher wage settlements in the government sector will burden the budget in 2003.

## 2  Conditioning Assumptions

The OeNB compiled this forecast in cooperation with the European Central Bank (ECB) and the other national central banks of the euro area. To ensure the consistency of the individual forecasts, they are all conditioned on the same underlying assumptions about the global economic developments in the years ahead. Based on quarterly data, the forecast also takes into account intrayear trends, spanning a forecast horizon that reaches from the first quarter of 2002 to the fourth quarter of 2004. The cut-off date for technical assumptions on interest rates, raw material prices and exchange rates was May 8, 2002, that

for underlying assumptions on global economic developments was May 17, 2002.

### 2.1 Global Economic Developments

The global economy's growth slump assumed in the fall 2001 forecast did come to pass, although not to the extent envisaged. In 2001, the world economy picked up 2.5%, which is 0.5 percentage point more than predicted in the fall of 2001. The resulting greater statistical carry-over effect also led to a substantial revision of global economic growth prospects for 2002 (by 1 percentage point to 2.5%). The high elasticity of international trade flows with regard to world economic growth resulted in a marked rise of the growth prospects for world trade outside the euro area from 0.4% to 2.1%, which, however, will have little direct effect on the growth of Austrian export markets, given the low degree of trade integration with the U.S.A. and Asia (excluding Japan). Against the general trend, growth forecasts for Austrian export markets even had to be scaled down, which is largely attributable to the sluggish economic recovery of Germany, Austria's most important trading partner. The receding growth of German import demand – of slightly under 0% in 2002 compared to 2% projected in the fall 2001 forecast – required a revision of the growth prospects for Austrian export markets from 2.6% to 1.5%. Indirectly, however, the brighter international economic outlook will also feed through to Austrian economic growth. The improved industrial confidence in the U.S.A. and in Germany, in particular, also causes domestic businesses to view future economic developments more optimistically.

Assumptions about U.S. economic growth are somewhat more uncertain. Even though the slump in economic activity was shorter than envisaged and the country has obviously overcome recession and the consequences of September 11, 2001 – as illustrated by an annualized quarterly growth rate of 5.6% in the first quarter of 2002 –, considerable uncertainties regarding the strength of the economic upswing remain. One of the reasons for the high GDP growth at the beginning of 2002, apart from a surprisingly stable private consumption and a hefty rise of government expenditure, was that inventories were reduced more slowly than in previous quarters.[1]) Their contribution to growth, however, will only continue to be significantly positive in the second quarter of 2002, and at a markedly lower rate than in the first quarter. By contrast, investment will decline further in 2002 owing to excess capacities and shallow corporate profits. Positive signals for the corporate sector primarily stem from confidence indicators. In 2003 and 2004, the corporate sector's investment activities should rebound and, together with stable private consumption, contribute to a rise in value added, which will be carried by domestic demand. Real GDP growth will come to 2.2%, 2.7% and 3.3%, respectively, between 2002 and 2004. This optimistic scenario is buttressed by robust productivity growth throughout recession. Major risk factors in this forecast are the persisting imbalances in the U.S. economy. In the course of the 2002 economic upturn, the U.S. current account deficit will again widen notably, reaching about 4.5% to 5% of GDP. Private consumption will only be able to act as a stabilizer if we

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1   *Without changes in inventories, the annualized quarterly growth rate only comes to 2%.*

assume the saving rate to decline further, to just over 1% of disposable house-hold income. Furthermore, the U.S. budget deficit will again increase significantly. The high debt ratio of households and nonfinancial corporations constitutes a further uncertainty, as its reduction would decelerate the growth rate of domestic demand.

As in the previous two quarters, the Japanese economy also shrank in the fourth quarter of 2001. The annualized quarterly growth rate of real GDP of –4.7% largely results from a slump in private investment activity. Economic performance is predicted to go down by –0.9% also in 2002. Intrayear trends, however, indicate a hesitant recovery of the Japanese economy. An improved external macroeconomic environment should boost exports and, consequently, investment activity, while private consumption will somewhat bolster economic activity. Toward the end of the forecast horizon, growth rates in Japan might again approach potential output growth. Given the structural problems of both financial and nonfinancial corporations, however, risks remain substantial; as corporate profits slump, it remains uncertain whether investment activity will rebound, as expected, in the second half of 2002.

The outlook for the other Asian economies has markedly improved since the fall 2001 forecast, prompting an upward revision of 2002 growth expectations for this region (by 1.4 percentage points to 4.9%). Korea, Singapore and Taiwan, which are largely dependent on exports of information and communication technologies, profit from the rapid recovery of the world economy in general and, given their tight trade links to the United States, from the revival in the U.S.A. in particular. The economic upswing in Hong Kong, Indonesia, Malaysia, the Philippines and Thailand will lag behind somewhat. The global downturn had a much weaker impact on the rather closed economies of China and India, the two largest Asian countries, which will keep surging throughout the forecast period.

After real GDP climbed 2.8% in 2001, growth in the EU accession countries is projected to advance at a steady pace of 2.7% in 2002. The high inflow of foreign direct investment (FDI) to the Czech Republic shows that the country is an attractive investment location. As a consequence, domestic demand, and investment activity in particular, should become major pillars of economic activity. The strong Czech koruna reduces the price competitiveness of the export-oriented sector of the Czech economy. After the parliamentary elections in 2002, however, intensified budget consolidation efforts will dampen growth, which has been accelerating on the back of the warming international economic climate. GDP growth will climb from about 3% in 2002 to almost 4% in 2004. In Hungary, domestic demand is supported by substantial real wage gains and ambitious government investment programs. This, however, leads to an acceleration of import demand which, in turn, produces a negative net export contribution to GDP growth and causes current account deficits to widen. Measures to prevent a further deterioration of the external balance might begin to be felt in 2003. During the forecast period, GDP growth will accelerate from 2.5% to 4.6%. In Poland, the economic situation is much gloomier: We forecast a real GDP growth of no more than 1.7% for 2002. Low investment activity dampens domestic demand, while continuing disinflation and an appreciation of the real exchange rate act as an additional brake on economic activity.

Toward the end of the forecast horizon, external impulses will drive the growth rate up to 4.6%.

The euro area growth projection hardly required any changes against the fall 2001 forecast. Real GDP growth is likely to come to between 0.9% and 1.5% in 2002 and to accelerate to between 2.1% and 3.1% in 2003. The growth prospects for Austria's key trading partner, Germany, have not improved since the fall 2001 forecast. The German economy seems to have bottomed out at the turn of the year; growth, however, remained strongly subdued in the first half of 2002 and will only rebound towards the end of the year. Owing to the unfavorable employment situation, private consumption will not make any substantial contributions to growth and investment activity will slacken further, given excess capacities, low corporate profits and the continuing recession in the construction sector. The slow recovery of exports and a simultaneous slowdown of demand for imports make net exports a major pillar of economic activity in 2002. Domestic demand will not recover before 2003/04.

Table 2

## Assumptions on the Development of Global Economic Conditions

|  | 2000 | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|---|
|  | *Annual change in % (real)* | | | | |
| **Gross domestic product** | | | | | |
| World economy | + 4.7 | +2.5 | +2.5 | +3.8 | +4.2 |
| U.S.A. | + 4.1 | +1.2 | +2.2 | +2.7 | +3.3 |
| Japan | + 1.5 | −0.4 | −0.9 | +1.3 | +1.7 |
| EU accession countries | + 4.0 | +2.8 | +2.7 | +4.1 | +4.6 |
| Asia excluding Japan | + 7.2 | +4.3 | +4.9 | +6.1 | +6.3 |
| **External trade** | | | | | |
| Imports of goods and services | | | | | |
| World economy | +11.1 | −0.2 | +1.6 | +6.5 | +7.1 |
| Non-euro area countries | +10.0 | −0.8 | +2.1 | +6.8 | +7.7 |
| Import demand on Austria's export markets, real | +11.4 | +2.0 | +1.5 | +6.6 | +6.9 |
| **Prices** | | | | | |
| Oil price (in USD per barrel) | 28.3 | 24.4 | 24.6 | 23.6 | 22.3 |
| Three-month interest rate in % | 4.4 | 4.3 | 3.4 | 3.4 | 3.4 |
| Long-term interest rate in % | 5.6 | 5.1 | 5.3 | 5.4 | 5.4 |
| EUR/USD exchange rate | 0.923 | 0.895 | 0.899 | 0.909 | 0.909 |
| Nominal effective exchange rate (euro area index) | 85.39 | 87.01 | 87.66 | 88.07 | 88.07 |

*Source: Eurosystem.*

Chart 2

## Long- and Short-Term Interest Rates in Austria
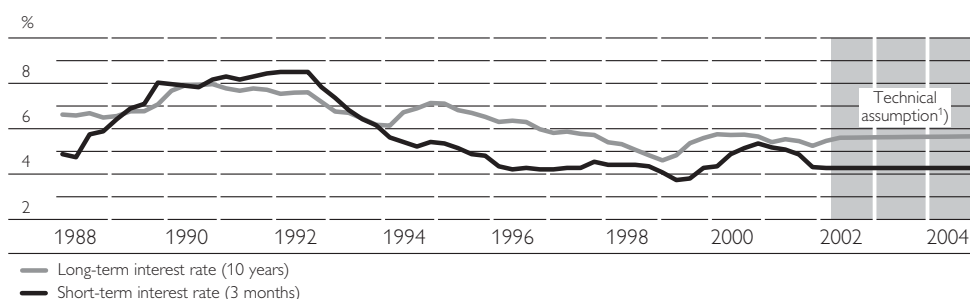


*Source: OeNB spring 2002 forecast..*
[1] *Shaded area: Technical assumptions for the forecast period.*

### 2.2 Technical Assumptions

With a view to forecasting economic developments under unchanged monetary policy conditions, a technical assumption is made that both short-term interest rates and exchange rates will remain constant over the entire forecast horizon. The short-term interest rate assumed for the forecast horizon is based on the three-month Euribor (3.4%)[1]. Long-term interest rates are oriented on the market expectations for government bonds with an agreed maturity of up to ten years and come to 5.3%, 5.4% and 5.4% for the years 2002 to 2004, respectively. The long-term interest rate level is thus higher than in the fall 2001 forecast, reflecting the more optimistic growth prospects (chart 2). A rate of USD/EUR 0.91 is assumed for the further development of the exchange rate of the euro against the U.S. dollar. Exchange rate developments of the current year so far result in an average 2002 rate of USD/EUR 0.90. This value exceeds the assumption of the fall 2001 forecast. The nominal effective exchange rate underlying the euro area forecast is somewhat above the figure for 2001, as it mirrors the slight appreciation registered in the first quarter of 2002 (chart 3).

Having surged in the first months of 2002, crude oil prices are currently highly volatile. The assumed future development of crude oil prices is based on forward rates and represents a significant risk factor in this forecast, given the highly uncertain political and international economic situation. At USD 24.6 (2002), USD 23.6 (2003) and USD 22.3 (2004) assumed per barrel, the current outlook is based on much higher prices than the fall forecast.

Chart 3

**Nominal Effective Exchange Rate of the Euro**



Source: OeNB spring 2002 forecast.
[1]) Shaded area: Technical assumptions for the forecast period..
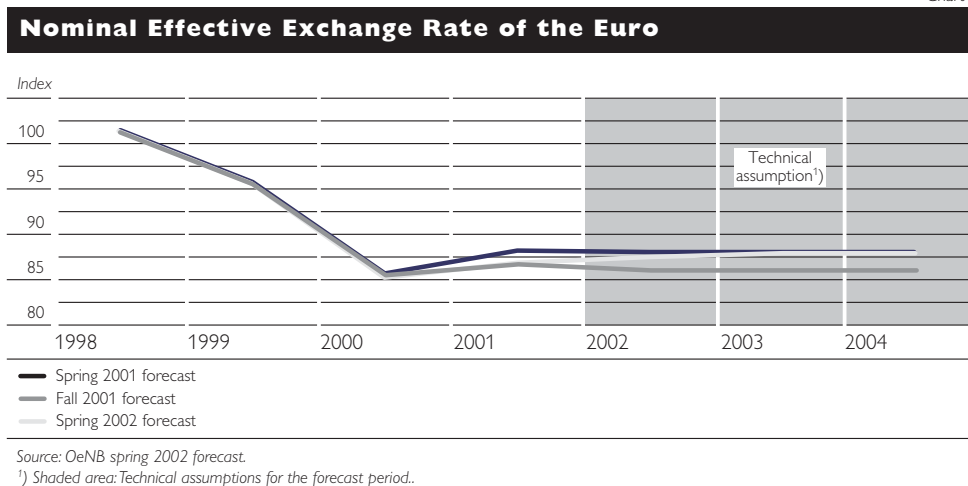
## 3  External Sector

Between 1995 and 2001, Austrian exporters notably improved their price competitiveness. During this period the cumulative price hikes of Austria's competitors in the export markets were some 15% higher than those of Austrian exporters, who were therefore able to gain substantial market shares over the past seven years. This scenario is based both on exchange rate develop-

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1   This equals the average market price over ten business days directly before and including May 8, 2001.

ments and on the policy of wage moderation, which – in combination with impressive productivity increases – clearly improved Austrian unit labor costs against those of its trading partners. As a consequence, net exports made a positive contribution to growth in the past few years.

It is interesting to note, however, that despite a marked improvement in price competitiveness by over 8%, hardly any market share gains were registered in 2000. With a certain time lag, however, the rise in price competitiveness translated into a dynamic expansion of real exports by 5.5% in 2001, in spite of a growth slump on Austrian export markets and low hikes of competitors' prices. This impact will continue to be felt in 2002. The OeNB expects real export growth to come to 3.2%, thus again exceeding that of Austrian export markets (1.5%).

Chart 4

**Development of Price Competitiveness**

**and of Austrian Exporters' Market Shares Between 1995 and 2004**
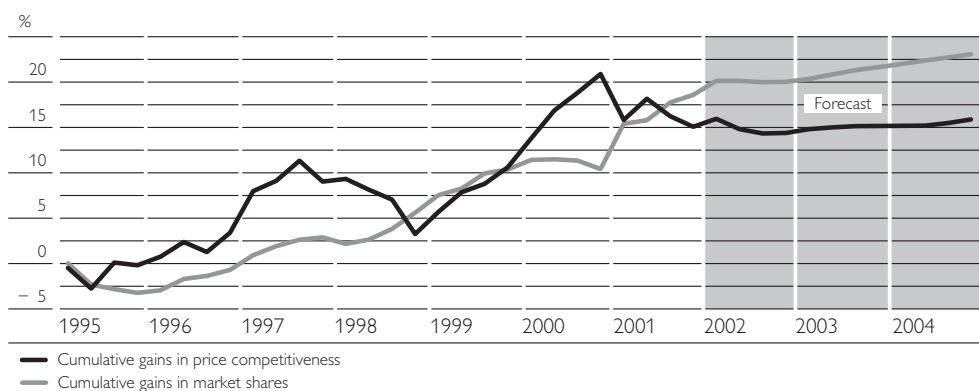


Source: OeNB spring 2002 forecast.

Real export growth will substantially accelerate in the course of 2002, as the global economic climate improves. Export prospects, however, are dampened by the sluggish recovery of economic activity in Germany, Austria's most important trading partner. German import demand is envisaged to keep declining during 2002. The slow growth of Austrian exports in 2002 against the year 2001, however, is largely ascribable to the unusually low statistical carry-over effect caused by subdued export growth in the second half of 2001. The momentum of quarterly growth rates in 2002 illustrates that the economic revival will be carried by exports of goods and services, investment in plant and equipment and by an expansion of inventories. In 2003 and 2004, real export growth is predicted to accelerate in parallel with export demand, coming to some 7% at the end of the forecast horizon. The further development of export prices will be determined by price competitiveness, which allows recent market share gains to be maintained. This trend is particularly supported by the positive outlook for tourism.

In the past, real import growth generally developed in parallel with real exports. The causes of this interlinkage are the high share of imported intermediate goods in exports and international transit trade. This structural relation also determines import developments during the forecast period. Domestic

demand is the second key determinant. The stronger-than-anticipated reduction in investment in plant and equipment in combination with an inventory runoff in 2001 translated into a more substantial slump in import growth (+3.6%) than in export growth (+5.5%). While import growth reached its low already in the second quarter of 2001, exports lagged one to two quarters behind. Net exports' contribution to real GDP growth was correspondingly high in 2001 at 1 percentage point. But in 2002, growth in real imports will be strong – in contrast to exports – as inventories expand and investment in plant and equipment augments. Net exports will, therefore, not contribute to GDP growth in 2002. In 2003 and 2004, Austrian exports will again chalk up higher gains than imports, as Austrian export markets will pick up more strongly than domestic demand and price competitiveness is assumed to remain favorable. The quarterly profile of import growth rates will be determined by the projected investment cycle, that of export rates will follow the smooth pattern of foreign demand. Both in 2003 and 2004, net exports will contribute 0.4 percentage point to GDP growth.

Table 3

### Growth and Price Developments in Austrian External Trade

| | 2000 | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|---|
| | *Annual change in %* | | | | |
| **Exports** | | | | | |
| Competitors' prices on Austria's export markets | +10.4 | +0.3 | −0.1 | +1.0 | +1.5 |
| Export deflator | + 2.1 | +1.6 | +1.3 | +1.0 | +1.3 |
| Import demand on Austria's export markets, real | +11.4 | +2.0 | +1.5 | +6.6 | +6.9 |
| Austrian exports of goods and services, real | +12.2 | +5.5 | +3.2 | +6.4 | +7.0 |
| **Imports** | | | | | |
| International competitors' prices on the Austrian market | + 7.7 | +0.9 | +0.7 | +1.2 | +1.5 |
| Import deflator | + 3.1 | +2.2 | +1.4 | +1.0 | +1.3 |
| Austrian imports of goods and services, real | +11.1 | +3.6 | +3.2 | +5.9 | +6.4 |
| **Terms of trade** | − 1.0 | −0.6 | −0.1 | +0.0 | +0.0 |

*Source: OeNB spring 2002 forecast, Eurosystem.*

The supply side-induced deterioration of the 2000 and 2001 terms of trade, which was largely attributable to food and oil price surges, will peter out slowly in 2002: Import prices will only augment by 0.1% more than export prices. For the next two years, the OeNB does not predict any further deterioration of the terms of trade. The constant bilateral exchange rates underlying this forecast cause a slight depreciation of the nominal effective exchange rate, which has a positive effect on export growth throughout the forecast horizon.

Despite the adverse development of the terms of trade, weak domestic demand, and the slump in investment in plant and equipment in particular, led to a marked improvement of the balance on goods in 2001. A reversal of this trend is expected in 2002, as imports are a major factor in the domestic components carrying economic recovery. The vigorous export growth envisaged for 2003 and 2004, however, will again improve the balance on goods. An opposite development is predicted for the balance on services. The positive trend in tourism will further widen the surplus on services in 2002 and stabilize the 2002 surplus level over the next few years (table 4). The regional distribution of foreign trade surpluses and deficits will largely remain unchanged over

Chart 5

## Exports, Imports and Investment in Austria

*Change from the previous quarter in %*

Forecast

Legend:
— Gross fixed capital formation
— Exports of goods and services
— Imports of goods and services

*Source: OeNB spring 2002 forecast, Statistics Austria.*
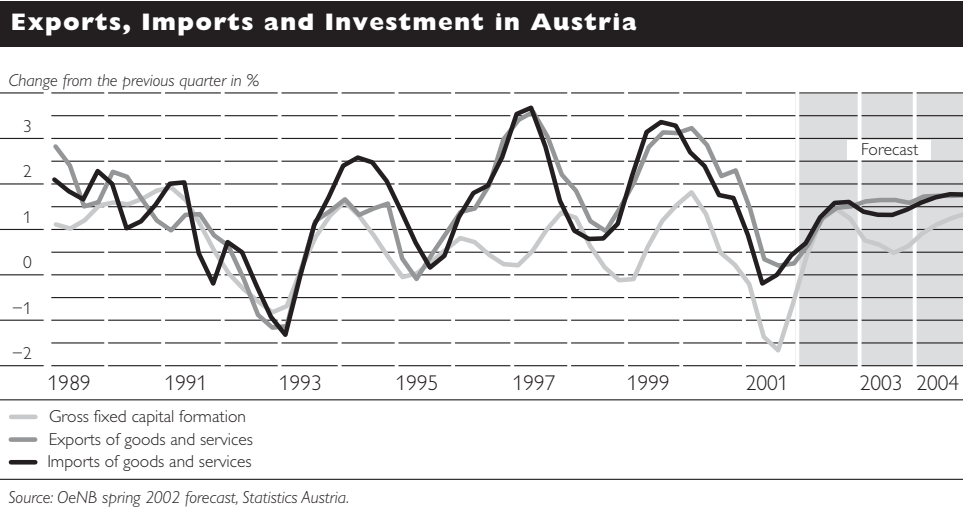
the forecast horizon. The income subaccount deteriorated notably in 2001. In recent years, high portfolio investment inflows (especially bonds) resulted in a substantial outflow of capital income. This tendency will – to a lesser degree – continue over the forecast horizon. Net current transfers are projected to stagnate at –0.7% of GDP between 2002 and 2004. All in all, the OeNB forecasts a moderate widening of the current account deficit to –2.6% for 2002, followed by a narrowing toward the initial 2001 level in 2003 and 2004. It is interesting to note that in 2004 the current account deficit will be entirely attributable to the negative balances on income and transfers. For the first time since 1993, however, the balance on goods and services will be even.

Table 4

## Austrian Current Account Developments

|  | 2000 | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|---|
| *% of nominal GDP* | | | | | |
| Balance on goods, non-euro area | 3.7 | 4.6 | 4.2 | 4.4 | 4.5 |
| Balance on goods, euro area | −5.2 | −5.2 | −5.4 | −5.3 | −5.2 |
| **Balance on goods** | −1.5 | −0.6 | −1.1 | −0.9 | −0.7 |
| Balance on services, non-euro area | 0.4 | 0.1 | 0.2 | 0.2 | 0.2 |
| Balance on services, euro area | 0.5 | 0.4 | 0.5 | 0.5 | 0.5 |
| **Balance on services** | 0.9 | 0.5 | 0.7 | 0.7 | 0.6 |
| **Balance on goods and services** | −0.6 | −0.1 | −0.4 | −0.2 | 0.0 |
| **Income balance** | −1.2 | −1.4 | −1.5 | −1.5 | −1.6 |
| **Transfers** | −0.7 | −0.7 | −0.7 | −0.7 | −0.7 |
| **Current account** | −2.5 | −2.2 | −2.6 | −2.4 | −2.3 |

*Source: OeNB spring 2002 forecast.*

## 4  Prices, Wages and Costs

### 4.1 Prices

Price hikes caused by higher oil prices and special effects of fiscal measures in 2000 and 2001 fed through to inflation rates of 2% and 2.3%, respectively. After year-on-year growth rates had reached a high of clearly over 2% in the second and third quarters of 2001, the inflation rate went down again to 1.8% year on year in the first quarter of 2002. The still relatively high inflation rate is ascribable to persistently steep oil prices. The inflationary effect of the introduction of euro notes and coins, however, was negligibly small. After HICP inflation came to 1.6% in April 2002, a substantial drop in inflation is expected by mid-2002. The inflationary decline is largely attributable to less pronounced price increases of services and processed food. Base effects of fiscal measures taken in 2001, such as charges for outpatient hospital visits, and moderate price hikes in tourism largely came to bear in the service sector while the fading effects of the BSE and foot-and-mouth disease crises still influenced processed food prices. The assumed oil price developments and the rise in domestic demand lead us to expect that inflationary pressures will augment again in the second half of 2002. Inflationary fluctuations in the second half of 2002 and in 2003 will largely be attributable to base effects, notably the introduction of tuition fees in October 2001 and the very low energy prices at end-2001 and the beginning of 2002. Altogether, the inflation rate will come to 1.6% in 2002. Over the remainder of the forecast horizon, HICP inflation will stabilize at around 1.6% to 1.7%. The assumed moderate energy price developments offset the demand side-induced greater inflationary pressure caused by more vigorous economic activity and higher household income.

### 4.2 Wages and Profit Development

The outlook for wages over the forecast horizon is conditioned on a continuation of wage restraint in the Austrian export industries with a view to staying internationally competitive. In the light of economic uncertainties and the deterioration of the employment situation, wage settlements for 2002 were rather moderate, considering the low real wage gains in the past. The overall compensation of employees will pick up 2.6% in 2002. Lower inflation, sluggish productivity growth and a higher unemployment rate lead us to expect wage increases of 2.4%[1] and 2.7% for 2003 and 2004, respectively.

Following high gains between 1988 and 2000, which averaged 2.1% per year, labor productivity only augmented by 0.8% in 2001; this was the lowest rate in 15 years. This substantial decline in productivity growth drove up unit labor costs and caused a narrowing of profit margins. Meager productivity developments and stagnating profit margins are also to be expected for 2002.[2]

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1   Seen from a statistical point of view, the lowering of nonwage labor costs by EUR 0.6 billion for 2003 assumed in the OeNB forecast means a reduction of employers' social security contributions, which will reduce the growth rate of the compensation of employees by 0.3 percentage point.

2   The GDP deflator for 2002 has been distorted downward by a statistical effect concerning the statistical discrepancy of 2001. Without taking this statistical effect into consideration, profit margins for 2002 would not decline by 0.4%, but stagnate.

For the next few years, the OeNB again foresees a sound growth of labor productivity on the basis of a cyclical upturn. The projected employment developments, which generally follow the economic trend with a certain time lag, and the continuing moderate wage hikes are likely to cause a marked decline in unit labor cost growth. In addition, the reform of nonwage labor costs will ease the financial burden on businesses in the next few years, thus improving their profit situation.

### 4.3 Economic Deflators

All economic deflators registered a decline since mid-2001, which was, however, stopped for the moment by the most recent crude oil price developments at the beginning of 2002. As in the last two years, oil prices have a strong influence on the private consumption deflator. In 2003 and 2004, the upward pressure on prices exerted by import prices and oil prices is expected to ease.

The pass-through of oil price increases in the recent past caused the GDP deflator to surge by 1.8% in 2001 (table 5). As these effects are petering out and unit labor costs are rising only slowly, the GDP deflator will only pick up 0.8% in 2002 (see also footnote 2, p. 27). Robust demand growth will widen businesses' profit margins in 2003 and 2004, bringing about an increase of the GDP deflator by 1.6% and 1.5%, respectively.

Table 5

**Selected Price Indicators for Austria**

|  | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|
| *Annual change in %* | | | | |
| Consumption deflator | +2.3 | +1.6 | +1.7 | +1.7 |
| Investment deflator | +0.7 | +0.9 | +1.2 | +1.2 |
| Import deflator | +2.2 | +1.4 | +1.0 | +1.3 |
| Export deflator | +1.6 | +1.3 | +1.0 | +1.3 |
| Terms of trade | −0.6 | −0.1 | +0.0 | +0.0 |
| GDP deflator | +1.8 | +0.8 | +1.6 | +1.5 |
| Unit labor costs | +2.0 | +1.2 | +0.5 | +0.6 |
| Compensation per employee | +2.8 | +2.6 | +2.4 | +2.7 |
| Labor productivity | +0.8 | +1.4 | +1.9 | +2.1 |

*Source: OeNB spring 2002 forecast, Statistics Austria.*

## 5 Domestic Economic Developments

### 5.1 Consumption

As in the past few years, the consumption pattern of households will remain the mainstay of the Austrian economy. After substantial average gains of 2.6% between 1998 and 2000, the OeNB's provisional calculations revealed that households' real disposable income contracted by 0.2% in 2001. Austrian consumers' disposition to smooth consumption, however, led to a relatively stable private consumption growth of 1.3% in 2001, whereas the saving rate kept declining. According to provisional calculations, the saving rate continued to contract sharply (to 5.4%) in 2001, following a decline from 11.5% in 1995 to 6.7% in 2000. Owing to delayed employment effects, households' real disposable income remains subdued at 1.3% in 2002 and will, if currently observed consumption patterns persist, further diminish the saving rate by 0.2 percentage point. A slight rise of the saving rate is envisaged for 2003 and 2004. Household consumption will again pick up momentum in the course of 2002, as inflation

Table 6

| **Determinants of Private Consumption in Austria** | | | | |
|---|---|---|---|---|
| | 2001 | 2002 | 2003 | 2004 |
| *Annual change in % (nominal)* | | | | |
| Compensation of employees | +3.3 | +2.7 | +3.3 | +3.6 |
| Mixed income of the self-employed (net) and investment income | +2.8 | +1.3 | +5.1 | +5.2 |
| Net transfers minus direct taxes[1]) | −9.1 | +0.7 | −3.4 | −3.1 |
| Transfer payments received by households | +2.6 | +3.4 | +2.9 | +3.0 |
| Transfer payment made by households | +2.7 | +1.5 | +2.2 | +2.2 |
| Direct taxes | +8.7 | +3.4 | +4.7 | +4.7 |
| *Contribution to growth of disposable household income in percentage points (nominal)* | | | | |
| Compensation of employees | +2.8 | +2.3 | +2.9 | +3.1 |
| Mixed income of the self-employed (net) and investment income | +0.8 | +0.4 | +1.5 | +1.5 |
| Net transfers minus direct taxes[1]) | −1.6 | +0.1 | −0.6 | −0.5 |
| Transfer payments received by households | +1.0 | +1.3 | +1.2 | +1.2 |
| Transfer payment made by households | −1.0 | −0.6 | −0.8 | −0.8 |
| Direct taxes | −1.6 | −0.7 | −0.9 | −0.9 |
| *Annual change in %* | | | | |
| Disposable household income (nominal) | +2.1 | +2.8 | +3.8 | +4.1 |
| Consumption deflator | +2.3 | +1.6 | +1.7 | +1.7 |
| Disposable household income (real) | −0.2 | +1.3 | +2.1 | +2.4 |
| Private consumption (real) | +1.3 | +1.4 | +1.9 | +2.3 |
| Saving ratio in % of disposable household income | 5.4 | 5.2 | 5.4 | 5.5 |

Source: OeNB spring 2002 forecast, Statistics Austria.
[1]) Negative values indicate an increase in (negative) net transfers minus direct taxes; positive values indicate a decrease.

remains low. As the employment situation improves, private consumption growth will further accelerate to 1.9% and 2.3% in 2003 and 2004, respectively.

The development of real government consumption is still subdued in 2002 at 0.2%. The OeNB forecasts an expansion of government consumption by 1.2% and 0.5% in 2003 and 2004, respectively.

**5.2 Investment**

Investment decline proved to be much stronger than anticipated in the fall 2001 forecast. While the recession in the construction sector continued as projected, the drop in investment in plant and equipment was surprisingly high. In 2001, overall investment activity slowed down by 1.5%. Business expectations have been increasingly optimistic since the beginning of 2002, as the international environment improved. In combination with favorable financing conditions, this leads us to expect a rise in investment in plant and equipment. The hitherto adverse situation on the construction sector will also improve – albeit more slowly than for the other investment components – as excess capacities will have been eliminated by end-2002. In 2002, government investment will also contribute to the recovery of domestic demand.

While investment in plant and equipment had still shown great momentum in 2000, it markedly slumped in 2001. The pessimistic output and export expectations of Austrian businesses – a result of the economic cooling in the second half of the year – caused investment in plant and equipment to contract by 1.2% in 2001. Businesses' assessment of order books reached its low in November and December 2001. The subsequent improvement until February 2002, however, only reflected the optimistic expectations of a very rapid economic recovery in the U.S.A. and the euro area. Since then, general industrial

Chart 6

## Corporate Profit Developments in Austria

### Between 1992 and 2004

*Change from previous period in %*



Profit margin
Unit labor costs
GDP deflator
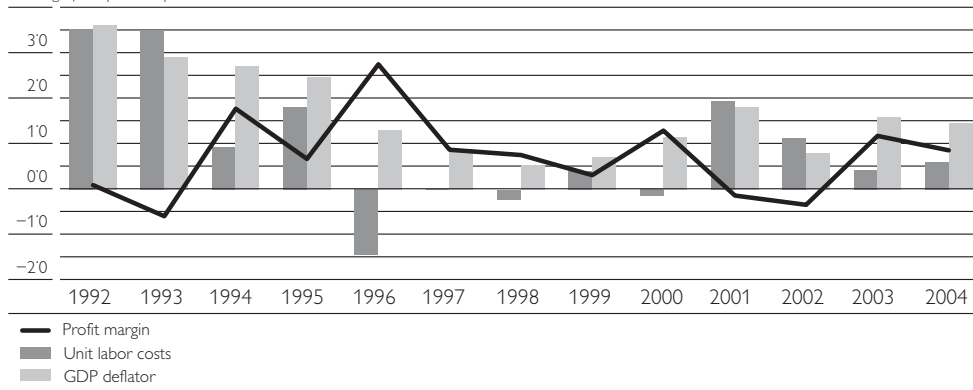
*Source: OeNB spring 2002 forecast, Statistics Austria.*

confidence and the assessment of output in the coming months have again been advancing steadily.

The uptrend in businesses' profit margins observed since 1994 did not continue in 2001. As forecast by the OeNB, profit margin growth, at –0.1%, was negative in 2001 for the first time since the 1993 recession. The decline in value added observed in the second half of 2001 and the delayed reaction of employment caused a surge in unit labor costs. Moreover, growing international competition has been exerting constant pressure on businesses' selling prices. Maintaining profit margins in 2002 will only be possible with the help of a consistent policy of wage moderation which, together with still favorable financing conditions, will invigorate the demand for investment in plant and equipment as of the second quarter of 2002. Economic recovery and wider profit margins in 2003 and 2004 will first improve the capital structure of many businesses and, toward the end of the forecast horizon, cause investment demand to reaccelerate. Overall investment in plant and equipment will pick up by no more than 1.2% in 2002 on account of the 2001 growth slump, but will expand powerfully in 2003 and 2004, by 6.2% and 5.9% respectively.

The marked contraction of gross fixed capital formation by 1.5% in 2001, however, is largely attributable to the crisis on the construction sector. Construction investment dropped by 2.2% in 2001. Thus, the year 2001 recorded the worst construction results since the mid-1980s. Both the continuously low confidence and high unemployment in the construction sector indicate that the construction crisis and the concurrent cutback on excess capacities will persist in 2002. Starting out from a low growth level, the construction sector will expand at a moderate pace in 2003 and 2004, as households' income situation improves.

The government sector also contributes considerably to an uptrend in investment activity. In 2002, the general government's investment demand has benefited, above all, from the economic measures the federal government decided upon at the end of 2001. A further expansion of government investment activity is expected for the 2003 election year, while growth rates will return to a moderate pace in 2004.

Chart 7

**Investment Activity in Austria**

*Change from previous period in %, annualized quarterly growth rates*

Forecast

Construction
Plant and equipment
Total
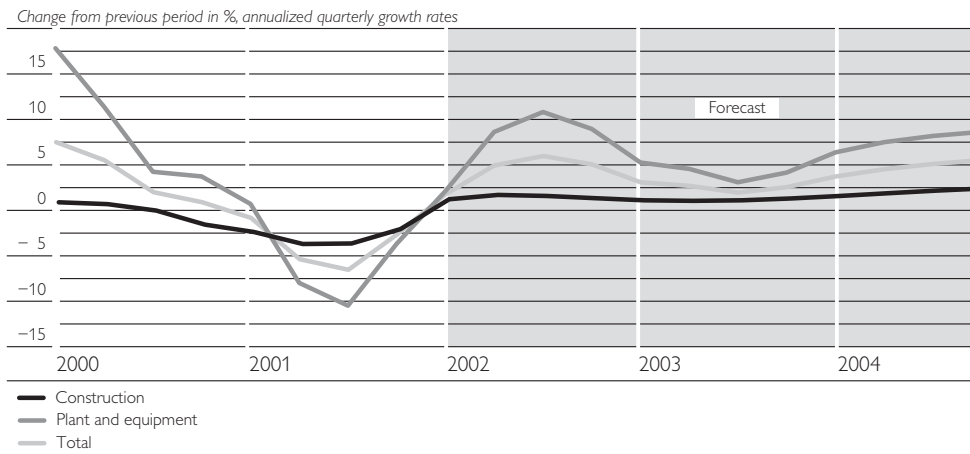
*Source: OeNB spring 2002 forecast, Statistics Austria.*

## 6  Labor Market

Despite the growth slump in 2001, employment maintained a considerable momentum until the third quarter of 2001. Since the beginning of the fourth quarter, payroll employment has been stagnating. This delayed reaction of employment to aggregate demand is a typical labor market phenomenon. But with the growing flexibility of the Austrian labor market, employment has been reacting increasingly fast to economic fluctuations in recent years. Given the protection against the dismissal of employees with regular contracts and the high layoff costs, businesses have endeavored to adapt their staff size via natural fluctuation. But at the same time, these provisions have caused a surge in flexible forms of employment, such as precarious jobs, part-time employment, fixed-term contracts or work contracts, over the past few years. As an overall consequence, staff levels now adapt more quickly to the economic situation than in the 1980s.

The drop in payroll employment resulting from the economic downturn in 2001, however, was kept at bay by two special factors. On the one hand, many vacancies were still filled even as the economy began to cool, since there had been a lack of qualified employees in the booming years 1999 and 2000. For the same reason, many businesses on the other hand hoarded their existing employees in order to avoid a similar experience during the expected economic upturn. This strategy, however, proved ill-advised when the economic slowdown turned out to be more profound than anticipated.

Because of these two factors and the delayed reaction of employment developments to capacity utilization, the labor market situation is not likely to improve noticeably before the second half of 2002. For 2002, the OeNB anticipates an overall increase in payroll employment by no more than 0.1%. Corporate profits are one key factor in the stagnation of employment. As the economic climate brightens, labor demand will pick up more strongly as well, resulting in a projected growth of payroll employment by 0.9% for both 2003 and 2004.

According to national accounts, the number of self-employed persons contracted by 1.6% per year on average during the past ten years. This trend will continue throughout the forecast period, but will be somewhat diminished by federal government measures. In particular persons affected by measures such as the abolition of premium-free coverage by the national health plan for nonworking childless spouses or the introduction of tuition fees will be encouraged to enter the labor market, often as freelancers. As to the number of public-sector employees, the OeNB forecast is largely in line with federal government plans, predicting a slight reduction of total employment (–0.2%) in 2002, followed by a 0.5% growth for the years 2003 and 2004.

Luxembourg is the only country in the EU where the response of labor supply to employment growth is more flexible than in Austria. This elasticity will essentially determine labor supply growth during the forecast period. Two factors seem to be responsible for this high degree of flexibility: On the one hand, the macroeconomic wage-setting process is characterized by a high measure of real wage flexibility and on the other hand, the participation rates of women and older groups of the population tend to be procyclical.

Table 7

### Determinants of Labor Supply in Austria

| | 2000 | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|---|
| | *Annual change in %* | | | | |
| **Labor supply** | −0.2 | +0.4 | +0.1 | +0.3 | +0.3 |
| **Total employment** | +0.5 | +0.2 | −0.2 | +0.5 | +0.5 |
| Public-sector employees | +1.7 | −0.4 | −0.4 | −0.4 | +0.0 |
| Self-employed | −2.5 | −1.0 | −1.8 | −1.3 | −1.1 |
| Payroll employment | +1.2 | +0.5 | +0.1 | +0.9 | +0.9 |
| **Unemployment rate (Eurostat definition) in %** | +3.7 | +3.6 | +3.9 | +3.7 | +3.6 |
| **Productivity** | +2.5 | +0.8 | +1.4 | +1.9 | +2.1 |
| **Profit margins** | +1.3 | −0.1 | −0.4 | +1.2 | +0.9 |
| Unit labor costs | −0.1 | +2.0 | +1.2 | +0.5 | +0.6 |
| GDP deflator | +1.2 | +1.8 | +0.8 | +1.6 | +1.5 |

*Source: OeNB spring 2002 forecast, Statistics Austria.*

At the same time, the Austrian federal government's structural labor market reforms and fiscal consolidation measures of the past few years will contribute to a modest increase in labor supply over the next few years. Raising the minimum age for early retirement and abolishing early retirement due to impaired earning capacity were the most important steps taken in this context. As a result, the labor force participation rate among 55- to 59-year old women and 60- to 64-year old men is expected to increase. Other reforms include the abolition of premium-free coverage by the national health plan for nonworking childless spouses and the introduction of tuition fees. Of course each measure only has limited effects by itself, but taken together, they are projected to raise labor supply by some 0.1%.

In general, demographic factors play a minor role, but in 2004 they will slightly dampen labor supply growth. Migration effects remain negligible. The trend of rising women's labor participation rates observed over the past few years is predicted to abate, not least because of the bleaker economic outlook. At the same time, it remains difficult to assess the overall effect generated by the

introduction of child-rearing benefits. On the one hand, labor supply is set to diminish because parents are entitled to the newly created child-rearing benefits for a longer period than they were for parental leave pay under the old regime; on the other hand, the permission to earn more money during parental leave than previously may reverse this trend to some extent. Since returning to the labor market after parental leave is intrinsically linked to the availability of child-care facilities, the OeNB expects the overall effect of the introduction of child-rearing benefits to be slightly negative. Also, the number of part-time jobs is set to increase.

All in all, the OeNB forecasts a labor supply growth of 0.1%, 0.3% and 0.3% for 2002 to 2004. The predicted development of employment and labor supply will drive up the unemployment rate (Eurostat definition) to 3.9% in 2002, while a decline to 3.7% and 3.6% is expected for 2003 and 2004, respectively. Productivity growth will rise from 1.4% in 2002 to 2.1% in 2004, whereas unit labor cost growth will fall from 1.2% to 0.6%.

## 7 Risks to the Forecast, Alternative Scenarios, Comparison of Forecasts

### 7.1 Risks to the Forecast

Compared to the fall 2001 outlook, the forecast risk has declined substantially. As anticipated in the OeNB's fall 2001 forecast, economic activity appears to have bottomed out at the turn of the year. However, the strength of the predicted upswing remains uncertain. The projection of an economic recovery in 2002 is based both on empirical observations of past business cycles and on positive signals from confidence indicators. The hard facts, however, are still missing: Neither the latest available data on industrial output nor current national accounts data allow any definite conclusions as to the magnitude of the upswing.

Short-term economic development in the U.S.A. constitutes a major forecast risk. Although the economic growth outlook for 2002 was notably revised upward against the fall 2001 forecast, even stronger short-term growth cannot be ruled out. In the long run, there may be the risk of less dynamic growth, as imbalances in the U.S. economy persist. Potential effects on the Austrian economy were investigated in section 7.2, "Scenario II: Appreciation of the Euro". For the period from 2002 to 2004, the overall forecast risks for the real economy variables seem to be balanced.

Risks concerning future price developments point upward, however. Oil prices, for example, which might considerably exceed the forward rates underlying the forecast, constitute an external factor of uncertainty (Scenario I: Higher Oil Prices), while a possible deviation from the policy of wage moderation during the forecast period represents an internal risk factor (Scenario III: Higher Wages).

### 7.2 Alternative Scenarios

To quantify the major forecast risks, three alternative scenarios were calculated: The first scenario assumes higher oil prices than the baseline scenario, the second scenario an appreciation of the euro against the U.S. dollar, and the third faster wage growth. The changed external framework conditions were

determined on the basis of the NIGEM global econometric model[1]). The first two scenarios start in the third quarter of 2002, the higher wages scenario in the first quarter of 2003.

### Scenario I: Higher Oil Prices

Oil prices surged in the first months of 2002. In line with the technical assumptions, oil prices will follow the forward rates during the forecast period. This implies a cut in oil prices from about 26 USD/barrel in the second quarter of 2002 to slightly above 22 USD/barrel – the lower margin of the OPEC oil price band – in the fourth quarter of 2004. Scenario I analyzes the effects of a permanent 20% price growth as of the third quarter of 2002, which would correspond to a return to the middle of the OPEC price band.

Higher energy prices create substantial price pressure by driving up import prices, thus causing export prices, wages and consumer prices to rise with a time lag. In relation to the baseline scenario, this means a cumulative HICP inflation of 0.37 percentage point until 2004. Real import and export growth lags behind the baseline scenario and the contribution of net exports to growth declines. From among the domestic components, gross fixed capital formation is worst hit, while private consumption growth slows down as real wages decline. Altogether, cumulative GDP growth remains 0.42 percentage point behind the baseline scenario until the end of the forecast period.

### Scenario II: Appreciation of the Euro

The imbalances in the U.S. economy, which had developed over the past few years, were only partly relieved during the 2001 recession. The saving rate rebounded somewhat and the speculative bubble on the stock markets was partially scaled down. But despite the meager domestic demand, the current account deficit still came to 4% of GDP. A sudden correction of the current account deficit and a reversal of capital flows might translate into a marked depreciation of the U.S. dollar or an appreciation of the euro. Considering historical exchange rate patterns, the euro is expected to appreciate against other currencies, such as the pound sterling and the Japanese yen, at the same time.

To estimate these exchange rate risks, we assumed an 8% depreciation of the U.S. dollar against the euro in this scenario, which, according to the NIGEM model, led to a 5% appreciation of the euro area nominal effective exchange rate. The direct consequences for Austria would be a decline in international competitiveness of some 4% and a decrease in Austrian export market growth of about 1%. Cumulative GDP growth in 2004 remains 0.44% below the baseline scenario, with two thirds being ascribable to lower net exports and one third to weaker domestic demand. Lower import prices act as a brake on inflation. As a consequence, cumulative HICP growth until 2004 remains 0.57 percentage point behind the baseline solution.

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1 NIGEM (National Institute Global Econometric Model) is a global econometric model set up by the National Institute of Economic and Social Research (NIESR).

Scenario III: Higher Wages

The spring 2002 forecast is based on the assumption of continuing wage moderation, which has been practiced since the mid-1990s. But wage settlements for 2003 and 2004 might yield higher results for several reasons. For instance, current wage bargaining in Germany and Italy, Austria's two major trading partners, proves to be much fiercer than in the recent past.

Therefore, we investigate the effects of wage settlements exceeding the baseline scenario by 0.75 percentage point for 2003 and by 1 percentage point for 2004. At first, higher real wages have a positive impact on private consumption, as they increase households' real disposable income. But with inflation beginning to accelerate soon and employment declining (albeit only slightly), these wage hikes remain largely ineffective. Furthermore, businesses' investment activity goes down and the contribution of net exports to GDP growth declines as competitiveness decreases. All told, real GDP growth after two years would merely exceed the baseline solution by 0.09%, whereas HICP prices would augment by 0.65%.

Table 8

| **Key Results for Alternative Scenarios** | | | | | | |
|---|---|---|---|---|---|---|
| Scenario | 2002 GDP | 2003 | 2004 | 2002 HICP | 2003 | 2004 |
| | *Deviation from baseline scenario in %* | | | | | |
| Higher oil prices[1] | −0.05 | −0.16 | −0.42 | 0.08 | 0.31 | 0.37 |
| Appreciation of the euro[2] | −0.11 | −0.39 | −0.44 | −0.07 | −0.43 | −0.57 |
| Higher wages[3] | 0.00 | 0.09 | 0.09 | 0.00 | 0.18 | 0.65 |

*Source: OeNB spring 2002 forecast.*
*[1] 20% increase of oil prices as of the third quarter of 2002.*
*[2] Depreciation of the U.S. dollar against the euro of 8%.*
*[3] Wage growth increase of 0.75 percentage point as of the first quarter of 2003 and of 1 percentage point as of the first quarter of 2004.*

## 7.3 Comparison of Forecasts

The fact that forecast risks are lower than in the fall 2001 outlook is also reflected by a greater convergence of the results of various forecasters. All forecasts show the same cyclical pattern: The economic upswing beginning at the turn of the year accelerates in the second half of 2002, leading to 2003 growth rates that exceed the average of the past decade. Growth expectations range between 1.1% and 1.7% for 2002 and between 2.4% and 2.9% for 2003.

The OeNB's outlook on real GDP growth for both 2002 and 2003 lies somewhat below other current forecasts. This is largely attributable to a more pessimistic estimate of external macroeconomic conditions, which is especially evident in world trade developments (table 9). As a consequence, the contribution of net exports to growth is going to decrease. With regard to domestic components, the OeNB forecast merely differs from other forecasters' estimates in the constituents of consumption expenditure. While the OeNB's estimates for private consumption growth are somewhat lower, those for government consumption a little higher than in comparable forecasts.

Table 9

## Comparison of Current Economic Forecasts for Austria

| | OeNB April 2002 | | | WIFO April 2002 | | IHS April 2002 | | OECD April 2002 | | IMF April 2002 | | EU Commission April 2002 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2002 | 2003 | 2004 | 2002 | 2003 | 2002 | 2003 | 2002 | 2003 | 2002 | 2003 | 2002 | 2003 |
| | *Annual change in %* | | | | | | | | | | | | |
| **Key results** | | | | | | | | | | | | | |
| GDP, real | +1.1 | +2.4 | +2.6 | +1.2 | +2.8 | +1.7 | +2.5 | +1.2 | +2.8 | +1.3 | +2.9 | +1.2 | +2.5 |
| Private consumption, real | +1.4 | +1.9 | +2.3 | +1.6 | +2.3 | +1.7 | +2.1 | +1.6 | +2.2 | × | × | +1.6 | +2.3 |
| Government consumption, real | +0.2 | +1.2 | +0.5 | −0.3 | +0.5 | −0.2 | +0.0 | +0.0 | +0.5 | × | × | −0.1 | +0.2 |
| Gross fixed capital formation, real[1]) | +0.6 | +3.6 | +3.6 | +0.3 | +4.1 | +1.4 | +3.4 | +0.3 | +4.4 | × | × | +0.6 | +4.0 |
| Exports, real | +3.2 | +6.4 | +7.0 | +4.0 | +7.2 | +5.9 | +6.8 | +4.7 | +8.0 | × | × | +4.2 | +7.5 |
| Imports, real | +3.2 | +5.9 | +6.4 | +3.1 | +7.0 | +5.2 | +6.0 | +3.9 | +7.6 | × | × | +3.5 | +7.6 |
| GDP per employee | +1.4 | +1.9 | +2.1 | +1.4 | +2.1 | +1.6 | +1.8 | × | × | × | × | × | × |
| GDP deflator | +0.8 | +1.6 | +1.5 | +1.2 | +1.2 | +1.5 | +1.3 | +1.5 | +1.9 | +1.8 | +1.2 | +1.7 | +1.3 |
| CPI | × | × | × | +1.7 | +1.4 | +1.8 | +1.6 | × | × | +1.8 | +2.6 | × | × |
| HICP | +1.6 | +1.6 | +1.7 | +1.6 | +1.4 | × | × | +1.7 | +1.7 | × | × | +1.6 | +1.7 |
| Unit labor costs | +1.2 | +0.5 | +0.6 | +1.2 | +0.0 | × | × | × | × | × | × | +0.8 | +0.6 |
| Payroll employment | +0.1 | +0.9 | +0.9 | +0.2 | +0.8 | +0.2 | +0.7 | × | × | × | × | −0.4 | +0.5 |
| | *%* | | | | | | | | | | | | |
| Unemployment rate[2]) | 3.9 | 3.7 | 3.6 | 3.9 | 3.8 | 4.0 | 3.9 | 5.6 | 5.1 | 4.1 | 3.8 | 4.0 | 3.8 |
| | *% of GDP* | | | | | | | | | | | | |
| Current account | −2.6 | −2.4 | −2.3 | −2.0 | −2.2 | −2.1 | −1.8 | −1.8 | −1.6 | −1.6 | −1.4 | −1.6 | −1.9 |
| Government deficit | −0.2 | −0.2 | 0.2 | −0.4 | 0.0 | 0.0 | 0.0 | −0.3 | 0.0 | −0.1 | −0.1 | −0.1 | 0.3 |
| **External assumptions[3])** | | | | | | | | | | | | | |
| Oil price in USD/barrel[3]) | 24.6 | 23.6 | 22.3 | 24.5 | 26.0 | 23.0 | 23.0 | 23.9 | 25.0 | 23.0 | 22.0 | 23.8 | 24.1 |
| Short-term interest rate in % | 3.4 | 3.4 | 3.4 | 3.5 | 4.2 | 3.6 | 4.2 | × | × | × | × | × | × |
| USD/EUR[3]) | 0.90 | 0.91 | 0.91 | 0.90 | 0.90 | 0.91 | 0.92 | 0.87 | 0.87 | 0.87 | 0.88 | 0.87 | 0.87 |
| | *Annual change in %* | | | | | | | | | | | | |
| Real GDP, euro area | 0.9−1.5 | 2.1−3.1 | × | +1.4 | +2.9 | × | × | +1.3 | +2.9 | +1.4 | +2.9 | +1.4 | +2.9 |
| Real GDP, U.S.A. | +2.2 | +2.7 | +3.3 | +1.8 | +3.3 | +3.0 | +3.3 | +2.5 | +3.5 | +2.3 | +3.4 | +2.7 | +3.1 |
| Real GDP, world | +2.5 | +3.8 | +4.2 | × | × | × | × | × | × | +2.8 | +4.0 | +2.9 | +3.9 |
| World trade | +1.6 | +6.5 | +7.1 | +3.0 | +8.8 | +4.5 | +7.5 | +2.5 | +9.5 | +2.5 | +6.6 | +3.2 | +7.0 |

*Source: OeNB, WIFO, IHS, European Commission, IMF, OECD.*
[1]) *For IHS: Gross capital formation.*
[2]) *Eurostat definition; for OECD: OECD definition.*
[3]) *OeNB: external assumption of the ESCB.*

## 8 Annex

Table 10

## Demand Components (Real Prices)

### at 1995 prices

| | 2001 | 2002 | 2003 | 2004 | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|---|---|---|---|
| | *EUR million* | | | | *Annual change in %* | | | |
| Private consumption | 111,239 | 112,849 | 115.037 | 117,634 | +1.3 | +1.4 | +1.9 | +2.3 |
| Government consumption | 37,122 | 37,178 | 37,608 | 37,793 | −0.2 | +0.2 | +1.2 | +0.5 |
| Gross fixed capital formation | 45,429 | 45,721 | 47,375 | 49,082 | −1.5 | +0.6 | +3.6 | +3.6 |
| Domestic demand (excl. changes in inventories) | 193,790 | 195,748 | 200,020 | 204,509 | +0.3 | +1.0 | +2.2 | +2.2 |
| Exports, total | 104,055 | 107,348 | 114,245 | 122,197 | +5.5 | +3.2 | +6.4 | +7.0 |
| Imports, total | 101,064 | 104,263 | 110,365 | 117,471 | +3.6 | +3.2 | +5.9 | +6.4 |
| Net exports | 2,991 | 3,085 | 3,879 | 4,726 | × | × | × | × |
| **Gross domestic product** | 197,639 | 199,880 | 204,766 | 210,160 | +1.0 | +1.1 | +2.4 | +2.6 |

*Source: OeNB spring 2002 forecast.*

Table 11

## Demand Components (Current Prices)

| | 2001 | 2002 | 2003 | 2004 | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|---|---|---|---|
| | EUR million | | | | Annual change in % | | | |
| Private consumption | 121,087 | 124,754 | 129,321 | 134,517 | +3.6 | +3.0 | +3.7 | +4.0 |
| Government consumption | 40,565 | 41,161 | 42,549 | 43,513 | +2.1 | +1.5 | +3.4 | +2.3 |
| Gross fixed capital formation | 48,101 | 48,843 | 51,212 | 53,701 | −0.9 | +1.5 | +4.8 | +4.9 |
| Domestic demand (excl. changes in inventories) | 209,753 | 214,758 | 223,081 | 231,730 | +2.3 | +2.4 | +3.9 | +3.9 |
| Exports, total | 110,013 | 114,939 | 123,536 | 133,821 | +7.1 | +4.5 | +7.5 | +8.3 |
| Imports, total | 110,790 | 115,888 | 123,905 | 133,620 | +5.9 | +4.6 | +6.9 | +7.8 |
| Net exports | − 778 | − 949 | − 368 | 201 | × | × | × | × |
| **Gross domestic product** | 210,702 | 214,801 | 223,592 | 232,852 | +2.9 | +1.9 | +4.1 | +4.1 |

Source: OeNB spring 2002 forecast.

Table 12

## Demand Components (Deflators)

| | 2001 | 2002 | 2003 | 2004 | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|---|---|---|---|
| | 1995 = 100 | | | | Annual change in % | | | |
| Private consumption | 108.9 | 110.5 | 112.4 | 114.4 | +2.3 | +1.6 | +1.7 | +1.7 |
| Government consumption | 109.3 | 110.7 | 113.1 | 115.1 | +2.3 | +1.3 | +2.2 | +1.8 |
| Gross fixed capital formation | 105.9 | 106.8 | 108.1 | 109.4 | +0.7 | +0.9 | +1.2 | +1.2 |
| Domestic demand (excl. changes in inventories) | 108.2 | 109.7 | 111.5 | 113.3 | +1.9 | +1.4 | +1.7 | +1.6 |
| Exports, total | 105.7 | 107.1 | 108.1 | 109.5 | +1.6 | +1.3 | +1.0 | +1.3 |
| Imports, total | 109.6 | 111.1 | 112.3 | 113.7 | +2.2 | +1.4 | +1.0 | +1.3 |
| Terms of trade | 96.4 | 96.3 | 96.3 | 96.3 | × | × | × | × |
| **Gross domestic product** | 106.6 | 107.5 | 109.2 | 110.8 | +1.8 | +0.8 | +1.6 | +1.5 |

Source: OeNB spring 2002 forecast.

Table 13

## Labor Market

| | 2001 | 2002 | 2003 | 2004 | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|---|---|---|---|
| | 1,000 | | | | Annual change in % | | | |
| Total employment | 4,027.3 | 4,017.6 | 4,039.4 | 4,061.1 | +0.2 | −0.2 | +0.5 | +0.5 |
| Private sector employment | 3,457.6 | 3,450.1 | 3,474.2 | 3,496.0 | +0.3 | −0.2 | +0.7 | +0.6 |
| Payroll employment according to the national accounts | 3,293.9 | 3,297.1 | 3,328.3 | 3,357.9 | +0.5 | +0.1 | +0.9 | +0.9 |
| | % | | | | | | | |
| Unemployment rate (Eurostat definition) | 3.6 | 3.9 | 3.7 | 3.6 | × | × | × | × |
| | 1995 = 100 | | | | | | | |
| Unit labor costs, whole economy[1] | 100.5 | 101.7 | 102.2 | 102.8 | +2.0 | +1.2 | +0.5 | +0.6 |
| | at 1995 prices in EUR 1,000 | | | | | | | |
| Labor productivity (whole economy) | 49.1 | 49.8 | 50.7 | 51.7 | +0.8 | +1.4 | +1.9 | +2.1 |
| Real wages per employee[2] | 30.8 | 31.1 | 31.3 | 31.6 | +0.4 | +1.0 | +0.7 | +0.9 |
| | at current prices in EUR 1,000 | | | | | | | |
| Gross wages per employee | 33.5 | 34.4 | 35.2 | 36.2 | +2.8 | +2.6 | +2.4 | +2.7 |
| | at current prices in EUR million | | | | | | | |
| Gross wages, total | 110,476 | 113,448 | 117,212 | 121,426 | +3.3 | +2.7 | +3.3 | +3.6 |

Source: OeNB spring 2002 forecast.
[1] Gross wages as a ratio of GDP.
[2] Gross wages divided by the GDP deflator.

Table 14

## Current Account

| | 2001 | 2002 | 2003 | 2004 | 2001 | 2002 | 2003 | 2004 |
|---|---|---|---|---|---|---|---|---|
| | EUR million | | | | % of nominal GDP | | | |
| Current account | −4,570.1 | −5,527.9 | −5,379.4 | −5,406.5 | −2.2 | −2.6 | −2.4 | −2.3 |

Source: OeNB spring 2002 forecast.

Table 15

## Quarterly Changes of Forecast Results

| | 2001 | 2002 | 2003 | 2004 | 2001 | | | | 2002 | | | | 2003 | | | | 2004 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 1st qu. | 2nd qu. | 3rd qu. | 4th qu. | 1st qu. | 2nd qu. | 3rd qu. | 4th qu. | 1st qu. | 2nd qu. | 3rd qu. | 4th qu. | 1st qu. | 2nd qu. | 3rd qu. | 4th qu. |
| *Annual change in %* | | | | | | | | | | | | | | | | | | | | |
| **Prices, wages, costs** | | | | | | | | | | | | | | | | | | | | |
| HICP | +2.3 | +1.6 | +1.6 | +1.7 | +2.0 | +2.7 | +2.5 | +2.0 | +1.8 | +1.5 | +1.5 | +1.6 | +1.8 | +1.5 | +1.5 | +1.7 | +1.6 | +1.6 | +1.7 | +1.8 |
| HICP (excl. energy) | +2.4 | +1.7 | +1.6 | +1.8 | +1.7 | +2.4 | +2.8 | +2.8 | +2.3 | +1.7 | +1.5 | +1.3 | +1.4 | +1.5 | +1.6 | +1.7 | +1.7 | +1.7 | +1.9 | +2.0 |
| Private consumption deflator | +2.3 | +1.6 | +1.7 | +1.7 | +2.2 | +2.5 | +2.4 | +2.2 | +1.9 | +1.4 | +1.4 | +1.6 | +1.7 | +1.8 | +1.7 | +1.6 | +1.6 | +1.6 | +1.8 | +1.9 |
| Gross fixed capital formation deflator | +0.7 | +0.9 | +1.2 | +1.2 | +0.8 | +0.8 | +0.6 | +0.6 | +0.7 | +0.8 | +0.9 | +1.1 | +1.3 | +1.3 | +1.1 | +1.0 | +1.0 | +1.1 | +1.3 | +1.4 |
| GDP deflator | +1.8 | +0.8 | +1.6 | +1.5 | +1.4 | +1.8 | +2.1 | +1.9 | +1.3 | +0.5 | +0.3 | +1.1 | +1.5 | +1.8 | +1.8 | +1.3 | +1.3 | +1.4 | +1.5 | +1.6 |
| Unit labor costs | +2.0 | +1.2 | +0.5 | +0.6 | +1.1 | +1.8 | +2.3 | +2.6 | +2.2 | +1.4 | +0.8 | +0.3 | +0.4 | +0.5 | +0.4 | +0.5 | +0.5 | +0.6 | +0.6 | +0.6 |
| Compensation per employee, nominal | +2.8 | +2.6 | +2.4 | +2.7 | +2.8 | +2.9 | +2.8 | +2.6 | +2.5 | +2.5 | +2.6 | +2.7 | +2.6 | +2.4 | +2.2 | +2.2 | +2.4 | +2.6 | +2.8 | +2.9 |
| Productivity | +0.8 | +1.4 | +1.9 | +2.1 | +1.7 | +1.1 | +0.5 | +0.0 | +0.3 | +1.1 | +1.8 | +2.4 | +2.2 | +1.9 | +1.8 | +1.7 | +1.8 | +2.0 | +2.2 | +2.4 |
| Compensation per employee, real | +0.4 | +1.0 | +0.7 | +0.9 | +0.6 | +0.3 | +0.4 | +0.4 | +0.7 | +1.1 | +1.2 | +1.1 | +0.9 | +0.6 | +0.5 | +0.6 | +0.8 | +1.0 | +1.0 | +1.0 |
| Import deflator | +2.2 | +1.4 | +1.0 | +1.3 | +3.8 | +2.9 | +1.4 | +0.8 | +0.7 | +1.4 | +1.9 | +1.6 | +1.2 | +0.9 | +0.8 | +1.1 | +1.5 | +1.5 | +1.3 | +1.0 |
| Export deflator | +1.6 | +1.3 | +1.0 | +1.3 | +2.2 | +1.9 | +1.4 | +0.8 | +0.6 | +0.9 | +1.5 | +2.0 | +1.7 | +1.1 | +0.7 | +0.6 | +1.1 | +1.4 | +1.4 | +1.2 |
| Terms of trade | −0.6 | −0.1 | −0.0 | −0.0 | −1.5 | −1.0 | −0.0 | −0.0 | −0.1 | −0.5 | −0.3 | +0.4 | +0.4 | +0.2 | −0.2 | −0.5 | −0.4 | −0.1 | +0.1 | +0.2 |
| *at 1995 prices, annual change and quarterly change in %* | | | | | | | | | | | | | | | | | | | | |
| **Economic activity** | | | | | | | | | | | | | | | | | | | | |
| GDP | +1.0 | +1.1 | +2.4 | +2.6 | +0.4 | +0.1 | −0.2 | −0.1 | +0.4 | +0.7 | +0.6 | +0.7 | +0.6 | +0.6 | +0.5 | +0.5 | +0.7 | +0.8 | +0.7 | +0.7 |
| Private consumption | +1.3 | +1.4 | +1.9 | +2.3 | +0.3 | +0.2 | +0.1 | +0.2 | +0.4 | +0.5 | +0.5 | +0.5 | +0.5 | +0.4 | +0.5 | +0.5 | +0.6 | +0.6 | +0.6 | +0.6 |
| Government consumption | −0.2 | +0.2 | +1.2 | +0.5 | −0.1 | +0.2 | +0.2 | +0.0 | +0.0 | −0.1 | −0.0 | +0.0 | +0.7 | +0.6 | +0.1 | +0.1 | +0.0 | +0.1 | +0.2 | +0.2 |
| Gross fixed capital formation | −1.5 | +0.6 | +3.6 | +3.6 | −0.2 | −1.4 | −1.7 | −0.7 | +0.4 | +1.2 | +1.4 | +1.2 | +0.8 | +0.7 | +0.5 | +0.6 | +0.9 | +1.1 | +1.2 | +1.3 |
| *Investment in plant and equipment[1]* | *−1.2* | *+1.2* | *+6.2* | *+5.9* | *+0.2* | *−2.1* | *−2.7* | *−0.9* | *+0.5* | *+2.1* | *+2.6* | *+2.1* | *+1.3* | *+1.1* | *+0.7* | *+1.0* | *+1.5* | *+1.8* | *+2.0* | *+2.1* |
| *Construction investment* | *−2.2* | *−0.2* | *+1.2* | *+1.6* | *−0.6* | *−0.9* | *−0.9* | *−0.5* | *+0.3* | *+0.4* | *+0.4* | *+0.3* | *+0.3* | *+0.3* | *+0.3* | *+0.3* | *+0.4* | *+0.5* | *+0.5* | *+0.6* |
| Exports | +5.5 | +3.2 | +6.4 | +7.0 | +1.5 | +0.3 | +0.2 | +0.3 | +0.7 | +1.3 | +1.5 | +1.5 | +1.6 | +1.7 | +1.7 | +1.6 | +1.7 | +1.7 | +1.7 | +1.8 |
| Imports | +3.6 | +3.2 | +5.9 | +6.4 | +0.9 | −0.2 | +0.0 | +0.4 | +0.7 | +1.3 | +1.6 | +1.6 | +1.4 | +1.3 | +1.3 | +1.4 | +1.6 | +1.7 | +1.8 | +1.8 |
| *Contribution to real GDP growth in percentage points* | | | | | | | | | | | | | | | | | | | | |
| Domestic demand | +0.3 | +1.0 | +2.1 | +2.2 | +0.1 | −0.2 | −0.3 | −0.0 | +0.3 | +0.5 | +0.6 | +0.6 | +0.6 | +0.5 | +0.4 | +0.4 | +0.6 | +0.6 | +0.7 | +0.7 |
| Net exports | +1.0 | +0.0 | +0.4 | +0.4 | +0.3 | +0.3 | +0.1 | −0.1 | −0.0 | +0.0 | −0.0 | −0.0 | +0.1 | +0.2 | +0.2 | +0.1 | +0.1 | +0.1 | +0.0 | +0.0 |
| Changes in inventories | −0.3 | +0.3 | −0.1 | +0.0 | −0.1 | −0.0 | −0.0 | −0.0 | +0.1 | +0.2 | +0.1 | +0.0 | −0.1 | −0.1 | −0.1 | −0.0 | −0.0 | +0.1 | +0.1 | +0.0 |
| *%* | | | | | | | | | | | | | | | | | | | | |
| **Labor market** | | | | | | | | | | | | | | | | | | | | |
| Unemployment rate (Eurostat definition) | 3.6 | 3.9 | 3.7 | 3.6 | 3.4 | 3.5 | 3.6 | 3.8 | 3.9 | 3.9 | 3.9 | 3.8 | 3.8 | 3.7 | 3.7 | 3.7 | 3.7 | 3.6 | 3.6 | 3.5 |
| *Annual change and quarterly change in %* | | | | | | | | | | | | | | | | | | | | |
| Total employment | +0.2 | −0.2 | +0.5 | +0.5 | +0.1 | +0.0 | −0.0 | −0.0 | −0.2 | −0.1 | +0.1 | +0.2 | +0.2 | +0.1 | +0.1 | +0.1 | +0.1 | +0.2 | +0.2 | +0.1 |
| *thereof private sector* | *+0.3* | *−0.2* | *+0.7* | *+0.6* | *+0.2* | *+0.1* | *+0.0* | *+0.0* | *−0.2* | *−0.2* | *+0.1* | *+0.2* | *+0.3* | *+0.2* | *+0.2* | *+0.2* | *+0.1* | *+0.2* | *+0.2* | *+0.1* |
| Payroll employment | +0.5 | +0.1 | +0.9 | +0.9 | +0.2 | +0.1 | +0.0 | +0.0 | −0.1 | −0.0 | +0.2 | +0.3 | +0.3 | +0.2 | +0.2 | +0.2 | +0.2 | +0.2 | +0.2 | +0.2 |
| *at 1995 prices, annual change and quarterly change in %* | | | | | | | | | | | | | | | | | | | | |
| **Additional variables** | | | | | | | | | | | | | | | | | | | | |
| Disposable household income | −0.2 | +1.3 | +2.1 | +2.4 | −0.2 | −0.3 | +0.1 | +0.4 | +0.3 | +0.4 | +0.5 | +0.6 | +0.5 | +0.5 | +0.5 | +0.5 | +0.6 | +0.6 | +0.6 | +0.6 |
| *%* | | | | | | | | | | | | | | | | | | | | |
| Household savings ratio | 5.4 | 5.2 | 5.4 | 5.5 | 5.7 | 5.2 | 5.2 | 5.4 | 5.3 | 5.2 | 5.2 | 5.3 | 5.3 | 5.4 | 5.4 | 5.4 | 5.5 | 5.5 | 5.5 | 5.5 |
| Output gap in % of GDP | −0.4 | −1.2 | −0.8 | 0.0 | 0.5 | 0.0 | −0.7 | −1.3 | −1.5 | −1.3 | −1.2 | −1.0 | −0.9 | −0.8 | −0.7 | −0.7 | −0.5 | −0.2 | 0.1 | 0.4 |

*Source: OeNB spring 2002 forecast.*
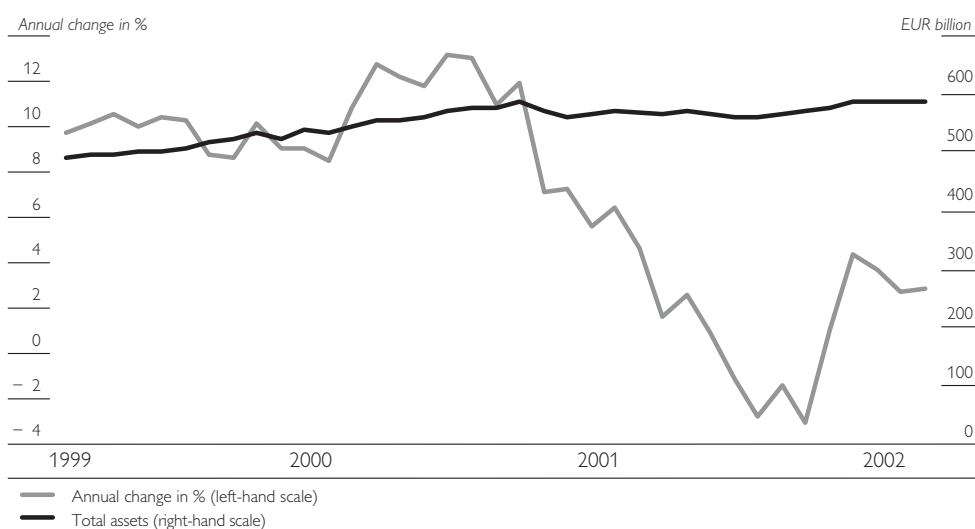[1] *Excluding other investment.*

# Money and Credit
# in the First Quarter of 2002

## Slow Asset Growth

Ralf Dobringer[1]

In the first three months of 2002, *asset growth* of banks operating in Austria lost momentum compared to the like period of the past few years: After a rise of EUR 22.49 billion or 4.3% in 2000 and a plus of EUR 9.69 billion or 1.7% in 2001, asset growth only came to EUR 1.16 billion or 0.2% in the first quarter of 2002. On the asset side, the main reasons for this sluggish increase were low *loan* demand and a sharp decline in *other domestic claims.*[2] On the liability side, *deposits* and *other domestic liabilities* registered the greatest decline.

### Total Assets of Domestic Banks



Annual change in %                                                                EUR billion

Annual change in % (left-hand scale)
Total assets (right-hand scale)

Source: OeNB.

### Market Share of Banks Operating in Austria

*% of total assets and cumulative change since the beginning of 2002 in %*



Special purpose banks
8.17 (+6.24)

Building and loan associations
3.18 (−1.64)

Volksbank credit cooperatives
4.96 (−0.44)

Joint stock banks
22.33 (+1.72)

Raiffeisen credit cooperatives
21.07 (−1.34)

State mortgage banks
6.28 (+3.16)

Savings banks
34.02 (−1.42)
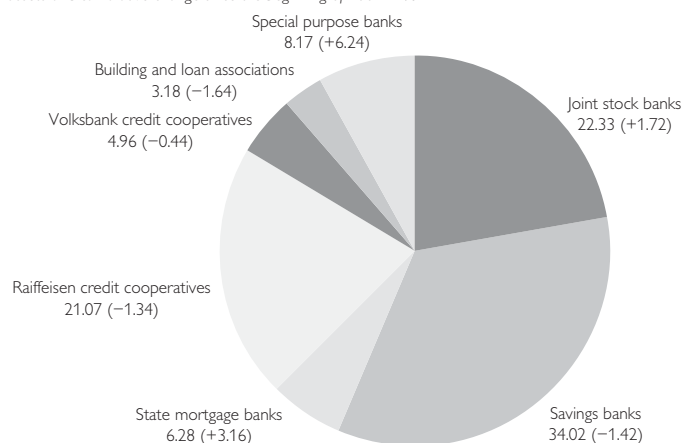
Source: OeNB.

1    In cooperation with Ulrike Ditlbacher and Walter Waschiczek.
2    Such as intangible assets, fixed assets, etc.

According to a sectoral breakdown, special purpose banks had the largest share in total asset growth at 6.3%, followed by state mortgage banks at 3.2%. Below-average total asset developments were reported by building and loan associations (–1.6%), savings banks (–1.4%) and Raiffeisen credit cooperatives (–1.3%). Savings banks[1]) still held the greatest market share at 34.0%, followed by joint stock banks at 22.3% and Raiffeisen credit cooperatives at 21.1%.

As in 2001, the five largest (independent) banks' market share, measured by total assets, decreased in the first quarter of 2002 (from 45.7% to 44.7%). The market share of the ten largest banks also retreated by 0.4 percentage point to 56.9%.

**Change in Market Share of the Ten Largest Banks**

**Operating in Austria**
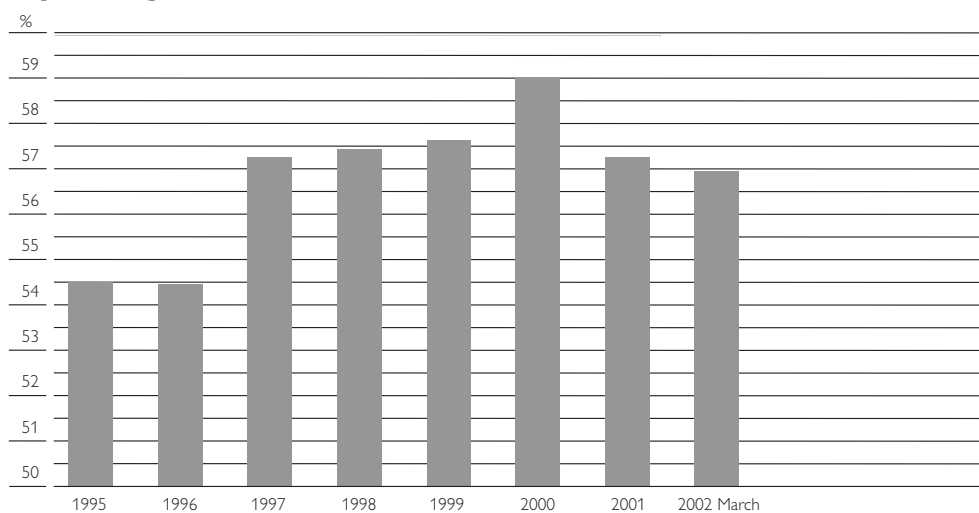


Source: OeNB.

Building and loan associations posted the highest share of loans in total assets at 75.3%, special purpose banks the lowest at 17.1%. Foreign currency lending was highest at Volksbank credit cooperatives with a share of 11.4% of total assets. Building and loan associations also recorded the highest share of deposits with 88.5% of total assets.

**Share of Selected Balance Sheet Items in Sectors' Total Assets**

| | Loans | | | Deposits | Interbank transactions | |
| --- | --- | --- | --- | --- | --- | --- |
| | total | thereof EUR | thereof in foreign currency | | assets | liabilities |
| | % | | | | | |
| Joint stock banks | 44.85 | 34.41 | 10.44 | 37.26 | 27.26 | 32.13 |
| Savings banks | 33.43 | 26.55 | 6.87 | 27.24 | 37.40 | 39.03 |
| State mortgage banks | 56.61 | 45.32 | 11.29 | 21.74 | 18.79 | 10.80 |
| Raiffeisen credit cooperatives | 40.06 | 32.78 | 7.28 | 38.33 | 36.16 | 40.76 |
| Volksbank credit cooperatives | 47.45 | 36.07 | 11.38 | 39.87 | 27.77 | 32.64 |
| Building and loan associations | 75.34 | 75.34 | x | 88.53 | 12.66 | 5.21 |
| Special purpose banks | 17.11 | 16.44 | 0.67 | 2.95 | 58.97 | 21.65 |
| Sector total | 39.53 | 32.00 | 7.53 | 32.06 | 34.20 | 33.27 |

Source: OeNB.

1   Including Bank Austria AG (BA).

**Banking Offices**

| | Joint stock banks and private banks | | Savings banks | | State mortgage banks | | Raiffeisen credit cooperatives | | Volksbank credit cooperatives | | Building and loan associations | | Special purpose banks | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | H | B | H | B | H | B | H | B | H | B | H | B | H | B | H | B |
| March 31, 2002 | 61 | 739 | 67 | 1,377 | 9 | 165 | 617 | 1,724 | 70 | 476 | 5 | 59 | 78 | 5 | 907 | 4,544 |
| Total | | 800 | | 1,444 | | 174 | | 2,341 | | 546 | | 64 | | 82 | | 5,451 |
| December 31, 2001 | 61 | 738 | 67 | 1,380 | 9 | 164 | 617 | 1,725 | 70 | 475 | 5 | 59 | 78 | 5 | 907 | 4,546 |
| Total | | 799 | | 1,447 | | 173 | | 2,342 | | 545 | | 64 | | 83 | | 5,453 |
| Change | | +1 | | −3 | | +1 | | −1 | | +1 | | × | | −1 | | −2 |

*Source: OeNB.*
*H = Head offices.*
*B = Branch offices and bureaux de change.*

The *number of banking offices* went down by 2 to 5,453 in the first three months of 2002. The number of *head offices* remained unchanged at 907. But further bank mergers are to be expected for 2002.

## Smooth Cash Changeover

March 2002 was probably the last month in which the effects of the cash changeover showed in banks' balance sheets. After *cash and central bank balances,* and especially the subitem *holdings at the Oesterreichische Nationalbank,* had exceeded the level of the previous year by 105.2% on December 31, 2001, they declined by 46.9% in the first quarter, thus returning to a level of EUR 4.06 billion. This surge was attributable to the introduction of euro notes and coins, as banks had to deposit eligible collateral *(cash collateral)* at the OeNB in the amount of the euro cash distributed but not yet debited to banks' checking accounts.

## Interbank Business Underpinned Growth

*Interbank claims and liabilities* were the two items to pick up most strongly in the first three months of 2002. In the first quarter of 2002, domestic interbank transactions increased slightly more slowly (by EUR 3.08 billion or 2.7%) than in the same period of last year (by EUR 5.11 billion or 5.0%). The growth rate of asset-side interbank transactions with foreign banks came to EUR 2.84 billion or 3.5%, which represented a deceleration by 1.6 percentage points. Liabilities growth, by contrast, sank by EUR 4.74 billion or 5.6%, after a rise by EUR 5.78 billion or 6.9% in the like period of 2001.

A sectoral breakdown shows that the share of interbank assets — stemming from both domestic and foreign transactions — in total assets was largest at special purpose banks[1]) (59.0%), followed by the multi-tier sectors savings banks (37.4%) and Raiffeisen credit cooperatives (36.2%). Raiffeisen credit cooperatives recorded the largest amount of interbank liabilities as a percentage of total assets (40.8%), succeeded by savings banks (39.0%) and Volksbank credit cooperatives (32.6%).

1   *Including Oesterreichische Kontrollbank AG (OeKB).*

## Stagnant Demand for Loans

After a rather lackluster first quarter of 2001, in which overall *loans* shrank by EUR 1.30 billion or 0.6%, the 2002 loan level effectively stagnated at EUR 232.77 billion, which represented a minus of EUR 0.03 billion. A rise in *foreign currency lending* of EUR 2.07 billion or 4.9% contrasted with a decline in *euro loans* of EUR 2.10 billion or 1.1%. In the first three months of 2001, euro loans had merely declined by EUR 1.34 billion or 0.7%, whereas foreign currency lending had picked up by EUR 0.05 billion or 0.1%. In March 2002, the share of foreign currency loans in total loans came to 19.1%, after 17.7% and 21.3% in March of 2001 and 2000, respectively.

**Loans to Domestic Nonbanks**

*Annual change in EUR billion*

— Euro
— Foreign currency
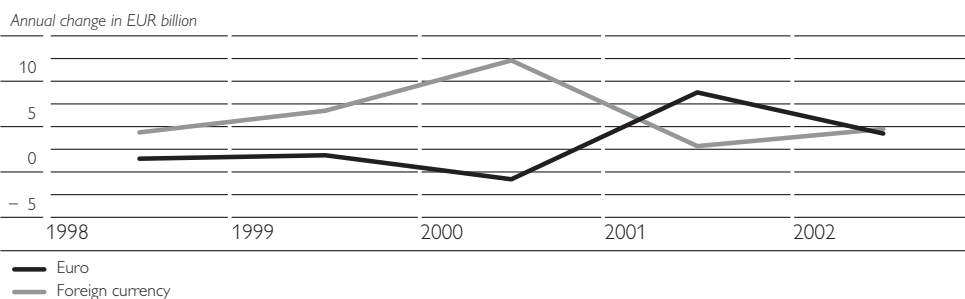
*Source: OeNB.*

In sectoral breakdown, a comparison of foreign currency loan growth rates yields interesting results: While joint stock banks massively expanded their foreign currency lending by EUR 1.16 billion or 9.2%, special purpose banks largely used euro loans to widen their credit portfolio by EUR 0.55 billion or 7.4%. In all other sectors – with the exception of building and loan associations, which are not allowed to extend foreign currency loans – the percentage of foreign currency loans grew more strongly than that of euro credit.

An analysis by *loan amount* shows that the majority of euro loans was taken out up to a sum of EUR 10,000, with very many of these loans being overdraft

**Share of Foreign Currency Loans in Total Loans by Loan Amount**

*% of total loans*

■ Up to EUR 10,000     EUR 100,000 to 500,000     Over EUR 3 million
EUR 10,000 to 50,000     EUR 500,000 to 1 million
EUR 50,000 to 100,000     EUR 1 million to 3 million
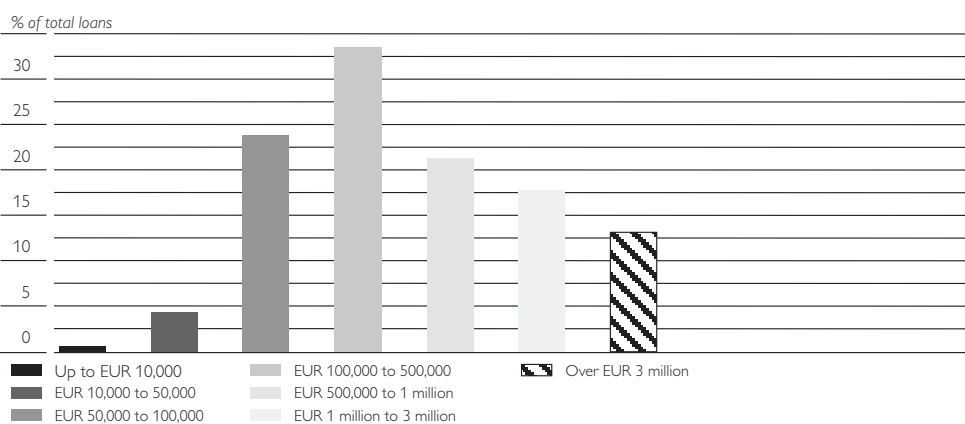
*Source: OeNB.*

facilities. Foreign currency loans, by contrast, were mainly granted between EUR 100,000 and EUR 500,000.

As at March 31, 2002, some 49% of all foreign currency loans were denominated in *Swiss francs,* 7 percentage points less than in March 2001. Since the beginning of 2002, however, lending in Swiss francs has again picked up by EUR 0.3 billion or 1.5%; in the like period of 2001 it had still declined by 3.8%. But this increase was most likely linked to the exchange rate of the Swiss franc, which rose at a similar pace during the same period. After the high growth rates in 1998 and 1999, lending in *Japanese yen* only gained EUR 0.7 billion or 3.8% in the first quarter of 2002. This rise is probably also largely attributable to currency-related changes. After all, in the first quarter of 2001 the increase had still amounted to EUR 0.9 billion or 6.0%. The share of yen-denominated loans in total foreign currency loans, which came to 41.8% in March 2002, has been going up continuously in recent years.



**Growth Rates of Foreign Currency Loans to Nonbanks**

Swiss franc
Japanes yen
U.S. dollar
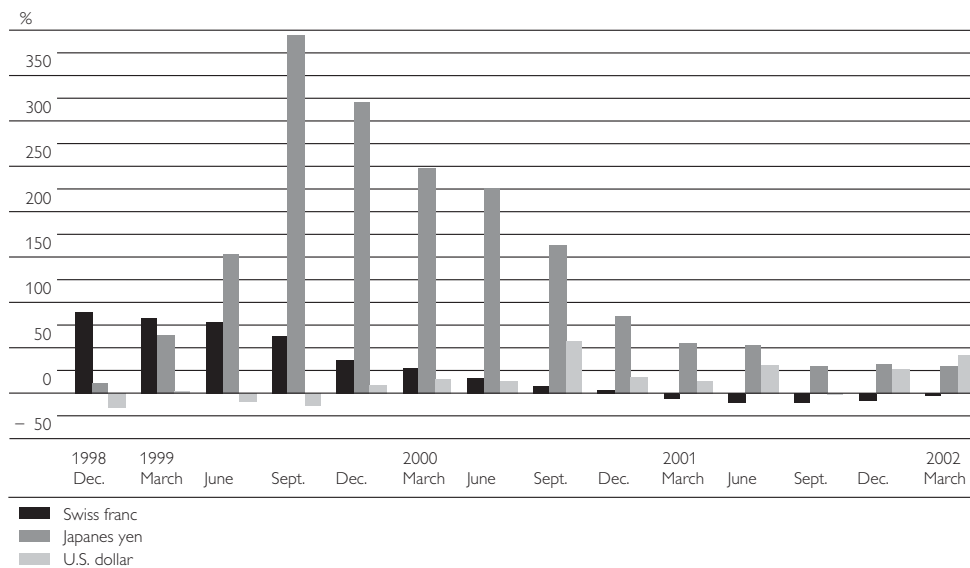
*Source: OeNB.*

Credit in *U.S. dollars* continued to play a minor role in the first quarter of 2002. Its share in total foreign currency loans amounted to 8.7%.

In December 2001,[1] *Austria* accounted for about 3% of all *outstanding loans in the euro area.* The share in Swiss franc-denominated loans stood at 29%, down from 33% in December 1999, while the share in Japanese yen-denominated loans increased from 35% to 39% over the same period of time.

*Regional differences* in the demand for foreign currency loans persist: Their share in total loans came to about 16% in Austria's eastern provinces[2] (14% in March 2001), whereas it was approximately 33% in the western provinces (31% in March 2001). In Austria's eastern provinces, foreign currency loans

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1  No data were available at the cut of date (March 31, 2002).

2  The eastern provinces are Lower Austria and Burgenland. For reasons of transparency, Vienna was not considered. Vorarlberg, Tyrol and Salzburg are classified as the western provinces.

taken out since the beginning of 2002 rose by 3.7%, in the western provinces the increase amounted to 2.9%.

Within total loans, *current account credit,* which also includes overdrafts on current accounts, decreased by EUR 1.73 billion or 2.8%, that is almost by the same amount as *nonrevolving loans* picked up (EUR 1.53 billion or 1.5%).

In the first three months of 2002, *households* were the only economic sector to register credit growth. Household borrowing augmented by EUR 1.04 billion or 1.7% against EUR 0.48 billion or 0.8% year on year. Only 76% of household loans were denominated in euro – a percentage which tends to decrease further, as euro-denominated credit grew more slowly at EUR 0.30 billion or 0.6% than foreign currency loans at EUR 0.74 billion or 5.1%. The average interest rate charged on household loans has remained unchanged at 5.75% since December 2001. At EUR 0.05 billion or 0.1%, *home loans and home improvement loans* showed considerably less growth than total household credit. The foreign currency share in this category came to 9.9%. Since the beginning of the year, the *average rate of interest on home loans* has been going down by 0.1 percentage point to 5.54%.

Since the beginning of 2002, *corporate* debt has been scaled back by EUR 1.29 billion or 1.0%. Credit to nonfinancial corporations had already been going down in 2001 by EUR 1.35 billion or 1.1%. About 80% of total loans were denominated in euro, with the euro share, however, retreating by EUR 2.18 billion or 2.1% and the foreign currency share going up by EUR 0.90 billion or 3.6%. Since December 2001, the *average rate of interest on commercial loans* has been going down by 0.15 percentage point to 5.65%.



**Share of Foreign Currency Loans**

*% of total loan volume*

Legend:
- General government sector
- Nonfinancial corporations
- Households

*Source: OeNB.*
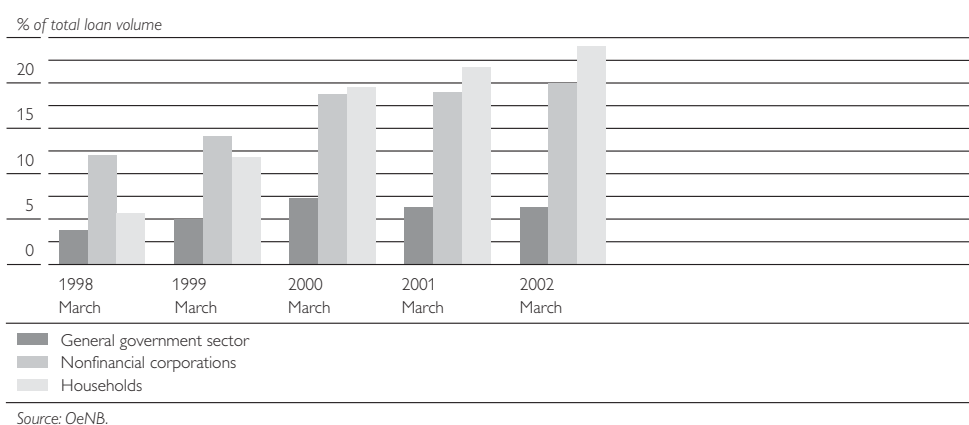
As in previous years, the *public sector* cut back its bank liabilities also in the first quarter of 2002 by EUR 0.07 billion or 0.3%, with the central government being solely responsible for this reduction. While the central government scaled back its liabilities by EUR 0.62 billion or 5.8%, *regional* and *municipal authorities,* in particular, raised their level of credit outstanding by EUR 0.74 billion or 15.4% and EUR 0.14 billion or 1.2%, respectively. Some 94% of total loans were denominated in euro, with foreign currency lending, however, expanding since the beginning of 2002 by EUR 0.39 billion or 28.6%. The *average rate of*

*interest on loans to public-sector entities* went down by 0.05 percentage point to 4.36%.

*Adjustments of claims on nonbanks* reached 3.38% in March 2002, that is a plus of 0.32 percentage point against December 2001 and the highest level since June 1999. At the end of the first quarter of 2001, adjustments of claims had still come to 3.27%, but at that time the growth rate was higher (0.35 percentage point) than in 2002. Volksbank and Raiffeisen credit cooperatives exceeded the average at 4.92% or 4.25%, respectively, building and loan associations and special purpose banks clearly lagged behind at 0.44% or 0.98%.

**Value Adjustments**



*% of claims on nonbanks*

— Banking sector total      — Four-period moving average (total banks)
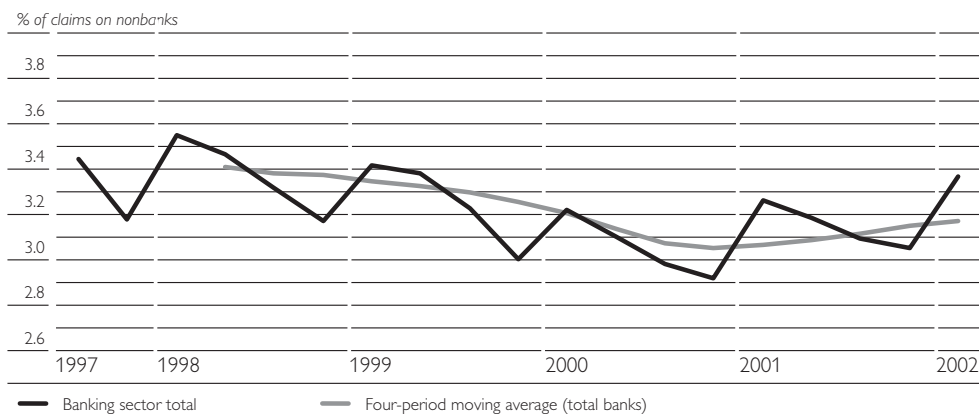
*Source: OeNB.*

Just as total loans, *securitized lending* has basically stagnated since the end of 2001, rising by only EUR 0.02 billion or 0.1% and recording a volume outstanding of EUR 21.43 billion. More than 99% were denominated in euro. While the subitem *eligible Federal Treasury bills* picked up EUR 0.26 billion or 53.5% in the first quarter of 2002, *securitized claims* fell by EUR 0.22 billion or 12.2% and *debt securities and other fixed-income securities* decreased by EUR 0.14 billion or 8.1%.

A sectoral breakdown shows that savings banks registered the highest rise in securitized lending at EUR 0.35 billion or 5.3%, whereas the greatest declines were recorded at Raiffeisen credit cooperatives at EUR 0.23 billion or 6.4% and joint stock banks at EUR 0.19 billion or 2.9%.

## Contraction of Deposits

After a very strong year 2001 (with a rise of EUR 3.22 billion or 1.8% by March 2001), the *level of deposits* declined EUR 0.75 billion or 0.4% in the first quarter of 2002.

While joint stock banks and savings banks registered the highest deposit outflows at EUR 0.94 billion or 1.9% and EUR 0.89 billion or 1.6%, respectively, Raiffeisen credit cooperatives and state mortgage banks raised deposits by domestic nonbanks by EUR 0.53 billion or 1.1% and EUR 0.39 billion or 5.1%, respectively. Building and loan associations also faced a minus of EUR 0.14 billion or 0.8%.

*Regional differences* could also be observed for deposits. At 62.7%, the eastern provinces had a considerably larger share of deposits in total assets than the western provinces at 40.6%. The "center provinces"[1]) ranged in-between at 48.9%.

The drop in deposits was largely attributable to *time deposits,* which had still climbed EUR 2.57 billion or 12.7% in March 2001, but plummeted EUR 1.75 billion or 6.9% in March 2002. *Nonfinancial corporations* held about half the euro-denominated time deposits, which have receded EUR 0.91 billion or 7.4% since the beginning of 2002. The *general government* also cut back its time deposits by EUR 0.53 billion or 7.9%, whereas *households* showed an expansion by EUR 0.16 billion or 5.0%.

*Sight deposits,* which also include personal checking accounts, picked up EUR 0.75 billion or 1.9% in the first three months of 2002 after a stagnation in the like period of 2001. *Households* registered a decline by EUR 0.16 billion or 0.9% to a level of EUR 17.52 billion or about 46% of total sight deposits. *Nonfinancial corporations,* by contrast, raised their sight deposits by EUR 0.94 billion or 6.6%, after a plus of EUR 0.10 billion or 0.7% in 2001. The *general government sector,* which only held about 10% of all sight deposits, also stepped them up by EUR 0.22 billion or 6.3%.

Despite a constant interest rate level – the *average rate of interest for savings deposits* with an agreed maturity of over 12 months has remained unchanged at 2.78% since December 2001 – *savings deposit* growth in the first quarter of 2002 slowed down noticeably by EUR 0.25 billion or 0.2%, against EUR 0.65 billion or 0.5% year on year.

At EUR 5.24 billion, total assets of *mutual funds* in Austria[2]) have gained somewhat more strongly since the end of 2001 than during the previous year
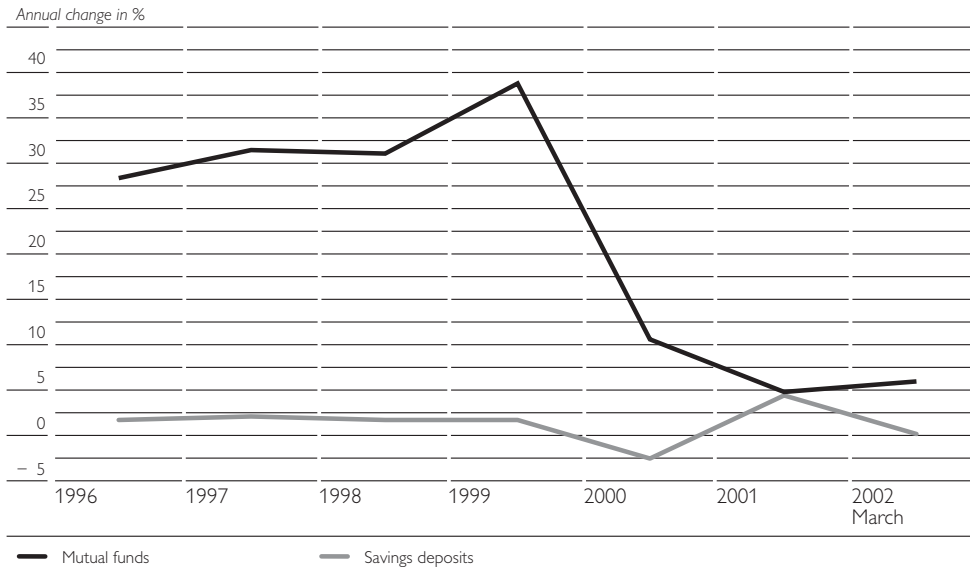
## Savings Deposits of Domestic Nonbanks



*Source: OeNB.*

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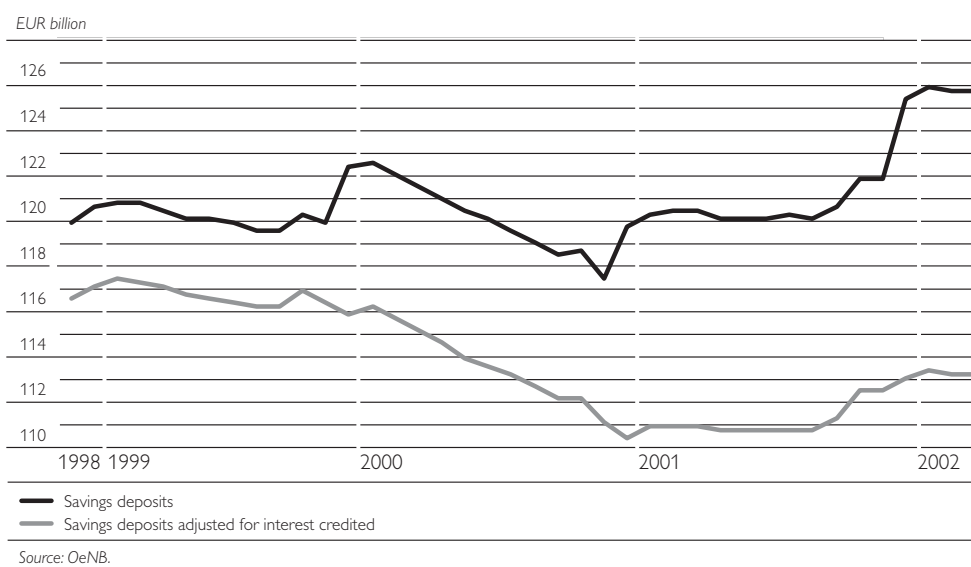
1    *Defined as Upper Austria, Styria and Carinthia.*
2    *Source: VÖIG (association of Austrian investment companies).*

**Changes in Savings Deposits and Mutual Fund Volume**

*Annual change in %*



Mutual funds — Savings deposits

*Source: OeNB, VÖIG.*

(2001: EUR 0.6 billion); the growth rates of the years 1998 and 1999, however, could not be reached. At 52.8%, *fixed income (bond) funds* still held the highest share among all types of funds, followed by *balanced funds* at 22.9% and *equity funds* at 20.5%.
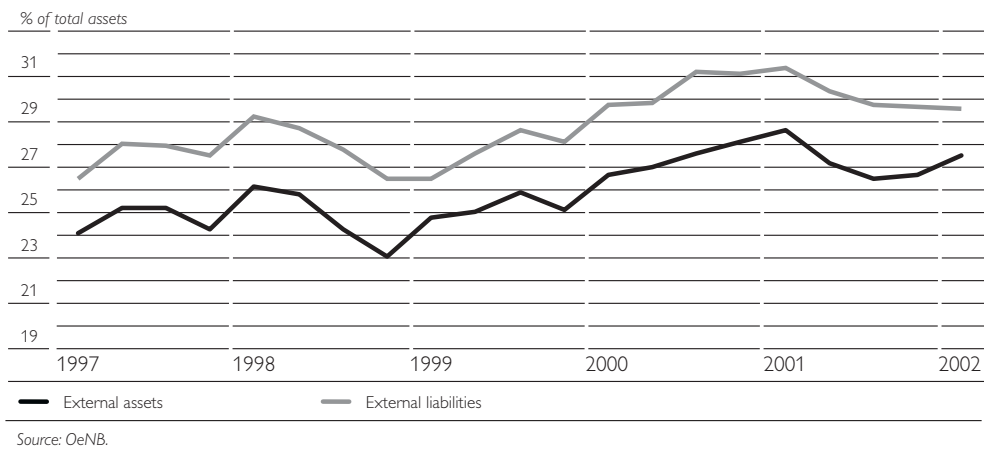
The issuance of direct paper for refinancing purposes by banks operating in Austria has augmented by EUR 1.19 billion or 2.2% since the beginning of 2002, compared to EUR 2.10 billion or 4.0% in the like period of 2001. Euro-denominated issues were the single source of growth and had a share of 88.5% in total domestic issues.

## External Business Retains Strength

With the international interlocking of banks increasing, external business has been gaining importance over the past few years. On the asset side, *external business* continued to be the mainstay of asset growth, posting a plus of EUR 5.41 billion or 3.5% in the first quarter of 2002. More than half the *external asset* growth stemmed from *Austrian banks' foreign interbank claims,* which have gained EUR 2.84 billion or 3.5% since the beginning of the year. In 2001, however, the increase had still amounted to EUR 4.04 billion or 5.1%. By contrast, *debt securities and other variable-yield securities of nonresidents* posted a more vigorous growth rate (EUR 1.38 billion or 10.2%) than in 2001 (EUR 0.97 billion or 5.4%). On the liability side, *external liabilities* receded slightly by EUR 0.18 billion or 0.1% this year, in contrast to 2001, when a rise of EUR 4.35 billion or 2.5% had been recorded. *Foreign interbank liabilities,* in particular, fell EUR 4.74 billion or 5.6% against a rise of EUR 5.78 billion or 6.9% in the first three months of 2001. *Securitized foreign liabilities,* however, picked up EUR 3.43 billion or 6.6% after a decline of EUR 0.61 billion or 1.1%.

In March 2002, external assets accounted for 27.5% of banks' total assets, while external liabilities had a share of 29.5%.

**External Assets/Liabilities of Banks Operating in Austria**

% of total assets

[chart showing External assets and External liabilities from 1997 to 2002, y-axis from 19 to 31]

External assets ——    External liabilities ——

Source: OeNB.

After the balance sheet total of *Austrian banks' branches abroad* had decreased by EUR 6.88 billion or 16.1% in the first quarter of 2001 – owing to some restructuring at one major bank – a further reduction by EUR 0.44 billion or 2.3% followed in the first quarter of 2002. The share of *banks in majority ownership of nonresidents* in total assets had also trended downwards to 18.8%.

## Volume of Derivatives Transactions Narrowed

In the first quarter of 2002, the volume of *derivatives transactions* declined by EUR 36.66 billion or 3.3%, after a surge of EUR 80.45 billion or 10.2% year on year. Especially *interest rate contracts,* the subitem with the greatest volume, sank markedly by EUR 71.97 billion or 7.6%. In March 2002, the ratio of derivatives transactions to total assets ran to 182.2%, after 151.5% in March 2001.

## Capital Ratio Continues to Rise

At the end of March 2002, the *capital* held by banks operating in Austria amounted to EUR 42.94 billion, EUR 0.96 billion or 2.3% more than at the beginning of the year. Compared to the corresponding period of last year, banks' capital rose by EUR 2.03 billion or 5.4%. The *(unconsolidated) capital ratio as a percentage of the assessment base* rose by 0.4 percentage point to 15.0%

**Banks' Own Capital**

% of assessment base

[chart showing % of assessment base from 1999 to 2002, y-axis from 13.0 to 15.0]
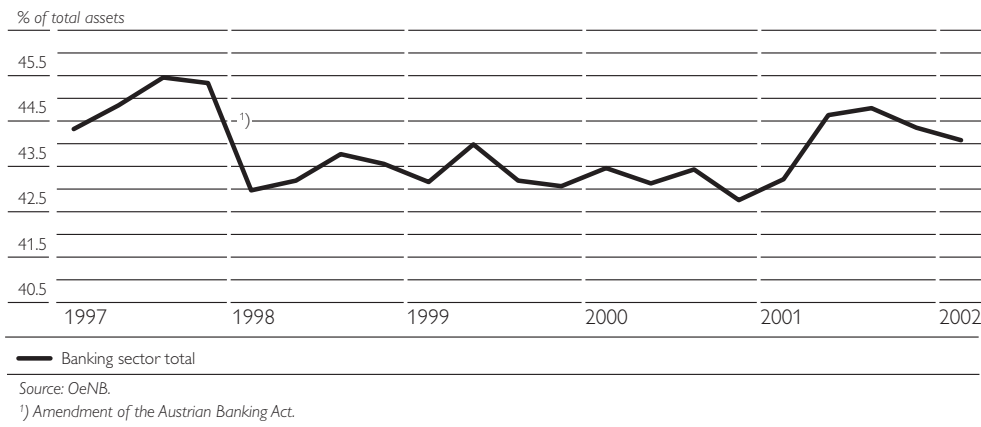
Source: OeNB.
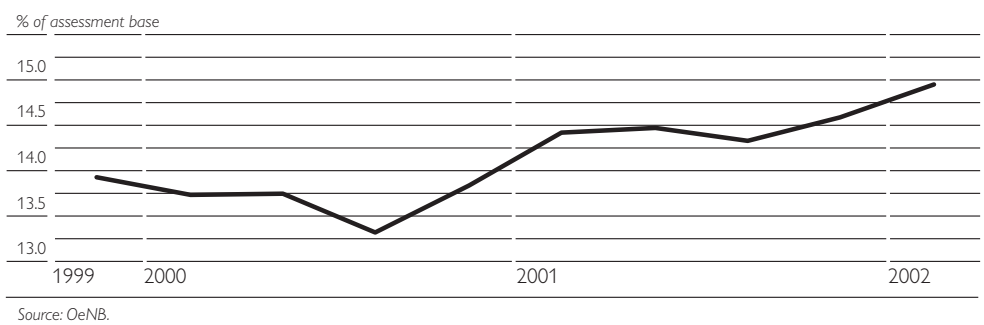
in the first three months of 2002. According to the Austrian Banking Act, minimum capital requirements are at 8%. *Core capital* still accounts for some two thirds of total capital (EUR 28.17 billion). *Eligible capital[1])* stood at EUR 40.53 billion, EUR 0.97 billion more than at the beginning of 2002. *Tier III capital,* which only serves to cover market risks, remained basically unchanged at EUR 2.41 billion.

In contrast to total assets, which gained EUR 1.16 billion or 0.2%, *risk-weighted assets[2])* declined by EUR 1.03 billion or 0.4% in the first three months of 2002. This means that, all told, banks obviously incurred less risk. Hence, *risk weighted assets as a percentage of total assets* went down by 0.3 percentage point to 44.1%.

**Risk-weighted Asset**



*% of total assets*

Banking sector total

*Source: OeNB.*
*[1]) Amendment of the Austrian Banking Act.*

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1  Core capital and supplementary capital minus deductible items.
2  Risk-weighted assets are assets reduced by value adjustments and weighted by risk categories in line with Article 22 (3) Austrian Banking Act.

# Balance of Payments in the Year 2001[1])

René Dell'mour,
Patricia Fahrngruber,
Claudia Oberndorfer,
Patricia Walter,
Isabel Winkler,
Robert Zorzi

— Austria's current account deficit continued to decline in 2001.
— The travel account improved slightly against 2000.
— Cross-border capital investment shrank in 2001.
— Austrian debt securities continued to be popular with nonresident investors.

Despite the difficult global economic environment, Austria's external sector fared well in 2001. Global growth had slowed down markedly, world trade was stagnant, stock prices declined, and the terrorist attacks of September 11, 2001, unleashed a worldwide shock wave with significant effects on the real economy and the financial markets. Apart from the global economic situation, the upcoming enlargement of the European Union (EU) is another key factor in the development of Austria's external trade relations. Austria is set to gain more than others from this further step of integration. Therefore, in analyzing Austria's balance of payments in 2001, this report puts a special focus on the significance of the twelve accession countries. The analysis shows that Austria has already established itself as a hub and a mediator between the current EU Member States and the Central and Eastern European accession countries.

## 1 Current Account

In 2001 Austria recorded a *current account deficit* (based on transactions; table 1) of EUR 4,570 million (2.2% of GDP).[2]) Compared to 2000, the shortfall narrowed by almost EUR 500 million or 9%. This improvement can be mainly traced to a smaller deficit on goods and services. In the year 2000, the current account deficit had already shrunk by 20% year on year.

**Austria's Current Account[1])**
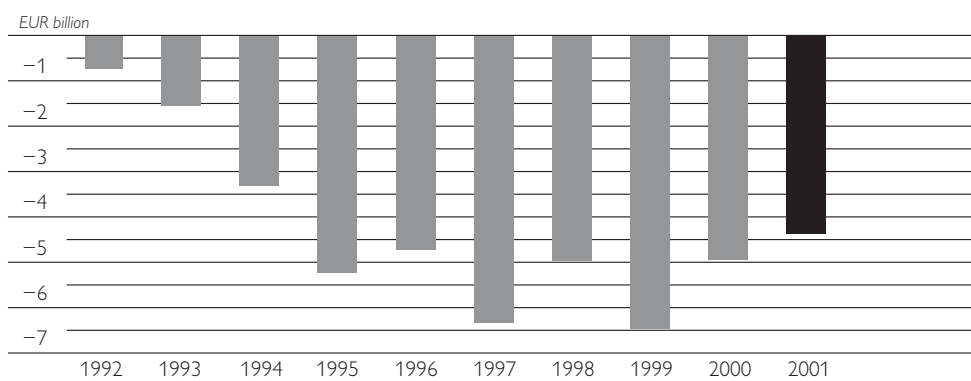


Source: OeNB.
[1]) 2001: Provisional data.

The deficit on Austria's current account with the *euro area countries*[3]) contracted by 1.3%, coming to EUR 8,055 million in 2001, chiefly because of the EUR 732 million decline in the shortfall on the goods account. Vis-à-vis

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1   Based on transactions. Editorial close: May 15, 2002.
2   Contrary to the cash balance, whose purpose is to provide a quick overview, the transaction balance complies with a calculation model requiring period adjustments and other adjustments. The transaction balance confirms the improvement of results which the cash balance for the entire year 2001 had already reflected.
3   Since January 1, 2001, including Greece; the analogous 2000 figures were calculated backwards.

Germany, its main trading partner, Austria has posted a relatively stable deficit for the past few years (2000: 2.1% of GDP; 2001: 2.5% of GDP).

Trade with the EU *accession countries[1]* generated a current account surplus of EUR 3,835 million, which marks a 2% decline compared to the result of 2000. Both the goods and services and the income accounts posted a surplus. Only the current transfers account was in deficit (EUR 38 million), which is attributable mostly to foreign workers' remittances.

**Austria's Current Account Broken Down by Regions[1]**



EUR billion

Accession countries
Euro area
Global

*Source: OeNB.*
*[1] 2001: Provisional data.*
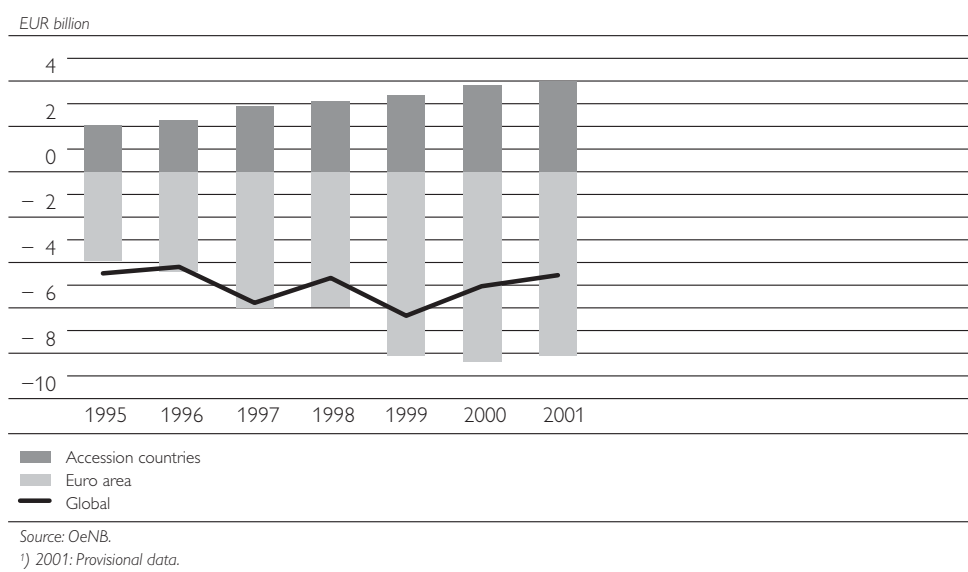
### 1.1 Goods and Services

An analysis of the subaccounts of the current account shows that the decreasing deficit is traceable first and foremost to the improvement in the cross-border trade in *goods and services.* With the deficit contracting from EUR 1,230 million to EUR 190 million, goods and services were almost in balance for the first time since 1994; the oil price, which, after its surge in 2000, started to decline, played a positive role in this development (the price of a barrel of Brent crude oil dropped from EUR 239 to EUR 213).

### 1.1.1 Goods

*Austria's external trade* (data provided by Statistics Austria) was EUR 4,205 million in deficit in 2001, which marked the best result since 1978;[2] compared to 2000, the goods deficit shrank by EUR 1,040 million or 20%. The exports-

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1   The EU is currently in accession negotiations with Bulgaria, Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, the Slovak Republic and Slovenia.

2   It should be noted that the balance of payments data deviate from Statistics Austria's external trade data because of differences in value definition (free on board – fob – and cost, insurance, freight – cif). While in the external trade statistics, goods are valued at cif, in the balance of payments, both exports and imports are valued at fob and freight and insurance costs are reflected in the services account, which is in line with international practice.

to-GDP ratio augmented further – from 33% to 35% – in the period under review.

The trade deficit vis-à-vis the *countries* of the euro area narrowed by EUR 230 million or 3% to EUR 7,490 million in the reporting year (see table 2). Exports and imports picked up 6% and 5%, respectively. In absolute terms, Austrian goods exports to the euro area came to EUR 40,500 million and Austrian imports from the euro area to EUR 48,010 million.

At EUR 1,920 million, Austria's goods surplus with the *EU accession countries* remained almost unchanged compared to the year 2000. Among these countries, Hungary and the Czech Republic play the largest part in Austria's external trade, taking seventh and eighth place, respectively, in the ranking of the most important export target countries, and fifth and eighth place, respectively, in the import ranking. The share of exports to the accession countries in the total volume of Austrian exports has remained relatively stable over the past six years (at 11% to 13.5%), whereas the share of imports rose from 6% to 10%. Starting from a relatively modest level, trade with the Baltic Republics has picked up remarkably more recently.

### 1.1.2 Services

The surplus on the *services* subaccount diminished by EUR 670 million in 2001. The balance of the unclassified transactions item,[1] which is reported in the services subaccount, advanced by some 50% to EUR 4,250 million in the reporting year.

### 1.1.2.1 Travel

Travel, the most important item of the Austrian services subaccount, recorded fairly positive results in the year under review. The number of *foreign tourist bednights* increased for the fourth time in a row, by 1.5 million bednights or 1.3% (table 4). This is all the more noteworthy as in 2001, the worldwide number of international tourist arrivals dropped for the first time since 1982 (by 1.3% to 689 million). According to the World Tourism Organization (WTO), this decline is attributable to the tragic events of September 11, 2001, given that an increase of some 3% had been recorded up to August of the same year. Yet Austria benefited from its reputation as a safe destination and its geographic proximity to the countries where the bulk of its visitors come from, and was thus able to increase its market share in global tourism in 2001. As projected, the 2001 winter season (November 2000 to April 2001) was the first one to record more foreign tourist bednights than the summer season of the same year (42.3 million vs. 41 million).

*Spending by foreign travelers* (including international passenger transport) developed even more favorably than foreign tourist bednights, rising by EUR 920 million or 7.4% in 2001 to some EUR 13,300 million (table 3). Receipts

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1   *The unclassified transactions item derives from an imbalance between banks' reported import and export payments for goods and the sum of merchandise import and export payments according to the foreign trade statistics compiled by Statistics Austria, with the former outweighing the latter. In line with international practice, the goods item of the balance of payments is calculated from the foreign trade statistics provided by the national statistical offices. The unclassified transactions item thus corresponds to the difference between merchandise payments and foreign trade figures.*

per bednight climbed by 6% to EUR 160. These figures reflect not only the rising importance of winter tourism, where visitors tend to spend much more than during summer vacations, but also the continuous trend towards high-quality accommodation. Four- and five-star hotels recorded an above-average plus of 2.2%, whereas budget hotels and guesthouses were faced with declining guest numbers.

The terrorist attacks of September 11, 2001, also showed in the *countries of origin* statistics. The number of visitors from the U.S.A. registered the greatest decline, slumping by 300,000 or 15.8%; also, there was a considerable decrease in arrivals from East Asia and the Pacific area. Austria's traditional – geographically close – tourist markets accounted for the largest increases in guests, with the number of visitors from Germany rising by 440,000, from the Netherlands by 300,000, from Switzerland by 200,000 and from Italy by 150,000. Also, more and more tourists from Central and Eastern Europe have been spending their holidays in Austria; a ten-year comparison shows that the region has become one of Austria's most important and most dynamic travel origin markets. The domestic tourist industry is likely to continue to profit from rising levels of prosperity in the accession countries. At present, at 23%, the share of Eastern European guests opting for four- and five-star accommodation is slightly below the average of 29%, but it should be noted that this share roughly equals that of German tourists staying in high-quality hotels and clearly exceeds that of Dutch visitors.

*Travel expenditure* expanded by 7.8% in the reporting year, coming to EUR 10,840 million. Amid travel inflow and outflow developments, the travel surplus edged up slightly to EUR 2,440 million (+EUR 130 million). Owing chiefly to the improvement of the goods account, the travel surplus recorded in 2001 covered almost 60% of the trade deficit. This ratio thus almost reached the level of the 1980s, when the travel surplus covered two thirds of the trade deficit, which, however, was much larger at that time.

### 1.1.2.2 Other Services

After a surplus of EUR 225 million in 2000, the services subaccount excluding travel posted a deficit of EUR 280 million in the year under review. The shortfall on the unclassified transactions item (see above) was key to this negative development.

At the same time, other services items improved: *transport* (including passenger transport) by EUR 357 million, *other business services* by EUR 635 million and *insurance services* by EUR 178 million.

### 1.3 Income

The income subaccount closed at a net deficit of EUR 3,010 million in 2001, thus reaching the highest annual value recorded so far. While *compensation of employees,* basically border and seasonal workers' income, posted a surplus comparable to the figures recorded in the previous years (EUR 590 million), the deficit on *investment income* widened by 23% from EUR 2,940 million to EUR 3,600 million. This downturn is chiefly ascribable to Austria's growing external debt (EUR 35 million at the end of 2000), which, in turn, resulted from the current account deficits of the past few years.
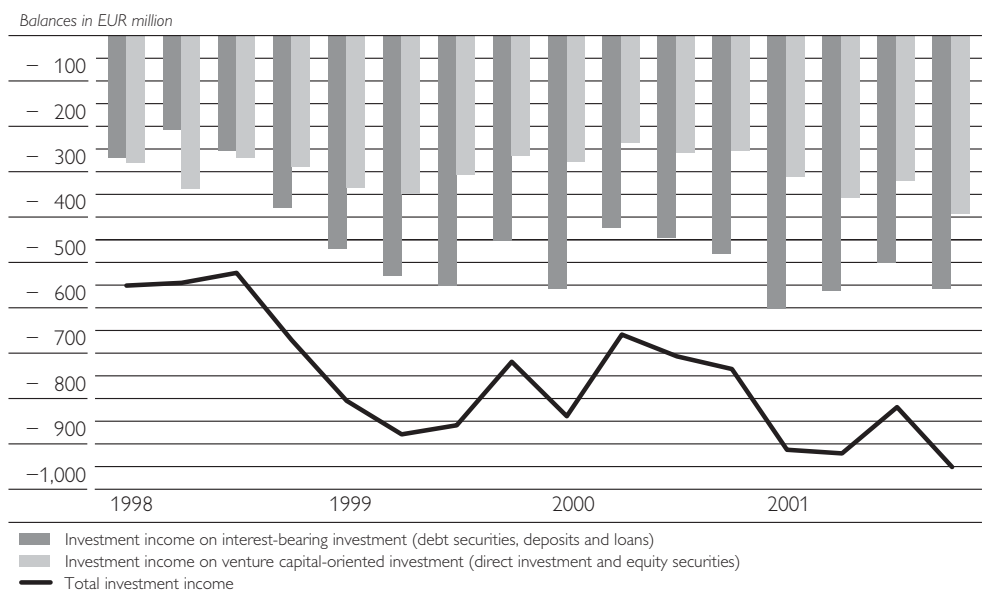
## Austria's Investment Income Broken Down by Regions[1]

EUR billion



Receipts         Expenditure

■ Rest of the world
■ Accession countries
■ Euro area
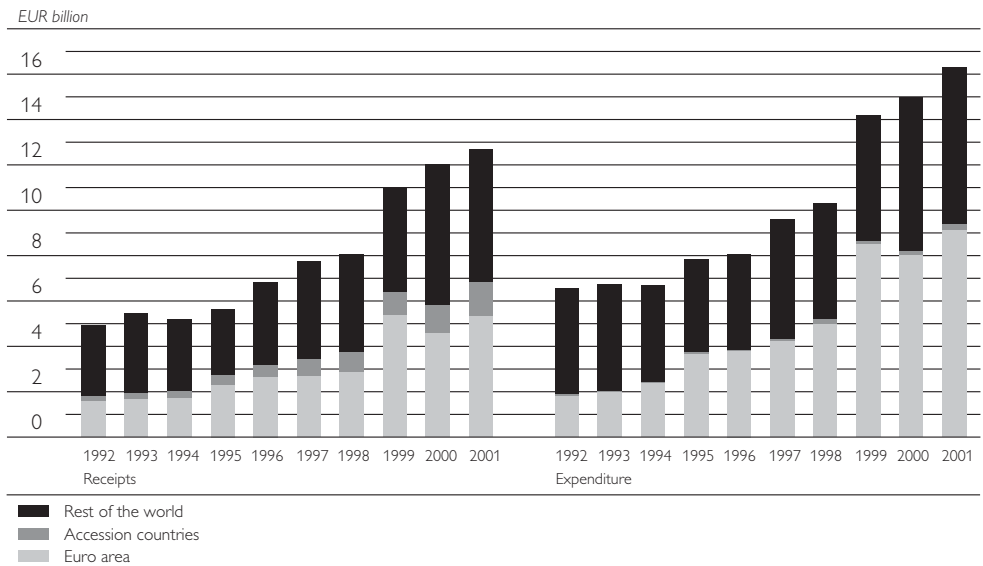
Source: OeNB.
[1] 2001: Provisional data.

A breakdown of net investment income by regions shows that net outflows to the euro area amounted to a hefty EUR 3,770 million. The chart illustrates that income flows between Austria and other euro area countries have been continuously on the rise. Austria also recorded a mounting net inflow of cross-border income from the accession countries (2000: EUR 1,080 million; 2001: EUR 1,220 million).

## Components of Austria's Investment Income[1]

Balances in EUR million



1998      1999      2000      2001

■ Investment income on interest-bearing investment (debt securities, deposits and loans)
■ Investment income on venture capital-oriented investment (direct investment and equity securities)
— Total investment income

Source: OeNB.
[1] 2001: Provisional data.

Broken down by major subaggregates (table 5), income on both direct and portfolio investment recorded net deficits (EUR 1,180 million and EUR 3,580 million, respectively), while income on other investment posted a surplus of EUR 1,170 million.

In 2000, profit distributions from direct investment income had soared to extraordinary heights, which were not reached in 2001: The transfer of profit both to and from Austria declined (by EUR 250 million and EUR 230 million, respectively). Available income estimates for 2001 show that subsidiaries' total earnings increased, which suggests that reinvestment has been augmenting. Income on other capital, including especially intercompany loans – coming to EUR 70 million and EUR 3 million, respectively – is of minor importance.

Owing to growing securitization, the most important component of investment income in terms of quantity is income on *portfolio investment.* Income on foreign investments remained almost unchanged (2001: EUR 4,870 million; 2000: 4,770 million); at the same time, Austria's dividend and interest payments increased markedly (to EUR 8,450 million from EUR 7,340 million in 2000).

*Income on bonds and notes* played a substantial role, reaching the highest annual values both on the asset and on the liability sides. In 2001, Austria recorded interest income of EUR 4,600 million, while Austrian borrowers faced interest payments of EUR 7,820 million. The general government and banks are net contributors, whereas other investors,[1] above all institutional investors, are net recipients.

*Income on other investment and reserve assets* was EUR 1,170 million in surplus in the period under review (+EUR 390 million compared to 2000). A sectoral breakdown of this item shows that the banking system (OeNB and banks) is a net recipient, while nonbanks (general government and other sector) are net contributors.

### 1.4 Current Transfers

The *current transfers* account posted a deficit of EUR 1,370 million in 2001, which means that the shortfall was EUR 75 million smaller than in 2000. Approximately half of the decline, EUR 35 million, was attributable to the fact that Austria contributed less to the EU budget in 2001.

A regional breakdown shows that current transfers with the euro area were EUR 120 million in surplus, whereas current transfers with the accession countries posted a deficit of EUR 38 million; the latter, however, is the result of foreign workers' remittances, the largest share of which (EUR 32 million) went to Poland.

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1   *Including other financial institutions (e.g. mutual funds), insurance companies and pension funds as well as enterprises and households.*

## 2  Capital Account

The *capital account* deficit increased slightly in the reporting year compared to 2000 (EUR 560 million).

*General government* capital transfers in kind, including above all receipts from the EU that are earmarked for infrastructural measures and are thus not part of current transfers, amounted to somewhat more than EUR 60 million in 2001 (against EUR 160 million in 2000).

*Private sector* capital transfers in kind basically consist of remissions of debt. This item posted a deficit of EUR 415 million, thus recording less outflows than in 2000 (EUR 600 million).

In terms of volume, capital transfers *in cash* only play a minor role in Austria's balance of payments statistics.

## 3  Financial Account

Originating in the U.S.A., the bearish mood on international technology markets put an end to the country's ten-year economic expansion and triggered a worldwide slowdown in economic activity. The events of September 11, 2001, increased investor uncertainty even further. Central banks sought to support the markets by slashing interest rates. Investors responded by shifting their portfolios toward lower-risk assets.

The euro area balance of payments shows that there were stock purchases in Europe. At the same time, European investors increasingly turned to American bonds, thus helping maintain the capital flows between Europe and the U.S.A.

With capital inflows of EUR 3,760 million, the Austrian financial account closed the reporting year at a somewhat lower level than the year 2000

**Volume of Cross-border Capital Transactions¹)**



Capital transactions in EUR billion (left-hand scale)
Capital transactions in % of GDP (right-hand scale)

*Source: OeNB.*
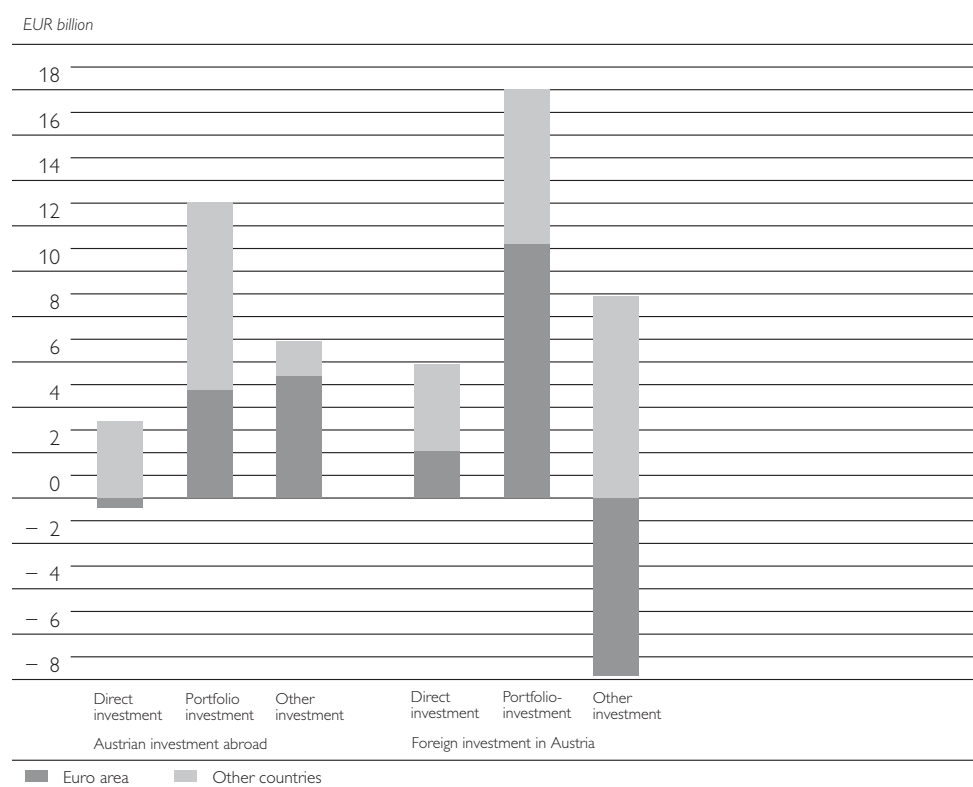*¹) 2001: Provisional data.*
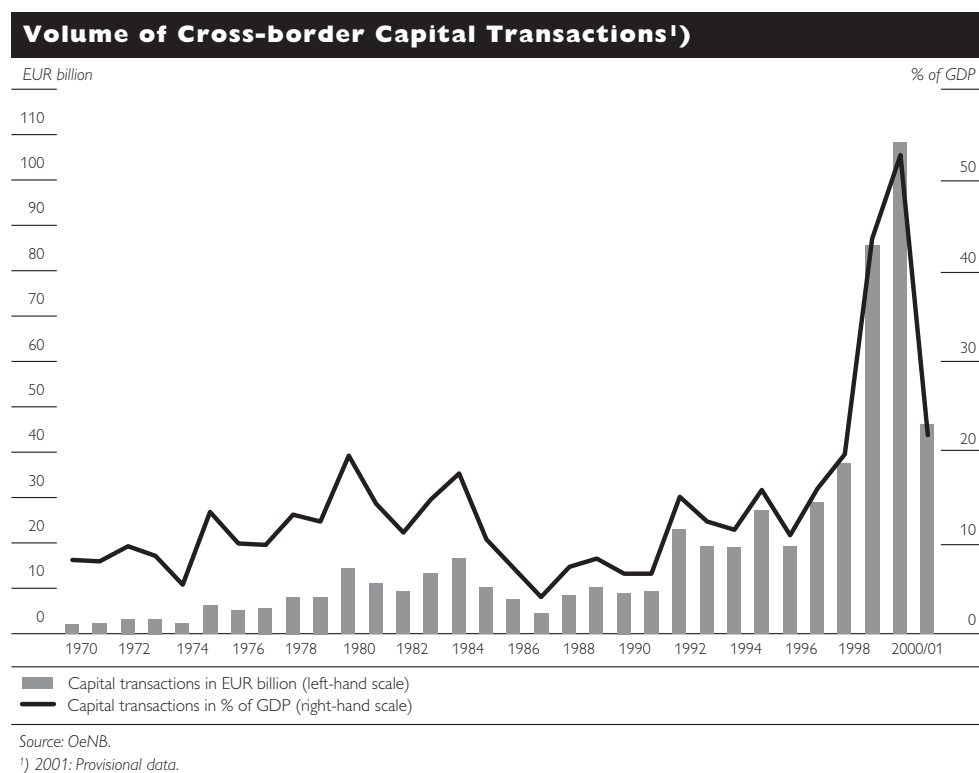
(EUR 4,150 million; table 6). The stock of cross-border claims and liabilities halved compared to the two previous years (2001: EUR 21,300 million and EUR 25,060 million, respectively). The reason for this decline may first and foremost be found in the reduced borrowing requirements owing to the economic slowdown. Furthermore, the major shifts in international portfolios in 1999 and 2000 prompted by the introduction of the euro seem to have come to an end in 2001. Volumes declined over the entire year, therefore the terrorist attacks of September 11, 2001, did not have a sustainable impact on the general decrease in trade volumes.

Both outward and inward Austrian direct investment was on the decline in 2001: Austrian direct investment abroad came to EUR 2,950 million, thus shrinking by more than half. Foreign direct investment in Austria decreased less sharply, reaching EUR 5,940 million in the reporting year.

As to *portfolio investment,* the build-up of claims and liabilities also slowed down in 2001. On balance, there capital inflows increased from EUR 4,890 million in 2000 to EUR 3,290 million in the year under review. Austrian investment in foreign shares and mutual fund shares shrank markedly against 2000, which made debt securities again the most important component in securities transactions, accounting for EUR 11,800 million. Conversely, debt securities were the most popular form of investment of nonresidents in Austria in 2001 (EUR 22,740 million).

## Austria's Financial Account (Selected Net Subaccounts) in 2001[1])



Source: OeNB.
[1]) 2001: Provisional data.

*Other investment,* which chiefly reflects the short-term financial account, also recorded a slowdown in the build-up of assets and liabilities in the reporting year.

A *regional breakdown* (table 7) of the financial account shows that in 2001, there were net inflows in combined direct and portfolio investment from the euro area and net outflows to the rest of the world.

### 3.1 Direct Investment

As the global economy was losing steam and stock prices had started to slip already in 2000, the economic climate for cross-border direct investment was rather unfavorable in the year under review. Already in 2000, UNCTAD had projected a pronounced decline in direct investment activity for 2001.

Austria experienced net capital outflows of EUR 2,950 million in *outward direct investment* in 2001, which is more than half less than the record value[1] of 2000 but still the third highest annual value ever recorded. Net equity capital outflows (including property) of EUR 2,220 million resulted from gross new investment of EUR 4,890 million and gross disinvestment of EUR 2,670 million (table 6). Reinvested earnings came to EUR 650 million (based on estimated annual profits and the observed profit distributions). Austrian investors' claims against affiliated companies expanded by EUR 90 million.

Four fifths of Austria's outward direct investment flows in 2001 – almost EUR 2,400 million – went to Eastern Europe; the *accession countries* accounted for EUR 2,100 million of this share. Like in 2000, Austria's investment activities in this region reached record levels in the reporting year. In 2001, Austrian direct investment in seven Eastern European target countries (including Hungary and Slovenia) exceeded every annual value ever recorded. Thanks to Erste Bank der oesterreichischen Sparkassen AG's stake in Slovenská Sporiteľňa, the Slovak Republic for the first time became the most important target country of Austrian FDI, recording inflows of EUR 640 million.

Despite major investments in Germany (restructuring of a foreign banking group), Austrian direct investment activities in EU countries resulted in disinvestment of EUR 350 million. Direct investment in the rest of the world totaled EUR 780 million, with the U.S.A., Canada and Australia and also to China and South Africa accounting for the largest shares.

The decline in *inward direct investment* was less pronounced than anticipated (by EUR 3,300 million or roughly a third). In 2000, the merger of BA and HypoVereinsbank had contributed to an extraordinary result (EUR 6,300 million). In 2001, the privatization of Austria Tabak AG and the Gallaher group's ensuing purchase of the free float accounted for a remarkable EUR 2,000 million.

The total of EUR 5,940 million in inward direct investment comprises EUR 4,590 million in gross new investment and EUR 710 million in disinvestment, as well as of reinvested earnings of EUR 1,200 million and intragroup loans worth EUR 860 million.

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1 *The figures of 2000 heavily reflected the merger of Bank Austria AG (BA) with Bayerische Hypo- und Vereinsbank AG (HypoVereinsbank).*

With 93% of inward direct investment coming from only five countries in 2001, the degree of concentration is much higher in inward than in outward direct investment. The United Kingdom was the largest investor in the reporting year, accounting for about half of the total investment volume (EUR 3,010 million), followed by Germany (EUR 1,300 million) and the Netherlands (EUR 490 million).

## 3.2 Portfolio Investment

*Portfolio investment,* i.e. investment in shares, bonds and money market instruments, continued to play the largest part in international capital transactions in 2001. Securities transactions recorded net inflows of EUR 4,890 million (table 6) in the reporting year. However, both Austrians' acquisitions of foreign securities and nonresidents' acquisitions of domestic securities declined by approximately 50% compared to 2000. Among all portfolio transactions recorded in 2001, only – both inward and outward – investment in long-term debt securities roughly equaled the results of 2000, whereas shares and investment certificates seem to have become less popular.

*Austrian investors,* especially institutional investors and banks, purchased foreign securities with a market value of EUR 13,070 million. Nonresident investors acquired domestic securities to the tune of EUR 17,960 million, once again opting chiefly for long-term debt securities. The general government continued to be the most important issuer of this type of debt security, yet bank issues almost caught up in 2001. Corporate bonds still do not play a role on the Austrian securities market.

## 3.2.1 Portfolio Investment in Foreign Securities

In 2001, Austrian investors purchased *foreign equity securities* to the tune of EUR 1,270 million in 2001. The stock swap between BA and HypoVereinsbank heavily influenced the results of acquisitions and sales of *foreign shares.* Leaving aside the stock swap, the figures reveal that Austrian investors' interest in foreign shares markedly declined in 2001 compared to the year 2000.

Investment in *foreign mutual fund shares* dropped by some 80% compared to 2000, amounting to EUR 1,230 million in 2001. Fourth quarter results accounted for almost half of the annual result 2001. A breakdown by regions reveals that the majority of Austrian investors opted for mutual fund shares issued in the euro area; mutual fund shares from accession countries accounted for 1% of sales to Austrians.

Austrian investors purchased debt securities worth EUR 11,800 million in 2001 (2000: EUR 12,120 million). Demand for *foreign bonds and notes* continued to run high (EUR 12,220 million); the annual result was the highest recorded since 1997 (except for the 1999 result). Debt securities issued in the euro area accounted for two thirds of the capital invested, followed, by a large margin, by U.S. issues, even though demand for these quadrupled compared to 2000. Issues from accession countries also became increasingly attractive to Austrian investors, representing 6% of total net acquisitions. It should be noted that a large number of issues in these countries is already denominated in the respective domestic currency.

**Breakdown of Austrian Investors' Foreign Securities Portfolios¹)**

**Acquisition of foreign securities broken down by type of security**

*EUR billion*



- Money market instruments
- Bonds and notes
- Equity securities
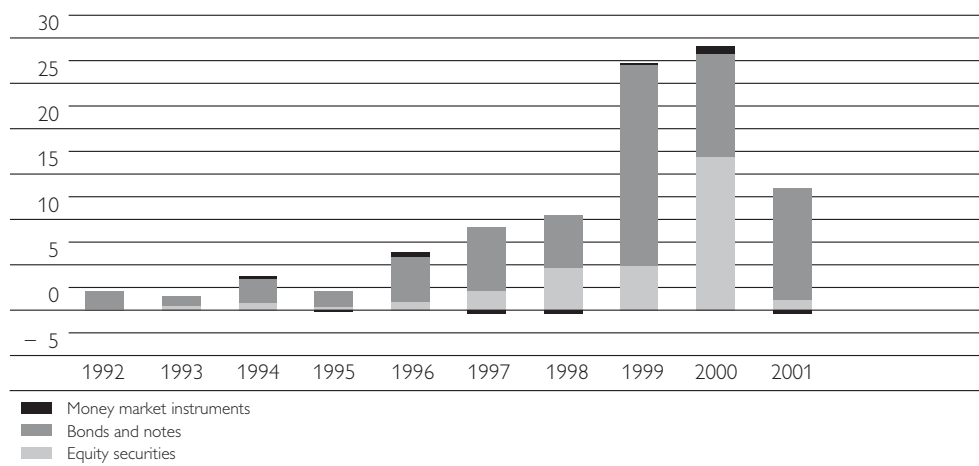
*Source: OeNB.*
*¹) 2001: Provisional data.*

Unlike in 2000, *foreign money market instruments* were sold to or redeemed by nonresident investors in 2001. The majority of investors went for commercial papers and certificates of deposits from the euro area, especially from Germany. Austrian investors also purchased money market instruments from Denmark, the United Kingdom and from accession countries. While investors sold or redeemed euro-denominated short-term debt securities, they purchased issues denominated in U.S. dollars and Czech or Slovak crowns.

### 3.2.2 Portfolio Investment in Domestic Securities

In the year under review, foreign investors acquired Austrian securities worth EUR 17,960 million, i.e. just like external assets, external liabilities had declined significantly on the year.

The annual result of *Austrian equity securities* sales also heavily reflects the BA/HypoVereinsbank stock swap. The extraordinarily high volume of share buybacks (BA shares) in the balance of payments for the first quarter of 2001 can be traced primarily to the fact that more than 50% of BA shares were held by foreign investors. In the second and third quarters, foreign investors purchased a smaller number of domestic shares, whereas in the fourth quarter, domestic investors bought back shares. Nonresidents showed a preference for energy shares and sold growth stocks on the Austrian market.

Nonresidents acquired *Austrian mutual fund shares* to the tune of EUR 1,000 million, 17% less than in 2000. The majority of acquisitions was recorded in the fourth quarter of 2001. Investors mainly purchased equity funds (about 50%), followed by balanced funds and fixed-income funds.

Like in recent years, Austrian *bonds and notes* were most popular with nonresident investors (EUR 25,670 million), recording the highest annual results since 1997 (except for the year 2000). Nonresident investors opted not only for euro-denominated issues but also for securities denominated in

**Breakdown of Nonresident Investors' Austrian Securities Portfolios[1])**

**Acquisition of Austrian securities by type of security**

*EUR billion*



- Money market instruments
- Bonds and notes
- Equity securities
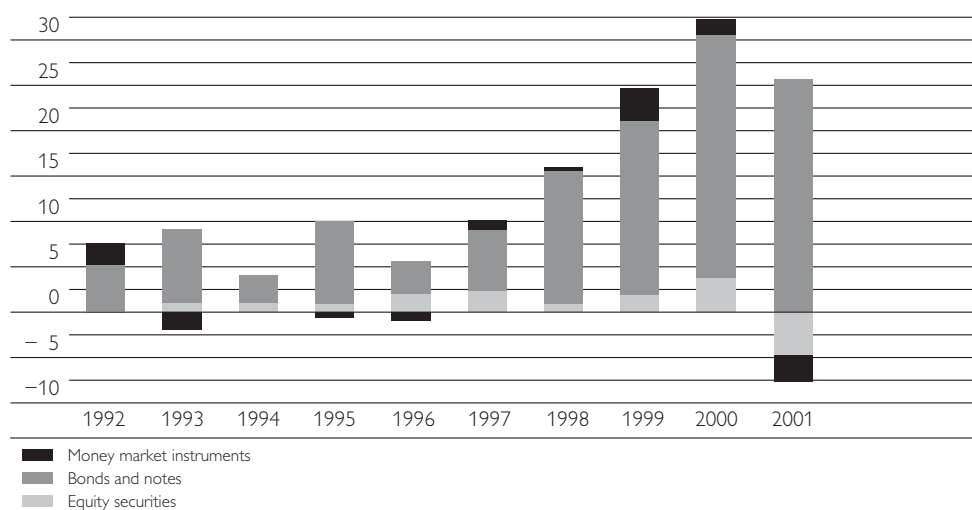
*Source: OeNB.*
[1]*) 2001: Provisional data.*

U.S. dollars. The general government continued to be the major issuer of bonds, but bank issues played an almost equally important role in 2001. Non-residents invested EUR 11,340 million (88%) in new issues or reopened issues of the Republic of Austria, which totaled EUR 12,960 million in 2001.

**Government Bond Syndication and Tender Offers in 2001[1])**

|  | ISIN | External transactions |
|---|---|---|
|  |  | *EUR million* |
| 5.875% Federal government bond 1996−2006/7 | AT0000383518 | 1,473 |
| 5.25%  Federal government bond 2001−2011/1 | AT0000385067 | 6,141 |
| 3.4%   Federal government bond 1999−2004/3 | AT0000384862 | 1,210 |
| 6.25%  Federal government bond 1997−2027/6 | AT0000383864 | 786 |
| 5.0%   Federal government bond 1998−2008/1 | AT0000384227 | 1,384 |
| 3.9%   Federal government bond 1998−2005/3 | AT0000384524 | 348 |
| Total |  | 11,342 |

*Source: OeNB.*
[1]*) Transaction values: + = sale abroad.*

In 2001, *domestic money market instruments* were sold to or redeemed by the Republic of Austria (−EUR 2,930 million). These included mainly U.S. dollar-denominated commercial papers and certificates of deposit, as well as − a far smaller number of − euro-denominated instruments.

**3.3 Other Investment**

The pronounced expansion of cross-border transactions − loans, deposits and other investments − recorded in 1999 and 2000 did not continue at the same pace in 2001. 2001 saw net capital outflows of EUR 5,860 million against EUR 2,700 million one year earlier (table 6). Through transactions, assets increased by EUR 6,920 million and liabilities by EUR 1,060 million, compared to a rise of EUR 16,990 million and EUR 14,300 million, respectively, in 2000.

This – in comparison to the past few years' results – small expansion of *other investment* more or less reflects the reduced gross flows recorded in portfolio investment and direct investment. However, it can also be argued that the adjustment and catching-up process in other investment triggered by the completion of Monetary Union has come to an end now.

A sectoral breakdown shows that the decline in gross flows was chiefly attributable to the *banking system* (OeNB and banks). While in 2000 the banking system had recorded capital outflows of EUR 12,460 million on the asset side, in 2001 capital outflows came to only EUR 5,280 million. On the liability side, capital inflows shrank from EUR 11,120 million in 2000 to EUR 1,300 million in the reporting year; the OeNB's transactions via the TARGET payment system were one of the main reasons for this decline.

Unlike the other sectors, the *general government* stepped up its cross-border transactions both on the asset and on the liability sides by amounts comparable to those recorded in 2000 (EUR 1,230 million and EUR 560 million, respectively). Thus, the general government was again net exporter (EUR 670 million) in other investments.

The *other sectors* raised their loans and deposits on the asset side by EUR 410 million. Substantial capital inflows (up to EUR 3 billion) on the liability side in 1999 and 2000 were succeeded by net capital outflows (EUR 810 million) because of a contraction in loans, especially in trade credits, caused by transactions.

### 3.4 Financial Derivatives

The financial derivatives item basically includes options, futures contracts and swaps, which are either based on capital products (securities) or on interest rate products. On the one hand, transaction values refer to the buying and selling of securities-based financial derivatives and, on the other, to transactions resulting from option payments (including premiums) in the course of OTC deals and/or from variation margin payments for futures contracts and from swap payments.

The financial derivatives subaccount closed the year 2001 with net capital outflows of EUR 330 million.

### 3.5 Reserve Assets

*Reserve assets* managed by the OeNB diminished by EUR 2,070 million through transactions. Net sales of securities to the tune of EUR 1,560 million were the main cause of this decline; also, the OeNB sold gold worth EUR 280 million. There were net imports of EUR 230 million in deposits, special drawing rights and reserve positions in the IMF; the bulk of these transactions took place already in the first half of 2001. This development is essentially consistent with the result recorded for the entire euro area. The preliminary euro area balance of payments shows that reserve assets declined by EUR 17,800 million in 2001.

The revenues from the sale of foreign and gold reserve assets substantially contributed to reducing the OeNB's intra-ESCB liabilities stemming from transactions within the TARGET payment system.

# 4  Annex

Table 1

## Balance of Payments Summary

| | 2000[1]) | 2001[2]) | Annual change |
|---|---|---|---|
| | *EUR million* | | |
| **Current Account** | −5,041 | −4,570 | + 471 |
| | | | |
| **Goods, services and income** | −3,593 | −3,200 | + 393 |
| **Goods and services** | −1,229 | − 189 | +1,040 |
| **Goods** | −2,989 | −1,280 | +1,709 |
| **Services** | +1,760 | +1,091 | − 669 |
| Travel | +1,536 | +1,374 | − 162 |
| Other services items | + 224 | − 283 | − 507 |
| Transportation | +1,471 | +1,828 | + 357 |
| *thereof international passenger transport* | *+ 776* | *+1,070* | *+ 294* |
| Construction services | + 298 | + 176 | − 122 |
| Financial services | + 166 | + 8 | − 158 |
| Royalties and license fees | − 442 | − 532 | − 90 |
| Other business services | +1,506 | +2,140 | + 634 |
| *thereof merchanting* | *+1,250* | *+1,326* | *+ 76* |
| Other services | + 29 | + 351 | + 322 |
| Unclassified transactions | −2,804 | −4,254 | −1,450 |
| **Income** | −2,364 | −3,011 | − 647 |
| Compensation of employees | + 573 | + 589 | + 16 |
| Investment Income | −2,937 | −3,600 | − 663 |
| **Current transfers** | −1,448 | −1,370 | + 78 |
| General government | −1,147 | −1,089 | + 58 |
| Private sector | − 301 | − 281 | + 20 |
| | | | |
| **Capital and financial account** | +3,674 | +3,201 | − 473 |
| | | | |
| **Capital account** | − 476 | − 561 | − 85 |
| General government | + 154 | − 108 | − 262 |
| Private sector | − 603 | − 415 | + 188 |
| Acquisition/disposal of nonproduced, nonfinancial assets | − 27 | − 38 | − 11 |
| **Financial account** | +4,149 | +3,762 | − 387 |
| Direct investment | +2,979 | +2,991 | + 12 |
| Portfolio investment | +3,290 | +4,892 | +1,602 |
| Other investment | −2,697 | −5,861 | −3,164 |
| Financial derivatives | − 261 | − 327 | − 66 |
| Reserve assets[3]) | + 839 | +2,067 | +1,228 |
| | | | |
| **Errors and omissions** | +1,367 | +1,369 | + 2 |

*Source: OeNB.*
[1]) *Revised data.*
[2]) *Provisional data.*
[3]) *Oesterreichische Nationalbank: Gold and foreign exchange, reserve position in the Fund, SDRs, etc.; increase: − / decrease: +.*

Table 2

## Merchandise Exports and Imports

## as Recorded in the Foreign Trade Statistics

### Goods by geographic area[1])

| | 2001 | | | | | |
|---|---|---|---|---|---|---|
| | Exports | | Imports | | Balance | |
| | Annual change | Share of total exports | Annual change | Share of total imports | | Annual change |
| | % | | | | EUR million | |
| EU | + 6.9 | 61.1 | + 4.3 | 65.7 | −6,178 | + 827 |
| Euro area[2]) | + 6.1 | 54.4 | + 4.5 | 61.0 | −7,477 | + 246 |
| *thereof:* | | | | | | |
| *Germany* | *+ 3.7* | *32.4* | *+ 4.4* | *40.5* | *−7,761* | *− 471* |
| *Italy* | *+ 6.0* | *8.6* | *+ 5.3* | *7.2* | *+ 773* | *+ 81* |
| *France* | *+11.6* | *4.6* | *− 3.3* | *4.1* | *+ 231* | *+ 465* |
| Non-euro area countries | + 7.7 | 45.6 | + 5.7 | 39.0 | +3,271 | + 791 |
| *thereof:* | | | | | | |
| *Switzerland and Liechtenstein* | *−14.4* | *5.4* | *+ 2.0* | *3.1* | *+1,637* | *− 732* |
| *Eastern Europe[3])* | *+10.6* | *17.1* | *+ 4.6* | *13.1* | *+2,447* | *+ 762* |
| *U.S.A.* | *+12.4* | *5.3* | *+ 2.7* | *5.4* | *− 286* | *+ 325* |
| *Japan* | *− 0.6* | *1.2* | *−11.8* | *2.3* | *− 869* | *+ 233* |
| Total | + 6.8 | 100.0 | + 5.0 | 100.0 | −4,206 | +1,037 |

*Source: Statistics Austria.*
[1]*) Geographic areas as defined by WIFO.*
[2]*) Including Greece. Greece joined Stage Three of EMU on January 2, 2001 and therefore has since been included in the euro area aggregate.*
[3]*) Albania, Belarus, Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Russia, Slovak Republic, Ukraine, countries of the former Yugoslavia.*

Table 3

## Travel and International Passenger Transport

| | 2000[1]) | 2001[2]) | Annual change | |
|---|---|---|---|---|
| | EUR million | | | % |
| **Travel** | | | | |
| Receipts | 10,752 | 11,297 | + 545 | + 5.1 |
| Expenses | 9,216 | 9,922 | + 706 | + 7.7 |
| Balance | 1,536 | 1,374 | − 162 | −10.5 |
| **International passenger transport** | | | | |
| Receipts | 1,608 | 1,983 | + 375 | +23.3 |
| Expenses | 833 | 914 | + 81 | + 9.7 |
| Balance | 776 | 1,070 | + 294 | +37.9 |
| | *1,000* | | | *%* |
| *Foreign tourist bednights* | *113,616* | *115,073* | *+1,457* | *+ 1.3* |

*Source: OeNB, Statistics Austria.*
[1]*) Revised data.*
[2]*) Provisional data.*

Table 4

## Foreign Tourist Bednights by Country of Origin

| | 2001 | | | |
|---|---|---|---|---|
| | Overnight stays | Annual change | | Share |
| | *1,000* | | *%* | |
| Germany | 52,769 | + 435 | + 0.8 | 45.9 |
| Netherlands | 7,678 | + 302 | + 4.1 | 6.7 |
| United Kingdom | 3,037 | − 29 | − 0.9 | 2.6 |
| Belgium, Luxembourg | 2,264 | + 48 | + 2.2 | 2.0 |
| Switzerland, Liechtenstein | 3,091 | + 199 | + 6.9 | 2.7 |
| Denmark | 952 | + 72 | + 8.2 | 0.8 |
| Italy | 2,684 | + 150 | + 5.9 | 2.3 |
| France | 1,443 | − 18 | − 1.2 | 1.3 |
| Sweden | 650 | − 27 | − 4.0 | 0.6 |
| Spain | 469 | + 17 | + 3.7 | 0.4 |
| Poland | 791 | + 36 | + 4.8 | 0.7 |
| Hungary | 788 | + 58 | + 8.0 | 0.7 |
| Czech Republic | 760 | + 74 | +10.9 | 0.7 |
| Croatia | 253 | + 6 | + 2.2 | 0.2 |
| C.I.S. | 466 | + 85 | +22.2 | 0.4 |
| Slovenia | 189 | − 12 | − 5.8 | 0.2 |
| Slovak Republic | 160 | + 9 | + 6.1 | 0.1 |
| U.S.A. | 1,579 | − 297 | −15.8 | 1.4 |
| Japan | 528 | − 56 | − 9.6 | 0.5 |
| Other countries | 34,523 | + 404 | + 1.2 | 30.0 |
| **Total** | 115,073 | +1,457 | + 1.3 | 100.0 |
| *Memorandum item: Austrian tourists* | *26,475* | *− 58* | *− 0.2* | × |

*Source: Statistics Austria.*

Table 5

## Investment Income

| | 2000[1]) | 2001[2]) | Annual change |
|---|---|---|---|
| | EUR million | | |
| Net investment income[3]) | − 2,937 | − 3,600 | − 663 |
| Investment income receipts | 12,051 | 12,682 | + 631 |
| Investment income payments | 14,988 | 16,282 | +1,294 |
| | | | |
| Net direct investment income[3]) | − 1,146 | − 1,181 | − 35 |
| Income on direct investment abroad | 1,401 | 1,660 | + 259 |
| Income on direct investment in Austria | 2,546 | 2,842 | + 296 |
| | | | |
| Net portfolio investment income[3]) | − 2,572 | − 3,584 | −1,012 |
| Income on foreign equity securities | 429 | 166 | − 263 |
| Income on domestic equity securities | 248 | 290 | + 42 |
| Income on foreign bonds and notes | 4,236 | 4,603 | + 367 |
| Income on domestic bonds and notes | 6,740 | 7,816 | +1,076 |
| Income on foreign money market instruments | 102 | 96 | − 6 |
| Income on domestic money market instruments | 351 | 343 | − 8 |
| | | | |
| Net other investment income[3]) | 780 | 1,165 | + 385 |
| Income on other investment, assets[4]) | 5,883 | 6,157 | + 274 |
| Income on other investment, liabilities | 5,103 | 4,991 | − 112 |
| | | | |
| Investment income on foreign interest-bearing investment[5]) | 10,289 | 10,932 | + 643 |
| Investment income on domestic interest-bearing investment[6]) | 12,199 | 13,152 | + 953 |
| Investment income on foreign venture capital-oriented investment[7]) | 1,762 | 1,750 | − 12 |
| Investment income on domestic venture capital-oriented investment[7]) | 2,789 | 3,129 | + 340 |
| | | | |
| Memorandum item: Net interest rate financial derivatives[8]) | − 121 | 34 | + 155 |

Source: OeNB.
[1]) Revised data.
[2]) Provisional data.
[3]) Income on outward foreign investment less income on inward foreign investment.
[4]) Income on deposits, credits and reserve assets.
[5]) Income on debt securities, deposits, loans and reserve assets.
[6]) Income on debt securities, deposits and loans.
[7]) Income on direct investment and equity securities.
[8]) Included in the financial account, financial derivatives.

Table 6

## Financial Account

| | 1999[1]) | 2000[2]) | 2001[3]) |
|---|---|---|---|
| | *EUR million, net* | | |
| **Financial account** | 6,614 | 4,149 | 3,762 |
| Assets | −39,421 | −52,009 | −21,302 |
| Liabilities | 46,034 | 56,159 | 25,064 |
| **Direct investment** | − 306 | 2,979 | 2,991 |
| Direct investment abroad | − 3,098 | − 6,244 | − 2,951 |
| Equity capital | − 2,591 | − 5,388 | − 2,215 |
| Reinvested earnings | − 666 | − 143 | − 647 |
| Other capital | 159 | − 713 | − 90 |
| Direct investment in Austria | 2,792 | 9,223 | 5,942 |
| Equity capital | 1,309 | 8,494 | 3,876 |
| Reinvested earnings | 1,431 | 677 | 1,203 |
| Other capital | 51 | 52 | 863 |
| **Portfolio investment** | − 2,553 | 3,290 | 4,892 |
| Portfolio investment in foreign securities | −27,207 | −29,081 | −13,065 |
| Equity securities | − 4,935 | −16,958 | − 1,270 |
| Bonds and notes | −22,114 | −11,343 | −12,224 |
| Money market instruments | − 158 | − 779 | 429 |
| Portfolio investment in domestic securities | 24,654 | 32,371 | 17,957 |
| Equity securities | 2,002 | 3,857 | − 4,786 |
| Bonds and notes | 19,120 | 26,716 | 25,671 |
| Money market instruments | 3,532 | 1,798 | − 2,927 |
| **Other investment** | 7,925 | − 2,697 | − 5,861 |
| Assets | −10,571 | −16,994 | − 6,918 |
| Trade credits | − 639 | − 2,234 | 308 |
| Loans | −11,452 | −10,028 | − 7,439 |
| Currency and deposits | 1,589 | − 4,723 | 663 |
| Other assets | − 69 | − 10 | − 449 |
| Liabilities | 18,496 | 14,297 | 1,057 |
| Trade credits | 1,181 | 502 | − 562 |
| Loans | 1,863 | 4,456 | − 240 |
| Currency and deposits | 14,924 | 9,132 | 1,851 |
| Other liabilities | 527 | 208 | 9 |
| **Financial derivatives** | − 415 | − 261 | − 327 |
| **Reserve assets[4])** | 1,963 | 839 | 2,067 |
| *Memorandum item: Interest-bearing investment* | *10,675* | *13,512* | *7,886* |
| *Assets* | *−31,597* | *−29,619* | *−16,886* |
| *Liabilities* | *42,272* | *43,131* | *24,771* |
| **Sectoral breakdown banks (including the OeNB)** | 7,204 | 17,938 | − 477 |
| Assets | −17,014 | −16,941 | −11,026 |
| Liabilities | 24,219 | 34,879 | 10,549 |
| **General government** | 15,087 | 7,273 | 8,936 |
| Assets | 440 | − 4,140 | − 1,220 |
| Liabilities | 14,646 | 11,413 | 10,156 |
| **Other sectors** | −15,676 | −21,061 | − 4,698 |
| Assets | −22,846 | −30,928 | − 9,056 |
| Liabilities | 7,170 | 9,867 | 4,359 |

*Source: OeNB.*
[1]) *Final data.*
[2]) *Revised data.*
[3]) *Provisional data.*
[4]) *Oesterreichische Nationalbank: Gold and foreign exchange, reserve position in the Fund, SDRs, etc.; increase: − / decrease: +.*

Table 7

## Financial Account by Region[1])

| | Investment in/ from the euro area[2]) | | Investment in/ from non-euro area countries | |
|---|---|---|---|---|
| | 2000[3]) | 2001[4]) | 2000[3]) | 2001[4]) |
| | EUR million, net | | | |
| **Financial account** | 13,749 | − 3,567 | − 9,600 | 7,329 |
| Assets | −35,072 | − 9,318 | −16,937 | −11,984 |
| Liabilities | 48,821 | 5,751 | 7,338 | 19,313 |
| **Direct investment** | 5,011 | 2,539 | − 2,032 | 452 |
| Direct investment abroad | − 2,786 | 419 | − 3,458 | − 3,370 |
| Direct investment in Austria | 7,797 | 2,120 | 1,426 | 3,822 |
| **Portfolio investment** | 10,542 | 6,407 | − 7,252 | − 1,515 |
| Portfolio investment in foreign securities | −20,528 | − 4,799 | − 8,553 | − 8,266 |
| Portfolio investment in domestic securities | 31,070 | 11,206 | 1,301 | 6,751 |
| **Other investment** | − 2,811 | −13,227 | 114 | 7,366 |
| Assets | −10,720 | − 5,393 | − 6,274 | − 1,525 |
| Liabilities | 7,909 | − 7,834 | 6,388 | 8,891 |
| **Financial derivatives** | 1,007 | 448 | − 1,268 | − 775 |
| **Reserve assets[5])** | × | × | 839 | 2,067 |

*Source: OeNB.*

[1]) *While for foreign direct investment in Austria and other inward investment it is possible to establish the identity of the foreign investors, in the case of portfolio investment one can only determine the country via which the transaction has been effected. This means that it is not possible to provide a current and/or completely reliable classification of creditors. Ongoing studies, however, show that the largest volume of Austrian securities sold to the euro area are government bonds sold to foreign banks in the course of tender or syndication offers. Since, in this case, the secondary market generated only a relatively small volume of cross-border transactions, the regional structure of the basic data derived from the reporting system on foreign exchange statistics can be regarded as sufficiently conclusive.*

[2]) *Including Greece. Greece joined Stage Three of EMU on January 2, 2001 and therefore has since been included in the euro area aggregate.*

[3]) *Revised data.*

[4]) *Provisional data.*

[5]) *Oesterreichische Nationalbank: Gold and foreign exchange, reserve position in the Fund, SDRs, etc.; increase: − / decrease: +.*

# EU Enlargement to the East: Effects on the EU-15 in General and on Austria in Particular

# The Impact of EU Eastward Enlargement on Wages in the Current Member States with Special Reference to Austria

Helmut Hofer,
Peter Huber[1])

## I  Introduction

The upcoming eastward enlargement of the European Union will increase the trade in goods between the prospective new EU Member States among the Central and Eastern European countries (CEECs) and the EU and will enhance migration. These developments will undoubtedly also have an impact on the labor markets of the current EU members.

Austria's geographical proximity and its historically strong ties to Central and Eastern Europe as well as the developments it has undergone since the opening up of the former Eastern Bloc make it an excellent model for assessing the possible effects of EU enlargement on the current Member States' labor markets. The Austrian economy was massively affected by the breakdown of communism and the fall of the Iron Curtain. Trade with CEECs boomed and the number of foreign workers registered in Austria increased.

Experts agree that Austria has benefited from the opening up of Eastern Europe. Growing employment demand triggered by the boom in exports more than offset job losses which had resulted from rising imports. However, the transition in Eastern Europe also encouraged migration to Austria. Approximately a quarter of the additional 115,000 foreign workers who took up jobs in Austria between 1989 and 1991 came from Central and Eastern Europe. The increase in the foreign labor pool in turn affected workers' chances of employment. There are strong indications that especially earlier immigrants and Austrians in low-income jobs (in particular men and older workers) were partially replaced by the newcomers.

Two studies commissioned by the European Commission analyze the effects of enlargement on employment, wages and distribution of income (see Boeri and Brücker, 2001; Mayerhofer and Palme, 2002). These studies use econometric methods to examine to what extent trade and migration impacted on wages, employment, sectoral mobility and unemployment in Austria (see also Hofer and Huber, 1999; Huber and Hofer, 2001), Germany (Brücker et al., 2000) and Sweden (Edin et al., 1999).

This study presents the most important findings about the empirical relationship between trade and migration on the one hand and wage growth and labor mobility on the other hand and looks at the existing results for Austria, also analyzing distributional aspects. Chapter 2 discusses the relationship between wages and external trade as well as migration by means of a simple theoretical model. Chapter 3 summarizes the available results relevant to the field of labor market, migration and external trade for Austria derived from micro-data studies. Our own estimates for Austria are presented in chapter 4. Chapter 5 comprises a summary of the most important results and conclusions from an economic policy perspective.

The Impact of EU Eastward Enlargement
on Wages in the Current Member States
with Special Reference to Austria

## 2  Theoretical Aspects

Studies on wages and migration usually implicitly or explicitly rely on a basic supply/demand model of the labor market, not taking into account mobility between sectors and/or regions. These studies impute a fixed and a variable factor and assume that the variable factor migrates. In such a model, labor demand and real wages which employers are willing to pay to a given amount of labor force are determined solely by the ratio of the variable factor to the fixed factor. Chart 1 illustrates this model, with the LS curve displaying labor supply and the LD curve labor demand. The point of intersection of the two curves (L, W) marks the original labor market equilibrium. The arrival of M migrants causes an outward parallel shift in the labor supply curve. In every income bracket, more jobs are now available. The new full employment equilibrium is at the point at which L' and W' intersect. At this wage rate, the employment of domestic workers is LI.

Chart 1

**Effects of Migration and an Increase in Imports**

**on the Labor Market**
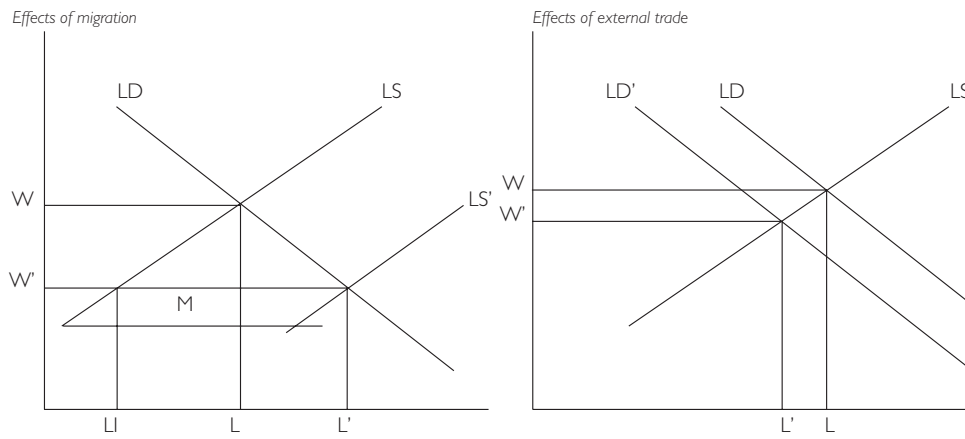


Note: LD: labor demand, LS: labor supply, M: migration, L: labor market equilibrium, W: wage rate equilibrium,
LI: employment equilibrium for domestic workers.
Source: Austrian Institute of Economic Research (WIFO), Institute for Advanced Studies (IHS).

Despite the simplicity of this model and the abstraction of significant effects, it allows some crucial predictions about the schematic effects of migration: Immigration reduces the employment of domestic workers from L to LI. This crowding-out effect happens on a smaller scale than the original migration wave. The extent of replacement depends on the slope of the demand and supply curves: the flatter (more elastic) the labor supply curve and the steeper (more inelastic) the labor demand curve is, the larger the crowding-out effect is. Migration also has a dampening effect on wages. The extent to which wages decline is also determined by the slope of the demand and supply curves: the steeper (more inelastic) the labor supply curve and the steeper (more inelastic) the labor demand curve, the larger the wage effect.

Analogous to the effects of migration, the impact of external trade can also be analyzed using this model. Increasing imports with exports and domestic consumption remaining unchanged in the same sector imply that domestic output shrinks. Consequently, a smaller labor force is required to satisfy the

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smaller demand for domestically manufactured goods. The derived factor demand for labor shifts from LD to LD'. When domestic consumer demand and exports remain constant, more imports in one sector mean that at any wage rate, less labor is sought after than under the original conditions. Therefore, wages and employment decline (from W to W' and from L to L', respectively).[1]) Similarly, increasing exports (under otherwise unchanged conditions) heighten labor demand, thus pushing up wages and employment. Again, the scale of the wage and employment effects depends on the relative increase (elasticity) of labor supply and demand; therefore, measuring the latter two is the main empirical task.

Allowing for unemployment by imputing rigid wages which respond to changes in unemployment at least marginally, an unemployment effect emerges next to the wage and crowding-out effects; its extent depends on how strongly wage policies respond to changes in the jobless rate. Thus, the labor market model confirms that immigration and increased imports tend to drive up unemployment and reduce wages and the labor participation rate. The relative scale of these three effects is determined by the following three critical parameters: real wage flexibility as well as the elasticity of labor demand and of labor supply.

One of the numerous important assumptions of the model which are not given in practice is the homogeneity of the factor labor. It is imputed that residents and migrants share the same characteristics and are therefore perfect substitutes. In reality, however, workers differ in many ways, especially in education and training. There is not only one labor market, there is a number of labor markets for workers with certain skills. In such a labor market, predictions derived from the model described above can be put into perspective if domestic and foreign workers are complements. If foreigners complement resident workers, the immigration of foreign workers will spur demand for domestic labor. Such a scenario would be conceivable, if residents were highly qualified and migrants were less qualified. If the employment of low-skilled workers requires a larger number of high-skilled workers to cope with the increased amount of management tasks, or if the larger number of less qualified labor enhances the productivity of highly qualified workers because they are able to delegate jobs, the immigration of low-skilled workers will push up wages and employment among highly qualified residents (Zimmermann, 1998).

Freeman and Katz (1991) show that the reduced form of the model shown in chart 1 can be written as:

$$\Delta w_{ij,t} = \gamma' Z_{ij,t} + \delta_1(\omega_{1,j}\Delta D_{j,t}) + \delta_2(\omega_{2,j}\Delta E_{j,t}) -$$
$$\delta_3(\omega_{3,j}\Delta MSHR_{j,t}) + \delta_4 \Delta IMS_{j,t} + \varepsilon_{ij,t} \tag{1}$$

where $\Delta w_{ij,t}$ is the log change in earnings for individual $i$ in industry $j$ at time $t$. $\Delta D_{j,t}$, $\Delta E_{j,t}$, $\Delta MSHR_{j,t}$ and $\Delta IMS_{j,t}$ denote the log changes in domestic demand, exports, the imports-to-GDP ratio and the share of migrants in

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1   Trade theory approaches are based on small, open economies. Unlike labor market models, these approaches impute given world market prices and frictionless labor markets. For an overview of the literature, see Huber and Wolfmayr-Schnitzer (2000).

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industry $j$ in the year $t$. $Z_{ij,t}$ is a vector of personal and industry characteristics which, apart from external trade, may also impact on wage growth. $\delta_1$ to $\delta_4$ are estimates, $\omega_{1,j}$ to $\omega_{3,j}$ are weights (the share of domestic demand, the exports-to-GDP ratio and the share of domestic production).

## 3 Investigation into the Effects of Migration and External Trade

Studies seeking to estimate the labor market effects of migration in Austria by applying econometric methods usually use the regional or sectoral variance of the share of foreign workers to ascertain the wage effect generated by an increase in the share of migrants. In many cases they find that migration has only small, but significant effects on the labor market, especially distributional effects. The following points can be summarized as a common denominator:

In general, high-skilled workers benefit from the arrival of low-skilled workers in that their wages rise. Less qualified workers, however, come under increasing pressure as other low-skilled workers enter the labor market and, as a consequence, their wages decline. The impact of migration varies from period to period. During large waves of migration, the effects (per migrant) are much stronger than in times of slow migration. Immobile workers ("stayers"), who cannot respond to increased competition by moving to another industry and/or region, are more exposed to the impact of migration than others. Thus, migration to one particular region or industry has geographically or industrially differentiated effects on stayers.

Table 1

### Studies on the Effects of Migration on the Labor Market

#### (1988 to 1991)

| Authors | Findings |
|---|---|
| Winter-Ebmer, Zweimüller (1996a) | Migration raises the wages of the high-skilled and reduces the wages of the low-skilled; it drives up unemployment and reduces the chances of employment, especially for men. |
| Winter-Ebmer, Zweimüller (1999) | At industry level, migration generated significant effects only from 1988 to 1989. |
| Winter-Ebmer, Zweimüller (1996b) | Changes in the share of migrants have a negative impact on the growth of young workers' wages and a positive impact on the wage level. |
| Winter-Ebmer, Zimmermann (1999) | Migration slows down employment growth. |
| Winter-Ebmer, Zweimüller (2000) | Migration increases the risk of unemployment only in industrial control variables, but considerably prolongs the duration of regional unemployment. |

There are some studies that arrive at differing findings on the labor market effects of foreign trade in Austria:

Aiginger, Winter-Ebmer and Zweimüller (1996) examine the relationship between trade with the CEECs and the development of wages and unemployment between 1989 and 1991 using an individual data set. They find that the change in the ratio of exports to the CEECs to GDP had significant effects. An increase of this ratio reduces the average individual unemployment rate, and the effect of the ratio of imports from the CEECs to GDP is insignificant. An increase of the ratio of exports to the CEECs to GDP by 1 percentage point augments the wages of workers who did not move to another industry in the period under review (stayers) by 0.4% and the wages of industry changers (movers) by 0.9%. If the ratio of imports from the CEECs to GDP in a sector

grows by 1 percentage point, wage growth for stayers will drop by 2.9% and by 1.8% for movers.

Winter-Ebmer and Zimmermann (1999) look into employment growth and wage developments at the industrial level in Germany and in Austria (for the 1987 to 1994 period). They measure the ratios of exports and imports from and to the CEECs to GDP and the corresponding ratios for the rest of the world separately. An increase in the ratio of imports from the CEECs dampens employment growth, if only slightly. For instance, if the import ratio grows by 1%, employment growth will slow down by merely 0.03%. In low-income sectors and industries with high shares of foreign workers, the effect of imports from the CEECs is somewhat stronger. In these industries, an increase in the ratio of imports from other countries also has a significant (negative) impact on employment. By contrast, the export ratio does not notably affect employment growth. Wage growth shows the inverse picture: If the ratio of exports to the rest of the world increases by 1%, wage growth climbs by 0.2%. This effect is even more pronounced in industries with a large share of migrants.

Hofer and Huber (1999) investigate the relationship between foreign trade and wages (from 1991 to 1994) using individual data. Like Winter-Ebmer and Zimmermann (1999), they find that increasing imports in one industry by 1% does not significantly reduce wage growth, whereas increasing exports by 1% leads to additional wage growth of 0.2%. Furthermore, industry stayers are more strongly affected by changes in external trade than industry movers. In particular, stayers in sectors with high import growth rates see significantly smaller wage growth rates. In this case, elasticity comes to –0.1.

## 4 Empirical Analysis

Owing to the limited availability of external trade data in the services sector, our analysis focuses on persons (men and women) employed in manufacturing. Also, we limited our investigations to 19- to 56-year olds, thus not taking into account apprentices and early retirees. Employees earning less than ATS 6,000 and those whose pay rose by 70% are also not represented in the sample, since such wage rates and wage hikes are usually attributable to part-time work or changes in working hours.

Since equation (1) is given in first differences, an econometric estimate should take into account only individual characteristics affecting wage growth

Table 2

### Statistics on Individual Employees (Men)

| | Total Sample | | Employees 1994 | |
|---|---|---|---|---|
| | Mean | Standard deviation | Mean | Standard deviation |
| Age | 34.310 | 9.150 | 33.710 | 8.580 |
| Share of blue-collar workers | 0.758 | 0.429 | 0.711 | 0.453 |
| Log monthly wages 1991 | 9.890 | 0.268 | 9.900 | 0.256 |
| Log monthly wages 1994 | | | 10.040 | 0.276 |
| Log change in monthly wages 1991 to 1994 | | | 0.142 | 0.167 |
| Share of industry stayers | 0.567 | | 0.706 | |
| Share of industry movers | 0.236 | | | |
| Transition to nonemployment | 0.198 | | | |
| Number of observations | 11,149 | | 8,945 | |

*Source: Association of Austrian Social Security Institutions, Austrian Institute of Economic Research (WIFO).*

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(but not the wage level). Therefore we include the age squared, a variable taking the value 1 for stayers and another variable taking the value 1 for industry movers and an interaction variable for working status and age. This has become necessary because the life income patterns of white- and blue-collar workers differ owing to the existing seniority rules and the wage growth for persons who have moved from one industry to another tends to be approximately a third lower (see Hofer et al., 2001). It should be noted that neither external trade nor the inflow of migrants is exogenous. Therefore, German external trade, immigration between 1988 and 1991 and the level of the share of foreign workers in the industry in 1991 were used as instruments.

In a first step, we use our data to estimate equation (1) for men and women as well as for white- and blue-collar workers (tables 4 and 5) separately. For men (table 3, column 1), we find a significant relationship between wage growth and external trade. Stronger domestic demand and export activity accelerate wage growth, whereas migration and increasing imports have the opposite effect. Overall, however, the effects are minor. If weighted domestic demand increased by 1%, wage growth would accelerate by 0.15%. Exports rising by the same amount would drive up wages by an additional 0.27%. Conversely, weighted import growth of 1% would dampen wage growth by 0.18%. If the share of migrant workers increased by 1 percentage point, wage growth, as a result, would drop by some 0.20%; however, this coefficient is not significant.

Compared to international studies, our coefficients are high, in particular for the external trade variables.[1] Since Austria is a small, open economy, external trade plays a more important role in wage setting. Using a comparable method for the U.S.A., Freeman and Katz (1991) obtained a coefficient of 0.029 for domestic demand, 0.008 for exports and –0.011 for imports. Equally small values – 0.0133, 0.004 and –0.001, respectively – have been calculated

Table 3

## Effects of Changes in External Trade and Migration on Wage Growth
### for Men between 1991 and 1994

|  | Men | | | | |
|---|---|---|---|---|---|
|  | Total number of employees (1) | Blue-collar workers (2) | White-collar workers (3) | Industry movers (4) | Industry stayers (5) |
| Weighted change in domestic demand | +0.147*** (0.043) | +0.144*** (0.045) | −0.077 (0.119) | 0.15 (0.10) | +0.10** (0.03) |
| Weighted change in exports | +0.273** (0.107) | +0.228** (0.114) | 0.133 (0.288) | 0.41 (0.33) | +0.21** (0.09) |
| Weighted change in imports | −0.182** (0.092) | −0.268*** (0.099) | 0.108 (0.203) | −0.35 (0.27) | −0.05 (0.07) |
| Change in the share of migrants | −0.191 (0.169) | −0.290* (0.182) | 0.254 (0.463) | −0.92 (0.50) | −0.03 (0.13) |

*Source: Association of Austrian Social Security Institutions, Austrian Institute of Economic Research (WIFO).*
*Note: Foreign trade variables as well as migration were instrumented by German external trade, lagged trade growth and the share of migrant workers in 1991. The specification contains not only the reported variables but also control variables for age squared, sectoral and interregional mobility as well as an intercept. The figures in parentheses show the standard deviation of the coefficient, \*\*\* (\*\*) [\*] stands for significance at the 1% (5%) [10%] level.*

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1   However, it should be noted that the individual coefficients are of limited international comparability, since they are subject to the number of industry categories used.

for Germany (see also Brücker et al., 2000). By contrast, Edin et al. (1999) find coefficients of 0.049, 0.055 and –0.060 for Sweden. The conclusion that wages respond to external trade developments more strongly in Austria is also in line with earlier findings. Furthermore, Aiginger et al. (1996) reported significantly higher coefficients for trade with the CEECs. Hofer and Huber (1999) arrive at somewhat smaller coefficients (0.1 to 0.2), and Winter-Ebmer and Zimmermann (1999) calculated similar coefficients, which, however, remain statistically insignificant.

We have made our results subject to a few additional stress tests by including further control and sector variables for resource- and technology-intensive sectors and the average productivity of these sectors. The results proved robust to such changes. Depending on the specification, we obtained coefficients from 0.15 to 0.10 for domestic demand. The coefficient for exports ranged from 0.37 to 0.19, for imports from 0.20 to –0.01 and for the change in the share of migrants in the workforce from –0.42 and –0.19.

We found considerable differences between blue- and white-collar workers (table 3, columns 2 and 3). Apparently, white-collar workers' salaries in Austria respond to changes in labor supply or demand only weakly. Neither the external trade variables nor the migrants' share in the workforce are significant. Changes in domestic demand also hardly have an impact on the growth of white-collar workers' pay.

This has a number of reasons. First, white-collar workers are usually better qualified; thus, they tend not to come under severe pressure from the new migrants, who usually work in low-qualified jobs. On the contrary, they may be complements to migrant workers, which would explain the insignificant, but positive effect of migration on wages. Also, imports from countries with relative advantages in sectors with a high share of less qualified jobs are thought to affect white-collar employees less strongly. Finally, the institutional setting of wage bargaining and the larger role of the principle of seniority in white-collar working environment are also reasons for wage growth not to respond strongly to fluctuations in labor supply and demand.

Blue-collar workers feel the impact of foreign trade developments and migration much more vigorously. Increasing weighted exports by 1% boosts wage growth by 0.23%, increasing weighted imports dampens wage growth by 0.27%. Unlike their white-collar colleagues, blue-collar workers must expect negative effects on wage growth from a rise in the share of migrants in a sector. If the share of migrants augments by 1 percentage point, the wage growth for blue-collar worker decelerates by approximately ¼%. If blue-collar wage growth were 2% without migration, it would drop to 1.75% factoring in immigrants. In other words, the effects of both migration and external trade on wage growth are fairly small.

The separate observation of movers and stayers can yield large differences in the results (Aiginger et al., 1996). Mobility can help reduce wage pressure on workers in sectors that supply highly competitive import markets or attract a particularly large number of migrants. They can move to sectors offering better chances of employment. This option, however, is subject to prevailing economic conditions. During an upswing, high labor demand makes it easier to change sectors than during a recession, when the number of jobs tends to be scarcer

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and it is harder to escape wage pressures. Aiginger et al. (1996) show that the increase of imports between 1988 and 1991 affected movers less severely than stayers.

The 1991 to 1994 period was marked by significantly different economic conditions than the 1988 to 1991 period. Results deviating from Aiginger et al. (1996) are attributable to slower employment growth. Between 1991 and 1994, both industry movers and industry stayers were subject to moderate wage growth while imports and migration were on the rise. It is noteworthy that the effects remained insignificant for both subgroups and, second, that the effects were larger but showed a higher standard deviation for industry movers. During economic slowdowns, the heterogeneity of movers' wages is higher than during upswings. In this group, persons in the peripheral workforce of an enterprise who successfully fended off wage losses and unemployment by moving from one sector to another mix with people who did not do so well. It can be concluded that during downturns, mobility across sectors is no guarantee that workers can evade income losses.

The labor market behavior of women differs sharply from that of their male counterparts. Women tend to be less mobile and to work in part-time jobs. Therefore it seems appropriate to analyze the impact of migration and trade on women in the labor force separately. However, owing to the lack of information on working hours in our data set, we encountered problems caused by data on women switching between full-time and part-time jobs and between economic sectors. Our results reflect these difficulties (table 4). The inclusion of all women in our sample yields unexpected results (table 4, column 1). If we leave aside all women whose wages changed by more than 20% to remove those who switch between part- and full-time jobs (column 2), we obtain insignificant effects of exports and imports on female employees' wages. The only significant impact we detect is related to the change in the share of migrant workers.

Table 4

### Effects of Changes in External Trade and Migration on Wage Growth for Women Between 1991 and 1994

|  | Women | | | | | |
|---|---|---|---|---|---|---|
|  | Total number of employees | | Blue-collar workers | White-collar workers | Industry movers | Industry stayers |
|  | (1) | (2) | (3) | (4) | (5) | (6) |
| Weighted change in domestic demand | +0.004 (0.07) | +0.0003 (0.04) | −0.08 (0.10) | +0.12 (0.12) | +0.16 (0.22) | −0.04 (0.07) |
| Weighted change in exports | −0.60*** (0.14) | −0.10 (0.08) | −0.76*** (0.18) | −0.07 (0.27) | −1.98*** (0.38) | −0.02 (0.12) |
| Weighted change in imports | +0.12* (0.07) | −0.01 (0.04) | +0.27 (0.08) | −0.20* (0.11) | +0.41*** (0.14) | −0.13*** (0.05) |
| Change in the share of migrants | −0.26 (0.26) | −0.32** (0.15) | −0.07 (0.34) | −0.67 (0.41) | −0.14 (0.77) | −0.52*** (0.23) |

*Source: Association of Austrian Social Security Institutions, Austrian Institute of Economic Research (WIFO).*
*Note: Foreign trade variables as well as migration were instrumented by German external trade, lagged trade growth and the share of migrant workers in 1991. The specification contains not only the reported variables but also control variables for age squared, sectoral and interregional mobility as well as an intercept. The figures in parentheses show the standard deviation of the coefficient, *** (**) [*] stands for significance at the 1% (5%) [10%] level. Column (2) does not take into account women whose wages declined by more than 20% in the period under review. All other columns include all female employees.*

Since women tend to be less mobile, the results for female industry stayers seem to be less distorted (table 4, columns 5 and 6). Corresponding to our original assumptions, rising imports have negative implications for immobile women workers. If import growth accelerates by 1%, wage growth for women will decline by 0.13%, which corresponds approximately to the value obtained for men. However, increasing migration affects the wage growth of women more severely than that of men. If the share of migrant workers rises by 1 percentage point, wage growth for female stayers shrinks by 0.5 percentage point.

Our next step involves an investigation into the impact of external trade and migration on the distribution of income. Over the past few years, a lot of research has been dedicated to this issue. We focus on the differences in the effects of globalization on wage growth at different levels of qualification. To identify these differences, we regress the wage level 1991 on age and age squared. Thus we adjust the wage level for differences in seniority and obtain age-adjusted wages. Differences in wages are to reflect first and foremost differences in workers' (observable and nonobservable) qualifications. In our next step we estimate equation (1) for the quartile of the age-adjusted distribution of income of 1991.

Table 5

### Effects of Changes in Trade and Migration
### on Various Income Quartiles for Men and Women

|  | 1st quartile | 2nd quartile | 3rd quartile | 4th quartile |
|---|---|---|---|---|
| *Men* | | | | |
| Weighted change in domestic demand | +0.12** | −0.01 | +0.08 | +0.11 |
|  | (0.07) | (0.08) | (0.09) | (0.09) |
| Weighted change in exports | +0.56** | −0.15 | +0.14 | +0.21 |
|  | (0.24) | (0.18) | (0.20) | (0.22) |
| Weighted change in imports | −0.12 | −0.13 | −0.08 | −0.75** |
|  | (0.21) | (0.15) | (0.15) | (0.15) |
| Change in the share of migrants | +0.82 | +0.15 | −0.14 | −0.24 |
|  | (0.48) | (0.30) | (0.31) | (0.29) |
| *Women* | | | | |
| Weighted change in domestic demand | −0.16 | +0.18 | +0.11 | +0.09 |
|  | (0.15) | (0.14) | (0.15) | (0.18) |
| Weighted change in exports | −0.08 | +0.47 | +0.11 | +0.41 |
|  | (0.28) | (0.31) | (0.31) | (0.33) |
| Weighted change in imports | +0.13 | +0.03 | −0.06 | −0.31** |
|  | (0.09) | (0.12) | (0.15) | (0.14) |
| Change in the share of migrants | +0.84 | −0.74 | −0.79 | −0.61 |
|  | (0.68) | (0.56) | (0.49) | (0.48) |

Source: Association of Austrian Social Security Institutions, Austrian Institute of Economic Research (WIFO).
Note: Foreign trade variables as well as migration were instrumented by German external trade, lagged trade growth and the share of migrant workers in 1991. The specification contains not only the reported variables but also control variables for age squared, sectoral and interregional mobility as well as an intercept. The figures in parentheses show the standard deviation of the coefficient, *** (**) [*] stands for significance at the 1% (5%) [10%] level.

The highly qualified workforce, especially men, benefit particularly from higher export growth (table 5, column 1). If weighted export growth accelerates by 1%, wage growth for men in the first quartile of the age-adjusted wage distribution increases by 0.5 percentage point. For women, this effect is insignificant, because, first, the income level of women is generally lower, and, second, women's share in the manufacturing sector with its highly qualified jobs and high export growth rates is generally small. The results confirm our earlier deliberations. Austria's comparative advantages lie with the production of

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human capital-intensive goods; therefore, the relevant sectors should post the highest export growth rates and, consequently, highly skilled workers should benefit from the increase in exports more than any other group.

While increasing exports do not considerably boost wage growth for low-skilled workers, a rise in imports, by contrast, has a clearly negative effect, which is larger for men than for women. Wage growth for men in the lowest income quartile of the wage distribution (adjusted for age) will slow down by 0.75 percentage point if the weighted import ratio climbs by 1%, whereas the same impetus reduces wage growth for women by only 0.31 percentage point.

Although the overall effects of migration on wage distribution are insignificant, our results show that the estimated coefficient for more highly qualified workers is positive and the coefficient for less qualified workers is negative. In other words, the highly qualified labor force (both men and women) tends to benefit from migration. At the same time the less qualified are exposed to increased competitive pressure and have to cope with slower wage growth. This effect hits women harder than men. Migration generates competitive pressures especially on less qualified labor, since the bulk of migrants lack good qualifications. Highly skilled workers, by contrast, gain advantages from migration as they are complements to the – usually less qualified – foreign workers.

If a country's wage structure does not respond sufficiently flexibly to changes in demand or supply, quantity adjustments can be alternative adjustment mechanisms. Migration or additional imports could force workers into unemployment or to move to another industry. The question that remains to be investigated is how close, in fact, is the relationship between mobility, external trade and migration? We analyze this question by dividing the workforce into three groups: those who were employed in one and the same sector throughout the 1991 to 1994 period, those who moved to other sectors and those who moved into nonemployment (unemployment or other nonemployment) in 1994.

We use a multinomial logit model (see Greene, 1997). This model estimates the relative probabilities (relative to an arbitrarily chosen reference state) that an individual is in one of several possible states. As reference category we define employment in the same industry in May 1991 and May 1994. The selection of individual $i$ for one of these categories is determined by a vector of industry- and individual-specific variables ($\tilde{Z}_i$). The multinomial logit specifies the probability $P_{ik}$ that individual $i$ is found in state $k$; $P_{ik}$ is given by

$$P_{ik} = \frac{exp(b'_k \tilde{Z}_i)}{1 + \sum_k exp(b'_k \tilde{Z}_i)} \qquad (2)$$

with $b'_k$ (k=1, 2) being a series of coefficients to be estimated.

The results obtained from the model described in equation (2) require a different interpretation from those reached by means of the linear regression model. The coefficients show the change in the relative probability of finding an individual in this state relative to the original state, which resulted from the change of this variable. A positive coefficient increases the likelihood of being found in this state relative to the likelihood of being in the original state.

Nonlinearity is another specific contained in the model described in equation (2). The coefficients cannot be interpreted as marginal effect.

In addition to the variables migration, external trade and domestic demand, the vector $\tilde{Z}_i$ contains the following control variables: age and its square, one dummy for blue-collar worker, two dummies for firm size (20 to 100 employees; more than 100 employees), two regional variables (Vienna; other cities with more than 100,000 inhabitants), number of years with the company, number of jobs until 1991, and the sector's interindustry wage differential.

Table 6

### Multinomial Logit Model: Sectoral Mobility, Nonemployment and Migration and Trade

| | Industry movers vs. industry stayers | | | Nonemployment vs. industry stayers | | |
|---|---|---|---|---|---|---|
| | Total | Blue-collar workers | White-collar workers | Total | Blue-collar workers | White-collar workers |
| *Men* | | | | | | |
| Weighted change in exports | −1˙10 (1˙76) | −1˙35 (2˙02) | − 1˙16 (3˙90) | −10˙60*** (2˙26) | −8˙65*** (2˙44) | −14˙66*** (5˙46) |
| Weighted change in imports | −9˙29** (1˙81) | −5˙28*** (1˙90) | −15˙14*** (5˙21) | + 5˙06 (2˙71) | +5˙18* (2˙59) | + 4˙03 (7˙47) |
| Weighted change in domestic demand | +2˙52** (0˙78) | +2˙48 (0˙84) | + 3˙57 (2˙52) | + 0˙76 (0˙96) | +1˙22 (1˙05) | + 0˙77 (3˙15) |
| Change in the share of migrants | −8˙79*** (2˙10) | −6˙53*** (2˙12) | −19˙86*** (8˙39) | + 5˙78*** (2˙64) | +4˙51*** (2˙53) | + 4˙05 (11˙31) |
| *Women* | | | | | | |
| Weighted change in exports | −5˙66*** (2˙14) | −5˙68*** (2˙70) | − 6˙53** (3˙45) | − 2˙08 (2˙08) | +1˙61 (2˙52) | − 9˙29*** (2˙66) |
| Weighted change in imports | +1˙38 (1˙47) | +1˙72 (1˙51) | + 3˙16 (2˙54) | + 1˙08 (1˙45) | −0˙07 (1˙46) | + 5˙57** (2˙60) |
| Weighted change in domestic demand | +4˙81 (3˙57) | +1˙76 (4˙73) | + 4˙39 (3˙80) | + 1˙06 (3˙41) | +2˙01 (4˙33) | − 2˙39 (3˙72) |
| Change in the share of migrants | −8˙44 (11˙77) | +5˙95 (15˙02) | −10˙85 (14˙36) | − 0˙84 (11˙46) | +4˙48 (14˙00) | + 2˙02 (14˙54) |

Source: Association of Austrian Social Security Institutions, Austrian Institute of Economic Research (WIFO).
Note: Foreign trade variables as well as migration were instrumented by German external trade, lagged trade growth and the share of migrant workers in 1991. *** (**) [*] stands for significance at the 1% (5%) [10%] level. The estimation takes into account not only migration, external trade and domestic demand, but also the following additional variables: age and age squared, one variable for blue-collar workers, two for firm size (20 to 100 employees; more than 100 employees), two regional variables (Vienna; city with more than 100,000 inhabitants), number of years with the company, number of previous jobs up to 1991, and the interindustry wage differential.

Our results for men suggest that their chances of employment improve when export growth is on the rise. In this case, the relative likelihood of moving into unemployment declines significantly for both blue-collar workers and male white-collar workers. A similar effect can be observed for female white-collar workers.

By contrast, migration affects only parts of the employees in question. In particular, the risk of unemployment changes for certain groups. Increased migration significantly heightens the risk of unemployment solely for blue-collar workers. Owing to the high heterogeneity among movers, all other groups do not show significant effects. The relationship, however, is positive also in these groups. Higher import growth also significantly increases the risk of unemployment for blue-collar workers and female white-collar workers. These effects are not significant for female blue-collar workers and male white-collar workers.

Hence, higher export growth rates reduce the risk of unemployment for all groups on the labor market, except for female blue-collar workers, whereas greater competition is the underlying cause for migration to raise the risk of unemployment especially for blue-collar workers, and export growth helps

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keep in particular blue-collar workers and female white-collar workers in employment.

The relative likelihood of female white- and blue-collar workers moving to other sectors decreases as the export ratio rises. Women employed in sectors with higher export growth rates enjoy good job security and are more rarely forced to switch industries. A higher import ratio, on the other hand, increases the probability that these women move to other sectors; however, like migration and changes in domestic demand, this effect remains insignificant.

For men, however, the coefficients are partly significant and carry the "wrong" signs. Both migration and higher imports increase the likelihood of employees switching sectors, while more rapid growth of domestic demand encourages interindustry mobility. We had expected the three factors to produce the opposite effects. However, the wrong signs can be attributed to the economic conditions prevailing in the period under review. When the economy is down, the majority of industry movers switch sectors involuntarily, which makes it difficult to observe voluntary mobility.

## 5 Conclusions

This paper examines the relationship between changes in external trade and migration on the one hand and wages and the mobility of the Austrian workforce on the other hand. Our results showed significant differences in the impact of changes in external trade and migration on different groups of labor. For men, migration and higher import growth imply decelerating wage growth in the blue-collar group whereas no such changes were recorded in the white-collar group. Furthermore, men in the upper income quartile gain significantly from increasing exports. By contrast, men in the lower income quartile are faced with slower wage growth. In accordance with other studies, we found that rising migration speeded up wage growth for men in the upper income quartile but led to slower wage growth for male workers in the lower income quartile. However, these effects are not statistically significant.

External trade and migration also affect the risk of unemployment for men. Blue-collar workers are more likely to be forced into unemployment when migration and imports are on the rise. All other groups are too heterogeneous as regards the risk of unemployment to allow statistically well-founded conclusions.

Among the female workforce, industry stayers are the group most affected by wage losses as a result of higher imports. The effects are similar, but owing to women's generally lower wages, less significant in the upper income quartile. Yet our results indicate that there are fundamental differences in female workers' adjustment to changes in labor supply and demand (especially in respect of sectoral mobility and working time), which we are able to analyze only inadequately. Future studies should look into these adjustment mechanisms, which are particularly relevant to the female workforce, in more detail.

What are the implications of our results for EU eastward enlargement? Experts widely agree (Boeri and Brücker, 2001, for the entire EU; Egger, 2000, for Austria) that the upcoming round of enlargement will generate only minor external trade effects. In particular, the expected import growth rates will most likely match the export growth rates. Therefore, aggregate data show

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that employees will hardly experience wage losses and nor will they be at risk of unemployment.

Enlargement may have an impact on the distribution of income if policy-makers fail to take the necessary economic measures. Taking into consideration Egger's (2000) findings, according to which both exports and imports will grow by an additional 0.5% after enlargement, we suggest that wage growth will pick up (for men and women) in the upper income quartile. At the same time, the lower income quartile would be faced with a slowdown in wage growth.

Migration following enlargement, by contrast, will generate larger effects. Our results suggest that migration would dampen wage growth for blue-collar workers and female industry stayers and at the same time increase the risk of unemployment for men (blue- and white-collar workers). Assuming that some 35,000 migrants a year arrive in Austria (i.e. a 1 percentage point increase in the share of migrants), wage growth for male blue-collar workers would be dampened by 0.3 percentage point (and amount to only 1.7% instead of 2%) and wage growth for women would be 0.5 percentage point lower.

Our results do not question the results of macroeconomic simulation studies which suggest that the overall economic effects of integration will be positive and that Austria will be one of the big winners of the upcoming round of enlargement (Baldwin et al., 1997, for Europe; Breuss, 2001, and Keuschnigg and Kohler, 1999, for Austria). Economic policymakers face the challenge of securing the positive overall effects of enlargement and of taking the necessary distributional measures to ensure that all sectors benefit from these gains.

Efforts to counter the risks of slower wage growth and higher unemployment among less qualified workers and low income earners should be given the top priority. Such measures could include better training for those entering the labor market and further education for the active workforce. Cuts in taxes and nonwage labor costs can contribute to maintaining net incomes at a stable level and to reducing the cost of labor for businesses; thus, the government would be able to ease the adjustment pressures on the workforce.

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# Institutional Implications of EU Enlargement in the Area of Economic and Monetary Policies

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## 1 Introduction

The European Union (EU) of today, shaped by enlargement and deepening, has seen the number of its Member States increase steadily during four successive enlargements. This broadening of the membership has also gone hand in hand – albeit with a certain time lag – with substantive improvements in many policy areas. At the present juncture, the EU again rises to the challenge of having to balance out enlargement and deepening. It became clear already a few years ago that – given its decade-long evolution and the extension of its mandate – the EU would have to undergo a number of reforms to safeguard its future operability and improve the decision-making procedures within its institutions. The EU's reform agenda is geared toward underpinning in particular its economic and monetary position in the global economy.

Never before has the EU been faced with such a sizeable enlargement, namely of up to 12 new Member States from today's perspective. Compared to the current EU-15, the requirements for decision-making procedures are set to soar in an enlarged Union. In addition, the accession countries differ significantly from the present EU Member States in economic terms, which could render decision-making even more difficult.

In this light, already the Maastricht Treaty envisaged a revision of the Treaties on which the Union is founded (Article N), under which institutional reform was to account for a bigger enlargement of the Union. Institutional reform ideas finally fed into the Treaty of Nice.[1] According to the Presidency conclusions, the Treaty of Nice, which was finalized at the 2000 Intergovernmental Conference (IGC), set the groundwork for the inclusion of new Member States. Yet, failing to fully meet the objective to establish efficient and democratic decision-making mechanisms, the outcome in many respects fell short of expectations.

This study explores the implications of enlargement for the individual institutions and decision-making procedures in their present form, considering both purely organizational issues and the European economic governance[2] angle.

## 2 European Council

The European Council brings together the heads of state or government of the EU Member States and shall increasingly concentrate on strategic goals (Trumpf and Piris, 1999; European Council of Helsinki, 1999). In an EU-27, i.e. a Union enlarged by 12 new members, some 65 delegates would convene instead of today's 40-odd.[3]

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1   *If the Treaty is not ratified, the institutional provisions are bound to be incorporated into the "Institutions" chapter of the accession treaties.*

2   *Governance encompasses "rules, processes and behaviour that affect the way in which powers are exercised at European level, particularly as regards accountability, clarity, transparency, coherence, efficiency and effectiveness." (European Commission, SEC[2000] 1547/7).*

3   *At present the European Council meetings bring together the 15 heads of state or government accompanied by their foreign ministers (occasionally by the economics and finance ministers), the president of the European Commission accompanied by a commissioner, the Secretary-General of both the Council of the European Union und the Commission as well as a limited number of representatives of the Presidency and the Council secretariat.*

The decisions taken at European Council meetings are a major impetus in defining the general political guidelines of the European Union. In addition to this primary mandate, the European Council is responsible for coordinating, reconciling (especially if the Council of the European Union fails to achieve agreement) and taking final decisions on issues that are key to the EU, such as treaty revisions, enlargement, or the medium-term financial outlook. Its arbitration function may well come to play a greater role in an enlarged Union.

Since the mid-1990s more and more attention has been paid to tightening economic policy coordination within the EU, notably against the backdrop of subdued economic growth and weaknesses on Europe's labor markets, technological progress, the liberalization and internationalization of the economy, and last but not least the beginning of the third stage of Economic and Monetary Union (EMU) in January 1999. In the light of these developments, the European Council meetings have increasingly laid down common positions on particular economic policy issues since the mid-1990s. As of 2001, the European Council has been convening an additional meeting in spring, which is almost exclusively dedicated to boosting the EU's economic policy performance. The procedures for economic policy coordination outlined in the Treaty establishing the European Community (TEC) have since then been extended to comprise the following instruments:

– economic policy coordination based on the Broad Economic Guidelines (Article 99 TEC);
– budget policy monitoring in line with the Stability and Growth Pact;
– structural labor market reforms according to the Employment Guidelines and national action plans (Luxembourg process);
– structural reforms on product, capital and services markets (Cardiff process);
– implementation of a balanced macroeconomic policy mix through a regular dialogue between government representatives, the European Central Bank (ECB), the social partners and the European Commission (Cologne process);[1])
– improvement of the functioning of the Single Market and elimination of fragmentation and inefficiencies such as to transform the EU into "the most competitive and dynamic knowledge-based economy in the world" by 2010 (Lisbon strategy).

Instruments of economic policy coordination range from ex ante coordination of joint measures, multilateral monitoring, ex post evaluation and recommendations, open coordination, peer pressure and common positions for the external representation of the euro area to an open dialogue among economic policymakers.

The economic policy meetings of the European Council are likely to gain in importance in an enlarged Union. While debates take up a great amount of time even today, in an EU-27 it will probably be almost impossible to arrive at decisions on economic policy guidelines. Chances are that instruments which are based on an agreement of the European Council, such as the open coordination method, will be applied to many issues of economic policy coordination.

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1    The Luxembourg, Cardiff and Cologne processes represent the three pillars of the European Employment Pact.

Such a development would, however, prove somewhat problematic for democracy in the EU.

Besides, the enforceability of measures on economic policy coordination is limited.

## 3 Council of the European Union[1])

In contrast to the European Council, the Council of the European Union, a key legislative body composed of one representative at ministerial level from each Member State, is at the center of the Union's reform drive. In particular, the reform agenda addresses the weighting of votes for decisions taken by qualified majority and the extension of qualified majority voting plus the Council's working methods with a view to increasing efficiency and coherence.

a) Qualified majority voting

In law, the Council takes decisions under the first pillar[2]) mainly by qualified majority. In fact, votes are taken only for about 10% of decisions, but as this method would allow Member States to form a blocking minority, the participants in the meetings are ready to make concessions, and in most cases this results in a consensus (Maurer, 2001). In an enlarged Union the number of votes to be taken could rise.

In the previous enlargements of the European Community/Union, when above all small and medium-sized countries acceded, the voting powers of the large Member States lost in weight.[3]) Since primarily smaller countries will be joining the EU in the upcoming enlargement, continuing the present system of weighted votes would have meant that certain decisions could be taken by the majority of votes while being backed only by some 50% of the EU's population (Giering, 2001; Hergenhan, 2001).

In line with the Treaty of Nice, as of January 1, 2005, three criteria will have to be met for decisions to be adopted:

– A qualified majority threshold of 169 (EU-15) or 255 (EU-27) votes (71.31% and 73.91%, respectively, and a blocking minority of 69 or 91 votes).[4])

– A simple majority of Member States; if the Council does not act on the initiative of the European Commission, agreement by at least two thirds of Member States is mandatory.

– The qualified majority must represent 62% of the entire EU population (this will be verified on request only).

The number of votes allocated to each Member State was changed: All Member States were attributed more votes, but the most populous countries

1  Commonly referred to as "Council of Ministers."

2  The first pillar refers primarily to Single Market legislation and EMU.

3  In 1958, Germany and France held a combined 48% of votes in weighted majority voting; this figure was reduced to 34% after the first, 32% after the second, and 26% after the third enlargement. In today's EU-15 their share amounts to 23% (Berger, 1998).

4  If on January 1, 2005, not all accession countries will have yet joined the EU, the qualified majority threshold will be increased in sync with the accessions. The threshold would in that case start from a percentage below the current one and progress to a maximum of 73.4%. In a Union of 27 Member States, the blocking minority would mount to 91 votes (see Declaration No. 21).

received a higher proportion of votes (at a ratio of almost 1:10). The accession countries were factored in as well:
— Germany, France, Italy, United Kingdom: 29
— Spain, Poland: 27
— Romania: 14
— the Netherlands: 13
— Belgium, Greece, Portugal, Czech Republic, Hungary: 12
— Bulgaria, Austria, Sweden: 10
— Denmark, Finland, Ireland, Lithuania, Slovak Republic: 7
— Estonia, Latvia, Luxembourg, Slovenia, Cyprus: 4
— Malta: 3
   The new voting rule renders decision-making more difficult, however:
— By raising the qualified majority threshold from currently 71.26% to 71.31% for the EU-15 and to 73.91% for an EU-27: In a Union of 27 Member States it will thus become easier to block decisions (Felsenthal and Machover, 2001).
— By introducing two new criteria (Member States and population): In an EU-27, the 13 largest states cannot carry a decision because they cannot muster the required numerical majority (Baldwin et al., 2001a). For instance, in an EU-27 Germany and two other large states will be able to block the adoption of a decision because of the 62% population criterion (at 87 votes, they will not, however, have a blocking minority, which would be decisive under the current voting rule).

The new procedures adopted in Nice will, thus, not really make Council decision-making more efficient.

It is unclear what potential coalitions and interactions between Member States might imply for the decision-making process: The 12 euro area Member States, for instance, have a blocking minority, but they fall short of a qualified majority by 64 votes. At a combined 237 votes, the EU-15 can, by contrast, muster the required majority even in an enlarged EU-27 (in addition to the blocking minority) provided they get an additional 18 votes. The 108-vote-strong blocking majority of the accession countries could theoretically become significant when the accession countries call for reopening e.g. issues associated with the EU budget.

b) Extension of qualified majority voting

Under the unanimity rule, each Member State has a right to veto. As the number of Member States rises, the likelihood of a Member State making use of its veto grows as well. In an enlarged EU, decisions requiring unanimity are likely to be more difficult to come by. To ensure that the EU continues to function effectively, the Treaty of Nice extended the scope of qualified majority voting by some 30 items, which fell considerably short of the original target though.

Apart from that, no or only little progress was made regarding the extension of qualified majority voting to key policy issues, such as EMU, taxation,[1]) social

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1    As a consequence, it seems unlikely for the EU body of law on taxation to be advanced substantially in the next years, as enlargement is bound to raise the heterogeneity of interests in terms of taxation further. Besides, the accession countries will be keen on upholding their favorable initial position and on retaining the right to grant tax relief for investment as long as possible. (Part, 2001).

and trade policies. As to EMU, four articles were changed over from unanimity to qualified majority voting following a long debate: TEC Article 100 paragraph 1 (economic measures to be taken in the case of difficulties in the supply of certain products) and paragraph 2 (Community financial assistance), Article 111 paragraph 4 (external representation of the euro area) and Article 123 paragraph 4 (measures on the introduction of the euro). By contrast, unanimity still applies to TEC Article 105 paragraph 6 (transfer of banking supervision tasks to the ECB) and Article 111 paragraph 1 (agreement on exchange rate regimes with third countries), which had also been under discussion.

c)  Working methods of the Council

The rise in the number of Member States and concurrent extension of tasks pose new challenges for the Council's working methods. The format of deliberations lacks in efficiency, the decisions taken at different Council meetings lack coherence and the Presidency is faced with a very heavy workload. As enlargement is expected to aggravate these weaknesses, numerous reform proposals have been made in recent years, many of which do not imply an amendment to the Treaty. It was, for instance, suggested to reduce the number of Council formations[1]) and informal gatherings of ministers, to establish a special Council formation as a new policy coordination institution ("Ministers of Europe") and to overhaul the role of the Presidency.

### 3.1 Ecofin Council/Eurogroup

Even though the Council of Economics and Finance Ministers (Ecofin Council) has been convening since the late 1950s, its status was greatly enhanced with the onset of EMU; among other things, the Ecofin Council assumes the European Commission's role as guardian of the Treaty in certain instances, namely e.g. in monitoring the economic and budget policies of the Member States. Since the Ecofin Council needs to be involved in all policy issues and measures of the EU which could have significant economic and financial implications, reform proposals target e.g. a clear delimitation of its powers in relation to other Council formations or the setting up of an Ecofin Council secretariat.

In addition to the Ecofin Council as the official economic policy coordination forum, an informal body (i.e. lacking formal decision-making powers) composed of the euro area ministers has been gathering since June 1998. This group, called the Eurogroup, meets to deliberate on issues about fiscal policy, the common currency and the joint external representation of the euro area. The European Commission and the ECB are invited to participate in the Eurogroup meetings; the non-euro area ministers are, however, only invited when issues of mutual interest, such as taxation policy, are to be discussed.

In the past months new life was breathed into the discussion about an upgrade of the Eurogroup's status in connection with the idea of an "economic government": Already at the beginning of the 1990s, France – motivated by the

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1   This is meant to improve the coherence and consistency of the proceedings and avoid the fragmentation of EU activities.

then dependency of the central bank on the government (the Banque de France had to seek and take instruction from the Ministry of Finance) and its perception that monetary policy was to serve as an instrument of general economic policy – had called for a "gouvernement économique" as a counterweight to the ECB. Above all Germany, however, adamantly opposed this plan, fearing interference with the ECB's independent monetary policy and, by extension, a weakening of the euro exchange rate. In the end, the Eurogroup was established as a compromise.

In the spring of 2001, the French prime minister, Lionel Jospin, repeated the call for an economic government, demanding that each Member State consult its peers and give careful consideration to their recommendations prior to taking major decisions which would influence the entire euro area. In the same vein, Commission president Romano Prodi (2001) spoke out in favor of establishing a "genuine economic government," since the political governance of EMU lacked both in efficiency and coherence and the ECB – given the semiannual rotation of the Presidency – did not have a permanent counterpart that could advise about the economic and financial situation of the EU and its Member States from a European perspective. Yet, Prodi insisted on investing the Commission with such powers, and not the Eurogroup.

Likewise, former Commission president Jacques Delors (2001) urged the euro area finance ministers to empower the Commission president to hold regular talks with the president of the ECB, as the Eurogroup was not suited to balancing out economic and monetary policies. Delors, however, rejected the idea of an economic government, since the lack of macroeconomic coordination in the field of economic policy might also be redressed in another way. The rules pertaining to the concept of "closer cooperation" (see section 7) could be applied to EMU, which would enable the Eurogroup to improve the coherence of its decisions.

According to the 12 finance ministers of the Eurogroup, economic policy cooperation should be intensified further, but there is no need for an official economic government and a harmonized economic policy. Chances are, however, that in an enlarged Union, the Eurogroup will gain a higher profile, as the Ecofin Council will be less suited to take decisions on the euro area given the increase in participants.

Thus, it cannot be ruled out that in the medium term the Eurogroup could be invested with formal decision-taking powers. This could strengthen the role of the European Commission as economic policy guardian of the Treaty to ensure cohesion between the pre-ins and the euro area Member States.

### 3.2 External Representation of the Euro Area

On the eve of the introduction of the single European currency, the Vienna European Council aimed at defining Europe's role as a global agent. Specifically, on EMU-related issues, the Community was to be given a single voice on the world stage. Rules on the external representation of the euro area have only been established for the representation in the G-7 meetings of finance ministers and central bank governors, at the International Monetary Fund (IMF) and for the composition of Ecofin Council delegations to third countries. Enlargement

raises institutional questions only in terms of the Community's effective functioning at the IMF, as the rules on G-7 representation and Ecofin delegations are clear-cut and do not entail expanding the number of participants in an enlarged Union.

Principally, the members' or constituencies' quotas (capital subscriptions) determine their voting powers in the IMF Executive Board. Besides, the country assigned the largest quota automatically hosts the IMF headquarters. At present, the U.S.A. holds the largest capital subscription, namely some 17.50%, and thus also has a blocking minority for decisions taken by the Executive Board of the IMF. The EU does not have a country member status; the combined calculated quota of EU Member States equals 30.30% (euro area Member States: 23.30%). The combined quota of an EU-25 would edge up marginally to about 32.40% (EU-27: 33.20%).

Numerically speaking, the EU or the Eurosystem could therefore dominate decision-making; in practice, this is frequently foiled as the EU Member States fail to coordinate a common position to be held in the Executive Board. The majority of accession countries already belongs to IMF constituencies chaired by EU countries. The EU mainly has to rise to the challenge of orchestrating its positions on international financial issues, such as the prevention and handling of global crises, in a more efficient way. Here, decision-making in an enlarged EU runs the risk of being dominated largely by the major Member States.

## 4  European Commission

While the Council essentially serves as the decision-making body of the Member States, the European Commission is the guardian of the Community's interests, as laid down in the Treaty. If the existing system had been left unchanged, another enlargement wave to an EU-27 would have resulted in a 33-member-strong Commission.

At the Intergovernmental Conference of Nice, a decision on the definitive number of Commission members was to a certain degree deferred by adopting a staggered approach. It was laid down that for the first new European Commission after January 1, 2005, each Member State shall appoint one representative to the Commission. As of the first Commission taking office once the Union reaches 27 Member States, there will be fewer commissioners than Member States, and the commissioners will be selected by a system of rotation that will be fair to all countries. A detailed specification of this rotation system and of the future number of Commission members is due to be made by unanimous vote of the Council once the accession treaty of the 27th Member State has been signed.

The new system, which is rated to be rather half-hearted (Baldwin et al., 2001a), is a compromise solution: Initially, each Member State retains its right to a commissioner, which has the ranks of the Commission swell with each accession and carries the possible risk of weakening its decision-making structure. As of the 27th Member State, the considerations of the Member States in favor of confining the number of Commission members become effective. As a result, up to 12 countries may accede to the EU without institutional reform. The deferral of the decision on how to organize the rotation system may,

however, still lead to some friction: Certain fundamental details as to equitable rotation were fixed already in Nice,[1]) but one has to bear in mind that above all the accession countries will be very reluctant to renounce their right to a commissioner. For this reason, it remains to be seen whether the rotation system will actually be implemented in the near future (Kraft, 2001). The political weight of the European Commission is assumed to be particularly great in the accession countries, as the Commission is in many respects their central reference point in the EU.

To raise the effectiveness of an enlarged Commission, the Nice IGC strengthened the position of the Commission's president. His or her tasks are now embodied in the Treaties: The president will determine the internal organization of the Commission and allocate portfolios to the commissioners. In addition, the president will appoint the vice-presidents following approval of all commissioners, and a member of the Commission will have to step down if the president requests this upon the Commission's collective endorsement.

The nomination method applied to the European Commission has undergone changes, too. In particular, the president will in the future be appointed by the Council, meeting in the composition of heads of state or government, by qualified majority instead of by unanimity.

In the enlarged Union, the Commission will play a decisive role in pursuing coherent long-term economic policy objectives and in ensuring compliance with EU legislation to safeguard political cohesion within the EU. This said, the role of the Commission in determining the agenda of the European Council should be strengthened and the responsibility for implementing legislative acts (overseen by the Council and the European Parliament) should be clearly assigned to the Commission (Grevi, 2001).

## 5  European Parliament

a)  Allocation of seats

The powers of the European Parliament have been extended substantially over the past decade. Seat allocation per Member State is based on a principle of digressive proportionality, meeting the principles of democratic representativeness and political equality to a limited extent only. A German member of the European Parliament (MEP), for example, represents 828,666 voters, which contrasts with a mere 71,500 per Luxembourg MEP (Maurer, 2001).

Left unchanged, these imbalances would have mounted further with enlargement. An equitable seat distribution among the Member States in the European Parliament is, for instance, not as important as in the Council of the European Union. The European Parliament represents the peoples rather than the countries of the EU. Apart from that, it is typically the transnational political groups, in which the members sit according to their political affinities, that shape the process of opinion forming, even though on certain issues a member's nationality may play a crucial role, too.

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1   In line with Article 4 paragraph 3 of the Protocol, the Member States will be treated absolutely equitably in determining the chronological order and length of the terms of office of the Commission members. The composition of each body will have to reflect the demographical and geographical spectrum of all EU Member States in an adequate way.

The reallocation of seats decided in Nice, which also factors in the 12 accession countries, is to be applied to elections as of 2004. The number of seats will be extended to 732, with the seats attributed to the current Member States reduced from 626 to 535. The new system allocates seats as follows:
– Germany: 99
– United Kingdom, France and Italy: 72
– Spain, Poland: 50
– Romania: 33
– the Netherlands: 25
– Greece, Belgium and Portugal: 22
– Czech Republic, Hungary: 20
– Sweden: 18
– Bulgaria, Austria: 17
– Slovak Republic, Denmark and Finland: 13
– Ireland and Lithuania: 12
– Latvia: 8
– Slovenia: 7
– Estonia, Cyprus and Luxembourg: 6
– Malta: 5

The new allocation of seats gives more weight to Member States' population size than the previous system.[1] There is, however, a striking difference between the number of seats allocated to today's Member States and the accession countries: While Belgium, Greece and Portugal are assigned 22 seats each, Hungary and the Czech Republic, which are as populous or – compared to Portugal – even more populous, will have only 20 seats each. This issue might lead to contentions between the current Member States and the ones to be, as the question as to how many seats each accession country eventually attains will be subject to the accession negotiations. In other words, the distribution agreed at the Nice summit only represents the current Member States' common position.

b) Decision-making and codecision procedures

Qualified majority voting in the Council is closely related to the codecision procedure introduced by the Maastricht Treaty, under which the European Parliament and the Council act as equal colegislators.[2] Short shrift was given to this topic in Nice, and the outcome was thus unsubstantial. Given the relatively broad extension of qualified majority voting, the pertinent literature points out that the "democracy deficit" in the EU has rather widened (Giering, 2001).

At the bottom line, the Treaty of Nice has further increased the complexity of the provisions on preparing, taking and implementing decisions: 16 different decision-making procedures apply to the Council, and 11 to the European Parliament. There are a total of 38 possible combinations of vote-taking by

1   Baldwin et al. (2001) pinpoint a shift in the ratio of the principles of equally weighting each Member State and each national constituency, as reflected in the reallocation of seats from 22 (Member States) to 78 (voters) to 3 to 97 and, in an EU-27, to 8 to 92.

2   There are, however, also provisions which allow for both codecision and unanimity in the Council (Articles 18, 42, 47, 151 TEC).

the Council and the European Parliament, 22 of which are of a legislative nature (Wessels, 2001). Reform proposals aim above all at simplifying the qualified majority voting procedure in the Council and at applying it more broadly and together with the codecision procedure of the European Parliament. These efforts, geared toward strengthening the European Parliament, contrast with developments rather lessening its influence: The European Commission, for instance, stresses "the need for close coherence between the use of different policy instruments and for more thought to be given to their selection" to improve the quality and efficiency of regulatory measures, calling in particular for stepped-up use of framework directives and for "leaving the executive to fill in the technical details via implementing 'secondary' rules" (European Commission, COM (2001) 428 and (2001) 726.[1]) Even a less efficient Council would undermine the position of the European Parliament, as this would result in a reduced number of legislative procedures and, concomitantly, less political clout for the Parliament (Baldwin et al., 2001a).

The Parliament has very little say in EMU-related issues (among other things, the right to give an opinion on monetary issues, participate in the nomination of the ECB's Executive Board, and hold the ECB accountable), but it plays an important role in determining the economic framework conditions of monetary policy, such as Single Market affairs, via the codecision procedure.

Reforms, though desired by the European Council, might, however, get stuck for a longer period of time in the complex decision-making process of the EU (in this case between the Parliament and the Commission). The drive to regulate securities markets was a case in point. The Lamfalussy report of February 2001 on the regulation of European securities markets presented a blueprint for reforming the legislative process, proposing, among other things, to recognize two layers in the legislative framework: on the one hand, framework principles to be decided by normal EU legislative procedures, i.e. proposal by the Commission to the Council of Ministers/European Parliament for codecision, and on the other, detailed technical measures taken by the Commission with the help of two new comitology committees. At the second (technical) level, the European Parliament is essentially limited to a supervisory role (draft measures must not exceed the implementing powers provided for in the basic instrument).

The European Parliament refused for almost a year to agree to this provision and demanded that it "must be provided with a binding 'call back' or similar appeal mechanism to refer the matter back to the Commission (…) to maintain the parallelism of the codecision procedure and ensure effective parliamentary oversight of the Securities Committee." Thus, following a negative opinion of the European Parliament, the Commission should withdraw its proposals and submit a legislative proposal under the codecision procedure. The Commission, however, argued that such a call back right for the European Parliament was not compatible with the TEC as amended and that the Commission had committed

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1   However, this should lead to modifying Article 202 TEC, which permits the Council alone to impose certain requirements on the way the Commission exercises its implementing powers: As the codecision procedure applies to many areas, the European Parliament should also have an equal role in supervising the way the Commission exercises its executive role and thus be again put on an equal footing with the Council.

itself to considering the Parliament's opinion as much as possible. Finally on February 5, 2002, a compromise was forged.

## 6  European System of Central Banks

Establishing Economic and Monetary Union (EMU) was tantamount to formulating a single European monetary policy, and the euro area Member States transferred their monetary decision-making powers from the national to the EU level. The Governing Council of the ECB, the highest monetary policy decision-making body, will be impacted by enlargement just like the other organs of the EU, albeit with a certain lag. The accession countries strive for a rapid and full-fledged integration into EMU, yet they first of all have to achieve durable convergence as laid down in the Maastricht Treaty. To qualify for EMU membership, a country must have participated in the exchange rate mechanism (ERM) of the European Monetary System (EMS) for a minimum of two years while complying with the normal bandwidths. Therefore, from a legal perspective, the earliest possible date of entry into EMU is two years after EU accession.

The Governing Council presently consists of the six members of the Executive Board of the ECB and the 12 governors of the euro area national central banks (NCBs). In this context, the decision-making process in the Governing Council is of relevance: For monetary policy decisions only a simple majority is required in law, with each member holding one vote. In fact, decisions have, however, been taken unanimously to date. In addition decisions are to be based on data covering the entire euro area, and special developments in individual regions must not be considered.

An enlargement of the Eurosystem, i.e. of the countries participating in monetary union, would under the current rule automatically increase the number of voting members represented in the Governing Council. By means of an enabling clause, the Nice European Council established the right to amend the voting powers of the Governing Council members without the need to convene an Intergovernmental Conference. The right of the Executive Board members of the ECB and the governors of the NCBs to participate in Governing Council meetings remains untouched though.

The Eurosystem is set to expand by countries differing widely in terms of GDP. As a consequence, chances are that adjusting the Governing Council to enlargement will not only be driven by efficiency goals, but will also aim at ensuring the credibility of monetary policy decisions on financial markets and acceptance by the population. After all, the simple majority procedure applicable to monetary policy decisions allows for relatively speedy decision-making even in an enlarged Governing Council.

## 7  Closer Cooperation

European integration has from the very beginning rested on the notion that all Member States should equitably participate in progressive integration, even if the principles of uniform and parallel integration have since been put in perspective, not least by EMU.

Following enlargement, Member States might, however, increasingly want to choose the extent to which they will or can participate in the deepening of integration.

Closer cooperation offers the possibility of differentiated integration within the institutional framework of the EU. The concept of closer cooperation was improved substantially at Nice:

— The right of individual Member States to apply their veto in areas of the first and third pillars, which include EMU and the Single Market, was abolished. Such cooperation had already been under consideration in the area of tax coordination.

— A group eligible for closer cooperation must comprise at least eight Member States (before, a majority of Member States had been required, which, in an EU-27, would have translated into 14 Member States).

A discrepancy remains, however, between the underlying rationale and the scope of closer cooperation (Janning, 2001). Given the still rigid constraints of closer cooperation — e.g. it must not be extended to new policy areas — its usefulness as a basic instrument for deepening European integration seems to be limited. Its effectiveness is probably highest for pushing through individual legislative acts (Giering, 2001).

Similar proposals by German Foreign Minister Joschka Fischer (2000) for generating a "gravitational center" and French President Jacques Chirac (2000) for creating a "pioneer group" went beyond the Nice approach.

## 8 Conclusions

The composition and functioning of today's EU institutions hark back to a system that was established in the 1950s for a community of six Member States. There is general agreement that this system fails to meet the new requirements brought about by enlargement, especially in the light of the difficulties the EU-15 is already faced with. Given the considerable uncertainties about the actual and concrete pressures on institutional stability, the EU might be entering a period of trial and error (Bainbridge, 2001). At any rate, the Nice European Council established the formal prerequisites for ensuring that an EU of 27 Member States will continue to be able to take economic and monetary policy decisions in an effective way. An in-depth analysis reveals, however, that the EU's current institutional setup has yet to undergo further adjustments.

The Council has evolved into a key body over the past few years. Yet, given the institutional framework conditions currently in place, enlargement could lead to a gridlock in economic policy decision-making, especially in the Council. Over the medium term, the Eurogroup might gain even greater influence in the area of economic policy coordination, albeit to a limited extent since binding decisions may only be taken by the Council. However, in an enlarged EU, particularly the European Commission will be critical to pursuing long-term economic policy goals and to safeguarding political cohesion within the EU.

In the future, the significance of closer cooperation could mount as an instrument facilitating economic policy reforms. On the down side, this concept runs the risk of leading to fragmentation. Given the nonbinding character of the open coordination method, using this method in the area of economic policy coordination will not completely offset the slowing down of decision-making in the Council. By contrast, with its option of simple majority voting in the Governing Council of the ECB, the Eurosystem disposes of a very efficient

decision-making procedure. For the relationship between fiscal and economic policies on the one hand and monetary policy on the other this could translate into even greater pressure for monetary adjustment.

For lack of a common blueprint for the future of EU institutions, the European Convention was convened by the Laeken European Council in December 2001 to tackle these issues and submit recommendations and proposals for reforms to the Intergovernmental Conference scheduled to take place in 2004. Whatever proposals for institutional reform will be presented to and considered by the IGC, they are poised to impact the future development and success of EMU.

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# The Banking System in the Accession Countries on the Eve of EU Entry

## 1  Introduction

Marianne Kager[1]

In what way will enlarging the European Union (EU) to the east influence the European banking environment? How will European banks react to the expansion of the internal market by an additional 104 million inhabitants and what strategies will they apply in Eastern Europe? How will Eastern European banks cope with the new framework conditions imposed by the Single Market? This study aims at answering these questions and at examining the changes to be expected in this context.

It is a well-known fact that stable financial markets are key to successful and sound economic development. The development of financial markets, in turn, depends on a stable economic environment. While via a series of transmission mechanisms both cyclical movements and monetary and fiscal policies influence the financial sector, financial stability is, in turn, a precondition for sustained economic growth and an efficient monetary policy. Otherwise, the transmission mechanisms would not work.

Just like individual economic policy measures, structural changes and external shocks also bear upon financial market volatility. Both monetary policy features, such as unexpected rises in minimum reserve requirements and inadequate supervisory regulations, and fiscal measures, such as the tax deductibility of provisions for bad loans or bank-specific taxes, may have an impact on the sound development of the financial sector. Financial markets are best protected against unexpected fluctuations through stable foundations, effective prudential provisions and a high degree of independence for the central bank.

In this sense, financial markets play a key role in the convergence process which is necessary for the successful integration of the Central and Eastern European countries (CEECs) applying for EU membership. As defined in the European Union's Copenhagen criteria, a functioning market economy is one of the preconditions for joining the EU. This is to guarantee that enterprises in the new Member States will be able to cope with the competitive pressure and market forces prevailing within the Union. At the same time, access to financing instruments remains a prerequisite for the restructuring and efficient functioning of the corporate sector.

In view of EU accession, therefore, the financial sector plays a key role in funding robust growth in the applicant countries. Only a sound financial sector that has undergone substantial reform will be able to help create stable framework conditions for economic growth. To quote Tobin, it is banks' central task "to supply, allocate and monitor financial funds for investment." The ultimate question will therefore be whether the Eastern European financial sector will be able to fulfill these requirements in the run-up to, and after, EU accession.

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## 2  Banking Reform in Eastern Europe in the 1990s Successful Despite Difficulties

It must be said right at the beginning that although banking reform has met with considerable difficulties and setbacks since 1990, the accession countries have largely succeeded in reforming their banking systems and overcoming the banking crisis. Let us briefly look back on the situation in the planned economies of Eastern Europe: at that time, the banking sector in the region was not comparable to the Western European banking system – much rather, it resembled a national accounting system where savings were gathered on the one hand while on the other, funds were allocated to enterprises without applying any performance criteria. Given the rather rudimentary separation of central and commercial bank functions alone, the mono-banking system of the centrally planned economies in Eastern Europe was a far cry from Western-style banking systems. It was thus one of the primary tasks in the early years of reform to split the mono-banking system into a two-level banking system with a central bank as the upper tier and commercial banks as the lower tier. This step resulted in a situation where the central bank faced a number of problem-stricken state-owned commercial banks. Apart from the general massive economic downturn in the CEECs, which was of a dimension that would have severely damaged the banking system in any country, the state-owned banks had to cope with a series of particularly unfavorable circumstances: They had all inherited irrecoverable assets from the communist era; management capacities for a Western-style banking system were lacking; and neither were there suitable provisions for risk management and accounting nor any bankruptcy regulations that would have facilitated proper banking operations. It is therefore not surprising that all accession countries experienced one or even several banking crises during the first years of transformation.

In overcoming these crises and restructuring their banking sectors, these countries basically had to deal with four kinds of problems:
– solving the problem of irrecoverable assets inherited from the communist era,
– recapitalizing the banking sector,
– introducing evaluation and accounting standards and adequate supervisory systems, and finally
– privatizing the banking sector.

An ex post analysis shows that the success of banking reform in the individual countries, as well as its economic cost, basically depended on the sequence in which the above problems were solved. Poland, for example, which was fastest and most cost-efficient in reorganizing its banking sector, first introduced new evaluation and accounting standards before transforming state-owned banks into corporations, which were then recapitalized. Polish banks either had to cope themselves with writing off bad loans or had to find strategic partners. Privatization was the final step in the process. Estimated at around 6% of GDP, the overall costs of banking reform in Poland are by far the lowest in Eastern Europe. Another example are the Czech and Slovak Republics, where the first step of banking reform consisted of (voucher) privatization and the removal of bad loans from banks' balance sheets. Owing to so-called soft budget constraints and continued cross-ownership links between financial

and industrial corporations, the problem of bad loans was not solved but continued to exist and was even exacerbated, rendering banking reform particularly expensive in these countries. By now, the costs of banking reform in the Czech and Slovak Republics are estimated to have reached 25% to 30% of GDP.

Even though banking reform in the CEECs was a costly and often painful experience, it must be pointed out that by international standards (table 2), the costs of banking reform were by far lower here than in other emerging markets – a fact that tends to be ignored. In the CEECs, the problem of bad loans (table 1) has been solved by removing them (either completely or to a large extent) from commercial banks' balance sheets. However, the corresponding figures are still very high compared to data from Western European banking systems.

Table 1

### Bad Loans as a Percentage of Total Loans

|  | 1998 | 1999 | 2000 |
|---|---|---|---|
|  | % | | |
| Czech Republic | 26.4 | 32.1 | 29.5 |
| Hungary | 10.4 | 8.8 | 7.9 |
| Poland | 10.9 | 13.7 | 13.2 |
| Slovak Republic | 31.7 | 23.7 | 15.2 |
| Slovenia | 10.4 | 11.5 | 12.6 |

Source: Wagner and Jakova (2001).

Table 2

### Costs of Bank Restructuring as a Percentage of GDP

|  | from | to |  |
|---|---|---|---|
|  | | | % |
| Czech Republic | 1991 | 2000 | 33[1]) |
| Hungary | 1991 | 2000 | 13 |
| Poland | 1990 | 2000 | 6 |
| Argentina | 1980 | 1982 | 55 |
| Indonesia | 1997 | current year | 33 |
| Spain | 1977 | 1985 | 15 to 17 |

Source: Szapáry (2001).
[1]) Estimation, since the banking reform was not completed yet in 2000.

The countries set to join the EU in 2004/05 have basically completed the restructuring and reform of their banking sectors, even if a number of problems remain to be solved in the near future, in particular with a view to forthcoming EU membership.

## 3 Characteristics of the Eastern European Banking Market on the Eve of EU Accession

After ten years of transformation it is interesting to take stock of the situation of the applicant countries' banking markets in the run-up to EU accession and to see whether their banking sectors efficiently fulfill their fundamental function, i.e. the transformation of financial funds. Eastern European markets
— are small in absolute figures,
— show a low degree of intermediation,
— report a high share of foreign-owned banks,
— generate high yields despite low productivity, enjoy good prospects for growth, but face tightening competition.

### 3.1 The Size of the Banking System in Eastern Europe

To understand the role of the Eastern European banking system in the Single Market, we must first of all get a clear picture of its absolute size, which is very small by Western European standards. We will see later that this is true both for absolute and relative figures (GDP, for instance). In 2001, the aggregate total assets of banks in the accession countries came to EUR 324 billion (2000: EUR 287 billion), thus reaching only 1.7% of total banking assets in the Euro-system, which stood at EUR 18,200 billion in 2001 and at EUR 17,200 billion in 2000. The following comparison is particularly striking: The aggregate total banking assets of the accession countries in 2000 roughly equaled the size of Crédit Mutuel's balance sheet, with Crédit Mutuel not even being a particularly large bank. A look at the sizes of banks' balance sheets in the individual countries is even more revealing. While Polish aggregate banking assets just about equal those of Svenska Handelsbanken, Hungarian total banking assets can be compared to the size of Hamburger Sparkasse's balance sheet. With its aggregate banking assets corresponding to the total assets of Raiffeisenverband Salzburg, Estonia came in last. Even if estimates about the future growth of the Eastern European banking market were relatively optimistic – which would be well justified – its aggregate assets will, by 2005, only roughly match those of the Royal Bank of Scotland in 2000, which illustrates that the Eastern European banking system will hardly have an impact on the competitiveness of Western European banks. An altogether different question, however, is what action Western European banks are going to take on the Eastern European market after integration and what an implication this would have for the Eastern

Chart 1

## The Banking Market in the Accession Countries

**Comparison of total assets as at December 31, 2000**

*EUR billion*



Countrys
Banks
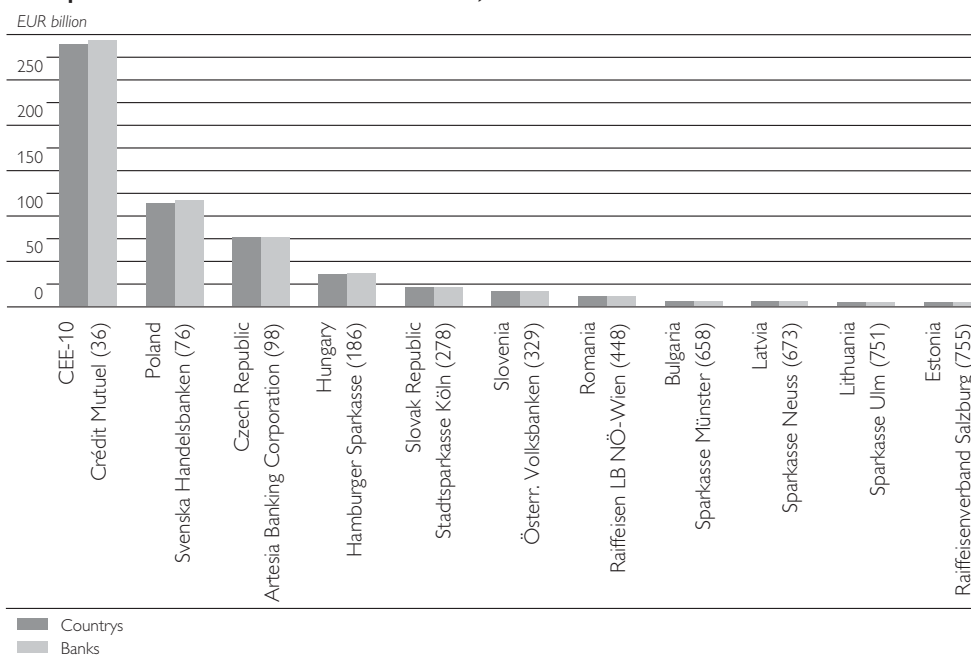
*Source: Bank Austria AG.*
*Note: The figures in parenthesis indicate the position in a global ranking.*

European banking system, its profitability, efficiency and degree of concentration.

This also applies to other balance sheet items such as loans and deposits. In 2001, aggregate loans in the accession countries totaled EUR 134 billion (2000: EUR 122 billion). By comparison, the liabilities of Deutsche Telekom AG alone came to EUR 60 billion at end 2000.

### 3.2 Financial Markets in the CEECs: Overbanked in Underbanked Markets

Not only is the Eastern European banking market relatively small in absolute terms, it also remains underdeveloped with regard to financial intermediation, i.e. its ability "to supply, allocate and monitor financial funds for investment," to quote Tobin yet again. There are a number of reasons why financial intermediation – which is normally measured by indicators like the total assets-to-GDP, loans-to-GDP or deposits-to-GDP ratios – is still so low in the CEECs. The particular circumstances that characterized the early years of transformation certainly played a role in this context. Economic crises and high inflation eroded banks' balance sheets, insufficient capital resources and bad loans triggered banking crises and substantially restricted banks' lending capacity. The environment Eastern European banks had to operate in during the first half of the 1990s was hardly promising: experience with a commercial banking system was lacking, the population had no confidence in banks, and both the economy's creditworthiness as well as income levels were low. Although the situation has improved over the past few years and indicators have slowly started to point to higher intermediation levels in most accession countries, standards are still far below EU levels. On average, the accession countries' aggregate assets come to around 75% of GDP (table 3), while the comparable figure in the euro area is 220%. For loans and deposits, the situation is quite similar.

Table 3

| **CEEC Banking Sector Indicators** | | |
|---|---|---|
| | *EUR billion* | *% of GDP* |
| Aggregate total assets | 324 | 75 |
| Loans to nonbanks | 122 | 31 |
| Deposits of nonbanks | 165 | 43 |
| *Source: National central banks, Bank Austria AG.* | | |

While the low level of deposits by nonbanks (as a percentage of GDP) is attributable to the low income level and, subsequently, the population's low disposition to save, there are various factors that might explain the low ratio of loans to nonbanks to GDP:

– Bad loans
  The yet unresolved problem of bad loans has inhibited loan expansion and/or increased the risk aversion of banks.
– Legal and institutional factors
  Inadequate collateral/mortgage provisions, insufficient law enforcement and/or slow enforcement of legal titles might also have played a role.
– Structural reasons on the demand side
  Additional factors are foreign direct investment (FDI) and multinational enterprises' direct financing.

In the past, foreign direct investment accounted for the majority of invest-
ment in the CEECs, leaving the respective national banking sectors largely
uninvolved. Moreover, the CEECs report a high share of international
(foreign) enterprises majority-financed by intercompany loans or bank loans
from abroad. Furthermore, high real interest rates not only had a negative
influence on credit demand, but also prompted enterprises to seek foreign
currency funding directly from foreign banks, if possible. In Poland,
Hungary and Slovenia, for example, enterprises' foreign-debt-to-equity
ratio is almost as high as their leverage with domestic banks. Only in the
Czech Republic, the corporate sector's leverage with domestic banks is
clearly higher (at just above 60%) than with foreign banks.

Table 4

| Corporate Debt in 2001 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Poland | | Hungary | | Czech Republic | | Slovenia[1] | |
| | EUR billion | % | EUR billion | % | EUR billion | % | EUR billion | % |
| With domestic banks | 48.1 | 55.7 | 15.8 | 53.2 | 16.5 | 60.2 | 4.8 | 52.7 |
| With foreign banks | 38.2 | 44.3 | 13.9 | 46.8 | 10.9 | 39.8 | 4.3 | 47.3 |

Source: National central banks, Bank Austria AG.
[1]) Data for the year 2000.

— Creditworthiness
  The fourth factor that plays a role in keeping the level of loan intermediation
  low is the lack of creditworthiness (of both small and medium-sized enter-
  prises and consumers).
  Loans to households are rare in Eastern Europe (with Slovenia being one
  possible exception). Even in the "rich" CEECs, household borrowing only
  comes to between 6% and 7.5% of GDP. In Austria, by comparison, con-
  sumer loans amount to around 30% of GDP. The reasons for this develop-
  ment can be found on both the asset and the liability sides. Households'
  creditworthiness is limited owing to low income levels and any demand for
  loans to households is thwarted by extremely high real interest rates.

Table 5

| Loans to Households as a Percentage of GDP | | |
|---|---|---|
| | 2000 | 2001 |
| | % | |
| Poland | 7.0 | 7.5 |
| Hungary | 4.6 | 6.0 |
| Czech Republic | × | 6.5 |
| Slovenia | 12.2 | 11.8 |
| Austria | 29.0 | 30.0 |

Source: National central banks, Bank Austria AG.

The low level of intermediation on both the asset and the liability sides of
banks' balance sheets is directly reflected in their product utilization sta-
tistics.
— Product utilization
  Surveys have shown that only around 70% of the population aged 15+ in
  Central Europe (Czech Republic, Poland, Slovak Republic) has a bank
  account. In Poland, the by far largest country of the region, this figure is

still way below 60% while in the countries of Southeastern Europe it ranges from no more than 19% (Bulgaria) to 34% (Romania). In Austria, by contrast, practically 100% of the population over 15 years of age has a bank account.

The values for other financial products are quite similar: 50% of the population in the Slovak Republic and in Slovenia has savings books, while the comparable figure in Poland comes to a mere 10%; the number of persons holding securities is even lower. Apart from Slovenia, where a remarkable 9% of the adult population holds securities, this percentage is between 1% and 3% in all other countries of the region. 14% of the Polish population has taken out bank loans, compared to 4% in the Slovak Republic and 9% in Hungary.

To put it in a nutshell, banking intermediation is relatively low in all the countries under review, which is attributable to the economic environment (income level and creditworthiness), to persistent inefficiencies (insufficient law enforcement, lack of mortgage-backed collateral) and finally to high real interest rates. It is therefore not surprising that the Eastern European banking market is considered to be a major growth market, which is also why Western European banks have, with a view to EU enlargement, been eager to gain a foothold in this market over recent years.

### 3.3 Foreign Banks Dominate the Market

Globalization and liberalization of financial markets around the world has driven up foreign banks' shares in the emerging markets. In the 1990s, the emerging markets began to be dominated to an increasing extent by "regional evolvers," i.e. banks focusing their activities on a certain region. This applied e.g. to Spanish banks' commitment in South America, but also to German, Austrian and Belgian/Dutch banks in Eastern Europe and to Japanese and Australian banks in Asia. In the accession countries, the transformation process was completed within only a few years, as the banking crises of the early years of transformation had created a situation where recapitalizing the financial system would have hardly been possible without the help of strategic investors.

As a result of this process, Western European banks currently dominate the banking system in the CEECs. In nearly all the countries of the region, foreign banks meanwhile hold a market share of more than 60%; in Estonia their share

Table 6

### Foreign Banks'[1]) Market Share in the CEECs

|  | 1996 | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|---|
|  | % | | | | |
| Estonia | 2.6 | 2.3 | 90.2 | 89.8 | 97.4 |
| Latvia | × | × | × | × | 69.8 |
| Poland | 16.0 | 18.6 | 27.9 | 65.5 | 65.7 |
| Slovak Republic | 13.6 | 26.0 | 25.9 | 31.1 | 65.4 |
| Czech Republic | 11.0 | 18.2 | 21.3 | 49.0 | 63.0 |
| Hungary | 58.0 | 55.4 | 59.4 | 53.9 | 61.9 |
| Lithuania | × | × | × | × | 59.9 |
| Slovenia[2]) | 5.3 | 17.4 | 16.9 | 16.3 | 15.7 |

Source: Bank Austria AG.
[1]) Banks of which foreign banks own at least 50%.
[2]) As of 1997 including SKB Banka d.d.

Table 7

## 2000 Ranking of Top 25 Banks in the CEEC-5

| | Bank | Country | Total assets | Foreign share[1] |
|---|---|---|---|---|
| | | | EUR million | % |
| 1 | PKO Bank Polski SA | Poland | 18,064 | × |
| 2 | PekaO | Poland | 17,803 | 59.8 |
| 3 | Československá Obchodní banka | Czech Republic | 15,555 | 89.8 |
| 4 | Komerční banka | Czech Republic | 13,601 | 71.6[2] |
| 5 | Česká Spořitelna | Czech Republic | 12,882 | 62.7 |
| 6 | OTP Bank Ltd. | Hungary | 7,245 | × |
| 7 | Powszechny Bank Kredytowy SA | Poland | 5,941 | 65.0 |
| 8 | Bank Handlowy | Poland | 5,456 | 91.4 |
| 9 | Bank Slaski | Poland | 4,955 | 86.9 |
| 10 | Bank Gospodarki Zywnoseciowej SA | Poland | 4,749 | × |
| 11 | Bank Przemyslowo-Handlowy SA | Poland | 4,722 | 86.1 |
| 12 | Kredyt Bank | Poland | 4,544 | 87.5 |
| 13 | Slovenská Sporiteľňa | Slovak Republic | 4,317 | 87.2 |
| 14 | BRE Bank | Poland | 4,228 | 50.0 |
| 15 | Nova Ljubljanska banka | Slovenia | 4,237 | × |
| 16 | BIG Bank Gdanski | Poland | 4,216 | 57.1 |
| 17 | Všeobecná úvěrová banka | Slovak Republic | 3,762 | × |
| 18 | Wielkopolski Bank Kreditowy SA | Poland | 3,525 | 60.1 |
| 19 | Commerzbank | Czech Republic | 3,237 | 100.0 |
| 20 | Hungarian Foreign Trade Bank Ltd. | Hungary | 2,966 | 95.7 |
| 21 | Citibank Polska | Poland | 2,906 | 100.0 |
| 22 | Central-European International Bank Ltd. | Hungary | 2,576 | 100.0 |
| 23 | Bank Zachodni | Poland | 2,493 | 81.6 |
| 24 | Kereskedelmi és Hitelbank Rt. | Hungary | 2,339 | 98.5 |
| 25 | HypoVereinsbank | Czech Republic | 2,242 | 100.0 |
| | Top 25, total | | 158,563 | |

Source: The Banker, Bank Austria AG.
[1] x = Foreign share below 50%.
[2] Société Générale took over a 60% share in January 2002.

is nearly 100%. The only exception is Slovenia, where foreign banks still account for no more than 16%.

While at the beginning of transformation, foreign banks tended to establish subsidiaries in the transition economies, in the course of privatization foreign investors increasingly took over the large retail banks in the CEECs. As a result, today 20 out of the 25 largest banks in the applicant countries are majority-owned by foreign banks, hailing mostly from Western Europe. The only non-European bank active in the region is CitiBank (U.S.A.) which, after initial greenfield investments, has now also purchased a large retail bank in Poland. The top 25 banks in the region cover a market share of 60%, with the 20 foreign-owned banks accounting for a total market share of around 46%.

It is therefore justified to say that on the eve of EU accession the banking market in Eastern Europe is dominated by Western European banks.

Table 8

## Market Share of the Top 25 Banks in the CEEC-5 in 2000

| | Total assets | Market share in the CEEC-5 | Share in top 25 |
|---|---|---|---|
| | EUR million | % | |
| CEEC-5 | 261,775 | × | × |
| TOP 25 in the CEEC-5, total | 158,563 | 60.6 | 100.0 |
| of which top 20 foreign banks[1][2] | 120,505 | 46.0 | 76.0 |
| Top 5 domestic banks[3] | 38,057 | 14.5 | 24.0 |

Source: The Banker, Bank Austria AG.
[1] Including Komerčni banka and Všobecná úvěrová banka.
[2] Majority foreign-owned.
[3] Majority domestic-owned.

### 3.4 Profitability and Efficiency: High Yields, Low Productivity

Banking sector profitability varies considerably across applicant countries, which is, inter alia, attributable to the fact that banking reform commenced at different points in time. Yet, the Eastern European banking system is profitable compared to other emerging markets:[1]

— Banks' balance sheets in the 1990s show high profits (relative to total assets), but also high administrative expenses; loan loss provisioning is relatively low compared with other emerging markets, but still high by EU standards.

— An evaluation of data for 2000 confirms this picture (table 9). High profits are contrasted by high administrative expenses and loan loss provisioning. Still, banks' profit for the year (after tax) is significantly higher in the accession countries than in the EU.

Table9

| **Bank Profitability in Eastern Europe in 2000** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Return on Equity | Interest income | Loan loss provisions | Income from commissions | Trading income | Administrative expense | Cost/income ratio | Other or extraordinary income[1] | Taxes | Net income | Equity |
| | % of net assets | % of average total assets | | | | | | % of average total assets | | | |
| Poland | 13.3 | 4.27 | −1.09 | 1.42 | 1.12 | 4.36 | 63.0 | 0.21 | 0.46 | 1.11 | 8.2 |
| Hungary | 11.6 | 4.09 | −0.58 | 1.00 | 1.04 | 3.85 | 66.1 | −0.44 | 0.23 | 1.04 | 9.4 |
| Slovak Republic | 6.6 | 3.74 | 0.66 | × | × | 2.54 | 107.7 | −1.21 | 0.10 | 0.56 | 7.0 |
| Czech Republic | 6.8 | 2.02 | 1.43 | 0.66 | 0.39 | 2.01 | 99.4 | −2.00 | 0.08 | 0.57 | 9.5 |
| Slovenia | 6.7 | 4.19 | −1.27 | 1.29 | 0.45 | 2.93 | 55.3 | −0.63 | 0.43 | 0.68 | 9.9 |
| Average[2] Top 25[3] | 14.4 | 4.5 | 0.8 | 1.7 | 0.9 | 3.8 | 64 | − 0.1 | 0.4 | 1.8 | 12.5 |
| 18 Western European banks[4] | 18.6 | 1.6 | 0.2 | 1.2 | 0.4 | 2.2 | 69.5 | 0.4 | 0.3 | 0.7 | 3.9 |

*Source: Annual reports, Bank Austria AG.*
[1] *Financial assets, depreciation and amortization of assets, other and/or extraordinary income.*
[2] *Unweighted.*
[3] *CEE banks: see table 7.*
[4] *Western European banks: KBC, Lloyds TSB, Citigroup, Société Générale, Union Bank of Switzerland, ABN-Amro, BNP-Paribas, Deutsche Bank, Nordea, Credit Suisse. UniCredito, Hongkong Shanghai Banking Corp., Banco Bilbao Viscaya Argentaria, Dresdner Bank, Bank Austria, Intesa, Commerzbank, HypoVereinsbank.*

Chart 2

**Interest Rate Spreads in the Accession Countries**
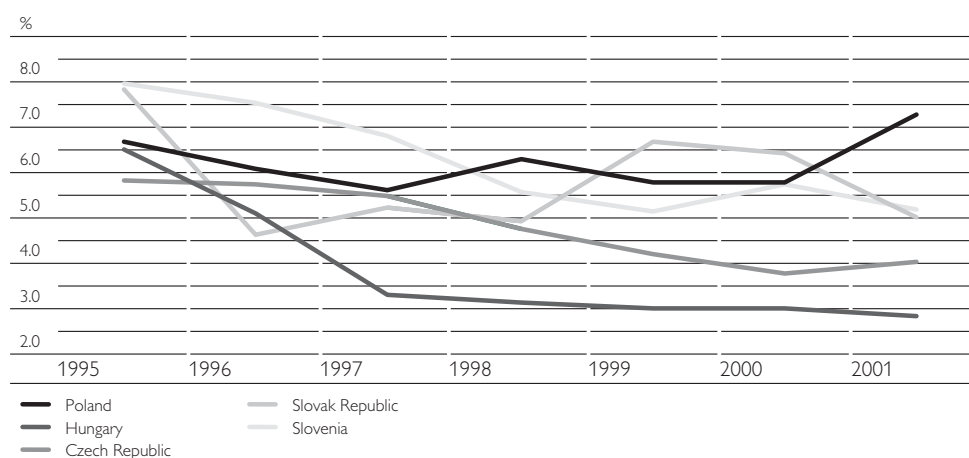


*Source: IMF, International Financial Statistics.*

1   *See BIS (2001).*

– A comparison of the balance sheets of the 25 largest banks in Eastern Europe and of 18 large Western European banks produces a similar picture: Eastern banks' profits, expenses and net income are significantly higher than those of comparable Western banks. Eastern European banks' lower return on equity (ROE) is chiefly attributable to the fact that their balance sheet equity is many times higher than that of Western banks, i.e. Eastern European banks are less leveraged.

– Other frequently used indicators for banking system efficiency are interest rate spreads. Since 1995, these spreads have narrowed in the applicant countries, owing both to a reduction of risks (and of inflation) and to tighter competition.

Spreads are narrowest in Hungary, where the banking system was already privatized in 1996/97 and where the majority of banks are foreign-owned.

– Banking sector productivity (as measured by assets per employee) is relatively low in the CEEC-5, with Poland reporting the lowest result at EUR 0.65 million (table 10). On average, banking sector productivity in the CEEC-5 comes to EUR 0.93 million (compared to an EU-wide[1]) average of EUR 8 million).

Table 10

## Banking Ratios in the CEEC-5 in 2000[1])

**Total assets per employee**

| | Total assets | Staff | Commercial banks | Average total assets | Staff | Total assets per employee |
|---|---|---|---|---|---|---|
| | EUR billion | 1,000 | Number | EUR billion | Average number | EUR million |
| Poland | 111.8 | 171.2 | 73 | 1.532 | 2.346 | 0.653 |
| Hungary | 31.9 | 26.7 | 42 | 760 | 637 | 1.194 |
| Czech Republic | 76.9 | 42.4 | 40 | 1.923 | 1.060 | 1.814 |
| Slovak Republic | 19.3 | 22.3 | 23 | 838 | 971 | 0.863 |
| Slovenia | 14.8 | 10.5 | 25 | 594 | 420 | 1.413 |
| CEEC-5, total | 254.8 | 273.2 | 203 | 1.255 | 1.346 | 0.933 |

Source: National central banks, Bank Austria AG.
[1]) Predominantly joint stock banks.

– The strong presence of foreign banks in Eastern Europe has created fierce competition in some areas and, subsequently, put margins under pressure; this applies to corporate and wholesale banking in particular. In retail banking, competition has not been very pronounced, as illustrated by the enormous differences in interest rates on loans to enterprises and to households. The Eastern European banking system's high productivity reserves, however, indicate that net income ratios will continue to be above average also in the future.

On the eve of EU accession, the situation of the applicant countries' banking system can be described as follows:

– After overcoming the banking crises of the 1990s, banking reform has in general been successfully completed in all countries under review.

– By Western European standards, the overall market is small in absolute terms (EUR 324 billion) and the banking intermediation level continues

1   Average assets per employee for Austria, Belgium, France, Germany, Italy, the Netherlands and Spain. OECD Bank Profitability (2000), own estimation for 2000.

to be low (with total banking assets amounting to 75% of GDP). Having achieved significant market shares over the past few years, foreign banks now play a dominant role in the Eastern European banking system, accounting for far more than 60% of market shares.

— Despite the low productivity level, Eastern European banks' profitability is higher than in the EU or in the G-3 (U.S.A., Japan, Germany).[1])

## 4 Eastern European Banks' Role in the EU's Single Banking Market

### 4.1 Eastern European Banks' Impact on the EU's Single Banking Market

Owing to its low degree of monetization, the integration of the Eastern European banking system will only have moderate effects on the EU-15's banking market. As mentioned above, the aggregate total assets of banks in the CEE accession countries correspond to the total assets of Crédit Mutuel. Accordingly, their share in total assets, loans and deposits will be equally low in the single banking market of an enlarged EU, coming to 1.2%, 1.2% and 2.1%, respectively. Given the small size of the Eastern European banking system, its integration into the Single Market is likely to have only little overall impact on the EU-15's banking market (e.g. through structural changes or systemic risks). Greater repercussions are only to be expected for individual submarkets or banks/bank groups.

Chart 3

**Share of CEECs in the EU's Single Banking Market**



*EUR billion*
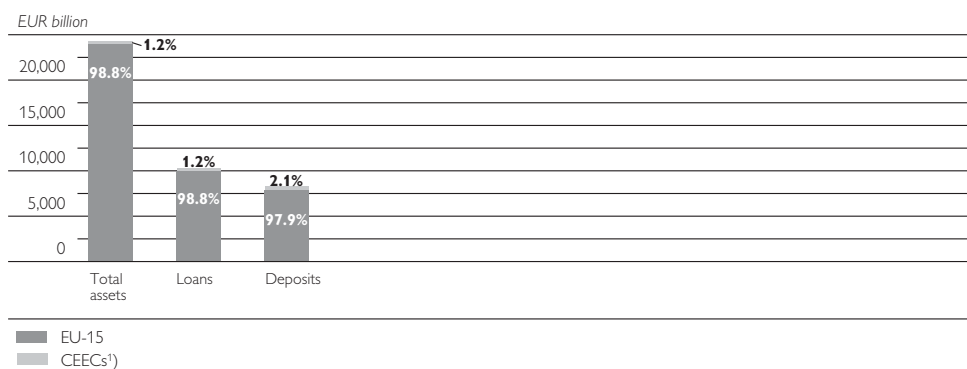
Source: National central banks, Bank Austria AG.
[1]) Excluding the Baltic countries.

Even if Eastern European financial systems currently still have a very low intermediation level and remain inefficient in some areas, one can assume that they are stable as such and that they are, in principle, able to fulfill their intermediary function. We have already pointed out that owing to the absolute size of the accession countries' banking systems, their integration will, in the short term, have no significant effects on the EU banking system, even though the customer potential of an additional market of 104 million inhabitants (28% of the EU's population) will be quite considerable in the medium term. However, Eastern Europe and its banking market are of special importance for

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1    See BIS (2001).

individual submarkets within the EU; from a regional perspective, this will
certainly apply particularly to Austria.

### 4.2 Effects on Accession Countries' Banking Markets

While the EU's banking market will remain relatively unaffected by the enlarge-
ment process, participation in the Single Market will have a by far greater effect
on the new Member States in Eastern Europe. Most likely, this effect will be
comparable to the impact the introduction of the single banking market – and
subsequently of the euro – had on the EU banking market at the time. In some
areas, however, it is difficult to establish whether effects are to be traced to the
Single Market, the euro, the advance of international globalization or new
technologies. Earlier expectations[1]) that the Single Market would exercise
pressure on profits, which would subsequently – through mergers and acquis-
itions – reduce surplus capacities at the national level and increase internation-
alization and geographic diversification at the international level, have been
fulfilled, albeit to varying degrees.

Moreover, the particularities of the transformation process must be taken
into consideration: Having triggered substantial changes in financial market
structures (internationalization), the transformation process – as described
above – essentially masks the supply and demand of financial products. Any
discussion of the Single Market's effects on Eastern European banks must start
from the macroeconomic impact of advancing transformation, which will
clearly be boosted by EU accession and will result in increased stability and
higher income.

– Increased stability and higher income will produce the following effects:
  Improved access to liquidity will secure the funding of high growth rates
  anticipated in the short term. This means that the additional liquidity
  resulting from free movement of capital, reduced sovereign and exchange
  rate risks (higher rating owing to EU accession, currency pegs within ERM
  II) and lower debtors' risks (legislative approximation, prudential provi-
  sions) will be offered at lower prices than before, i.e. there will be no
  supply-side factors to restrict above-average asset-side growth of balance
  sheets (lending business) and the level of banking intermediation will rise in
  these countries, in particular for loans. Assuming that adjustment will not
  cause a severe recession, it is realistic to expect lending growth rates to be 7
  percentage points (5 percentage points for balance sheets) higher than the
  respective growth rate of nominal GDP in the years after EU accession.
– Below-average growth rates of government debt (Maastricht criteria) and
  better funding conditions for the CEECs on international capital markets, in
  particular, will reduce interest on government bonds denominated in
  national currencies, which will change the risk structure on the asset side,
  i.e. raise risks. In addition, supervisory regulations (Basel II) will set new
  parameters for assessing asset risks.

EU accession and the increasing stabilization of exchange rates will also open
a wide range of possibilities for investment portfolio diversification. Above all,
however, the stabilization of local currencies will contain dollarization (using

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1   ECB (1999).

foreign currency as legal tender). The probability that EU accession will trigger capital flight by prompting investors to make investments abroad (freedom of capital) and thus withdraw funds from the national banking system is to be deemed low for the following reasons:

– For the time being, interest on investment is higher in the accession countries than in the euro area or many other countries.

– Confidence in countries' own banking systems has clearly been mounting, given that deposit insurance schemes are being implemented to comply with EU regulations.

– The share of higher-yielding investment (securities, funds, life insurance policies) will primarily be distributed via national markets.

Although the range of investment options will expand, funds are not expected to be shifted directly from savings deposits to equity portfolios; nevertheless, investments are expected to diversify relatively fast since any financial product that has been authorized in one of the Member States (in particular in the securities and funds segment) may be sold throughout the Single Market. Given the currently low level of financial wealth and a slowly increasing tendency to save – precautionary measures against unexpected events such as unemployment currently seem to be more important than accumulating financial assets for the relatively foreseeable and yet far off period of retirement – it is realistic to expect portfolio diversification to proceed only gradually.

Economic stabilization, the increasing stability of exchange rates and the opening-up of money and capital markets will also reinforce the disposition to adjust interest rate levels on the liability side. In the medium term, it is unrealistic to expect negative real interest rates to persist after EU accession.

All in all, the question is whether banks will profit from the stabilization of local currencies (in particular after a possible EU accession) primarily because the volume of managed assets will rise or because they will have new possibilities to use foreign investment channels. Shares and bonds, which caused an enormous international diversification in the euro area during and after the introduction of the euro, do not play such an important role in households' financial assets in Eastern Europe. Moreover, even if a more pronounced diversification of portfolios is advisable in terms of risk-spreading, there is the problem that yields on foreign investment may be lower than on domestic investment (e.g. in the bond market).

– Rising competition – more pressure on profits – stronger concentration?

Aside from the macroeconomic effects of rising stability and higher incomes, EU accession will also affect banking markets through changes in rules and regulations. Taking over the body of EU law will require adjustments of prudential supervision regulations and of banking operations. This chiefly concerns the freedom of establishment and the free movement of capital, which will change the competitive conditions on the CEE market (e.g. by providing easier access for niche players).

The effects of increased competition on banks' profits are difficult to estimate as they depend on banks' ability to adjust to the new conditions.

An initial adjustment process can be identified even today: as competitive pressure reduces the high margins currently prevailing, efficiency will have to rise to keep profits at a constant level. As expense ratios are still rather high at

the moment, this should certainly be feasible. However, banks that are less profitable even now will be driven out of the market if they fail to cut costs in line with narrowing margins.

It is doubtful that margins will rise again once the concentration process is completed. Analyses of the EU banking system show that the elimination of nonprofitable banks and the ensuing higher degree of concentration do not explicitly affect banks' margins.[1] The standardized products prevailing in Eastern European markets today – deposits and loans, mainly to large enterprises – are subject to fierce competition both on overbanked and highly concentrated markets, which prevents margins from rising even in more highly concentrated markets and results in strong pressure to raise efficiency.

Developments in areas requiring greater local know-how (capital financing of small and medium-sized enterprises and households, day-to-day banking operations, e.g. giro account transactions) might be somewhat more differentiated. After enlargement, the advantage of local know-how will become less relevant in the medium term, but having a foothold in Eastern European markets will nevertheless help drive up profits. Banks that are represented in these markets will find it easier to assess local customers and will have more power in setting local prices. As concentration will continue to rise in the future, this is all the more true for the banks "surviving" this process.[1]

Pressure on banks' margins also originates from the fact that any remaining (short-term) restrictions on capital movement will cease to apply and that EU accession will in general reduce both sovereign and borrowing risks (e.g. through legislative approximation). As direct funding from abroad is less risky and will no longer be restricted to – mostly multinational – wholesale customers, it may create pressure on the margins in local currencies.

These are good reasons to expect competition to intensify, thus creating pressure on margins and costs and consequently causing concentration to rise slightly. Pressure on margins, however, can only be compensated via adequate productivity increases (see section 3.4 "Profitability and Efficiency"), which will require corresponding investments in infrastructure. Stringent cost and risk management will, to a greater degree than before, also be required for (Western) banks in Eastern Europe.

Table 11

## Banking Concentration in the CEECs

**Share in total assets**

|  | Top 5 | Top 10 |
|---|---|---|
|  | % |  |
| Czech Republic | 64 | 74 |
| Poland | 51 | 67 |
| Hungary | 53 | 72 |
| Slovak Republic | 62 | 80 |
| Slovenia | 63 | 82 |
| Lithuania | 90 | × |
| Estonia | 95 | × |

Source: Banks' balance sheets, national central banks, Bank Austria AG.

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1   Corvoisier and Gropp (2001).

The pressure on profits and margins will thus, on average, raise concentration. At present, the five largest banks in the CEECs already hold market shares of more than 50%, with the top 10 banks dominating two-thirds to four-fifths of the market. Thus, concentration in the Eastern European markets is far higher now than it was in the EU before the inception of the Single Market. Only very few EU Member States (e.g. the Netherlands) currently report higher banking concentration.

It cannot be excluded, however, that concentration continues to rise even further, not only on account of the competition-induced pressure on profits described above. Mergers between Western European banks also have an impact on market shares in Eastern Europe. In Poland, for example, the affiliates of Bank Austria AG (BA) and Bayerische Hypo- und Vereinsbank AG (HypoVereinsbank) – Powszechny Bank Kredytowy und Bank Przemyslowo Handlowy – merged to form the third-largest bank in the country.

Banking concentration will also rise as some foreign banks withdraw from the Eastern European market. As described above, increasing competition and narrowing margins will trigger streamlining measures intended to raise productivity levels. Given the small size of banks in absolute terms, one can expect that some of the current players will withdraw from the Eastern banking market in the medium term. According to some analyses, foreign banks that fail to reach a market share of 2% to 3% will redirect their activities to other markets.

Finally, as the Eastern European market is very small in absolute figures and the average size of commercial banks (with banks' total assets in the CEEC-5 coming to EUR 1.3 billion) is far below Western standards, possible future efficiency increases based on returns to scale are likely to be limited. This is particularly true for the retail sector, which despite cost-intensive IT investments remains the market segment that probably has the highest market potential, given its rising income levels.

Most likely, however, participation in the Single Market will only slightly increase foreign banks' share in the CEE banking market. Taking the EU as a measure, it is obvious, first of all, that the Eastern European banking market exhibits a higher degree of internationalization (with foreign banks accounting for a market share of 60%) than the EU banking market ever did. Even in Austria, a small EU country with a high percentage of foreign banks, only 40% of banks are foreign-owned. Even if the market share of foreign banks will possibly increase even further in some of the applicant countries, the completion of privatization is unlikely to bring about any major changes.

Altogether, it is difficult to estimate how and, above all, in which order the freedom of establishment and the free movement of capital – which will first of all increase competition, putting pressure on margins and profits – will lead to higher concentration. Moreover, general tendencies prevailing in banking, in particular regarding new products and technologies, render this estimation even more difficult.

### 4.3 Impact on Austrian Banks

Given the small absolute size of the CEECs' financial market, the applicant countries' accession to the Union will only have minor direct effects on EU financial markets on the whole. There will, however, be implications for indi-

vidual banks and submarkets. This is particularly true for the Austrian banking sector which, holding a disproportionately high market share in the Eastern European banking market, has a stronger commitment in this region than any other Member State.

— The total assets of Austrian banks' affiliates come to around 16% of CEEC-8 banks' balance sheets[1]) (values for 2000 are based on balance sheet figures for 2000, ownership structures mid-2001), reaching significantly higher levels in the Czech or Slovak Republics.

— Austrian banks' subsidiaries account for around one quarter of the market volume of foreign banks in Eastern Europe.

— Measured by the business volume of Austrian parent banks, this means that regional concentration is very high. In 2000, total assets of Austrian banks' subsidiaries in Eastern Europe came to EUR 46 billion, corresponding to 8% of the aggregate total assets of Austrian banks.

— At the level of individual credit institutions, commitment is exceptionally high: Eastern European subsidiaries of Erste Bank der oesterreichischen Sparkassen AG (Erste Bank) accounted for 25%, those of Raiffeisen Zentralbank Österreich AG (RZB) for 20% and those of BA for more than 11% of the individual group's total assets (values for 2000).

— Eastern European subsidiaries constitute a significant yield factor for Austrian banks (in 2000, BA and RZB generated around 40% of their profits for the year from their Eastern European subsidiaries, with the corresponding figure for Erste Bank coming to even 86%).

Considering these figures, the consequences of enlargement for the Austrian market and for Austrian banks will be twofold: on the one hand, effects will originate at the macro level while on the other, they will result from the above-mentioned changes in the market situation in Eastern Europe.

— Reduced risk owing to macroeconomic effects:

— After enlargement, Eastern Europe will transform from an emerging market to an EU market. The stability provisions the new Members will have to implement in the course of EU integration (the Stability and Growth Pact applies to all EU members) should help reduce country risks.

— The (expected) integration in ERM II will reduce exchange rate risks, which will generally disappear with the entry into EMU.

— Legislative approximation and improved law enforcement will reduce default risks.

— If EU accession drives up growth rates in the CEECs in the medium term, as generally expected, banks' default risk will go down.

— Consequences of market development:

— Austrian banks are overrepresented in the future EU growth market of Eastern Europe. Provided our estimation is correct, the growth rate of banks' total assets in the accession countries will be 5 percentage points higher than the nominal GDP growth rate in these countries. Annual growth rates would thus come to between 12% and 15%, influencing banking groups' total assets accordingly.

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1   CEEC-8: Bulgaria, Croatia, Czech Republic, Hungary, Poland, Romania, Slovak Republic, Slovenia.

– If EU accession changes the banking environment in Eastern Europe causing foreign banks to remain in the market only if they reach a certain market share (2% to 3%), then the current market presence of Austrian credit institutions suggests that they will be able to maintain or even expand their market shares.

– In the medium term, margins are expected to narrow also in Eastern Europe (see section 4.2). In the future, the size of Eastern European subsidiaries' contribution to Austrian banks' profits will depend on whether they succeed in raising productivity. As the reorganization of their Eastern European subsidiaries has not yet been fully reflected in Austrian banks' balance sheets, it stands to be expected that subsidiaries' contributions to banks' earnings will continue to be high at least in the near future.

– Altogether, EU enlargement will reduce the risks for Austrian banks in these countries and increase their growth potential. Owing to Austrian banks' strong presence in this market, these effects are not only significant for individual banks, but also have an impact on the Austrian banking sector as a whole.

Table 12

### Austrian Banks (Subsidiaries) in the CEECs[1]) in 2000[2])

| | EUR billion |
|---|---|
| Total assets of Austrian banks in the CEEC-5 in 2000 | 46 |
| | **%** |
| which corresponds to: | |
| Share in total CEEC-5 market | 16 |
| Share of foreign banks in the CEEC-5 | 26 |
| Austrian banks' aggregate total assets | 8 |
| | **EUR million** |
| Profits for the year 2000 of Austrian banks' subsidiaries in the CEEC-5[3]) | 519 |
| | **%** |
| which corresponds to: | |
| Share in profits for the year of all banks in the CEEC-5 | 26 |
| Share in profits for the year of all foreign banks in the CEEC-5 | 35 |
| Share in Austrian banks' aggregate profits for the year | 22 |

Source: Austrian banks' annual reports.
[1]) Bulgaria, Croatia, Czech Republic, Hungary, Poland, Romania, Slovak Republic, Slovenia.
[2]) Including Česká spořitelna and Slovenská sporiteľna.
[3]) Only for the Czech Republic, Hungary, Poland, Slovak Republic, Slovenia.

## 5  Conclusion

After completing the transformation of the mono-banking system, banking reform and banking privatization, integration into the Single Market will be the next challenge for the banking system in the CEECs. Although competitive pressure and the degree of internationalization are already high today, the Single Market will squeeze the currently high profits further. As revenues decline, efficiency will have to be increased to secure profits. This will drive up concentration and maybe also raise the degree of internationalization. At the same time, however, some foreign banks will leave the market.

Altogether, the Single Market will have less of an effect on Eastern European banks than it had on the EU's banking system in 1992. The challenge of the further opening of the Eastern European market and a subsequent rise in

competition will be enhanced by the expected possibilities arising from EU accession. These factors are expected to improve stabilization – particularly in the monetary field – and raise the level of prosperity, which will open up new opportunities in banking. To profit from these opportunities, however, banks will have to be highly efficient in reducing unit costs while applying local know-how.

For individual submarkets – such as e.g. Austria – and individual subsidiaries, the entry of the Eastern European accession countries into the Single Market will have a significant impact. An enormous growth potential and low risks (macrostabilization) will contrast with shrinking margins and increased competition. It will be a demanding task for banks, from the business management point of view, to adequately react to these new challenges.

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# The Integration of Eastern Europe — Effects on Stock and Bond Markets

## 1  Introduction

Edward Ludwig,
Peter Schlagbauer[1])

As valuations on financial markets tend to discount future developments, we assume that European financial markets have already largely anticipated the impact of the economic integration of the Central and Eastern European countries (CEECs). However, it is difficult to single out financial market participants' precise expectations. Prices reflect not the expectations themselves, but changes in expectations and unforeseen developments as well as adjustments of agents' risk perception. Moreover, the economic integration of Austria with the CEECs has already progressed very far. Austrian companies have been doing business in the CEECs for many years, and they make good profits there. However, further economic integration is likely to entail more heated competition, with lower profit margins for these Austrian companies.

This brief presentation of the facts demonstrates how complex the factors are that have an effect on European financial markets, factors which are nearly impossible to capture by means of a top-down analysis of fundamentals. Hence, it stands to reason that the possible fundamental effects of EU enlargement to the East will be considerably smaller than the forecasting error in estimates of financial market data for long periods. Limited analytical approaches of the type stating that "if there is additional GDP growth, stock prices will rise under ceteris paribus conditions" are not very useful, as the lack of solid data permits only general statements to be made. Therefore, we broach the topic of the effects of the integration of the CEECs on stock and bond markets not by way of fundamental analysis, but use a liquidity approach[2]) based on benchmarks and asset allocation, which allows conclusions about financial market data to be drawn.

Of the accession countries, currently only Poland, the Czech Republic and Hungary are represented in the emerging market benchmark indices. The main benchmarks for emerging market bonds are the COBA and the EFFAS bond indices; the Morgan Stanley Capital International Emerging Markets (MSCI EM) Index[3]) is the key benchmark for emerging market equities. Capitalization is very low in the other accession countries, which means that even if they were represented in the indices, their impact would be small. Consequently, our

2  The liquidity approach is useful in many instances: (1) for currencies: the development of the EUR/USD exchange rate tracks the development of the fundamentals less and less, at least in the short and medium run (up to 1 year), instead moving in tandem with liquidity flows; (2) for bonds: when a crisis occurs, investors become extremely risk averse in the short run and move into bonds, which are a safe haven. Investors' reactions lead to an overshooting and to a very large shift of liquidity out of stock markets; (3) for stocks: analyses on index inclusions and the literature on positive feedback theories from behavioral finance, such as those formulated by Shiller (2000) and Shleifer (2000), confirm the liquidity approach.

3  Poland joined the MSCI EM Index in 1995, Hungary and the Czech Republic followed in 1996.

analysis is limited to the impact of the integration of Poland, the Czech Republic and Hungary.

In the second section, we analyze the outlook for changes in European bond prices in the wake of EU enlargement. As the benchmark is an important signal, the extent of its change, above all the change of its weights, will have an important impact. Other developments, such as convergence with the euro area, will also influence investors strongly regardless of the weight of the converging countries in the new Europe.

In section 3, we examine the relative size of the accession countries' stock markets with those of the main European investment areas and describe the methodology used to calculate the principal European stock benchmarks. We also take a closer look at the effects of the most recent EU enlargement round and of the latest entry of a country into Economic and Monetary Union (EMU) in the light of the reclassification of a European emerging market as a developed market. We conclude with a description of the consequences of EU enlargement for European stock markets in general and for Austria's stock market in particular.

## 2 EU Eastern Enlargement and the Consequences for Europe's and Austria's Bond Markets

### 2.1 Implications for Investors

The advent of EMU entailed the convergence of many EU Member States' interest rates and monetary developments, in turn reducing the scope for diversification on Europe's sovereign bond markets. Spreading bond investment among countries with different currencies increases the risk-adjusted yield of a given portfolio. However, the option of spreading has diminished substantially for investors who divide their capital among Western European bonds. While other types of bonds – e.g. corporate bonds or high-yield bonds – are gaining ground and offer new diversification options, these alternatives have other risk features, and hence cannot replace government bonds. So the bond markets in the CEECs are increasingly adopting this role. Especially Poland, the Czech Republic and Hungary are liquid enough to replace the former Southern European bond markets. Before Eastern European bond markets – currently still emerging markets – are fully accepted as developed markets, they must complete the process of convergence with Western European markets. The first crucial step in this direction will be EU membership. This step will not only raise investors' confidence in the accession countries, but these countries' bonds are likely to be included in European benchmarks. The second important step will be for the accession countries to join EMU and to be included in EMU benchmarks. To a large extent, these effects resulting from convergence have already taken place. The first push toward integration into European markets occurred when these countries' sovereign rating was upgraded from BB to BBB. During the emerging markets crisis of 2000/2001, the accession countries' interest rates moved closer in line with those of Western Europe. Spreads contracted sharply, above all those of euro-denominated eurobonds. The yields of bonds denominated in local currencies, especially Hungarian and Polish bonds, still have considerable potential to come down to the much lower EU level. Most upcoming changes for eurobonds and local currency bonds are likely

to take place during the period between EU accession and EMU entry, as EMU entry will simply be a question of time once a country has joined the EU and as it is quite certain that important adjustments will take place on accession countries bond markets. Since many major European benchmarks and hence many mutual funds will cover these countries' bonds, many investors holding Western European bonds will feel the impact during this period. The magnitude and the impact of these changes depend largely on how the accession countries' bonds are weighted in the benchmarks. To monitor the changes, the most prevalent indices should be closely tracked. Moreover, the risk/return profile of the different sovereign bond markets is an equally important performance factor. Fund managers may choose to give more attractive markets a greater weight than they have in the benchmark, or such markets may be accorded a particularly strong position already during the process of strategic asset allocation by the choice or the creation of a representative benchmark. Bearing these considerations in mind, we reviewed the composition of current benchmarks and analyzed them in terms of changes which might occur upon the EU accession of the Czech Republic, Poland and Hungary. In addition, we looked at the risk, profit and diversification aspects of a range of bonds, estimating a risk- and profit-optimized portfolio with the aid of our optimization tool. We came to the conclusion that the impact of accession country bond markets on Austrian and European investors is positive, and that investors should prefer such bonds to traditional European bonds.

**2.2 Aside: Index Methodology**
Assessing the changes caused by the inclusion of new countries in existing benchmarks requires a thorough knowledge of the conventional index calculation methods. As a rule, benchmarks use recommended methods and techniques; in addition, they fulfill the criteria of transparency and replicability. The price and performance time series as well as other index measures, such as duration or yield to maturity, are generally calculated using the formulas recommended by the European Bond Commission of the European Federation of Financial Analysts' Societies (EFFAS). The weights of the individual bonds in the index are based either on their face value or on their market capitalization. In the former case, the weights change only when bonds are introduced to or eliminated from an index, whereas market movements have no impact. In the latter case – when the index is a market-value weighted average of total bond returns – we have what is called floating weights. If a bond's price changes by comparison to that of other bonds (and thus by comparison to its market capitalization), the weight changes as well. This method is standard procedure for calculating bond index weights and has an important impact above all when prices fluctuate sharply, as is often the case with Eastern European bonds. In addition to weights, the criteria a bond must fulfill to be included in the index represent another important factor in index calculation. As a rule, only liquid straight bonds with a remaining life of over one year are included in the index. Countries with a lower volume of bonds or new issues are frequently not represented in benchmark indices. This criterion may also have an influence on whether Eastern European countries, whose total issuing volume is small by international standards, are included in benchmarks.

**2.3 An Analysis of Benchmark Options**

The weighting of benchmarks after including Czech, Polish and Hungarian bonds is of prime interest to investors who seek to spread their investment across Europe. To this end, we have drawn up possible weighting scenarios for various European benchmarks and have analyzed the differences compared to the current weights.

**2.3.1 Market Capitalization**

To calculate market capitalization, we used only bonds which fulfill the above-mentioned prerequisites for inclusion in a bond index (such as liquidity or a large issue size). The comparison between the market capitalization of the Czech Republic, Poland and Hungary and that of the EU as a whole indicates that the admission of these three countries into EU-wide benchmarks will have little impact: These countries together would account for no more than just over 1% of total European capitalization. The basic question arises whether these three countries are large enough to be included in the indices at all. There is no clear answer to this question, as it depends on the respective policy behind the construction of a benchmark. In its Global European Benchmark, JPMorgan includes only countries with a significantly higher capitalization than that of these three accession countries. However, the debt of the applicant countries is very likely to rise further in the near future, increasing capitalization. This may mean that at least Poland, the country with the highest market capitalization, would be integrated into this index. Salomon Smith Barney's (SSB's) European World Government Bond Index (WGBI) and European Government Composite Index already cover countries with very low bond issuing volumes, such as Ireland or Switzerland. It is quite likely that new EU members will also be represented in these benchmarks. Table 1 shows the different capitalization and weights of possible benchmarks after the EU entry of the Czech Republic, Poland and Hungary. Chart 1 indicates possible compositions of a European benchmark after the accession of these three countries. Quite obviously, because these countries will account for such a small share, they will have only a minor impact on benchmark characteristics.

A comparison of the accession countries to the EU countries outside the euro area shows that the accession countries account for a significant portion of a conceivable benchmark. Hence, after these three countries join the EU,

Table 1

**Bond Market Capitalization**

| | Face value | | Market value | |
|---|---|---|---|---|
| | EUR million | % | EUR million | % |
| Euro area | 2,409.3 | 82.34 | 2,551.0 | 81.75 |
| Denmark | 69.1 | 2.36 | 69.1 | 2.21 |
| Norway | 12.7 | 0.43 | 12.8 | 0.41 |
| Sweden | 54.7 | 1.87 | 58.4 | 1.87 |
| Switzerland | 36.9 | 1.26 | 38.8 | 1.24 |
| United Kingdom | 305.9 | 10.45 | 352.2 | 11.29 |
| Poland | 21.0 | 0.72 | 20.4 | 0.65 |
| Hungary | 13.0 | 0.45 | 13.7 | 0.44 |
| Czech Republic | 3.6 | 0.12 | 4.0 | 0.13 |
| Total | 2,926.1 | 100.00 | 3,120.4 | 100.00 |

*Source: RZB, Thomson Financial Datastream, Reuters.*

Chart 1

**Feasible Weights of an EU-Wide Index after Czech, Hungarian and Polish EU Accession¹)**

%

1.22

17.03

81.75
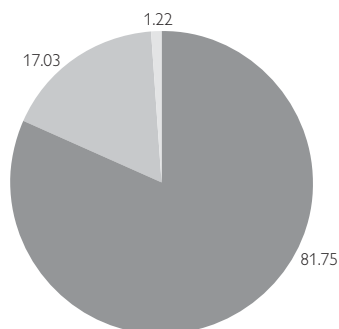
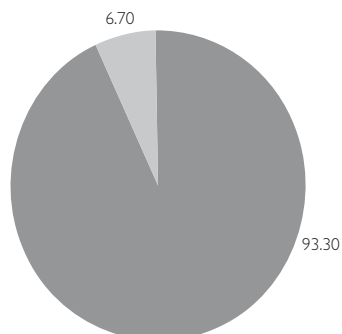Euro area      EU excl. euro area      Accession countries

*Source: RZB, Thomson Financial Datastream, Reuters.*
*¹) Weighted by the market capitalization of January 2002.*

Chart 2

**Feasible Weights of an EU-Wide Index (Excluding the Euro Area) after Czech, Hungarian and Polish EU Accession¹)**

%

6.70

93.30

EU excl. euro area      Accession countries

*Source: RZB, Thomson Financial Datastream, Reuters.*
*¹) Weighted by the market capitalization of January 2002.*

measures of non-euro area countries will change more strongly than overall European indices and will thus provide new opportunities for diversification. Chart 2 presents an option for a composite benchmark covering EU countries outside the euro area countries exclusively.

### 2.4 Convergence with the Euro Area

Although a performance forecast for Czech, Polish and Hungarian bonds would have to consider a number of factors and would therefore be relatively inexact over the long-term horizon, we may reliably pinpoint one factor that will have a positive effect on bond performance: The need for the accession countries' interest rates to converge with those of the euro area as a prerequisite for joining EMU will induce local currency indices to appreciate. While this effect is partly being anticipated already now, we believe that is likely to accelerate at the latest

upon the EU entry of the Czech Republic, Poland and Hungary. Once the countries have become EU members, EMU entry will simply be a matter of time, and the further convergence of interest rates to euro area levels will be certain to occur. We expect that as EMU members the Czech Republic, Poland and Hungary will exhibit a spread to the Bund[1]) similar to that Greece displays. As the level of interest rates between the three accession countries currently diverges, the impact of the interest rate convergence will differ among the countries. Whereas interest rates in the Czech Republic have nearly converged to the euro area level, the gap is still large in the case of Hungary and especially Poland. While the average yield to maturity of liquid bonds in the Czech Republic is only 0.06% higher than the Greek average, the differential is 2.72% in the Hungarian case. At 4.25%, Poland exhibits the largest spread to the Greek average. The price gains following the convergence of bond yields also depend on the average duration of the bonds, which also diverge considerably. At 4.53, the Czech Republic has the highest modified duration, followed by Poland (3.07) and Hungary (2.81). Even though the duration is low compared to that of the euro area, investors should take into account that the spread of liquid maturities is very large among the individual bonds. While market capitalization in Hungary is high in the short- and medium-term segment (maturities of between 1 and 5 years), the total duration is low; however, Hungary will chalk up the highest price gains during the period of convergence with the euro area in the long- and very long-term segment (maturities of between 9 and 15 years) where the duration is high. Capitalization is also highest in the short- and medium-term segment in Poland. In addition, Poland has some bonds in the long maturity segment (7- and 8-year maturities), but has no ultra long-term bonds. Czech bond maturities and weights are more evenly distributed than those of their Hungarian and Polish counterparts and cover a broad range from 1 to 14 years.

Assuming unchanged interest rates in the euro area and disregarding exchange rate fluctuations, the convergence pattern would lead to the following total performance in the three applicant countries: Poland 13.04%, Hungary 7.63%, and the Czech Republic 0.26%. Table 2 contains more detailed information about the calculation.

Table 2

### Selected Intex Data and Interest Rate Convergence Calculation

|  | Czech Republic | Poland | Hungary |
|---|---|---|---|
| | *%* | | |
| Coupon (in % of the face value) | 6.68 | 6.35 | 8.74 |
| Yield to maturity | 5.17 | 9.36 | 7.83 |
| | *in years* | | |
| Modified duration | 4.53 | 3.07 | 2.81 |
| | *%* | | |
| Interest rate differential to the euro area | 0.06 | 4.25 | 2.72 |
| Appreciation of the index | 0.26 | 13.04 | 7.63 |

*Source: RZB, Reuters.*

1    *Spread to the Bund: Spread between a bond (such as a Greek government bond) and a German Bundesanleihe.*

Growing liquidity and expanding market capitalization in the Czech Republic, Poland and Hungary during the period in which interest rates converge make it quite likely that benchmarks with fairly high capitalization standards will also include these countries. During this period, the convergence effects are bound to entail high capital inflows into these countries. After the accession countries join the euro area, the integration of their bond markets is expected to engender further liquidity surges and capital inflows.

**2.5 Estimates of Capitalization on EMU Entry**

Market capitalization in the Czech Republic, Poland and Hungary may augment at a faster rate than that of the longer-established European bond markets, because bustling issuing activity is expected to raise nominal market capitalization and because bond prices will go up in the wake of interest rate convergence. We took these two factors into account in devising a scenario and in calculating the new market capitalization of the three applicants. We based our scenario on a rise in government debt in conformity with the Maastricht criteria, assuming an annual debt increase of 5%. In all likelihood, the process of convergence to the euro area will end with EMU membership. We chose 2006 as the earliest possible date of membership and based our calculations for Western European government bonds on the current level of interest rates, because we deem this a realistic reference value for a long-term average and because exact forecasts for the period analyzed are impossible to make. Additionally, we assumed a constant nominal market capitalization. The market value of the established markets thus remains unchanged, whereas the capitalization of the applicant countries augments, consequently increasing their weight within Western Europe and the EU. In our scenario, the benchmark weight of the Czech Republic, Poland and Hungary would advance from 1.22% (chart 1) to 1.64%, which is tantamount to a 35% rise, but capitalization still remains very low.

**2.6 Diversification of Investment Throughout Europe after EU Enlargement**
**2.6.1 Correlations**

For this analysis, we used three-month correlations. These correlations show that European investors' diversification on the Czech, Polish and Hungarian market has positive effects. The correlations between the Czech, Polish and Hungarian bond markets are very weak, coming to less than 0.22. The highest correlation between these markets and the European bond market is 0.43, which is also low. The currency correlations also exhibit clear diversification effects resulting from investment in EU accession countries. While the corre-

Table 3

## Correlation Matrix: Bonds[1])

|  | Czech Republic | Hungary | Poland | Euro area | U.S.A. |
|---|---|---|---|---|---|
| Czech Republic | 1.00 | 0.21 | 0.08 | 0.30 | 0.07 |
| Hungary |  | 1.00 | 0.20 | 0.43 | 0.25 |
| Poland |  |  | 1.00 | 0.30 | 0.17 |
| Euro area |  |  |  | 1.00 | 0.70 |
| U.S.A. |  |  |  |  | 1.00 |

*Source: RZB, Thomson Financial Datastream.*
[1]) *Three-month correlations of the respective local currency indices on a euro basis.*

Table 4

### Correlation Matrix: Currencies[1])

| | U.S. Dollar | Swiss Franc | Pound Sterling | Norwegian Krone | Polish Zloty | Hungarian Forint | Czech Koruna |
|---|---|---|---|---|---|---|---|
| U.S. dollar | 1.00 | 0.11 | 0.67 | 0.56 | 0.50 | 0.15 | 0.10 |
| Swiss franc | | 1.00 | 0.10 | 0.35 | 0.21 | −0.01 | −0.17 |
| Pound sterling | | | 1.00 | 0.34 | 0.35 | 0.17 | −0.05 |
| Norwegian krone | | | | 1.00 | 0.41 | 0.25 | −0.04 |
| Polish zloty | | | | | 1.00 | 0.31 | −0.12 |
| Hungarian forint | | | | | | 1.00 | 0.15 |
| Czech koruna | | | | | | | 1.00 |

Source: RZB, Thomson Financial Datastream.
[1]) Three-month correlations of selected exchange rates to the euro.

lations between the Western currencies – except for the Swiss franc – are generally above 0.5, which is not low, they are below 0.5 in the case of the Czech koruna, the Polish zloty and the Hungarian forint. According to empirical observations, Eastern European currency and bond correlations are very stable, so that no abrupt changes are likely to occur in the near future.

### 2.6.2 Risk

We used annualized 90-day daily volatilities as a risk measure. Both bond and exchange rate volatility should be taken into account to ensure comparability between the different markets. With their exchange rate risk, foreign currency bonds are more volatile, but a comparison of bond risk in the three applicant countries to foreign currency bond risk in EU member countries reveals quite similar figures. At 5.66%, Hungary exhibits less volatility than the UK at 7.76%. The Czech Republic displays even lower figures. Only Poland stands out with a high volatility of 10.87%, which is comparable to that of the U.S.A. (10.07%). The reason bond volatility is high in Poland is because the Polish zloty has a volatility of 9.62%. However, this figure should diminish at the latest immediately following Poland's EU entry as a result of preparation for EMU membership and should decline to the volatility levels of the pound sterling (6.34%) or the Swedish krona (6.33%). Factoring out the currency component, the bond indices of the Czech Republic, Poland and Hungary are already less volatile[1]) than those of EU Member States. As a case in point, at 5.5% UK bond volatility substantially surpasses Czech (3.79%), Polish (3.61%) or Hungarian (2.45%) bond volatility.

Despite their lower ratings, these three countries' default risk is hardly higher than that of the EU.

### 2.6.3 An Optimized Portfolio for European Investors

Both the diversification effects on account of lower correlations and the expected revaluation of the indices on account of the convergence of interest rates justify a higher weighting of bonds from these countries in a portfolio diversified across Europe than that resulting from the replication of the benchmark.

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1   This fact may be traced to the lower duration of these three benchmark indices compared to the EMU benchmarks.

To illustrate this, we calculated a portfolio with an optimum yield-to-risk ratio using our optimization tool. This tool optimizes a portfolio by comparison to a set benchmark, maximizing the benefit to the investor. The concept is based on the assumption that outperforming the benchmark increases the benefit while a higher risk decreases the benefit. Tracking error is used as the risk measure. As long as the outperformance benefit is higher than the risk disadvantage, the investor will deviate from the benchmark. Risk aversion expressed in terms of the weight the risk carries also influences how much an investor will deviate from the benchmark. We assumed a risk-averse investor in our calculations. The model requires performance and risk data for the investment period covered as input for portfolio optimization. We targeted 2006 as the earliest possible date for the first accession countries' EMU entry. In calculating the performance of all countries, we assumed a steady interest rate curve, taking into account expected price gains on account of interest rate convergence in the case of the Czech Republic, Poland and Hungary. The long time period also warrants an extrapolation of the long-term volatilities. To this end, we used three-year volatilities, as they contain both market and exchange rate volatility. However, volatility, above all exchange rate volatility, is bound to diminish as convergence with the EU, especially with the euro area, progresses. As a result of the optimization, a strong underweight position for the euro area shows a clear preference of the optimization tool for a stronger diversification by building higher-risk positions. The reasons are the relatively long time horizon within which risk rises more slowly than earnings and the expectation that some non-euro area countries will post a better performance. The Czech Republic, Poland and Hungary are overweighted most against the benchmark. Here, additional performance triggered by convergence with the euro area is a key factor. Sweden and the UK are also overweighted by our optimization tool; by contrast, no positions in Norwegian kroner and Swiss francs are taken. Within the euro area, countries with higher spreads to the Bund, such as Greece and Austria, are overweighted. At 7.57%, the portfolio risk clearly lies below the benchmark risk of 8.36%; at the same time, the portfolio outperforms the benchmark by 2.5 percentage points. Table 5 provides a detailed account of these figures.

Table 5

## Optimized Portfolio Allocation

|  | Benchmark | Optimization Tool | Deviation |
|---|---|---|---|
|  | % |  | *Percentage points* |
| Euro area | 83.97 | 62.57 | −21.40 |
| Norway | 0.41 | 0.00 | − 0.41 |
| Sweden | 1.87 | 6.41 | + 4.54 |
| Switzerland | 1.24 | 0.00 | − 1.24 |
| United Kingdom | 11.29 | 13.83 | + 2.54 |
| Czech Republic | 0.68 | 5.46 | + 4.78 |
| Hungary | 0.42 | 5.10 | + 4.68 |
| Poland | 0.13 | 6.63 | + 6.50 |
|  |  |  |  |
| Performance | 21.46 | 23.99 | + 2.53 |
| Volatility | 8.36 | 7.57 | .. |

*Source: RZB.*

## 3  EU Enlargement to the East and the Consequences for European Stock Markets in General and Austria's Stock Market in Particular

The integration of Eastern European countries has two types of impact on liquidity. On the one hand, changes in important stock benchmarks entail an adjustment of the portfolio weights to the altered benchmark, in turn leading to strong liquidity flows. This is why we took a closer look at the methodology and purpose of various Europe-wide and international indices. On the other hand, the stepped-up integration of Eastern European countries makes it possible to widen the investment spectrum and to improve risk diversification, which may trigger liquidity flows that are higher than those caused by the adjustment of benchmark weights.

### 3.1 The Main Supraregional Stock Benchmarks and Their Methodology

The principal supraregional stock benchmarks are offered and calculated by Morgan Stanley Capital International (MSCI), Financial Times Stock Exchange (FTSE) International, Dow Jones (DJ) and Standard & Poor's (S&P). Since the end of May 2002[1] all these benchmarks have been weighted essentially[2] according to the market capitalization of the free float shares. Table 6 compares the market capitalization of the three most highly developed stock markets in Eastern Europe with those of different European regions. The resulting matrix indicates the respective accession country's share in the general investment of various European investment regions. For example, in the case of investment on the basis of market capitalization the benchmark weight of the applicant countries (total) would come to 0.73% upon EU entry. On joining EMU, the joint weight would be 1.13% (based on market capitalization and not taking into account additional floats and differences in relative performance).

Table 6

### Possible Shares of Eastern European Stock Markets

#### Weighted by Stock Market Capitalization

| | Market capitalization[1] USD billion | Poland | Czech Republic | Hungary | Total |
|---|---|---|---|---|---|
| Market capitalization[1] | × | 27.3 | 11.6 | 11.2 | 50.2 |
| | USD billion | % | | | |
| EU | 6.862 | 0.40 | 0.17 | 0.16 | 0.73 |
| Europe | 8.326 | 0.33 | 0.14 | 0.13 | 0.60 |
| Europe (excl. United Kingdom) | 6.866 | 0.40 | 0.17 | 0.16 | 0.73 |
| EU (excl. euro area) | 2.456 | 1.09 | 0.46 | 0.45 | 2.00 |
| Europe (excl. euro area) | 3.920 | 0.69 | 0.29 | 0.28 | 1.26 |
| Euro area | 4.406 | 0.61 | 0.26 | 0.25 | 1.13 |

Source: RZB, World Federation of Exchanges (FIBV), local stock exchanges.
[1] Data: March 2002.

1  In May 2002 the MSCI concluded the second part of its structural rebalancing process with a free float weighting and the extension of the free float market coverage.
2  In the MSCI indices, marginal discrepancies may occur on account of the fact the the MSCI follows the goal of an 85% free float market coverage and as well as an 85% free float sector coverage. GDP-weighted versions of the MSCI Europe and MSCI EMU Indices are available as well.

As the free float share (the ratio of free float market capitalization to total market capitalization) of the Eastern European stock markets is far lower at roughly 38%[1]) than that of the EU (79%)[2]), the weight of the three applicants would just come to about 0.35% if they joined the EU immediately and if weighting were on the basis of free float market capitalization. Using the same weighting formula and assuming immediate EMU entry, the three applicant countries' benchmark weight would be 0.61%.

Table 7

### Possible Shares of Eastern European Stock Exchanges

#### Weighted by Free Float Market Capitalization

|  | Free float market capitalization[1]) USD billion | Poland | Czech Republic | Hungary | Total |
|---|---|---|---|---|---|
| Free float market capitalization[1]) | × | 9.6 | 3.5 | 5.9 | 19.0 |
|  | USD billion | % |  |  |  |
| EU | 5.449 | 0.17 | 0.06 | 0.11 | 0.35 |
| Europe | 6.687 | 0.14 | 0.05 | 0.09 | 0.28 |
| Europe (excl. United Kingdom) | 5.048 | 0.19 | 0.07 | 0.12 | 0.37 |
| EU (excl. euro area) | 2.280 | 0.42 | 0.15 | 0.26 | 0.83 |
| Europe (excl. euro area) | 3.605 | 0.26 | 0.10 | 0.16 | 0.52 |
| Euro area | 3.091 | 0.31 | 0.11 | 0.19 | 0.61 |

*Source: RZB, World Federation of Exchanges (FIBV), local stock exchanges.*
*[1]) Data: March 2002.*

At the international level, MSCI is the predominant benchmark provider. According to the first International/Global Asset Manager Survey conducted by Pensions & Investments magazine, 95% of respondents named MSCI as their primary international[3]) index provider (thereof, 80.4 percentage points applied to the Morgan Stanley Capital International Europe Australasia Far East Index, MSCI EAFE). In a further question, 86% of the respondents considered MSCI indices the primary global benchmarks. In mainland Europe, the MSCI indices have a "market share" of 69%, ahead of the FTSE International (16%) and the Dow Jones Index (15%).[4])

### 3.2 The Establishment of European Benchmarkts

A "European" attitude toward stock investment did not truly arise until the second half of the 1990s, bringing with it a need for European bench-marks. The main trigger for the creation of European indices was the knowl-edge that the euro would be introduced on financial markets at the beginning of 1999. Backed by Deutsche Börse and the Swiss exchange (who jointly founded the subsidiary STOXX), the Dow Jones (Euro) STOXX family of

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1   *We estimate a free float share (free float market capitalization/market capitalization) of some 35% for Poland, 30% for the Czech Republic and 53% for Hungary.*

2   *Approximated on the basis of the aggregation of the free float market capitalization of the DJ STOXX (600) with the end-2000 profile (when the DJ STOXX was still weighted on the basis of market capitalization).*

3   *In this context, international means supraregional, not worldwide.*

4   *See Pensions & Investments, July 10, 2000 (Source: Reuters Business Briefing) and MSCI Newswatch, August 2000.*

indices became a hit with the media from February 1998.[1]) The MSCI EU Index is the only one of the indices which covers exclusively EU Member States.[2])

### 3.3 EU Membership and Benchmarks

The last EU enlargement round at the beginning of 1995 resulted in the membership of Austria, Sweden and Finland. Chart 3 shows the development of the Datastream (DS) stock market indices[3]) of those accession countries and of the EU Member States referenced to the 1995 entry date. In addition, we calculated an "index of the countries which joined the EU in 1995" that sums up the indices of those three countries (weighted by market capitalization). This index is designed to offset or buffer country-specific influences (such as the below-average performance of Austria's stock market after the dissipation of the hope that the opening up of Eastern Europe would trigger a boom).

Chart 3



**Stock Market Development¹) of the Countries**

**which Became EU Members in 1995 and the EU Index**

*January 1995 = 100*

Legend:
— EU
— Austria
— Sweden
-- Finland
— Index of the countries which joined the EU in 1995
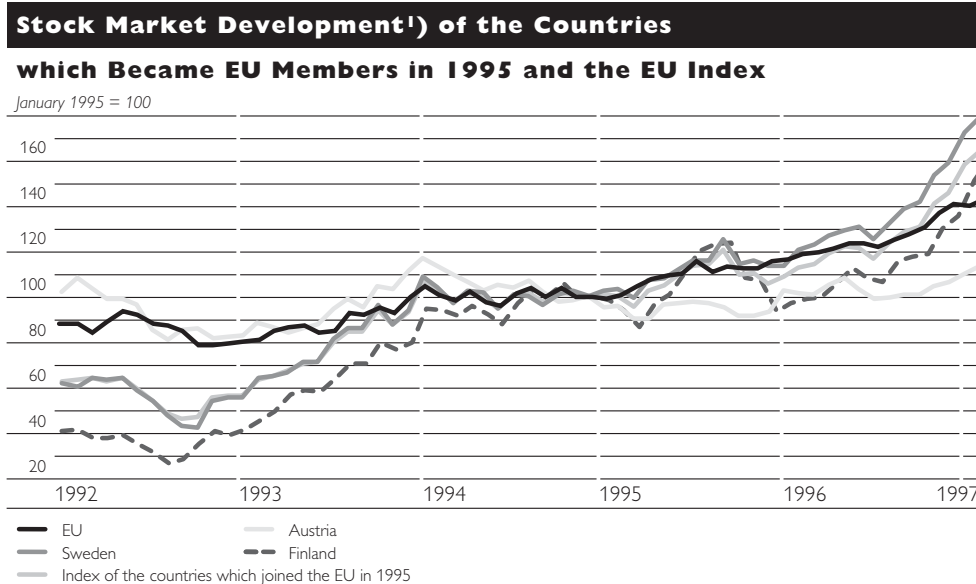
*Source: RZB, Thomson Financial Datastream.*
*¹) Indexed to December 31, 1994.*

This synthetic index exhibited strong parallels between stock prices in the new member countries and in the EU in the year before these countries acceded to the EU. A notable feature is that the countries which became EU members in 1995 significantly outperformed EU members between fall 1992 and the end of 1994 and underperformed after EU entry in 1995. It is also interesting that the correlation against the EU index increases considerably. However, the outperformance has to be seen against the background of the fact that between fall 1992 and the end of 1994, the countries merely offset their previous under-

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1   *The disproportionately frequent citation in articles and reports (German and Englisch reports in Reuters Business Briefing) confirms this claim.*
2   *Interestingly enough, the FTSE offers a Financial Times European Union ex EMU Index (Source: Bloomberg).*
3   *Datastream calculates the total market time series of the countries or regions, so the data are based on a uniform methodology.*

performance: Both the index of the three acceding countries and the EU index started out from roughly the same level at the beginning of the 1990s. To a certain degree, this development is the result of a relatively high share of cyclically sensitive sectors (industry, banks) and the more pronounced recession in the Scandinavian countries in 1992/93 compared to the remainder of Europe.

To minimize this effect, we analyzed the performance and correlation development against other European index aggregates, such as that of Europe without the UK and of the later euro area, and found the same results. However, the MSCI EU Index is not likely to be the most important index in the family, as Switzerland, a major established market, is not included in the index.[1])

Chart 4

**Correlation[1]) of the Stock Market Index of the Countries**

**Which Joined the EU in 1995**



EU
Europe excl. the United Kingdom
Euro area

Source: RZB, Thomson Financial Datastream.
[1]) One-year correlations of the monthly changes.
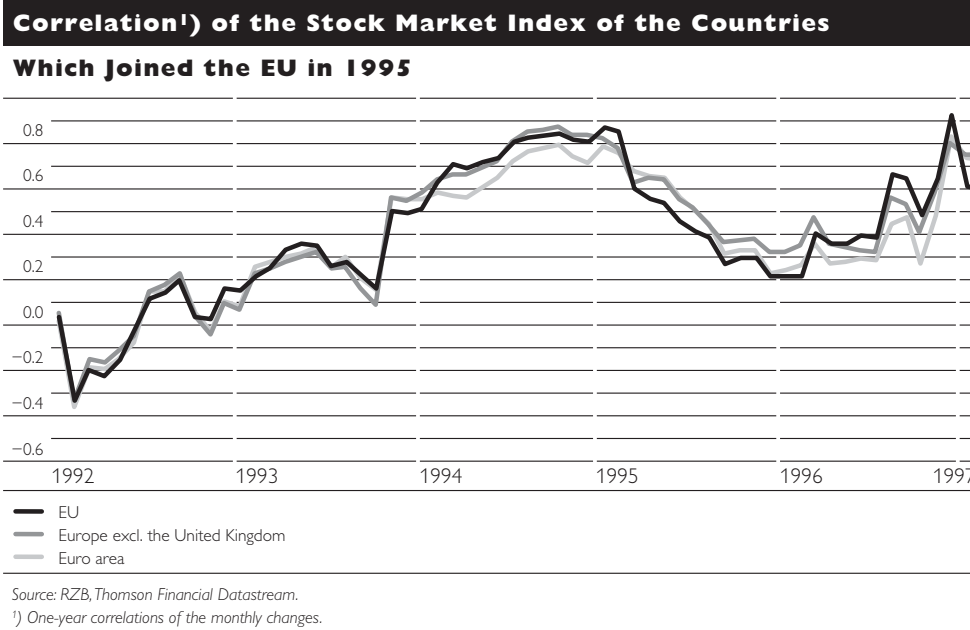
The inclusion of countries in the main European benchmarks (MSCI Europe, the FTSE World Europe family, Dow Jones STOXX) is not governed by the concept of EU membership, but largely by the classification of the stock market as a developed market (as compared to an emerging market).

In this classification, MSCI also occupies a top position. According to the current MSCI classification, the stock markets of the following European countries are considered developed markets, and hence are represented in the MSCI Europe: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the UK. The MSCI Emerging Markets (EM) Europe includes the Czech Republic, Hungary, Poland, Russia, and Turkey.

Table 8 shows that Denmark, the UK, Spain, Sweden and Austria have been classified as developed markets since 1969, though they joined the EU

1    Moreover, the media hardly use this index: Reuters Business Briefing (RBB) did not mention the MSCI EU or MSCI European Union index prior to October 13, 1998. In 1999, RBB contains only 257 references in German and English.

Table 8

**EU Membership and MSCI Classification**

| Year of Accession | Country | MSCI membership as | |
| --- | --- | --- | --- |
| | | Emerging Market from | Developed Market/MSCI Europe from |
| 1995 | Austria | | 1969 |
| | Sweden | | 1969 |
| | Finland | | 1987 |
| 1986 | Spain | | 1969 |
| | Portugal | 1989 | 1997 |
| 1981 | Greece | 1989 | 2001 |
| 1973 | United Kingdom | | 1969 |
| | Ireland | | 1990 |
| | Denmark | | 1969 |
| Founding member | Luxembourg | | 1990 |

*Source: RZB, Reuters Business Briefing.*

later. Conversely, Portugal and Greece were already EU members when they were classified as emerging markets, and were reclassified as developed markets 11 years (Portugal) and 20 years (Greece) after becoming EU members.[1] Only Ireland and Luxembourg were classified directly as developed markets in 1990 without having been carried as emerging markets beforehand.

### 3.4 The Reclassification from an Emerging Market to a Developed Market and Its Relationship to EMU Entry

The most recent reclassification from emerging to developed market status was of the Greek market in 2001. Prices and volumes on this stock market accelerated noticeably from 1997, a development which cumulated in a doubling between the beginning of 1999 and September 1999. Although the chart is reminiscent of the technology-heavy Nasdaq index, this development was influenced only very little by the TMT (technology, media and telecommunications) bubble. At roughly 26% at the end of 2000,[2] Greece's share of TMT stocks more or less matched that of the remainder of European countries.

Much rather, this trend resulted from the convergence of interest rates, which provided the Greek banking sector with a positive impetus. Greece's largest commercial bank, the National Bank of Greece, managed to boost its share value tenfold between the beginning of 1997 and September 1999.[3] This argumentation corroborates the assumption that the market considers formal EMU entry far less important than prior convergence required for actual EMU entry. The increased probability of reclassification to developed market status on EMU entry was a prime factor in boosting investors' interest.

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1   *An analysis of the 1986 enlargement round, while fundamentally interesting, does not allow any parallels to the enlargement of the EU toward the East. Moreover, in 1986 there was no general European investment consciousness. As a case in point, the stock market index for Portugal, the Lisbon BVL General Index (BVLX), has only been calculated since January 1988.*

2   *We do not have more precise figures for September 1999 and the beginning of 2000. However, we may assume that the share of TMT stocks surpassed the overall European level (30%) by several percentage points.*

3   *Also, Greek construction stocks outperformed the average.*

Chart 5

## Greek Stock Market

*Index points*  ·  *Turnover in thousands of stocks per quarter*

— GREECE-DS stock market (left axis)
▬ GREECE-DS stock market turnover in thousands of stocks (right axis)

*Source: Thomson Financial Datastream.*
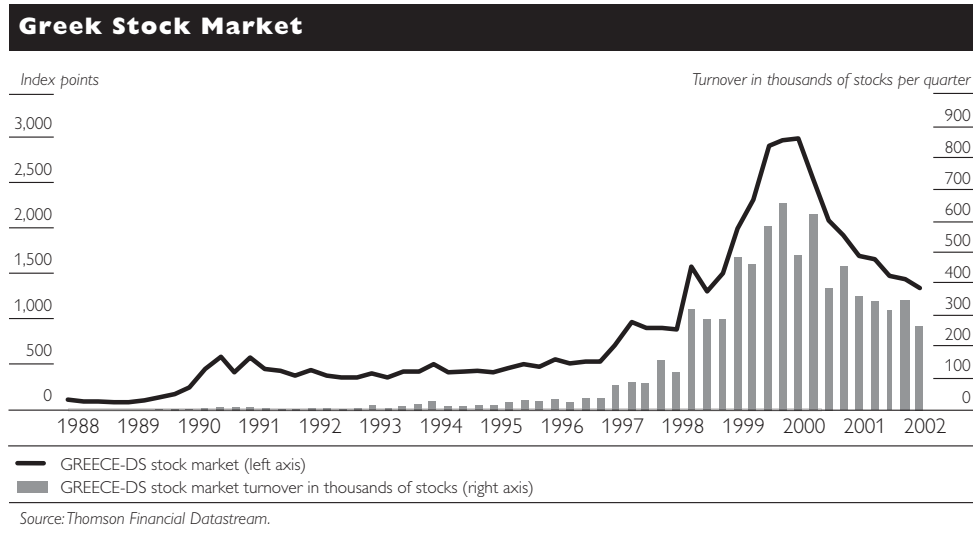
MSCI cites the comparatively high degree of the Greek economy's and stock market's development gauged on the basis of several factors as reasons for the reclassification. Greece's per capita income, e.g., exceeded the bottom limit of the high income countries as defined by the World Bank. Moreover, Greece took measures to ensure the country's economic, fiscal and monetary health and to qualify for EMU entry. In the years named, the Greek stock market grew substantially, and its liquidity and operational efficiency (clearing and settlement) improved markedly.[1]) The Greek stock market's development in 1997/98 reflects the anticipation of Greece's joining of EMU in 2001. Translated to Europe's stock markets, this means that the accession countries' EMU convergence is a key issue already now.

## 4 Conclusions

The range of European investment opportunities in bonds is widened by the EU accession of the Czech Republic, Poland and Hungary, which also enlarges diversification among government bonds. We consider it highly likely that the new Member States will be integrated into existing European benchmarks. As these countries will account for only a minimal share of the benchmarks, the positive diversification effect will be very weak. However, the prospect of joining EMU will entail a convergence of interest rates with those of the euro area. As the three analyzed countries' market capitalization is low, it is not to be expected that EMU entry will change euro area interest rates. Hence, it stands to reason that Czech, Polish and Hungarian interest rates will converge toward euro area interest rates. Bond prices in these countries are relatively certain to rise as long as this effect lasts, that is until the countries become EMU members. During this period, the time at which these countries will in fact join EMU and currency risk represent the greatest sources of uncertainty. Positive diversification effects along with an above-average, risk-adjusted performance compared to Western European bonds make Czech, Polish and Hungarian bonds attractive

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1   See MSCI press release of July 31, 2000.

for Austrian and European investors. However, as the weighting of the three accession countries will be very low in the Europe-wide benchmarks, it will not suffice for investors who wish to profit from these countries' performance to orient their strategic asset allocation on these benchmarks. To enjoy the full benefit of the accession bonus, investors should give these markets a greater weight in their strategic asset allocation than the European benchmarks, and if necessary even give them an overweight position in their tactical asset allocation.

From the perspective of the stock markets, the integration of the accession countries will not trigger any sudden and massive liquidity flows between EU Member States, in particular Austria, because the free-float market capitalization of the prospective applicants is comparatively low. Much rather, the integration process will be a gradual one. The integration has important implications for investors who operate with a more comprehensive definition of Europe. The growing integration of Eastern European countries broadens the range of investment options, a circumstance that investors who wish to anticipate a future benchmark weighting will use to invest in the largest and most liquid accession country instruments. EU membership and the convergence triggered by the prospect of joining EMU soon after (above all in the case of the Czech Republic, Poland and Hungary) have an impact, as does the hope that these countries' markets will then be upgraded from emerging market[1] to developed market status. The examples of EU convergence analyzed in this study (Austria, Sweden and Finland) and the upgrading of Greece to developed market status suggest an overweighting of the accession country stock markets in European, regional and international portfolios, just like in the case of an optimized bond portfolio.[2] The Austrian market, which at times in fact has a higher correlation with the Hungarian than with the German market,[3] offers investors who do not wish to move beyond the developed market limit in their portfolios (at least not yet) the opportunity to benefit from Eastern Europe's EU and EMU convergence at a lower risk.[4] The liquidity flow such an investor policy would trigger could boost the value of Austrian companies (and the Austrian stock market) compared to European companies of the same size and in the same sector. As the regions become more closely knit, above all following Eastern European countries' EU and EMU entry, the Austrian market will lose importance as a surrogate for an exposure in Eastern Europe and the markup bonus will dissipate.

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1 *However, this has not only positive implications, as an upgrade will trigger outflows from emerging market funds.*

2 *Optimizing a portfolio that includes accession country equities (by analogy to an optimized bond portfolio) would require a number of assumptions and would thus exceed the scope of this paper.*

3 *Measured by the respective MSCI country indices.*

4 *No currency risk and the advantages of a developed market (according to the MSCI definition).*

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# Exchange Rate Strategies
# of the EU Accession Countries
# on the Road to EMU:
# Impact on the Euro Area

Peter Backé,
Gabriel Moser,
Wolfgang Pointner

## 1  Introduction

This paper offers a selective overview of the implications that the exchange rate strategies of the Central and Eastern European countries (CEECs) negotiating EU entry may have for the euro area. Basically, there are two angles from which to approach this issue: First, how do the CEECs' preparations for EU accession and participation in Economic and Monetary Union (EMU) affect their exchange rate regimes, and how do these measures impact the euro area countries? Second, how significant is the timing and speed at which the CEECs prepare to introduce the euro?

In the following, only the first question will be addressed, starting with an overview of the exchange rate strategies that the individual accession countries employ at present (section 2). Section 3 summarizes the positions the EU and the accession countries have adopted on monetary integration. One objective of monetary integration, reducing exchange rate volatilities between the accession countries and the euro area, is analyzed in section 4. To this effect, theoretical and empirical findings of how volatility affects trade and foreign direct investment (FDI) are discussed in detail. Section 5 highlights various aspects of exchange rate interaction between the euro and the currencies of the accession countries, notably the effects of an equilibrium real appreciation of the accession countries' currencies, the institutional framework of exchange rate coordination following EU enlargement as well as the potential for exchange rate turbulences in the accession countries and their implications for the euro area.

This paper will not address questions that arise from the accession countries' future participation in the euro area, including possible implications of the euro area's enlargement for the single monetary policy. Given the small economic weight of the CEECs, it appears to be a plausible proposition that the participation of today's accession countries in the euro area should have just a marginal effect on the single monetary policy. Similarly, we do not investigate what impact the monetary integration of the accession countries may have on the exchange rate of the euro against other international currencies (U.S. dollar, Japanese yen), for lack of a meaningful theoretical grounding necessary for such an analysis. Again, it may reasonably be assumed that the EU should be able to ward off unwelcome influences on the euro exchange rate with a sensible and transparent design and implementation of the monetary integration process of the accession countries.

## 2  Exchange Rate Strategies
## Pursued by the Accession Countries

The Central and Eastern European EU accession countries pursue a range of exchange rate strategies (table 1). The Central European accession countries, for example, have made their exchange rate strategies increasingly flexible in recent years, as their exposure to capital market flows has increased (reflecting the greater attractiveness of these markets following stabilization, reforms and the dismantling of capital controls) as well as, above all in the case of Hungary, measures aimed at achieving compatibility with the exchange rate mechanism II (ERM II). By contrast, the Baltic republics continue to stick to rigid exchange rate pegs. Developments in the two Southeastern European accession countries have been mixed: While Bulgaria introduced a currency board regime in mid-

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| Exchange Rate Regimes of the Central and Eastern European | |
| --- | --- |
| **EU Accession Countries (as at April 15, 2002)** | |
| Bulgaria | Peg to the euro (currency board) |
| Czech Republic | Managed float |
| Estonia | Peg to the euro (currency board) |
| Hungary | Peg to the euro, fluctuation band of 15% |
| Latvia | Peg to the SDR, fluctuation band of 1% |
| Lithuania | Peg to the euro (currency board) |
| Poland | Float |
| Romania | Managed float |
| Slovak Republic | Managed float |
| Slovenia | Managed float |

Source: OeNB.

1997 in the aftermath of a currency and banking crisis, Romania has pursued a managed float regime since 1991.

While exchange rate volatility in the Baltic republics and in Bulgaria against the given anchor currency is, by definition, zero (or close to zero in the case of Latvia), the other accession countries display highly diverse degrees of exchange rate volatility, despite the formal similarities that exist between their exchange rate regimes. Principally, this is due to the different approaches to foreign exchange intervention the individual central banks have adopted, with Poland (de facto free float) and Slovenia (manages exchange rates tightly within the framework of formal monetary targeting) marking the two corner solutions. The implications of exchange rate volatility for trade and for foreign direct investment will be discussed in greater detail in section 4.

## 3 The Outlook for the Monetary Integration of the Accession Countries

The EU has proposed a three-step approach for the monetary integration of the accession countries. First, they will accede to the EU, then they will participate in ERM II, and eventually they will adopt the euro, i.e. become full-fledged members of Economic and Monetary Union. Participation in the euro area will be contingent upon at least two years' membership in the EU and upon a sustainable compliance with the Maastricht convergence criteria. Progress toward convergence will be reviewed in a multilateral procedure, as set out in the Treaty on European Union.

Upon EU accession, the exchange rate policies of the new members become a matter of common concern according to the Treaty establishing the European Community (EC Treaty). In essence, this means that beggar-thy-neighbor exchange rate policies or competitive devaluations will cease to be an option. It should be noted that it is, at any rate, debatable in how far such policies can be implemented at all today, given the degree of economic and financial integration that has already been achieved among the EU Member States (see also section 5.2).

Participation in ERM II presupposes the mutual consent of the newly acceding country and the EU institutions. Furthermore, it is incompatible with free floats, crawling pegs and currency pegs to an anchor currency other than the euro (see section 5.2). While a currency board may supplement participation in ERM II as a unilateral commitment, it is no substitute for actual membership.

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Each arrangement will be reviewed on a case-by-case basis in the EU accession negotiations. The accession countries have accepted the EU position on monetary policy integration for new members. Alternative options (such as unilateral euroization) have been analyzed by accession countries at the technical level but have, at least for the time being, been dismissed as ineffective given the high uncertainty surrounding the ensuing benefits, costs and risks, and the EU's disapproval.

Thus, the key question for the accession countries is whether to aim at introducing the euro as early as two to three years after EU accession or whether to opt for a more gradual approach to monetary integration.

Currently, the accession countries are pursuing divergent monetary policy integration strategies: Several countries, notably Hungary, Slovenia and Estonia, are aiming at joining the euro area as soon as possible. In the other countries, the decision-making process is still evolving. Within the latter group, the central banks of Poland, Slovakia and Latvia are clearly leaning toward a speedy participation in the euro area, but an official policy statement (reconciled between the central bank and the government) is still outstanding.

Let us take a closer look at arguments put forth in favor of speeding up monetary integration, using Hungary as an example: In the spring of 2001, the government and the central bank of Hungary endorsed a road map for introducing the euro in 2006,[1]) pointing out the positive effects that participation in a monetary union is known to generate (trade creation through the use of a single currency in a larger economic area, lower interest rates, elimination of currency turbulences triggered by volatile investor confidence). Moreover, policymakers argue that Hungary's economic cycle is already closely aligned with that of the euro area, and that a small, open economy has limited leeway for monetary policy in a global environment, as the exchange rate tends to create rather than absorb shocks.

Estonia and Slovenia have reasoned along similar lines, with Estonia stressing that it has actually been in quasi-monetary union with Germany for the past ten years under its currency board arrangement and that its economy has proved its flexibility and ability to grow dynamically over a longer period of time under this arrangement.

Conversely, the arguments offered by those accession country representatives who embrace a more gradual monetary policy integration center mostly on the differences in economic structures between the accession countries and the euro area, structural weaknesses yet to be remedied, uncertainty relating to the effects of full integration into the internal market as well as problems and deficiencies in the wage-setting process. Some countries also refer to the output losses that compliance with the Maastricht criteria, above all the inflation criterion, will produce; a more gradual convergence toward these criteria is believed to help reduce the sacrifice ratio.

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1   *The position of Hungary joining the euro area has changed somewhat in recent months. First, both the central bank and the new government that came into office in spring 2002 have since named the year 2007 as the target date for joining the euro area. Second, even this date has a conditional character according to the new government: While it was desirable to join Monetary Union by 2007, a final decision would only be made after a detailed examination of whether Hungary was in fact ready for complete monetary policy integration by that date.*

## 4  Volatility, Trade and Investment

Reducing the uncertainties and distortions caused by exchange rate volatility in cross-border transactions is an explicit objective of monetary policy in numerous countries. The actual effect of exchange rate volatility very much depends on the degree of economic integration that has been established between the countries in question. The purpose of this section is to analyze how the volatility of the accession countries' currencies may affect their economic relations with the euro area. A short theoretical introduction prepares the ground for this assessment. Exact quantifications of the effects of exchange rate volatility will not be provided, however, as empirical analyses in this field tend to produce highly divergent results, depending on the method used and the countries reviewed.

### 4.1 Theoretical Explanations for the Influence of Volatility on Trade and Investment

In the economic literature, the impact of exchange rate volatility on trade flows is traced to the concept of risk aversion.[1] Risk-averse companies demand compensation in the form of a risk premium for the uncertainty to which they are exposed as a result of exchange rate volatility in international trade. The type of risk depends on the currency in which a business transaction is settled: If the transaction is settled in a foreign currency, the company incurs a price risk; if the transaction is settled in the domestic currency, exchange rate volatility will not affect the price, but trade volumes will be subject to uncertainty. As the risk premium drives up costs, the volume of trade flows between the countries involved will shrink. A policy leading to a reduction of exchange rate volatility may, therefore, contribute ceteris paribus to an intensification of trade relations. However, Coté (1994) points out that, strictly speaking, risk aversion as such does not sufficiently explain lower trade flows. An increase in exchange rate

Chart 1

**Share of the CEECs[1]) in the External Trade Volume**

**of the EU Member States in 2000**
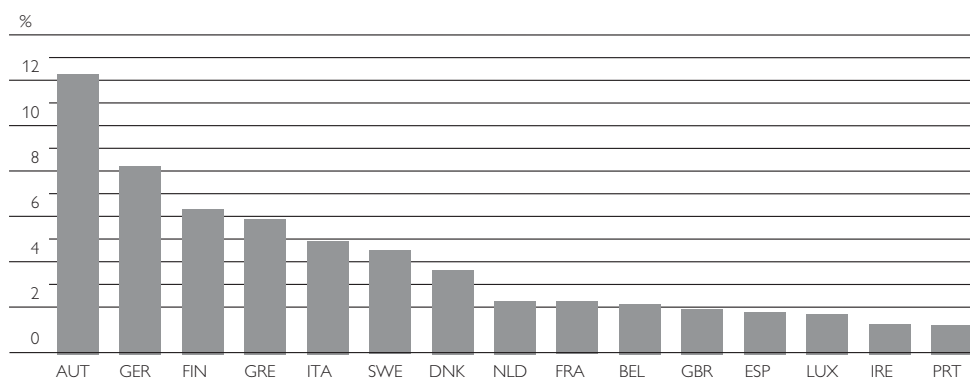


Source: UN, Direction of Trade.
[1]) The CEECs comprise Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, the Slovak Republic and Slovenia.

1  *The concept of risk aversion implies that risk-averse individuals will prefer a sure outcome (a given fixed amount) to a game with an uncertain outcome, even if the expected value of this game is as high as the fixed amount.*

volatility and the concomitant risk goes hand in hand with a substitution effect and an income effect for risk-averse individuals. When an activity involves higher risks, its utility will sink, causing fewer resources to be used (substitution effect). In turn, the overall utility for an individual will sink as well, leading to a reallocation of resources (income effect). Only a more detailed specification of the underlying utility function will permit assessing clearly which of the two effects prevails.

While market participants can hedge against exchange rate risks on forex markets, even hedging comes at a cost, causing trade volumes to be lower than they would be in the absence of exchange rate volatility. The bigger the share of transactions hedged in the overall trade volume, the smaller the significance of exchange rate volatility is in cross-border trade.

The impact of exchange rate volatility on international investment flows, like that on trade, is attributed to the risk aversion of investors. In other words, an increase in volatility would be expected to cause foreign direct investment in a given country to contract. As underlined by Bevan et al. (2001), FDI inflows are of crucial importance for the CEECs as these investments do more than fulfilling capital needs, given the spillover effects they create. Above all, foreign direct investments serve as a vehicle for technology transfers, i.e. the target countries will benefit from innovations in production and manufacturing and from improved management techniques. Hence, the merits of FDI should not be assessed on volume terms alone; the extent to which new expertise is shared and applied matters as well. Most FDI statistics, however, do not provide for such a fine distinction.

### 4.2 Empirical Findings on the Impact of Volatility

The effects of volatility on international trade have been analyzed in a number of empirical studies that came up with divergent results. Anderton und Skudelny (2001) indicate that these differences may be traced to the method used: the outcome will differ depending on whether time series, cross-country data or panel data are used. Time series analyses tend to find only small, statistically insignificant relationships between volatility and trade, while cross-country data imply larger effects that are, however, also hardly or only slightly significant.[1]) Panel data analyses, by contrast, produce significant estimates implying that, were it not for exchange rate volatility, trade volumes might have been bigger by 8% to 15%.

In a gravity model for 186 countries, Rose (2000) estimated the effects of the disappearance of exchange rate volatility and the use of a single currency on bilateral trade activities. Through control variables, he tested the influence of other factors, including the income level, the geographical distance and multilateral trade agreements, on trade relations. The calculations imply that the trade volume stands to rise by 13% once exchange rate uncertainty disappears. This figure is dwarfed by a 335% increase in trade triggered by the use of a single currency. Rose qualifies his findings by stating that many monetary union
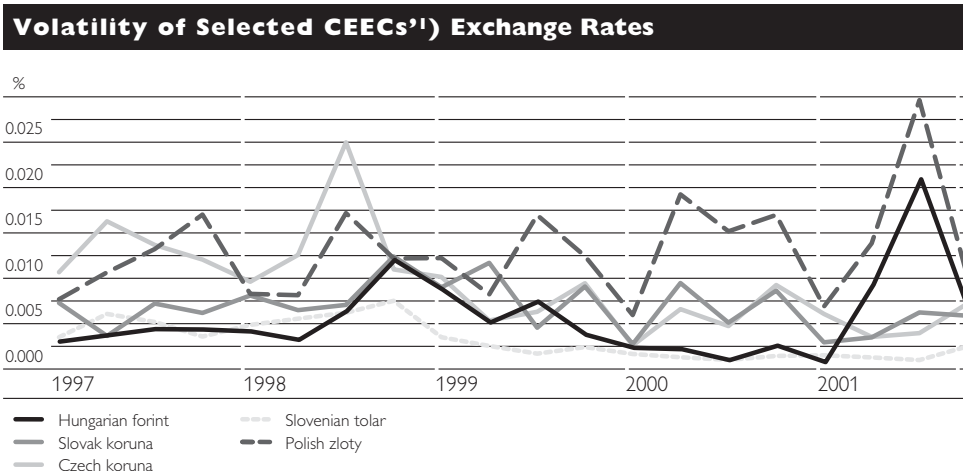
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1   Dell'Ariccia (1998) indicates that many of these analyses do not take into account causality problems, because a negative correlation between trade and exchange rate volatility may also result from interventions undertaken by central banks with a view to ensuring exchange rate stability with the major trading partners.

members in his data set are countries with low incomes and low trade volumes, so that his findings cannot be transferred directly to the EU, for instance. Indeed, most of the countries covered are former colonies maintaining a monetary union with their former colonial power.

In his critique, Persson (2001) doubts specifically that the countries joined together in a monetary union are readily comparable with the remainder of the countries reviewed by Rose. In a matching approach, Persson attempts to show that the trade effects attributed to monetary union can, at least in part, be explained by other differences between the two groups of countries. Persson compares monetary union members with structurally similar nonmembers and finds a monetary union to enliven trade by 13% to 65%. Honohan (2001) indicates that a number of countries not only replaced the currency of their colonialists with their own money in the process of decolonialization, but also refocused their economic policies on developing their domestic industries. The ensuing trade contractions would, however, be attributed to the dissolution of monetary union in a corresponding specification of the estimation. Apart from these methodological caveats, it should be stressed again that the aforementioned papers analyze trade relations among countries that are structurally highly different from the accession countries.

The impact of exchange rate volatility on foreign direct investments in developing countries was analyzed by Bénassy-Quéré et al. (2001). According to this paper, FDI will decrease more strongly when the nominal exchange rate becomes more volatile than amid a real appreciation and the ensuing loss of competitiveness.[1] On the importance of volatility for investors in the CEECs, Marin et al. (2002) presented in a recent study on FDI in Eastern Europe the results of a survey of companies accounting for 20% of Austrian investment in Central and Eastern Europe. In this study, the underlying risk of these investments is generally considered to be small, but of all types of risk identified, the exchange rate risk is deemed to be highest.

Chart 2



**Volatility of Selected CEECs'[1]) Exchange Rates**

Source: Datastream, OeNB.
[1]) Against the euro. Volatility is measured as quarterly standard deviation from weekly returns.

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1   Foregoing the possibility of adjusting structural changes by changing the exchange rate calls for high wage and price flexibility. If prices are inflexible, e.g. imbalances may emerge in the labor market.

Chart 2 depicts the volatility of the exchange rates of a number of CEE currencies. The different degrees of volatility reflect the different monetary policy objectives that the individual countries pursue (see table 1). In this respect, volatility has been calculated as the quarterly standard deviation of the weekly exchange rate return. Chart 3, by comparison, shows exchange rate volatility in a number of EU Member States prior to the introduction of the euro. Regarding ERM participation, please note that in the case of Italy, this means participation in ERM I as defined from 1993, as opposed to participation in ERM II for Greece. Italy's ERM I experience from 1996 may well serve as a meaningful benchmark, as the — limited — differences in design (parity grid in ERM I versus peg to the euro in ERM II) are evidently irrelevant for the extent of exchange rate volatility.

The implications of these movements for the euro area countries are dependent on the extent of trade relations and investments activities. Here, there are major differences. For instance, 40% of all foreign direct investments made in the CEECs by euro area countries in 1999 were made by Germany, 15% by the Netherlands and 11% each by Austria and France. Similarly, Germany accounted for 46% of all exports from the euro area to Central and Eastern Europe in 2000, compared with roughly 10% attributable to Austria. Measured as a percentage of the euro area countries' external trade, the share of the CEECs is highest in Austria at 12%, followed by 8% in Germany and 6% in both Finland and Greece, compared with a euro area average of slightly above 4.7%.

Chart 3

**Volatility of Selected EU Exchange Rates¹⁾**



Source: Datastream, OeNB.
¹⁾ Against the euro. Volatility is measured as quarterly standard deviation from weekly returns.
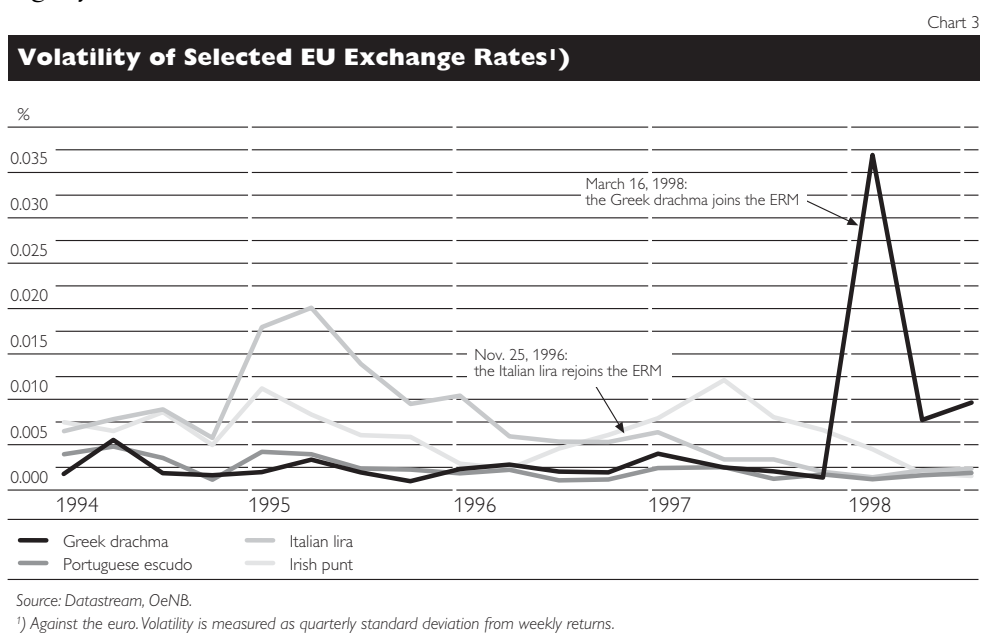
Reflecting a 13% expansion of trade — the effect Rose (2000) found the disappearance of exchange rate volatility to have, which is within the band identified by Anderton and Skudelny (2001) and Dell'Arricia (1998) — euro area exports to the CEECs in 2000 would have been EUR 14 billion or 0.24% of GDP higher, while imports would have been EUR 11 billion or 0.17% higher. For Austria, these effects would have been even three times higher (measured as

a ratio of GDP), given the closer trade relations it has established with the CEECs. Mirroring national differences in trade relations and investment activity, the individual euro area countries are, as a result, more or less sensitive to exchange rate volatilities in the CEECs. Overall, the repercussions of exchange rate volatility on trade relations and foreign direct investment are evidently fairly limited, particularly when one considers that the figures identified in the various papers can be considered to be rather the upper ceiling of the anticipated effects.

Regarding the impact of a given exchange rate strategy on volatility, developments in Slovenia show that even under a managed float regime, exchange rate volatility can be kept at a very low level. However, as already mentioned, Slovenia manages its exchange rate very tightly. The examples of Italy and Greece imply that participation in ERM II should not have a meaningful effect on volatility, at least not in the short run. The ERM II framework permits the currencies to move within given fluctuation bands, compliance with which allowed volatility to rise in the case of Greece (unlike in the case of Italy). After the second quarter of 1999, the volatility of the Greek drachma was, however, again within the boundaries registered before participation in ERM II.

## 5 Scenarios of Exchange Rate Developments Between the Euro Area and the Accession Countries

### 5.1 Equilibrium Development of the Real Exchange Rate

The following is meant to serve as a theoretical basis, supported by empirical evidence, for a plausible scenario regarding the development of the real exchange rates of the accession countries. Discussing the development of the equilibrium real exchange rate is important, as it is the starting point for the analysis of the nominal exchange rate and thus of the nominal exchange rate regime of the accession countries.

The medium- to long-term development of the real exchange rates between the accession countries and the euro area is closely linked with the real convergence process, i.e. with the evening out of income levels among accession and euro area countries. The major aspects can be discussed with a neoclassical equilibrium model for two economies linked by trade and capital flows and both producing internationally tradable and nontradable goods (e.g. Obstfeld and Rogoff, 1996). Such models assume purchasing power parity for tradable goods and complete wage and price flexibility. Accordingly, the path of the real exchange rate, measured in terms of the development of the relative consumer price indices and the nominal exchange rate, is given by the following equation:[1])

$$\pi^* - \pi - \Delta e/e = (1 - \gamma)[(\Delta A_T^* - \Delta A_N^*) - (\Delta A_T - \Delta A_N)]$$

The left-hand side of the equation describes the change of the real exchange rate, as caused by an inflation differential between the two countries, $\pi^* - \pi$, and by nominal exchange rate movements, $\Delta e/e$. The real exchange rate will adjust when the difference between the growth of total factor productivity in

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1    Assuming identical shares of wage-based income in the sectoral output as well as identical shares of non-tradables in the consumption profile of both countries.

the tradable and nontradable goods sectors, $\Delta A_T^* - \Delta A_N^*$, becomes bigger in one country than in the other, which is also known as the Balassa-Samuelson effect. The intensity of this effect will, moreover, be influenced by the share of nontradables in the consumer profiles of the two countries, $1 - \gamma$.

The underlying mechanism is based on the assumption that the factor labor is fully mobile domestically between the two sectors while it is fully immobile across borders. This leads to uniform wage growth within a country, but to potentially divergent loan growth rates (reflecting productivity growth in the respective tradable goods sector) between the two countries. As a result, wage growth in the nontradable goods sector outpaces productivity growth in both countries and consequently nourishes inflation. When one country's sectoral productivity differential is bigger than that of the other, the rates of domestic price level growth will diverge, thus exerting upward pressure on the real exchange rate. However, other mechanisms may also be at play in inducing appreciation caused by sectoral productivity differentials. For instance, if wage negotiations are centralized and wage growth depends on productivity growth in the tradable goods sector, this results in a forecast path for the real exchange rate that is equivalent to the path projected with the Balassa-Samuelson effect and thus observationally equivalent.[1])

This explanatory approach assumes that the two economies under observation are in a steady state equilibrium, in which both labor and capital productivity will change only as total factor productivity changes. What speaks against this proposition is that in the tradable goods sector the amount of capital invested per employee in the euro area is at present significantly above the corresponding amount in the accession countries. On the assumption that the levels of total factor productivity are not highly divergent, this implies that marginal returns of capital are comparatively higher, which induces arbitrage opportunities for euro area investors. As capital movements among accession and euro area countries are being fully liberalized amid EU accession, unless liberalized earlier, there is a high potential for net capital flows from the euro area to the accession countries (see Lipschitz, Lane and Mourmouras, 2002). These high net capital flows, in turn, influence the bilateral real exchange rates.

In a fixed nominal exchange rate regime, net capital inflows lead to monetary expansion, which spurs inflation.[2]) At a given foreign inflation rate, this triggers a real appreciation of the domestic currency. The real appreciation will continue as long as the current account deficit has widened to an amount that matches the net capital inflows. In a regime of flexible nominal exchange rates, net capital inflows cause the recipient country's currency to appreciate nominally, thus causing the real exchange rate to appreciate vis-à-vis given domestic and international inflation rates. This, too, leads to a current account deficit that matches the net capital inflows.

1   General equilibrium models can typically be solved decentrally or centrally (through a social planner). The optimal allocation and the price vector and the equilibrium price vector are not dependent on the solution method.

2   The upward pressure on domestic prices may, in the short run, be dampened by sterilizing capital inflows (see Lipschitz, Lane and Mourmouras, 2002).

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In other words, in this model framework, the nominal exchange rates of the accession countries do not have an influence on the development of real exchange rates; much rather, they are determined by "more fundamental" supply-side factors, such as the development of total factor productivity and the initial capital stock.[1])

The effects on relative labor productivity, and thus on the national price level and the real exchange rate, that are linked with the economic catching-up process and that are caused by divergent developments of sectoral total factor productivity and the convergence of capital intensities are well founded empirically; see table 2 for examples for several European countries for the period from 1973 to 1991.

Table 2

**Productivity Differentials and Real Appreciation in Western Europe Between 1973 and 1991**

|  | Relative price change between tradable and nontradable goods | Sectoral productivity growth differential | Average real appreciation against Germany | Contribution of the relative price effect |
|---|---|---|---|---|
|  | % |  |  | *percentage points* |
| Germany | 0.5 | 0.4 | × | × |
| Italy | 3.0 | 3.2 | 1.7 | 1.6 |
| Spain | 2.5 | 2.7 | 2.0 | 1.1 |
| Austria | 2.1 | 2.1 | 1.3 | 1.0 |

*Source: Canzoneri, Cumby, Diba and Eudey, 1998.[1])*
*[1]) De Gregorio, Giovannini and Wolf (1994) and numerous other papers arrive at similar results.*

Table 2 shows that the development of relative prices between tradable and nontradable goods was closely correlated with the productivity growth differential between the two sectors in all countries. Moreover, this effect was bigger for the then catching-up countries[2]) than for Germany, as productivity grew faster in the tradable goods sector of these countries. On balance, a large part of the real appreciation can in all cases be traced to this effect. The figures documented here are likely to represent rather the lower boundary for the anticipated real appreciation, as the convergence process of the accession countries is evolving in the context of fully removed capital controls, which was not the case in the countries listed at the time. Moreover, the accession countries started to converge from significantly lower levels. Dismantling the capital controls loosens the credit restriction of the accession countries, thereby facilitating faster capital accumulation and thus higher productivity growth. The

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1   In this neoclassical model, the actual amount of current account deficits and the real appreciation will typically even be higher than the amount that allows capital allocation levels to converge, because demand-side effects may emerge as well. For instance, expectations of growing incomes may induce agents in the accession countries to finance consumption through debt (consumption smoothing). Preferences for nontradable goods rising hand in hand with growing incomes have similar effects. Other mechanisms are based on monopolistic competition in the nontradable goods sector. In this respect, note a recent contribution to the debate on the Balassa-Samuelson effect: MacDonald and Ricci (2001) argue that relative productivity gains in the distribution sector may lead to a real appreciation, similar to productivity gains in the tradable goods sector through the Balassa-Samuelson mechanism.

2   In 1971, the gross domestic product (GDP) per inhabitant at current exchange rates corresponded to 65% of German GDP for Austria, 37% for Spain and 62% for Italy. These differences shrank by roughly 20 percentage points in all countries until 1991.

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current consensus estimate for trend real appreciation in the accession countries
is 2% p.a.

Generally, both theory and empirical evidence indicate that the real
exchange rates of the accession countries will continue to appreciate against
the euro. This development is a long-term equilibrium phenomenon, driven by
the growth of total factor productivity and capital accumulation in the accession
countries.[1]) This real appreciation can be achieved either with a fixed exchange
rate and an inflation differential to the euro area, or with a flexible and gradually
strengthening nominal exchange rate.

What is important in assessing the effects of this equilibrium phenomenon
for the euro area is to take account of the mutual causation of capital inflows and
real appreciation. As capital flowing into the accession countries spurs produc-
tivity growth in the export sectors of these countries, the real appreciation
against the euro is "competitively neutral"; in other words, the real appreciation
of the accession countries' currencies puts euro area companies neither at an
advantage nor at a disadvantage vis-à-vis accession country companies.

Regarding the capital inflows induced by the real appreciation, the euro area
is the "natural source" of these capital flows, given its geographical proximity,
the deepening of capital markets in the euro area as well as existing ties between
the financial sectors of the two economic areas, i.e. between the banking
sectors. As capital is being accumulated more rapidly in the accession countries
than in the euro area, given the economic catching-up process of the former, the
share of investments in the euro area of total net wealth in the euro area, and
thus the economic interlinkages between the two economic areas, will tend to
grow. The positive net investment position of the euro area in the accession
countries is a factor that stands to exert a downward pressure on the bilateral
real exchange rates in the future, once the loans taken out or the interest
accrued have been redeemed, or once the profit from foreign direct investments
has been repatriated. At present it is not possible to quantify the exchange rate
effects accompanying the development of a net investment position, given the
scarcity of data on the euro area's net investment position in the accession
countries.

A negative side effect of the real appreciation for the euro area is the ensuing
loss of purchasing power of the euro in the accession countries. For instance,
services bought on traveling in those countries tend to become dearer. The
ensuing welfare losses must be juxtaposed with the welfare gains generated by
the economic catching-up process (higher returns on investment in the acces-
sion countries, increased efficiency through increased division of labor among
accession and euro area countries, etc.).

In applying the above considerations to the real world (in this case, to the
exchange rates of the accession countries) it is important to always bear in mind
that the underlying assumptions are relatively far from reality. For instance,
assuming a smooth adjustment of wages and prices to their equilibrium level, on
which the irrelevance or neutrality of the nominal exchange rate regime is

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1   A countereffect leading to a real depreciation of the accession countries' currencies against the euro materi-
    alizes (under plausible assumptions) when the loans linked with the bilateral capital flows are redeemed or
    interest is paid thereon (so-called transfer effect).

grounded, is a crucial drawback of these theories. Numerous empirical and theoretical papers (for an overview, see Obstfeld, 1999) show that changes in the nominal exchange rate and, thus, the nominal exchange rate regime have significant effects on the real exchange rate and, consequently, on the allocation of goods and productivity factors above all in the short term. Moreover, the model assumes that financial market players take fully informed decisions, while in reality investment decisions must always be taken under uncertainty. In the case of the real exchange rate, this uncertainty means that a clear discrimination between equilibrium appreciation and disequilibrium overvaluation is hard to make, which may cause opinions of market participants and of monetary and exchange rate policymakers to be divided. Moreover, owing to uncertainty, erratic changes and overreactions of financial market participants' expectations may lead to excessive capital in- and outflows.

**5.2 Coordination of Exchange Rate Policies in the Enlarged EU**

In the theoretical debate, the nominal exchange rate regime only becomes relevant when nominal rigidities are introduced into the above model. In such case, changes of the nominal exchange rate or, given constant inflation rates, inflation differentials may cause significant real exchange rate movements. As far as these changes are not justified by fundamentals, inefficiencies will result, either through "dysfunctional shifts" of goods production among countries (Mundell, 2000) or through shifts in purchasing power that are not justified by productivity changes. These distribution effects among states create incentives to coordinate economic policies in the area of nominal exchange rates. The main tool for balancing interests and for implementing the consensus in an EU enlarged by the accession countries is ERM II.[1])

In the enlarged EU, in particular following integration into ERM II, nominal exchange rates will be influenced heavily by multilateral political decisions. This is particularly true for the adoption of the euro, which presupposes a consensus on the irrevocable fixing of the euro entry exchange rate.

However, these decisions must be supported by the financial markets, above all because they are made under conditions of removed capital controls. Should policymakers and financial markets be divided on the adequate nominal exchange rate level, or should financial markets disacknowledge the adequacy of the exchange rate advocated by policymakers, speculative attacks might be launched on accession country currencies, which, if successful, may have consequences for the real economy. For instance, the United Kingdom saw only small growth rates in the aftermath of the ERM crisis, while the countries hit by the Asian crisis even plunged into a massive recession. As documented by Kaminsky and Reinhart (1998) and Mishkin (1999), the Asian crisis is a worst-case scenario when it comes to the impact on the real economy.

What is important for the real effects is how the negative income effect caused by the withdrawal of foreign capital compares with the positive substitution effect stemming from the lower exchange rate (Gupta, Mishra and Sahay, 2000), as well as the extent of corporate bankruptcies and banking problems

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1   However, the exchange rate becomes a matter of common concern from the point of EU accession, which need not necessarily coincide with accession to ERM II.

that occur as foreign capital is being pulled out (Calvo, 1998). Empirical analyses, such as effected by Dollar (1992), show that the volatility of the exchange rate and long-term economic growth are negatively correlated. Exchange rate crises often go hand in hand with banking crises, which in turn tend to lead to temporary growth setbacks. As evidenced by Reininger and Schardax (2001), companies in the accession countries are comparatively highly indebted in foreign currencies. In the event of a currency crisis, this might trigger a shakeout in the real economy sector. The extent of this effect depends on the extent to which the foreign currency debt has been hedged; while no data are available, theoretical considerations indicate that such hedging has not been undertaken on a large scale.

### 5.3 Currency Turbulences in the Accession Countries – Impact on the Euro Area

The 1990s saw a number of currency crises some of which were accompanied by banking crises. The crisis of the exchange rate mechanism of the European Monetary System in 1992, the Mexican crisis of 1994, the Asian crisis of 1997/98 and most recently the Argentine crisis (to name but a few) have shown that every crisis has its own history – specific trigger factors and specific consequences for growth and employment, both nationally and in other countries – and that there are just very few factors that all crises have in common. At the same time, both market participants and economic policymakers have been learning lessons from these crises, which may in itself be a reason why crises keep striking in ever new forms, with new causes and with new repercussions. Nevertheless, out of the many factors on which the emergence and the development of crises have been blamed in the past, some appear to be of particular relevance for the accession countries.

As explained in section 3.1, the accession countries are likely to see high capital inflows.[1] In this case, these inflows and the accompanying phenomena, i.e. real appreciation and a current account deficit, are a long-term equilibrium phenomenon, while in the past they would often be an indicator of a looming crisis. This indicates how difficult it is both for markets and policymakers to distinguish between an equilibrium development and an overshooting of the exchange rate. Such constellations facilitate the emergence of divergent views between policymakers and markets, which may in turn trigger speculative attacks on fixed exchange rates.

One aspect on which the emergence of crises was blamed in the past is the dismantling of capital controls and the deregulation of domestic financial sectors. On both counts, the accession countries have been making significant headway in recent years. Capital controls were removed step by step, which is typically considered by the literature to have a stabilizing effect. Regarding the deregulation of the financial sector, permitting nonresidents to acquire equity stakes in banks was a crucial move, likewise described as stabilizing in the literature on account of the concomitant import of know-how. Indeed, the

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1   The given nominal exchange rate regime of the accession countries directly influences the extent of these flows, as the fluctuation of the expected gains increases with the fluctuation band of the nominal exchange rate, which affects the relative attractiveness of holding assets in the accession countries.

strong international ties of the banking sector in the accession countries appear to be an asset that none of the countries hit by crisis in the past had such abundantly. Here, a tradeoff may exist; the external influence, particularly from the euro area, should lessen the probability of crises. In turn, the correspondingly higher exposure would push up the costs of crisis given a more efficient transmission channel.
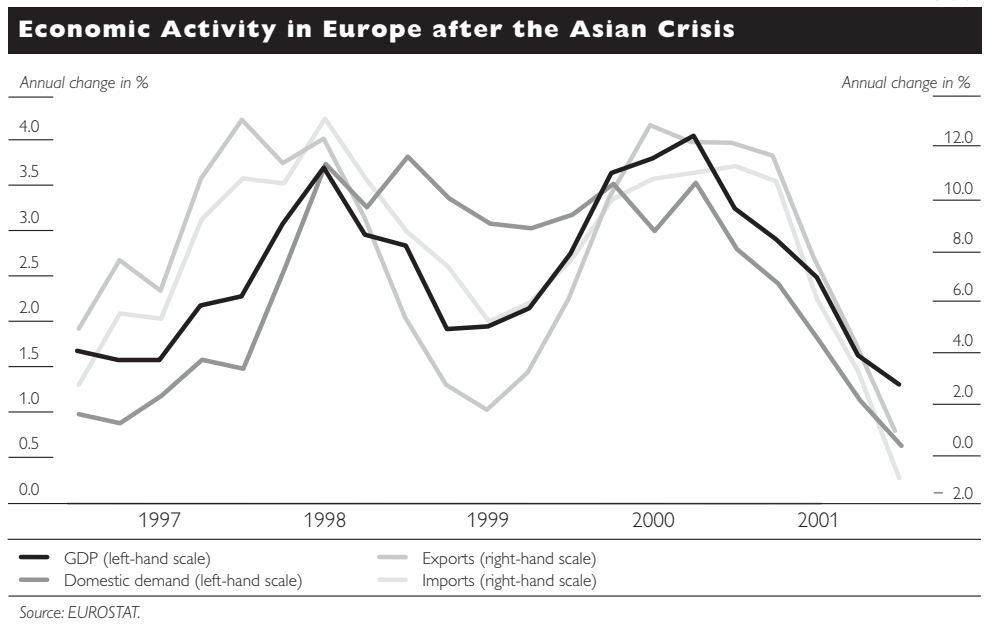
Finally, the above factors apply to all accession countries (if to different extents), which is why they might be understood by the markets to have very similar effects. In other words, should crisis strike in a given accession country and lead to a reversal of capital flows, there is a chance that the other countries, too, might suffer large capital withdrawals, solely on account of this similarity, even though pulling out the money would not be justified by fundamentals (contagion). Furthermore, there is a fundamental reason why a currency crisis, i.e. a strong depreciation in an accession country, may spill over to the region: given the high interlinkage of trade both among accession countries and with the euro area, the depreciation of the currency of one accession country against the euro has a direct bearing on the competitiveness of the other countries (for an empirical study on the relationship between trade ties and spillover, see Glick and Rose, 1998). However, no significant contagion effects were registered in the past, particularly not during the Russian crisis.

To sum it up, it cannot be ruled out that exchange rate and financial crises could occur in the accession countries owing to these risk factors. The international transmission of such developments to the euro area can, theoretically, occur via a number of channels:

— The purchasing power and competition effects that go hand in hand with the depreciation of the accession countries' currencies cause exports to the countries concerned to contract. Investments directly linked with such exports are being shelved.

— Given the recession emerging in the event of crisis, investments made in these countries lose in market value, causing the capital position of (euro area) investors to deteriorate. This balance sheet effect reduces the investment power of companies.

— The lending capacity of banks hit by such losses may be affected adversely. This is particularly true for financial institutions with a high exposure in Central and Eastern Europe that failed to adequately diversify potential regional risk concentrations on international financial markets (through loan insurance or securitization on the assets side, or through banking alliances on the liabilities side).

— On account of increased uncertainty, financial market perturbations emerge, which translate into higher interest rates or stock market downturns, which in turn adversely affect investments.

— Expectations of negative repercussions of a crisis on the euro area may produce a downward pressure on the exchange rate of the euro.

The quantitative impact of a currency crisis in the accession countries on the euro area very much depends on its intensity and regional dispersion. Here, a range of scenarios are conceivable. Another major factor is the extent of the economic integration of the euro area with the accession countries in relation to overall economic activity in the euro area. To cover both factors and to assess, as

Chart 4

## Economic Activity in Europe after the Asian Crisis

Annual change in %

Annual change in %

GDP (left-hand scale)                    Exports (right-hand scale)
Domestic demand (left-hand scale)        Imports (right-hand scale)

Source: EUROSTAT.

a benchmark, the repercussions of a worst-case scenario on the euro area, this section continues with a discussion of the impact of the Asian crisis on the euro area and with a comparison of the latter's economic ties with the accession countries and with Asia.[1]

As is evident from chart 4, the Asian crisis markedly dampened external trade in the euro area, with the export setback exceeding the contraction of imports. This reflected a reversal of capital flows that translated into a rapid reversal of the current accounts of the countries concerned,[2] which was caused by a combination of a recession and a massive nominal and real depreciation. Moreover, the Asian crisis also sparked significant contagion effects on other emerging markets, which added to the slowdown of international growth. A major aspect of the relatively mild impact on the euro area was the then very robust internal demand, which was evidently the reason why, apart from the external trade channel, none of the transmission channels mentioned above was significant. Regarding the time dimension of the crisis, exports were fairly quick to bounce back to their precrisis growth path, causing the Asian crisis to have relatively minor economic repercussions on the euro area on balance.[3]

What was crucial for the relatively minor effect of this crisis was the small economic significance of the Asian countries for the euro area. The share of exports in the region was between 0.7% of euro area GDP, or of 1.2% when Japan is factored in. By contrast, exports to the accession countries accounted for some 1.4% of GDP in 2000.[4]

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1   As a regional breakdown of the net investment position of the euro area is not available, this comparison must be limited to the share of external trade in GDP.
2   The difference between the current account/GDP ratio of Indonesia, Korea, Thailand, Malaysia and the Philippines before and after the crisis averaged approximately 12%, and the real depreciation roughly 25%.
3   The unemployment rate remained unaffected.
4   Source: Eurostat.

The anticipated macroeconomic costs of currency and financial crises depend both on their intensity and on their likelihood of occurrence. Given the size of the accession countries relative to the euro area, there is an inbuilt cost threshold. The likelihood of occurrence can be reduced by effective and credible economic policy institutions, particularly central banks, financial market authorities and wage-setting institutions, as well as adequate national budget policies in the accession countries. The intensified economic policy coordination and surveillance within the EU, in which the accession countries will participate immediately upon the EU's enlargement to the east, the multilateral obligation to defend an exchange rate within the ERM II framework, as well as the improvement of the institutional and legal framework conditions in the accession countries through the adoption of the *acquis communautaire* should be further important factors reducing the probability of crises in the accession countries.

## 6  Summary and Conclusions

This paper starts with a succinct overview of the exchange rate regimes that the accession countries currently pursue, and of the positions that the EU and the accession countries have adopted on the issue of monetary integration. The stocktaking attests to the diversity of the exchange rate policies in accession countries. The EU has proposed that the accession countries take a three-step approach to complete monetary integration (EU accession – ERM II participation – introduction of the euro). While all accession countries have essentially accepted the phased integration, their positions on, and strategies for, the timing of the introduction of the euro differ.

This raises the question of whether exchange rate volatilities will subside as the integration process advances and whether trade-creating and growth-boosting effects will consequently emerge. Papers that address this question indicate that a complete elimination of exchange rate volatilities should visibly enliven bilateral trade. The introduction of a single currency, by contrast, promises to have a multiple of the effect of the disappearance of exchange rate uncertainty alone, according to Rose (2000). It is difficult to assess the impact the institutional framework of the accession countries' monetary policy integration will have on volatility. In the short run, the implications of participation in ERM II for volatility appear to be mixed, while over a longer period of time – particularly in the run-up to the introduction of the euro – such participation is likely to dampen exchange rate fluctuations.

In the long term, the real exchange rates of the accession countries are likely to appreciate against the euro. The current consensus estimate is a trend appreciation of some 2% p.a., reflecting a long-term equilibrium phenomenon caused by the convergence of the output levels of the two economic areas. Current account deficits linked with these developments would also be considered equilibrium phenomena. However, in the short term, there is a chance that excessive capital inflows may cause a disequilibrium, i.e. a real overvaluation and excessive current account deficits. As a result, currency crises may emerge in individual countries under certain circumstances, which could affect the banking sector adversely and possibly spill over to other accession countries. From today's perspective, the repercussions for the euro area of both equili-

brium and possible disequilibrium developments would appear to be limited, given the small size of the accession country economies in relation to the euro area. The likelihood that such crises emerge may be reduced by effective macroeconomic institutions and policies and efficient coordination, for which EU accession is the best guarantee, as well as by the multilateral surveillance of national economic policies. In other words, participation in Monetary Union eliminates the risk of currency crises, but not the risk of other financial crises.

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# STUDIES

# EURIBOR Interest Rate Instruments
## as Indicators of Financial Market Expectations

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Martin Scheicher[1])

## 1 Introduction

Financial market prices provide vital input for monetary policy analysis and thus for central banks. The monetary policy strategy of the Eurosystem aims at maintaining price stability in the medium term. To obtain a comprehensive view of price developments, the Eurosystem employs two sets of indicators: The first set comprises monetary indicators that focus on the monetary aggregate. This approach reflects the notion that inflation is a monetary phenomenon after all. The second set comprises a number of other indicators, such as inflation forecasts, real economic data and financial market prices. Together, these indicators serve to produce a detailed picture of the economic situation in the euro area.

For a number of reasons, financial markets are an important source of information not for euro area central banks alone. The main reason for regularly analyzing securities and derivatives prices is to obtain forward-looking information. Since monetary policy measures tend to take effect with a certain time lag, forward-looking financial market prices are a welcome additional factor in supporting other economic data. The factors that determine the price of a stock help explain how and why market participants attune their activities to expected future developments. Put simply, the value of a stock can be seen as its discounted expected payoff. Thus, today's prices are essentially driven by market expectations about a given company's future profit performance. This is why the securities prices observed on the market today serve to depict current expectations of the future development of nominal and real variables.[2]) One of the most important monetary policy indicators is the yield curve; it maps market participants' interest rate and inflation expectations and thus portrays market forecasts of interest rate developments, enabling central banks to consider market participants' current interest rate expectations in their monetary policy decisions.

A detailed analysis of financial market prices is also vital for monitoring and maintaining the stability of the financial system. It has become increasingly important for central banks to monitor potential fragilities on the financial markets. By regularly monitoring systemic risk factors, it should be easier to identify emerging crises and to take timely action to avert negative consequences to the economy. A recent example for financial instability is the collapse of the Long-Term Capital Management (LTCM) hedge fund. As a consequence, more weight is now being put on macroprudential analysis, with a special focus on indicators for aggregated credit, liquidity and market risks inherent in the financial system.

This study aims at giving an overview of the information on financial market players' expectations contained in EURIBOR interest rate instruments, with a special emphasis on the euro area. We will analyze a number of mutually supplementary approaches to presenting market expectations, starting from an examination of the yield curve, on which central banks have relied heavily

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in their decision-making for a long time. In this context, we will address new questions prompted by the creation of Monetary Union. We will also examine the forecasting quality of forward rates and look at the information content of derivatives on interest rate instruments. Here, option price-based indicators are clearly gaining in significance, as they provide additional and supplementary information to that contained in the yield curve. Therefore, this study takes a closer look at this more recent approach. The implied densities calculated from option prices make it possible, for example, to quantify market expectations regarding the probability of rising or falling interest rates. To ensure the homogeneity and comparability of data, we use only indicators that are based on the EURIBOR rates. Moreover, we will examine what consequences monetary policy measures have on market expectations.

This study is structured as follows: Chapter 2 deals with the yield curves of spot prices and forward rates. Chapter 3 looks at how to employ option premiums as uncertainty indicators and chapter 4, finally, presents concluding remarks.

## 2  Yield Curves

### 2.1 Zero-Coupon Yield Curves

The yield curve establishes a relation, for a certain point in time, between the interest rates of government bonds (or of instruments traded on the interbank market) and their respective residual maturities,[1]) thus depicting the yields to be achieved over different investment horizons (ranging from several months to ten years or more). The yields indicated by the yield curve have only a very small credit risk, if any. The yield curve therefore portrays an estimation of the unobservable riskfree interest rate and over a broad maturity band. The yield curve plays a vital role for market participants, as it provides the discount factors for discounting the expected payment flows and thus constitutes the basis for trading a number of financial instruments, in particular when it comes to analyzing the risks of exotic options or structured products.

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1    See Pagan, Hall and Martin (1996).

## Glossary

| | |
|---|---|
| underlying asset | financial instrument on which a derivative is based, e.g. the interest rate, stock price or exchange rate. |
| bank liability curve (BLC) | yield curve composed of interbank instruments |
| Black-Scholes model | important theoretical model for assessing options |
| derivative instrument | instrument whose price depends on that of another instrument, e.g. forward contract, option or interest rate swap |
| EONIA | Euro OverNight Index Average |
| EURIBOR | Euro Interbank Offered Rate |
| European-style option | which is exercisable only at expiry |
| futures contract | forward contract to buy or sell a security on a future date at a price that is fixed today; traded on an exchange |
| implied density | market expectation of the probability of various changes in the price of an underlying asset, as calculated from options prices |
| implied volatility | market expectation of the variance of an underlying asset during its remaining life, as calculated from options prices |
| credit risk | risk of loss owing to default of a creditor or a counterparty |
| kurtosis | measure for the concentration of values around the mean or the peakedness of a distribution |
| liquidity risk | risk of loss arising from failure to timely close a position in a trading portfolio |
| market risk | risk of loss arising in trading portfolios owing to large-scale price movements |
| zero-coupon rate | interest rate for a bond without coupons (spot rate) |
| option | right to buy or sell a security within a given period of time at a price fixed today; defined by underlying asset, maturity and strike price |
| on-the-run Treasury bond | Treasury bond with a benchmark function on which liquidity is concentrated |
| over-the-counter (OTC) market | interbank trade effected off organized exchanges |
| stock return | relative price change of a stock between two trading days |
| bond yield | rate of return on bond investments (equates the market price to the present value of the expected future cash flows) |
| risk neutrality | frequent assumption, in valuation models, of market participants' preferences; the expected yield of all securities is equal to the riskfree interest rate |
| skewness | measure for the symmetry of a probability density |
| strike price | the specified price on an option contract at which the contract may be exercised |
| forward rate | today's rate for future loans or deposits |
| swap | over-the-counter contract for the exchange of fixed and variable payment flows (including cross-currency swaps) |
| swap points | interest rate paid for fixed-against-variable interest rate swaps |
| volatility | measure for the dispersion of a security's yield around its expected value |
| probability density | distribution of the probabilities of the results of a random experiment, represented e.g. by the Gaussian curve |
| yield curve | relation between individual interest rates and their respective maturities |

In general, monetary policy measures influence short-term interest rates first. Following the yield curve, the ensuing money market movements then affect interest rate instruments and bonds with maturities of several years, inter alia via inflation expectations. Long-term interest rates, in turn, influence over-all demand, and investment in particular. Given this relationship, the yield curve is an important indicator for market expectations of the future development of short-term interest rates, inflation and economic activity.

As not all required combinations of payment flows and maturities are traded on financial markets, the yield curve cannot be observed directly, but must be estimated from the limited data available. The literature distinguishes between government bond-based and interbank interest rate-based calculations, using, for example, either German, French, or Austrian government bonds or money market deposits, interest rate swaps and futures contracts. This method produces two types of yield curves, each with different levels depending on which set of data the calculations are based on. This difference is attributable to the fact that interbank interest rates are higher than those for government bonds, as the latter do not have a default risk.

Forming the basis of the second type of yield curve, interest rate swaps are the most frequently traded OTC derivatives. An interest rate swap is a contractual agreement to exchange periodic fixed-rate payments for an agreed period of time based upon a specified amount of principal for a stream of payments calculated by using a floating rate of interest (fixed-for-floating interest rate swap). Interest rate swaps are forward contracts since, at the point the counterparties enter into the agreement, they lay down conditions that are binding for the future. In the euro area, the EURIBOR is normally used as the underlying interest rate, while the LIBOR rate is used for pound sterling transactions, and the EURODOLLAR rate is used for U.S. dollar transactions. These reference rates have a maturity of three months.

The mechanism of a swap is the comparative advantage that each of the counterparties has in a particular market segment. Credit institutions, institutional investors or businesses use swaps to adjust differently structured payment flows in asset liability management, to hedge against interest rate risks or to take on such risks for trading purposes. At the time of contract initiation, the present value of the position of the fixed rate payer corresponds to that of the variable rate payer. The spread between the current EURIBOR rate and the previously determined fixed rate is typically calculated at half-year intervals. Depending on whether the calculated spread is positive or negative, one or the other counterparty will have to pay the incremental cash flow, as illustrated in the following example of a 3-year interest rate swap:
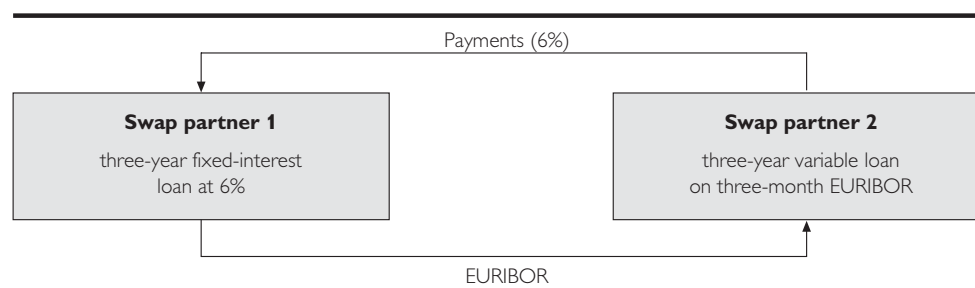
Interest rate swaps can also be understood as par value bonds whose coupon corresponds to the fixed rate of the contract when the bond is redeemed.

The key benefit of EURIBOR rates and EURIBOR-based swaps is that they guarantee a uniform yield curve across the entire euro area. The situation has changed somewhat with the beginning of Stage Three of Economic and Monetary Union (EMU). Unlike the interbank market, euro area government bond markets have not become fully integrated.[1]) The Eurosystem's single monetary policy has, however, prompted the integration of the unsecured money markets. Since a single key interest rate now applies for the euro area, during the completion of EMU national money market rates converged to a uniform level (differing only across maturities) as a result. Therefore, national market characteristics, such as different tax rules, liquidity premia or issuers' credit ratings no longer influence the yield curve calculated from interbank rates.

In general, the liquidity of government bonds is highest in these medium- and long-term maturity segments. Over the last few years, different benchmarks have evolved for the individual categories. While the German government bond serves as a benchmark for the 10-year segment French bonds record higher trading activity in the 5- to 7-year segments.[2]) Another factor is that only certain types of government bonds are available for the settlement of futures contracts, which are often used to cover interest rate risks. These special factors lead to liquidity spreads which, in turn, cause yield distortions. On the interbank market, by contrast, liquidity is high and a broad maturity band is covered. Contracts are quoted daily for the same maturity periods, with the bid/ask spread coming to around 4 basis points. These series can be used to calculate a yield curve representative for the entire euro area, thus providing a uniform basis for monetary policy analysis. As liquidity is very high at the short end, monetary policy forecasts tend to be more accurate for short- and medium-term developments. This time horizon is of special interest for the Eurosystem. In this context, it is also important to apply the concept of implied risk-neutral density to complete the information contained in the yield curve with essential data on future interest rate developments. The options used for this purpose are also based on EURIBOR contracts. Using this uniform data set guarantees the homogeneity of inputs, thus making it easier to interpret the results as it is not necessary to take different market characteristics into consideration.

There is a trend also outside the euro area to base yield curve estimations on interbank instruments rather than government bonds. In the United States, for example, budget surpluses have caused obvious distortions on the government bond market. Declining volumes triggered strong interest rate movements in certain maturity segments of U.S. Treasury notes and bonds that cannot be explained by fundamental economic factors. In the United Kingdom, similar developments resulted from the fact that there various investment limitations apply for mutual funds. In both countries, yield curves mirror the result of these distortions. Demand for papers with long residual maturities is unproportionally high, which artificially drives up bond prices while at the same time causing yields to plunge. These developments have caused central banks to

1   See Danthine et al. (2000).
2   See Bank for International Settlements (1999) and European Central Bank (2001a).

attribute greater significance to the interbank market when analyzing interest rate and inflation expectations.[1]) In reference to its components, this type of yield curve is called bank liability curve (BLC). As the interest rate instruments used reflect the interest rates relevant to banks, the BLC is also of interest when analyzing the monetary transmission mechanism.

One caveat in interpreting yield curves that are based on interbank instruments is that a possible default risk must be taken into account. The size and relevance of the credit risk interbank market participants face have been widely discussed in the literature.[2]) As no principal is actually exchanged in an interest rate swap, but only the difference in interest rates, the credit risk involved is rather low. Moreover many market participants apply techniques such as hedging open positions so as to minimize credit risk. Finally, trading portfolios are marked to market daily, which helps avoid the accumulation of major losses. All in all, the default risk seems to hardly influence the informative value of yield curves. This is all the more true for a relative comparison of curves at various points in time.

Three different interest rates are used to depict the yield curve:

— The yield to maturity equates the market price of an interest rate instrument, e.g. the bond price, with the present value of all future cash flows; it is determined by the maturity period, the coupon and the redemption amount, i.e. the yield corresponds to the return on investment if the paper is held to maturity.

— The zero-coupon interest rate is the yield of a bond without annual coupons, i.e. involving a one-time payment upon maturity; it denotes the return on an investment over a period from today (t) to the redemption of the zero-coupon bond $(t + \tau)$.

— The forward interest rate is today's return on a future investment, i.e. the return of an investment whose maturity period ranges from a future point in time $(t_1)$ to a later point in time $(t_2)$.

The directly observed yield of an interest rate instrument is not suited for estimating the yield curve as it does not fully cover all possible maturity periods and the coupon effect. The coupon effect represents the distortion caused by cash flows before the redemption of bonds. Thus, cash flows may differ greatly for two bonds that have the same residual maturity, but different overall maturities. To avoid such effects it is necessary, in a first step, to calculate from the observed yields the zero coupon interest rates that are not influenced by different cash flows. These hypothetical rates are then interpolated in order to determine the interest rate paid for each desired maturity period. As a next step, one can use the zero coupon rates to calculate the (implied) forward rates. The spot and forward curves contain the same information; they only differ in the maturity periods they represent (ranging either from today to a future point in time, or from one future point in time to another). In the following, we will discuss an estimation of zero coupon interest rates. Moreover, the section 2.2 will deal with the information content of forward rates.

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1   See Brooke, Cooper and Scholtes (2000), European Central Bank (2000), Malz (1998) and Ron (2000).
2   See Collin-Dufresne and Solnik (2000).

Euro BLC data are based on the EURIBOR, the central reference rate for unsecured euro area credits with a maturity ranging from one month to one year. On the U.S. money market, borrowing both from the central banks and the money market is governed by a single rate, the federal funds rate. In the euro area, by contrast, banks can borrow from the central bank at the Eurosystem's main refinancing rate, or from each other on the overnight market at the EONIA rate.[1] On the interbank market, swaps with maturities of several years are only quoted on the three-month EURIBOR, which is, however, closely linked to the key interest and overnight rates (chart 1). Chart 1 shows these three interest rates to have drifted apart in fall 1999, when an unexpected interest rates increase caused the EURIBOR to climb faster than the EONIA. At that time, market participants were expecting key interest rates to rise at some point during the next months, which is why the EURIBOR reacted more pronouncedly than the overnight rate. The overall spread between the EURIBOR and the key interest rate is relatively small (see chart 1), which makes the EURIBOR a reliable indicator of expectations linked to the main refinancing rate.

Chart 1

**EURIBOR, EONIA and Main Refinancing Rate**



- Three-month EURIBOR
- EONIA
- Main refinancing rate

Source: OeNB, Datastream.
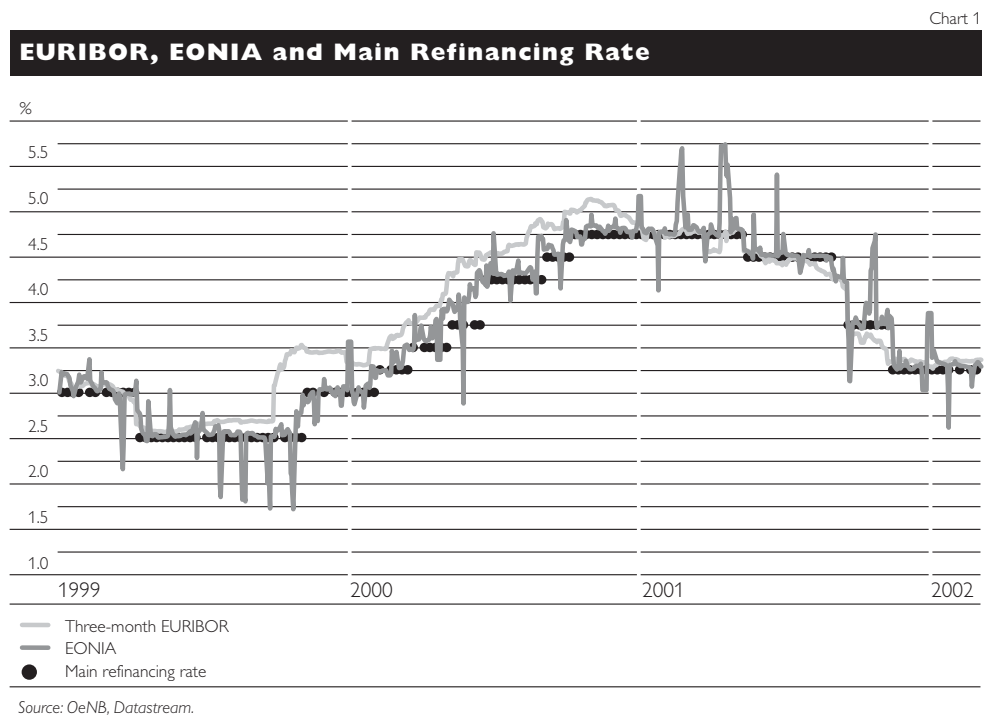
Before calculating the yield curve, we must lay down conventions for the calendar and for the type of remuneration. The day-count convention (calendar) regulates the annualization of interest rates by determining the number of days in a year used to calculate the accrual of interest. This means that the interest rate varies according to the number of business days taken into account. Moreover, there is the choice between discrete and continuous interest rate payments. The market practices followed in this calendar are actual/actual and

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1   See European Central Bank (2001b).

continuous interest payments. The following data are used to estimate the zero-coupon yield curve:
– EURIBOR rates for maturity periods of 3, 6 and 12 months;
– interest rate swaps for the three-month EURIBOR for maturities of 2, 3, 4, 5, 6, 7, 8, 9 and 10 years.

The method used to calculate the yield curve is in line with the procedures typically applied by market participants[1]) and consists of two steps: First, a bootstrap procedure is used to calculate the zero-coupon rate for each time bucket, i.e. the predefined maturities on a 12-month basis. We start our calculation with the observed money market rates and then proceed to interest rate swaps. The first swap contract used to determine the yield curve has a maturity period of two years. Using the 12-month EURIBOR rate, its yield is converted into the hypothetical interest rate of a 2-year zero coupon bond. The zero coupon rates previously determined for 3, 6, 12 and 24 months and the 3-year interest rate swap are then used to calculate the 3-year zero coupon rate. In a second step, a linear interpolation is carried out for these time buckets in order to achieve a continuous yield curve for maturity periods ranging from 3 months to 10 years. This rather simple method is well suited to map different yield curve developments as long as there are sufficient data and the yield curve does not exhibit any sharp changes.[2])

### 2.2 Interpreting the Zero-Coupon Yield Curve

The observed zero-coupon yield curves are typically rising, falling (inverted) or constant across all maturities. The most frequent case is that of a positive slope, i.e. a situation in which interest rates increase in line with maturity periods. The theoretical basis for analyzing the yield curve is the expectations hypothesis. According to this approach, the current interest rates with long maturities are comprised of the expected future short-term rates. Thus, the current yield of a 10-year bond, for example, corresponds to the aggregate yields of ten consecutive future 1-year bonds. This implies that the yield of a one-time investment in a 10-year bond is equal to the yield resulting from purchasing one 1-year bond each year and keeping it in one's portfolio until redemption. It is thus possible to plot the respective expectations of future interest rate developments for any point in time by combining interest rates with different maturities. This explanatory approach makes it possible to analyze expectations of future cyclical developments on the basis of the expected future real interest rates. The Fisher hypothesis plays an important role in this context. It states that nominal interest rates contain both the expected real interest rate and the expected rate of inflation, which makes it impossible, when observing interest rates, to distinguish directly between the two components.

Interest rate developments and expectations of cyclical and price developments are interlinked in various ways. In general, a rising yield curve positively correlates with the expected economic growth. One explanatory approach incorporates the desire of economic agents to continuously develop consumption. Hence, if an economic downturn is unlikely, the demand for longer-term

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1    See Hull (2000), chapter 4, for further details.
2    Ron (2000) compares two different estimation procedures for the BLC.

bonds to hedge against potential income losses will decrease. Consequently, the bond price will fall and yields will go up, thus causing the gap to short interest rates to widen. As a result, ceteris paribus, the yield curve will steepen. Another approach traces this positive correlation to the development of inflation and the related monetary policy reactions. If economic growth clearly accelerates, the central bank will take measures to keep inflation at bay. A rise of key interest rates will first of all have an impact on the money market. As higher interest rates are transmitted along the yield curve, long-term interest rates will consequently rise as well.[1]

When applying the expectation hypothesis, we must take into account the assumption that investors are risk-neutral. This frequent limitation of preferences implies that in their decision-making, investors act as if they did not require additional compensation for risk. In reality, however, market participants' expectations may comprise constant or time-dependent risk premia that influence the forecasting quality of current zero coupon rates with respect to future interest rates. To be able to quantify these risk premiums, the strict form of the expectation hypothesis was extended and alternative models were introduced. The literature discusses alternative approaches such as the hypothesis of limited expectations, the preferred habitat approach, the liquidity hypothesis and the hypothesis of segmented markets.[2]

Charts 2a and 2b show the exemplary zero-coupon yield curves for six points in time: July 15, 1999; January 13, 2000; July 20, 2000; July 19, 2001; January 17, 2002; and March 1, 2002. We can see that the curves clearly change over time, which is essentially attributable to changing forecasts of macroeconomic developments. For the first three dates under observation, the yield curves all point upward, differing from each other only in curvature. By July 2001, developments saw a twisting at the short end of the yield curve. A key factor in changing market participants' expectations was the slowdown in U.S. economic growth, which drove up expectations of interest rate cuts in the euro area. The development over the first half of 2001 shows an inversion of the euro BLC, with the short end moving downward and the long end moving upward. This movement resulted in a steeper yield curve. Until December 2001/January 2002, an inversion was observed at the short end, as the 3-month rate was higher than the 1-year rate. With a view to long-term interest rate expectations on the interbank market one might, at that point, conclude that market agents expected the general economic situation to deteriorate over a time horizon of two to three years and thus expected interest rates to fall. Subsequently, i.e. for maturity periods of more than two years, the yield curve again exhibited rising zero coupon rates. This pattern implies that an economic slowdown is estimated to be limited in time. Thus, the zero coupon yield curve for January 2002 did not indicate that market participants expected a pronounced recession.

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1 *Empirical studies on the information content of the yield curve can be found in Dotsey (1998), Schich (1999) and Berk and Bergeijk (2000). No studies have been carried out for euro area developments since 1999, as the time span is too short.*

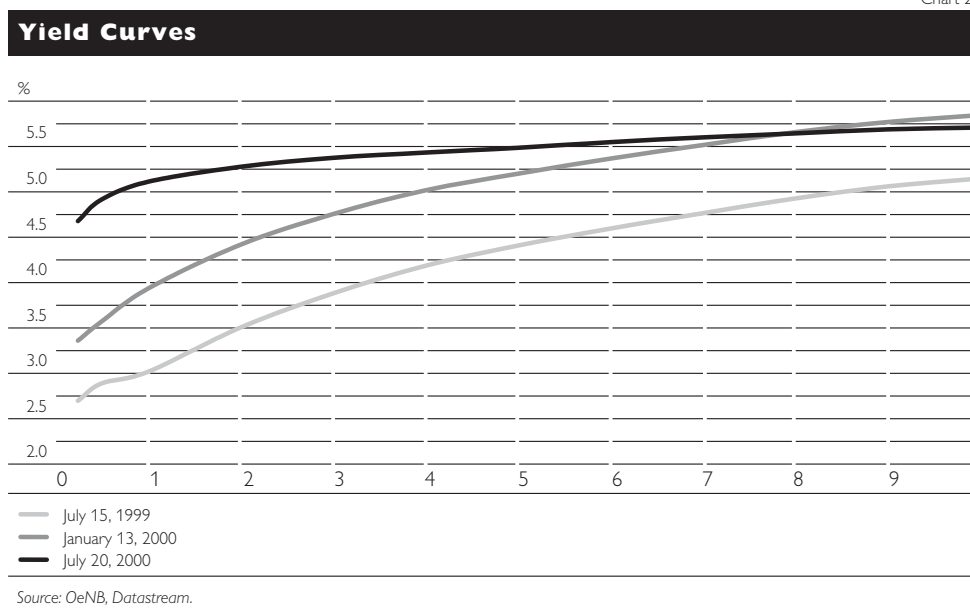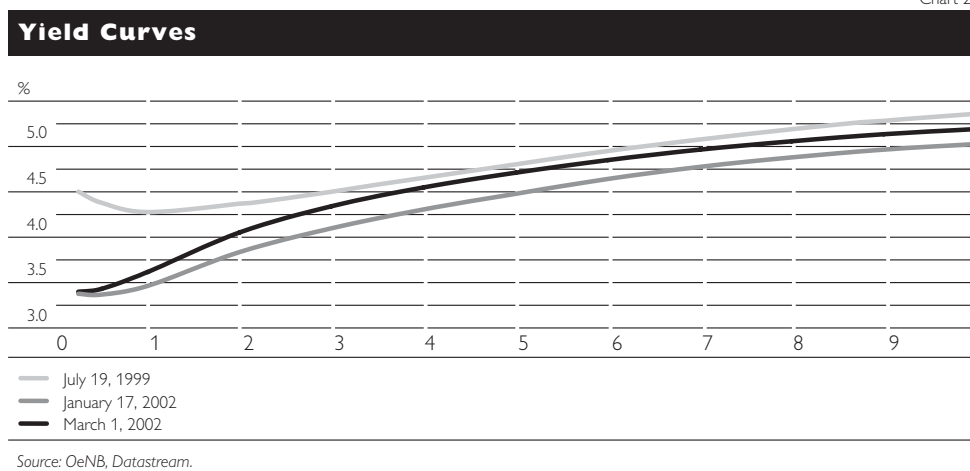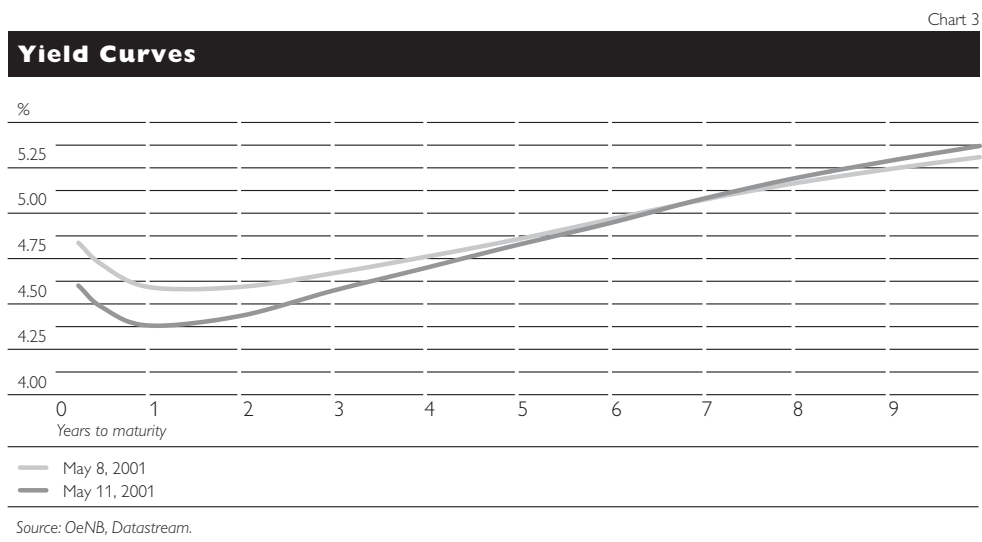2 *See Campbell et al. (1997), chapter 10.*

Chart 2a

## Yield Curves



| | July 15, 1999 |
| | January 13, 2000 |
| | July 20, 2000 |

*Source: OeNB, Datastream.*

Chart 2b

## Yield Curves



| | July 19, 1999 |
| | January 17, 2002 |
| | March 1, 2002 |

*Source: OeNB, Datastream.*

Like the 1999 and 2000 curves, the most recent curve, estimated for March 1, 2002, again exhibits a continuously positive slope, with the inversion at the short end having disappeared again. The latest yield curve indicates that in March 2002, financial market players expected the macroeconomic situation in the euro area to improve over the medium term, a notion which was influenced by market participants' expectation that the U.S. economy had passed its trough. Most economic and confidence indicators point to a beginning cyclical upswing or turning point for the summer of 2002. These improved perspectives have led to a clear upward revision of financial market expectations, which had an obvious impact on the movement of the yield curve.

The yield curve also serves to demonstrate the impact monetary policy measures have on market participants' expectations. A case in point is their reaction to the Eurosystem's interest rate cut of May 10, 2001, which, according to media reports, caught market participants by surprise. Chart 3 shows the

zero-coupon yield curves for May 8 and 11, 2001. By May 11, the BLC has clearly twisted, with the short end being 20 basis points below and the long end around 10 basis points above the curve of May 8. The short end also shows that the lower overnight interest rate caused the EURIBOR to decline slightly as well. Another remarkable development here is a climb in the 10-year zero-coupon interest rate. The uptrend in long-term interest rate swaps rates went hand in hand with similar movements of U.S. and German bond yields. This parallel rise in long-term interest rates on different markets indicates market players' increased uncertainty regarding future inflation developments. In the euro area, M3 growth played a major role in this context, as market participants tend to observe this indicator with particular interest. All in all, the interest rate cut caused the yield curve to steepen.

Chart 3

## Yield Curves



%

5.25
5.00
4.75
4.50
4.25
4.00

0   1   2   3   4   5   6   7   8   9
*Years to maturity*

— May 8, 2001
— May 11, 2001

*Source: OeNB, Datastream.*

To examine the explanatory power of the yield curve derived from interbank data, we compared it with that of German government bonds, using a principal components analysis (PCA) of zero-coupon rates. The PCA is a method of multivariate statistical analysis based on correlation matrices and facilitating the extraction of common determinants of swap rates and government bond rates. Thus, it is possible to compare the structure and interdependence of the two data sets. The detailed results of this comparison are presented in annex 1. The major finding is that there are strong similarities between the swap curve and the government bond curve.

### 2.3 Forward Yield Curves

Having studied spot prices, the next step is to analyze forward interest rates. A direct indicator of the forward yield curve can be derived from the prices of three-month EURIBOR futures contracts traded on the London International Futures and Options Exchange (LIFFE). Their nominal value is EUR 1 million, the smallest price movement allowed (tick size) is fixed at 0.005. Upon expiry of a contract, the positions are valuated at the official price and profits or losses are settled on this basis. Forward rates can be calculated directly from the prices of forward contracts, as these are quoted at 100.00 minus the forward rate. The

number of contracts traded actively is high enough to allow the implied forward rates to be calculated for a maturity period of up to 22 months.

Chart 4 shows the forward rates for the most frequently traded maturity periods in February 2002 as well as the spot price. To supplement our examination of the zero-coupon yield curve for individual points in time, we introduce a time series perspective, which enables us to analyze, on a daily basis, the changes in market expectations of interest rate developments in the euro area since the beginning of Stage Three of EMU. The chart clearly shows how interest rates went up as the Eurosystem gradually raised its key interest rates in 1999 and, in part, also in 2000. In winter 2000/01, forward rates fell below the EURIBOR rate for the first time. This positive gap between forward and spot prices means that, since then, market participants were expecting key interest rates to go down over the maturity periods of the forward contracts. This downward trend continued in 2001.

The development of the spread between forward and spot prices shown in chart 4 mirrors market participants' changing expectations on when and by how much the Eurosystem would reduce its key interest rates. This development is substantially influenced by economic forecasts. In the first half of 2001, part of the releases data as well as some confidence indicators and the forecasts derived from macroeconomic models suggested a cyclical downturn. At the same time, however, the growth of monetary aggregates did not decelerate and the oil price remained relatively high – two factors indicating a more sustained threat to price stability. Market participants do not pay attention to the economic climate in the euro area alone when interpreting the forward yield curve, but also to the U.S. economic situation and the monetary policy of the Federal Reserve System (Fed). As of the beginning of 2002, the forward and spot rates have been going up again, reflecting the improvement of economic forecasts, as already mentioned when discussing the yield curve. For the second half of 2002 (for the forward contract maturing in September 2002, to be exact), key interest rates are expected to be raised again.

Chart 4

## The EURIBOR and Three Forward Rates in 2002



Three-month EURIBOR
March 2002
June 2002
September 2002
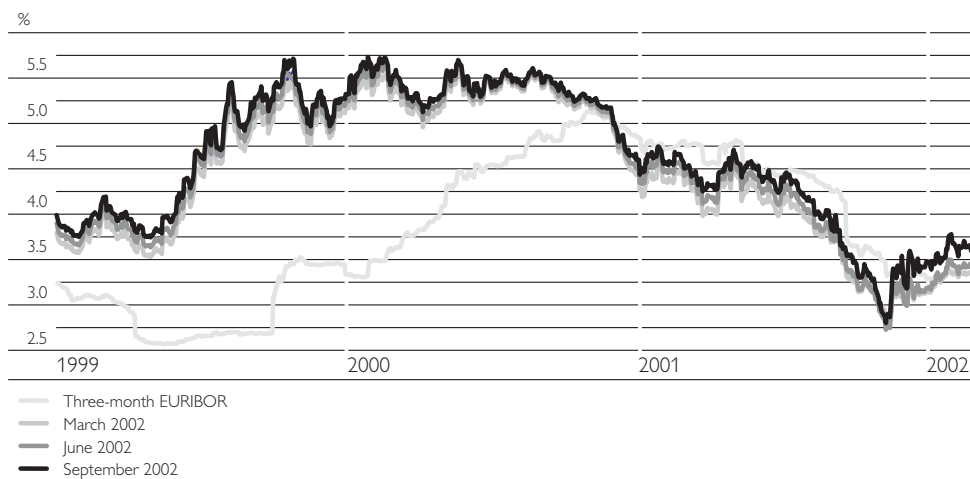
Source: OeNB, Datastream.

Chart 4 also shows that, at times, considerable differences exist between the rates for futures contracts with different maturity periods. Rates for contracts with longer maturities track the movement of the rate for the shortest contract at varying intervals. A negative gap between forward rates of different maturities reflects a falling forward yield curve, which indicates that market participants expect interest rates to decline only during the maturity period of longer contracts.

Before forward rates can be used as indicators of future interest rates expectations, their forecasting quality needs to be assessed. One important step is to quantify by how much forecasts and realizations deviate. Thus, if there was a sustained distortion in one direction, that is if rate expectations were typically too high or too low, this would significantly reduce the explanatory power. The graphical comparison of forecast time series and actual time series is a simple method to assess the forecasting power EURIBOR futures have for future spot rates. We fixed the forecasting horizon at two months, i.e. our forecast is based on the forward rate at two months prior to maturity. For the realized interest rate, we used the respective spot price on the day the contract matured. Thus the forecasting horizon covers around 40 trading days. In this type of evaluation, it does not matter which estimation method is used, since the forecast market prices of EURIBOR futures can be observed directly. When estimating forward rates, by contrast, different securities (or instruments with different characteristics) are used, which means that the instruments used to estimate the yield curve need not necessarily be homogeneous. Chart 5 shows the results of this comparison. Forecast values and realized values differ only very slightly: at 0.8 basis points, the mean forecasting error does not significantly differ from zero. The chart also shows that there is no systematic deviation into any one direction, which means that there is no sign of any notable distortion of forecasts. The graphical analysis indicates that the expectation hypothesis for EURIBOR futures rates cannot be rejected.[1]

Chart 5

**The Forecasting Quality of EURIBOR Forward Interest Rates**



Source: OeNB, Datastream.

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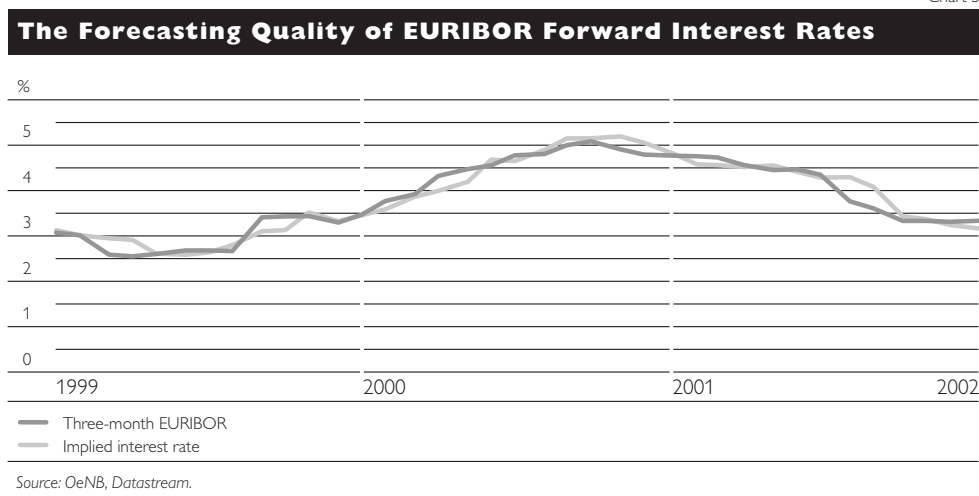
1    Moreover, an econometrically more exact measurement of the relation between the two series was carried out in the course of a cointegration test. By applying the Engle-Granger procedure, a cointegration between the forward rate and the future spot rate was determined.

## 3  The Informative Value of Options on Interest Rates

Since the yield curve plots the expected level of future interest rates, an indicator for the uncertainty of market participants' expectations may help to produce a clearer picture of the forecasts. The literature suggests using implied volatility and implied risk-neutral density for this purpose. These two methods are based on the prices of options on interest rates and can be used to calculate how widely prices are spread around expected values (variance), and, at a more general level, to determine the probability of various market forecasts. Like yield curves, implied volatilities and densities are forward-looking variables. As the yield curve discussed in section 2.3 is based on EURIBOR interest rate swaps and forward contracts, respectively, we now use the prices of options on the three-month EURIBOR to calculate the uncertainty measures.

Options are derivative contracts that are used to take speculative positions or to hedge investment portfolios. They convey the right to buy or sell a particular asset at a fixed price (strike price) on or before a specified future date. Unlike with futures contracts, only the seller of an option is obligated to perform, while the buyer may choose not to exercise an option. This fundamental difference has a strong impact on the valuation of the respective products. We distinguish call and put options, long and short positions, and European- and American-style contracts. Options to buy (call options) are acquired in anticipation of rising prices, whereas options to sell (put options) are bought in anticipation of falling prices. A long position means buying call or put options, a short position means that the writer (or holder) sells options naked against payment of an option premium. European-style options may be exercised by the holder only on the contract expiration date, while American-style options may be exercised at any time between the date of purchase and the expiry date. Stock options are traded on exchanges in a standardized form; exchange rate and interest rate contracts are also traded over the counter in considerable quantities.

The current value of an option is largely driven by the difference between the current price of the underlying asset and the strike price. If this difference is positive, i.e. if the underlying asset is worth more than the strike price, the holder of a call option stands to make a profit. Should the strike price of an option lie above the current underlying asset price (out-of-the-money option), this does not render the option invaluable as such, as the difference may yet turn positive until the option expires. In other words, the value of an option largely depends on how the price of the underlying asset develops over the life of the option. An important measure in this respect is how widely spread the prices are around the expected value (variance). For the holder of a call option, an option is the more promising the bigger the volatility of the underlying asset is. If the price of the underlying asset is much higher than the strike price, the value of the option goes up considerably. Since options are future-oriented, market participants must anticipate the variances for the period until the contracts settle. As explained above, these expectations are key drivers of option prices, which is why the observed prices of traded options "implicitly" show the volatility or probability density that market participants expect the underlying asset prices to have until an option expires.

The data the implied variance and the implied probability density are based on are the prices of LIFFE-traded options. Here, contracts with maturities of up to ten months are quoted at the same nominal value (EUR 1 million) as EURIBOR futures and at nine striking prices. The positions in options are marked to market on a daily basis, and margin calls are made when the market moves against a position. The two indicators are extracted from the option prices via a theoretical pricing model and are estimates of the uncertainties about the development of the short interest rate. See annex 2 for details on the procedure and for theoretical background information.

### 3.1 Implied Volatilities

The implied volatility represents investors' current expectations, over an interval, of the fluctuation of future interest rates during the remaining life of an option. Historical volatility, by contrast, measures the variance of past price changes only. Calculated according to a theoretical model from the prices of options on interest rate instruments, implied volatility is an indicator that has a two-fold function. On the one hand, the second moment serves to complement the spot price/forward yield curves used in chapter 2 to plot the expectation value (first moment). When interpreting both market expectations and current uncertainty estimations together, it is possible to take into account data that are relevant for the risk premium-related distortions mentioned in chapter 2. On the other hand, implied variance helps analyze market participants' risk estimation. Changes in implied volatility may be interpreted as changes in market dealers' risk assessment. Thus, the anticipation of broad dispersions might indicate that market participants expect pronounced volatilities.

Chart 6 shows the implied volatility of the EURIBOR and the spot price. Over the observation period, volatility fluctuated between 10% and 30%. The spread curve exhibits three distinct phases. What is remarkable is the continued low level of volatility from December 2000 to September 2001. At that time, market participants' expectations regarding interest rate developments were relatively precise. The reduction of key interest rates on May 10, 2001, did not trigger any pronounced reactions. Subsequently, volatility increased after the terrorist attacks of September 11, 2001 – a trend that continued until the turn of the year 2001/02. This rise in volatility indicates that the terrorist attacks

Chart 6



**The EURIBOR and Implied Volatility**

Three-month EURIBOR (left-hand scale)
Implied volatility (right-hand scale)

*Source: OeNB, Datastream.*
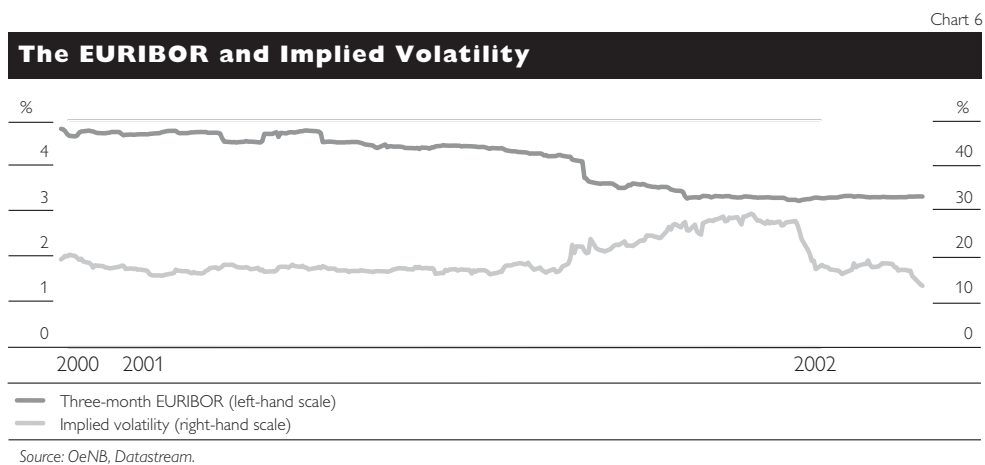
drove up uncertainty. Thus, immediately after September 11, the liquidity situation gave cause for concern. As of December 2001, volatility newly decreased while the economy showed first signs of an upturn. This reduction of volatility indicates market players' reduced uncertainty with respect to further monetary policy measures, thus supporting the results gained from the EURIBOR forward rates.
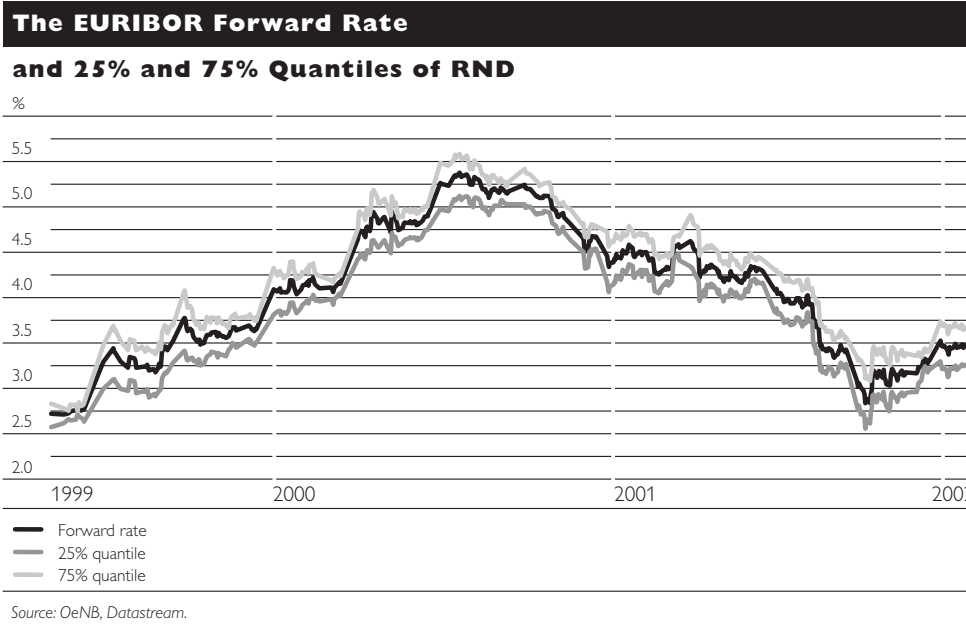
### 3.2 Implied Densities

In the literature,[1]) the concept of implied volatilities has been expanded to include risk-neutral density (RND). RND depicts market agents' expectations of the probability of price and interest rate changes of various dimensions, thus enabling us to calculate the aggregate risk-neutral probability distribution. Implied volatility, by contrast, only depicts part of the information contained in the density. Applying this method, we can clearly determine by how much market participants estimate interest rates to deviate from the expected value and how likely various interest rates appear to be from the present point of view. We can also see how the probability of certain price changes or interest rate movements develops over time. The skewness of the implied density, which shows whether positive or negative price changes are more likely in the current distribution, is of special interest for a monetary policy analysis. RND produces risk-neutral measures of the symmetry (or lack of symmetry) of the yield distribution. As a normal (Gaussian) distribution is symmetric, the skewness is zero. This method serves as a supplement to implied volatility and provides an additional measure for market uncertainty.

In estimating the implied RND, we proceed as follows: Using the set of market prices as quoted at the end of the trading day as a sample, we examine six to eleven option prices on average. The model for the price dynamics of the underlying asset is a mixture of two lognormal distributions. This specification consists of two regimes with different means and variances that are controlled by their relative weights. Their aggregate density is thus determined by five parameters: two mean values, two variances, and the relative weight of the two lognormal distributions. This relatively simple approach guarantees that the representation of densities is sufficiently flexible, making it possible to infer a large number of possible risk estimations from option prices. For each day, parameters are estimated from the available option price by numerically minimizing the squared distance between the theoretical price resulting from the valuation model and the actual market price. From this estimate, which is based on a given day of the month, we infer the joint density parameters that provide a complete definition of the RND. This enables us to diagram probability density and calculate the related descriptive statistics.

Chart 7 shows the forward interest rates and the 25% and 75% confidence intervals resulting from the RND, enabling us to examine by how much market players' interest rate expectations disperse and change over time. The distance between quantiles, for example, indicates the uncertainty about the level of interest rates over the remaining life of the options. We can see that this band narrows significantly at first, only to broaden again later. The reduced distance

1  See Jackwerth (1999) for an overview of the various models.

Chart 7

**The EURIBOR Forward Rate**

**and 25% and 75% Quantiles of RND**



— Forward rate
— 25% quantile
— 75% quantile

*Source: OeNB, Datastream.*

between the 25% and the 75% quantiles indicates a decline in uncertainty; part of this development, however, may be attributable to maturity-specific effects. In the literature, it has been pointed out, for example, that implied volatility increases with the remaining life of an option. Such effects render it difficult to clearly interpret these movements. Still, the pronounced narrowing of the confidence interval indicates that market participants' risk estimation declined.

Chart 8 shows the RND for July 15, 1999; January 13, 2000; July 20, 2000; January 17, 2001; July 19, 2001; and March 1, 2002. Choosing these time intervals guarantees that all RNDs have a constant maturity period of 60 days. Thus, possible maturity-specific effects become irrelevant, which makes it easier to interpret the results. Just as the yield curves, the RND exhibits a

Chart 8

**RNDs Over Time**



— July 15, 1999
— January 13, 2000
— July 20, 2000
— January 17, 2001
— July 19, 2001
— March 1, 2002

*Source: OeNB, Datastream.*

Chart 9

**RNDs**



May  8, 2001
May 11, 2001

*Source: OeNB, Datastream.*
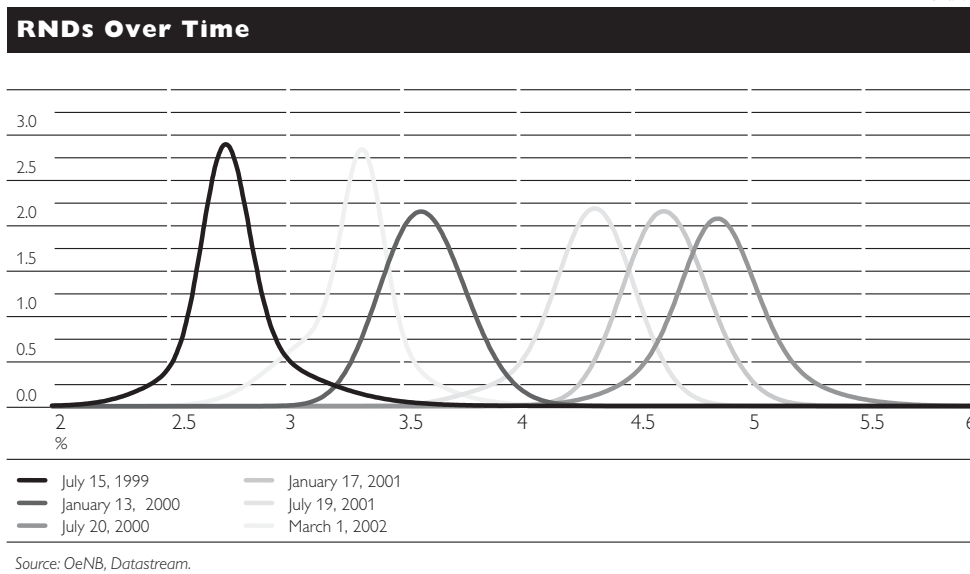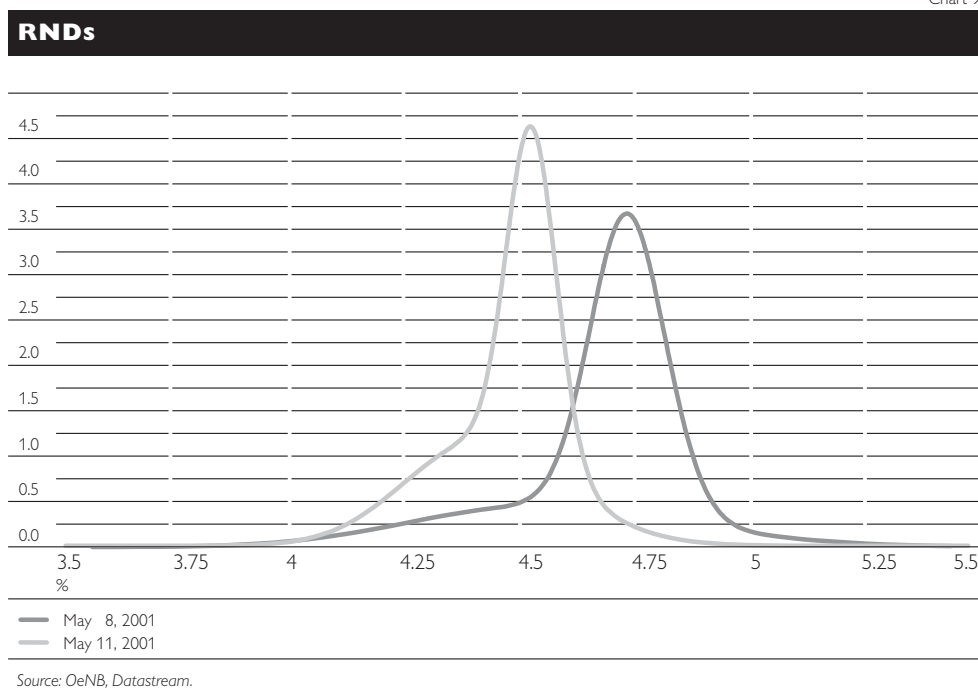
clear shift in densities. Another interesting factor apart from the mean and the variance is the skewness as an indicator of the symmetry of market players' expectations. The observed option prices, for example, indicate whether market participants consider a rise in interest rates just as likely as a decline. Obviously, the skewness also decreased over time, just like the first and second moments. A negative skewness means that negative values are more frequent than positive values. We can see here that market participants' expectations of declining interest rates strengthened over time, thus determining the development of option prices.

With the help of implied density we can illustrate how risk estimations change in the wake of monetary policy measures. Chart 9 shows RND movements around the time of the meeting of the Governing Council of the ECB on May 10, 2001. As in our discussion of the yield curve in section 2.2, we chose May 8 and 11, 2001, as observation days. Just like the yield curve, RND development was obviously influenced by the Governing Council meeting. First of all, the mean declined owing to a change in the forward interest rate. Density changed its form as well, with the implied probability mass shifting to the left. This means that from the perspective of market agents', lower interest rates became more likely. It is interesting to note a stronger bulge to the left of the center of the new distribution. All in all, the movement recorded after the Council meeting indicates that the first interest rate move did not cause market participants' expectations of further accommodative action to decline.

## 4 Conclusion

This study presents two types of financial market indicators that are both based on the EURIBOR interest rate. We started our examination by using the interbank yield curve as an indicator of interest rate expectations and presented a method for estimating a yield curve for the euro area. Based on interbank instruments, the euro BLC serves as a representative illustration of euro area market players' interest rate expectations. Our selection was supported by the results of a comparison with a yield curve based on German government bonds. We also examined and confirmed the forecasting quality of forward rates. As a second indicator, we discussed the information contained in options on interest rate instruments. A useful tool for rendering a comprehensive picture of market expectations is the implied density, which makes it possible to use option prices to illustrate the (risk-neutral) probabilities by which market participants currently expect interest rates to change. Both the indicators of interest rate expectations and implied volatilities and densities rely on the interest rate for unsecured interbank loans, i.e. the EURIBOR. This uniform approach allows for a simultaneous representation of both market participants' interest rate forecast and risk estimates for the euro area money market.

Constructing a third yield curve, the so-called credit term structure, appears to be of particular interest for the further development of financial market indicators. In this construction, the yield curve extracted from corporate bonds is used in addition to those derived from government bonds and interbank instruments. This extension, however, only seems to be useful if a broad range of issuers is active on the market. The advantage of this method would be that it produces an indicator that is directly connected to the real economy, thus introducing an additional perspective to viewing the monetary transmission mechanism.

**Annex 1**
**Results of the Principal Components Analysis (PCA)**
The PCA depicts the empirical relations between the yield curves of government bonds and interest rate swaps and examines the differences between these two markets. Moreover, it also serves to estimate the informative value of various approaches to measuring riskfree interest rates. To this end, we extract the determinants of the correlation matrices of the two yield curves. The PCA calculates the most important unobserved factors of zero-coupon rates for government bonds and swaps, which serve to depict the key determinants of yield curves.

The data set used here comprises the zero-coupon rates calculated for German government bonds and interbank instruments with a maturity of six months and one to ten years, respectively. All in all, 11 time series (daily observations), ranging from November 15, 1994, to March 21, 2001, are used for each of the two categories. A precondition for applying the PCA is that the time series do not exhibit any stochastic trends. Unit root tests[1] show that zero-coupon rates are not stationary, whereas their first differences are. This is why the analysis is carried out using the first differences. Summarizing the

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1    *We applied the ADF test; for details see Hamilton (1994).*

available data in a simplified form, the PCA highlights the unobserved common factors of interest rate changes, thus enabling us to model the correlation structure of the eleven time series on the basis of their major components without reducing the information content. The major components are calculated by transforming the correlated eleven interest rates into eleven orthogonal series. They are pairwise uncorrelated linear combinations of interest rate changes and depend on their weights on the initial data. The resulting factors have the same variability as the initial data and are arranged in a way that the first series explains the highest share (in percent) in the variability of the original time series; the second series explains the second-highest share, etc. (see Bliss, 1997, for a study on U.S. government bond yields).

The empirical results derived from the PCA indicate that the composition of the determinant factors is very similar for both yield curves (see table "Weighting of the First Three Major Components for Government Bonds and Swaps"). With a cumulative explanatory value of 98% for government bonds and 96% for swaps, three components appear to be key factors for both government bonds and interbank instruments: The first factor has positive and, for maturities of one year or more, almost identical weights across all maturity periods and can therefore be interpreted as representing the levels of both curves. Its explanatory value comes to 78% for bonds and 8% for swaps. This shows that the general interest rate level has the strongest influence on the correlation of the first differences of zero coupon rates. Weights at the short end are negative for the second factor, but increase in line with maturity lengths, turning positive for maturities of four to five years (and more). This pattern represents the slope of the two yield curves. The explanatory value of the second factor is 15% for bonds and 11% for swaps. With an explanatory value of 3% for government bonds and 5% for swaps, the third factor has positive weights at the short end, followed by negative weights, and then again by positive weights at the long end, thus depicting the skewness of the curves. With an explanatory value of below 1%, the remaining factors are only of very little importance. The high similarity of the first three dominant components shows that the two curves are consistent in the most important factors. This means that, based on the PCA, we can conclude that the swap curve is able to reproduce the dynamics of government

## Weighting of the First Three Major Components

### for Government Bonds and Swaps

| Years to maturity | Bonds | | | Swaps | | |
|---|---|---|---|---|---|---|
| | Comp 1 | Comp 2 | Comp 3 | Comp 1 | Comp 2 | Comp 3 |
| 0.5 | 0.1644 | −0.6115 | 0.4952 | 0.0660 | −0.7561 | 0.6454 |
| 1 | 0.2353 | −0.5382 | 0.0970 | 0.2557 | −0.4158 | −0.4297 |
| 2 | 0.2906 | −0.3315 | −0.3354 | 0.3067 | −0.2411 | −0.3170 |
| 3 | 0.3201 | −0.0974 | −0.4430 | 0.3182 | −0.1558 | −0.2539 |
| 4 | 0.3290 | 0.0178 | −0.3287 | 0.3297 | −0.0317 | −0.1088 |
| 5 | 0.3317 | 0.0899 | −0.1769 | 0.3314 | 0.0310 | −0.0502 |
| 6 | 0.3308 | 0.1390 | −0.0370 | 0.3315 | 0.0801 | 0.0233 |
| 7 | 0.3277 | 0.1768 | 0.1010 | 0.3279 | 0.1416 | 0.1457 |
| 8 | 0.3219 | 0.2076 | 0.2112 | 0.3198 | 0.1937 | 0.2294 |
| 9 | 0.3147 | 0.2299 | 0.3020 | 0.3148 | 0.2234 | 0.2678 |
| 10 | 0.3047 | 0.2491 | 0.3873 | 0.3125 | 0.2391 | 0.2708 |

*Source: OeNB.*

bond yields. These results, whose explanatory power is valid for the entire euro area, show that the interbank yield curve is a suitable instrument for monetary policy analysis.

**Annex 2**

**Option Price Theory and Estimation of Implied Risk-Neutral Density**

A central finding of financial market theory is the extraction of the theoretical price of a European-style call option (for an overview of option price models, see Hull, 2000):

$$c(X, \tau) = e^{-r\tau} \int_{x}^{\infty} f(S_T)(S_T - X)dS_T,$$

with

$c(.)$      price of a European-style call option
$X$      strike price
$\tau$      maturity of option
$f(S_t)$    risk-neutral density of the price of the basis instrument at t
$S_T$      price of the basis instrument at T
$r$      riskfree interest rate.

The above valuation equation shows that the price of a call option equals the expected (risk-neutral) option payoff, i.e. the discounted difference between the price the underlying asset commands on the option expiration day and its agreed strike price. Looking ahead, the value of an option expiring at T is thus influenced fundamentally by the probability of the underlying asset assuming higher or lower prices. This theoretical result illustrates the central role that the risk-neutral probability density plays in determining the theoretical price of an option. This price will differ according to the price path of the underlying asset.

In practice, a very common choice in this context is the Black-Scholes model (1973), which assumes that the price path of the underlying asset is described by a geometric Brownian motion. This gives as theoretical price of a European-style call option

$$c(X, \tau) = SN(d_1) - Xe^{-r\tau}N(d_2)$$

with

$$d_1 = \frac{ln(S/X) + (r + 0.5\sigma^2)\tau}{\sigma\sqrt{\tau}}$$

$$d_2 = d_1 - \sigma\sqrt{\tau},$$

with

$N(.)$    cumulative normal distribution
$\sigma$      volatility of underlying asset prices.

The Black-Scholes model allows the estimation of the implied volatility, as all other parameters are known. It is thus possible to extract the variance forecast from in the market price by numerical iteration.

For the extraction of the RND, the Black-Scholes model is generalized. The RND model consists of the specification of the mixture of two lognormals for modeling the price path of the underlying asset (Melick and Thomas, 1997; Gemmill and Saflekos, 2000; or Jondeau and Rockinger, 2000). The mixture of two lognormal distributions [Log N()] is defined as

$$f(S_T) = \theta LogN(a_i, b_i, S_T) + (1 - \theta)LogN(a_i, b_i, S_T)$$
$$a_i = lnS + (\mu_i - 0.5\sigma_i^2)\tau$$
$$b_i = \sigma_i\sqrt{\tau}$$

with
$\theta$      weighting coefficient of the lognormals $(0 \leq \theta \leq 1)$
$\mu_i, \sigma_i$   mean and variance of the normal distribution
$a_i, b_i$   location and dispersion parameters of the lognormal distribution.

The above specification of the stochastic process of the underlying asset price is based on two states with different moments, governed by the weights $\theta$ and $1-\theta$. In each state, the log price of the underlying asset is log-normally distributed. The assumption of a mixture of two distributions is flexible enough to generate a variety of PDF (Probability Density Function) shapes deviating from the normal (Gaussian) distribution. This property is required because the empirically observed PDFs of securities returns contrast sharply with the normal distribution produced by the Gaussian model (Pagan, 1996). This deviation results from two facts: first, large price changes occur more often than the normal distribution would suggest, and second, there are signs of asymmetry in stock returns. Empirically, negative and positive price moves are simply not equally probable. This empirical regularity is also apparent in the implied volatilities. If the implied volatility of an option is plotted against its strike price, the chart typically exhibits a U-shaped pattern, termed smile effect and extensively described in the literature. It reflects the fact that, contrary to the (one-lognormal) Black-Scholes assumption, the prices of options with widely dispersed strikes display significant deviations. Generally the model described above allows for great flexibility in displaying market expectations of how the underlying asset price may develop during the time to maturity. In the literature the estimation results for a mixture of two normal distributions of stock prices point to a higher occurrence of low-volatility regimes than of high-volatility regimes. The latter are interpreted as a crash state in the literature. In the case of a single normal distribution, i.e. when the weighting coefficient assumes the boundary values of 0 or 1, the mixture model is identical with the Black-Scholes model.

We use the nonlinear least squares method to estimate the five parameters of the lognormal distribution, i.e. we minimize the squared difference between the observed market prices and the theoretical option prices based on the model outlined above. In this minimizing exercise we use forward prices to specify the mean. In the absence of arbitrage possibilities, the forward price thus equals the mean of the risk-neutral distribution. This restriction serves to simplify the estimation procedure. Another simplification is that the mixture model used to extract the theoretical option prices is expressed in a closed form.

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# Abbreviations

| | | | |
|---|---|---|---|
| AMS | Arbeitsmarktservice Österreich (Austrian Public Employment Office) | GDP | Gross Domestic Product |
| | | HICP | Harmonized Index of Consumer Prices |
| ARTIS | Austrian Real Time Interbank Settlement | IHS | Institut für Höhere Studien (Institute for Advanced Studies) |
| BWA | Bundes-Wertpapieraufsicht (Federal Securities Supervisory Authority) | IIP | International Investment Position |
| | | IMF | International Monetary Fund |
| BWG | Bankwesengesetz (amendments to the Banking Act) | NACE | Nomenclature générale des Activités économiques dans les Communautés Européennes (Statistical Classification of Economic Activities) |
| CAD | Capital Adequacy Directive | | |
| CEECs | Central and Eastern European Countries | | |
| COICOP | Classification of Individual Consumption by Purpose | ÖCPA | Austrian Version of the Classification of Products by Activities |
| CPI | Consumer Price Index | OECD | Organisation for Economic Co-operation and Development |
| EC | European Community | | |
| ECB | European Central Bank | OeKB | Oesterreichische Kontrollbank |
| EEA | European Economic Area | OeNB | Oesterreichische Nationalbank |
| EEC | European Economic Community | ÖNACE | Austrian Version of the Statistical Classification of Economic Activities |
| EGVG | Einführungsgesetz der Verwaltungsverfahrensgesetze (Introductory Act to the Administrative Procedure Acts) | RTGS | Real Time Gross Settlement System |
| | | SDR | Special Drawing Right |
| | | SNA | System of National Accounts |
| EMU | Economic and Monetary Union | TARGET | Trans-European Automated Real-time Gross settlement Express Transfer |
| EQOS | Electronic Quote and Order Driven System | | |
| | | TEU | Treaty on European Union |
| ERM | Exchange Rate Mechanism | WIFO | Österreichisches Institut für Wirtschaftsforschung (Austrian Institute of Economic Research) |
| ERP | European Recovery Program | | |
| ESCB | European System of Central Banks | | |
| ESNA | European System of National Accounts | WWU | Wirtschafts- und Währungsunion |
| EU | European Union | | |
| Eurostat | Statistical Office of the European Communities | | |

# *Legend*

– = The numerical value is zero
.. = Data not available at the reporting date
× = For technical reasons no data can be indicated
0 = A quantity which is smaller than half of the unit indicated
∅ = Mean value
_ = New series

Note: Apparent arithmetical discrepancies in the tables are due to rounding.

# Official Announcements
# of the Oesterreichische Nationalbank

## Official Announcements
## Regarding the Foreign Exchange Law

| | | | |
|---|---|---|---|
| DL 1/91 | Promulgation of the new Official Announcements regarding the Foreign Exchange Law; general provisions | Sept. 24, 1991 | 4/1991 |
| | 1. Issuance of new Official Announcements | | |
| | 2. Definitions | | |
| | 3. Fees | | |
| DL 2/91 | Granting of general licenses | Sept. 24, 1991 | 4/1991 |
| | 1. General license | | |
| | 2. Waiver of obligation to declare; release | | |
| | 3. Nonbanks | | |
| | 4. Banks not engaged in foreign business | | |
| | 5. Foreign exchange dealers | | |
| | 6. Exchange bureaus | | |
| | 7. Special banks and financial institutions | | |
| | 8. Provisions applying to both banks and financial institutions | | |
| DL 3/91 | Reporting requirements | Sept. 24, 1991 | 4/1991 |
| | 1. General provisions | | |
| | 2. Exemptions from the reporting obligation | | |
| | 3. General reports | | |
| | 4. Reports by banks | | |
| | 5. Reports by nonbanks and financial institutions | | |
| | 6. Special reports | | |
| DL 4/91 | Assets of nonresidents with residence (domicile) in Iraq | Oct. 29, 1991 | 4/1991 |
| DL 2/93 | Modification of the Official Announcement DL 3/91 | May 5, 1993 | 2/1993 |
| DL 1/95 | Repeal of the Official Announcement DL 1/93; SC Resolution 1022 (1995) Concerning the suspension of the sanctions of the United Nations against the Federal Republic of Yugoslavia | Dec. 21, 1995 | 4/1995 |
| DL 1/96 | Modification of Official Announcement DL 3/91 | Sept. 3, 1996 | 3/1996 |
| DL 1/99 | Modification of Official Announcements DL 2/91 and DL 3/91 to the Foreign Exchange Act | Dec. 21, 1998 | 4/1998 |
| DL 2/99 | Abrogation of Official Announcement DL 3/93 Sanctions of the United Nations against Libya | April 30, 1999 | 1/1999 |
| DL 3/99 | Modification of Official Announcement DL 3/91 with respect to the Foreign Exchange Act | Dec. 16, 1999 | 3/1999 |
| DL 1/01 | Modification of Official Announcement DL 3/91 with respect to the Foreign Exchange Act | June 19, 2001 | 2/2001 |
| DL 1/02 | Modification of Official Announcements DL 1/91 and DL 3/91 with respect to the Foreign Exchange Act | Feb. 25, 2002 | 1/2002 |

Please see the German-language publication "Berichte und Studien" for a list of all Official Announcements in German.

# *Council Regulations*
# *of the European Communities*

## Minimum Reserve Regulations

| | | |
|---|---|---|
| No 2531/98 | Council Regulation (EC) concerning the application of minimum reserves by the European Central Bank | Nov. 23, 1998 |
| No 2532/98 | Council Regulation (EC) concerning the powers of the European Central Bank to impose sanctions | Nov. 23, 1998 |
| No 2818/98 | Regulation (EC) of the European Central Bank on the application of minimum reserves | Dec. 1, 1998 |

# List of Reports, Summaries and Studies[1]

## Oesterreichische Nationalbank and Selected Monetary Aggregates

| | |
|---|---|
| Official Announcements Regarding the Foreign Exchange Law and Minimum Reserve Requirements – see preceding page | |
| Calendar of Monetary Highlights | 2/1999 |
| The Possibilities and Limitations of Monetary Policy – Results of the OeNB's 27th Economics Conference | 3/1999 |
| Calendar of Monetary and Economic Highlights | 4/1999 |
| Calendar of Monetary and Economic Highlights | 1/2000 |
| Calendar of Monetary and Economic Highlights | 2/2000 |
| Calendar of Monetary and Economic Highlights | 3/2000 |
| The New Millennium – Time for a New Economic Paradigm? – Results of the OeNB's 28th Economics Conference | 3/2000 |
| Calendar of Monetary and Economic Highlights | 4/2000 |
| Calendar of Monetary and Economic Highlights | 1/2001 |
| Calendar of Monetary and Economic Highlights | 2/2001 |
| The Single Financial Market: Two Years into EMU – Results of the OeNB's 29th Economics Conference | 2/2001 |
| Calendar of Monetary and Economic Highlights | 3–4/2001 |
| Calendar of Monetary and Economic Highlights | 1/2002 |
| Calendar of Monetary and Economic Highlights | 2/2002 |

Please see the German-language publication "Berichte und Studien" for a list of all German-language reports, studies and special publications of the OeNB.

## Austrian Financial Market

| | |
|---|---|
| Austria's Major Loans Register in 1998 | 2/1999 |
| Money and Credit in the First Half of 1999 | 3/1999 |
| Banking Holidays in Austria | 4/1999 |
| Money and Credit in the First Three Quarters of 1999 | 4/1999 |
| Money and Credit in 1999 | 1/2000 |
| The Austrian Supervisory Risk Assessment System | 1/2000 |
| Money and Credit in the First Quarter of 2000 | 2/2000 |
| Risk Analysis of a Representative Portfolio of International Assets | 2/2000 |
| Calculating the Thresholds for the Notification of Mergers of Banks – The New Legal Situation | 2/2000 |
| Money and Credit in the First Half of 2000 | 3/2000 |
| Banking Holidays in Austria | 4/2000 |
| Money and Credit in the First Three Quarters of 2000 | 4/2000 |
| Money and Credit in the Year 2000 | 1/2001 |
| Money and Credit in the First Quarter of 2001 | 2/2001 |
| Money and Credit in the First Half of 2001 | 3–4/2001 |
| Banking Holidays in Austria in the Year 2002 | 3–4/2001 |
| Money and Credit in the Year 2001 | 1/2002 |
| Money and Credit in the First Quarter of 2002 | 2/2002 |
| EURIBOR Interest Rate Instruments as Indicators of Financial Market Expectations | 2/2002 |

## Interest Rates

| | |
|---|---|
| An International Comparison of Term Structures – Estimations Using the OeNB Model | 1/1999 |

[1] For a comprehensive list of reports, summaries and studies hitherto published please refer to issue no. 1/2002 of "Focus on Austria."

Published in
"Focus on Austria"

## External Sector

| | |
|---|---|
| Austria's International Investment Position in 1997 | 1/1999 |
| Special Survey on the Regional Allocation of Nonresident Securities Held by Residents as of December 31, 1997 | 1/1999 |
| Balance of Payments for the Year 1998 | 2/1999 |
| New Concept of the Austrian Balance of Portfolio Investment | 2/1999 |
| Austrian Outward and Inward Direct Investment at the End of 1997 | 2/1999 |
| Balance of Payments in the First Quarter of 1999 | 3/1999 |
| Austria's International Investment Position in 1998 | 3/1999 |
| Balance of Payments in the First Half of 1999 | 4/1999 |
| Austrian Outward and Inward Direct Investment in 1997 – Results of the 1997 Survey and Development of Selected Indicators | 4/1999 |
| 1997 Coordinated Portfolio Investment Survey | 4/1999 |
| Balance of Payments in the First Three Quarters of 1999 | 1/2000 |
| Balance of Payments in 1999 | 2/2000 |
| Austrian Outward and Inward Direct Investment at the End of 1998 | 2/2000 |
| Balance of Payments in the First Quarter of 2000 | 3/2000 |
| Austria's International Investment Position in 1999 – The External Sector of the Financial Account | 3/2000 |
| Balance of Payments in the First Half of 2000 | 4/2000 |
| Austrian Outward and Inward Direct Investment – Results of the 1998 Survey and Development of Selected Indicators | 4/2000 |
| New Statistical Framework for the Portfolio Investment Position | 4/2000 |
| Balance of Payments in the First Three Quarters of 2000 | 1/2001 |
| Balance of Payments in the Year 2000 | 2/2001 |
| Austrian Outward and Inward Direct Investment at the End of 1999 | 2/2001 |
| Balance of Payments in the First Quarter of 2001 | 3–4/2001 |
| Austria's International Investment Position in 2000 | 3–4/2001 |
| Austrian Outward and Inward Direct Investment – Results of the 1999 Survey and Development of Selected Indicators | 3–4/2001 |
| Balance of Payments in the First Three Quarters of 2001 | 1/2002 |
| Balance of Payments in the Year 2001 | 2/2002 |

## Economic and Monetary Union

| | |
|---|---|
| Harmonized Indices of Consumer Prices – Progress and Unresolved Problems in Measuring Inflation | 2/1999 |
| Economic Policy Co-operation in EMU: European Economic Policy Challenges | 2/1999 |
| Effects of the Euro on the Stability of Austrian Banks | 3/1999 |
| The Austrian Banks at the Beginning of Monetary Union – The Effects of Monetary Union on the Austrian Banking System from a Macroeconomic Perspective | 3/1999 |
| Recent Developments on the Meat Markets and Their Impact on Inflation in Austria and the Euro Area | 1/2001 |
| Economic Aspects of the Euro Cash Changeover in Austria | 2/2001 |
| Central Banks and the Challenges of the Information Economy – Are We on the Road to e-CBs? | 1/2002 |

# List of Studies
## on Focus on Austria Main Topics

**Focus on Austria 2/2000:**

## The Monetary Policy of the Eurosystem
Monetary Policy and Monetary Policy Strategy in EMU:
New Framework – New Challenges
The Credibility of the Eurosystem
Monetary Growth during the Changeover to Economic
and Monetary Union
Indicators for Assessing Price Changes
Estimate and Interpretation of the Taylor Rule for the Euro Area
Modification to the Monetary Policy Framework
and Structural Changes in the Austrian Money Market
in Stage Three of EMU

**Focus on Austria 3/2000:**

## On a New Capital Adequacy Framework
## as Proposed by Basel and Brussels
Regulatory Capital Requirements for Austrian Banks –
A Supervisory Tool Subject to Change
Supervisory Review
Credit Risk
Critical Evaluation of the Basel Committee's
and the European Commission's Proposals on the
Treatment of Other Risks in the New Capital Adequacy Framework
Interest Rate Risk in the Banking Book

**Focus on Austria 2/2001:**

## The New Framework
## for Fiscal Policy
Fiscal Policy Design in the EU
Measures and Strategies for Budget Consolidation
in EU Member States
Distributive Aspects of Economic Policy in EMU –
An Analysis from an Employee Perspective
Problems Relating to the Taxation of Cross-Border Capital Income
Austria's Sovereign Debt Management Against the Background
of Euro Area Financial Markets
Cyclically Adjusted Budgetary Balances for Austria

**Focus on Austria 3–4/2001:**

## Aspects of the Transmission of Monetary Policy

The Transmission Mechanism
and the Role of Asset Prices in Monetary Policy
Asymmetric Transmission of Monetary Policy
through Bank Lending –
Evidence from Austrian Bank Balance Sheet Data
Balance Sheet and Bank Lending Channels:
Some Evidence from Austrian Firms
Financial Innovation and the Monetary Transmission Mechanism
Transmission Mechanism and the Labor Market:
A Cross-Country Analysis
Monetary Transmission and Fiscal Policy
Principles for Building Models of the
Monetary Policy Transmission Mechanism

**Focus on Austria 2/2002:**

## EU Enlargement to the East:
## Effects on the EU-15 in General
## and on Austria in Particular

The Impact of EU Eastward Enlargement on Wages
in the Current Member States with Special Reference to Austria
Institutional Implications of EU Enlargement
in the Area of Economic and Monetary Policies
The Banking System in the Accession Countries
on the Eve of EU Entry
The Integration of Eastern Europe –
Effects on Stocks and Bond Markets
Exchange Rate Strategies of the EU Accession Countries
on the Road to EMU: Impact on the Euro Area

# Publications
# of the Oesterreichische Nationalbank

## Periodical Publications

| | |
|---|---|
| Statistisches Monatsheft | monthly |
| Focus on Statistics | |
| (English translation of "Statistisches Monatsheft") | http://www.oenb.at |
| Leistungsbilanz Österreichs, revidierte Jahresdaten | |
| gegliedert nach Regionen und Währungen | annually |
| Berichte und Studien | quarterly |
| Focus on Austria (selected chapters from | |
| „Berichte und Studien") | quarterly |
| Focus on Transition | semiannually |
| Finanzmarktstabilitätsbericht | semiannually |
| Financial Stability Report | |
| (English translation of "Finanzmarktstabilitätsbericht") | semiannually |
| Geschäftsbericht | annually |
| Annual Report (English translation of "Geschäftsbericht") | annually |
| Volkswirtschaftliche Tagung | |
| (for a list of the topics discussed at the conferences, | |
| see below) | annually |
| The Austrian Financial Markets – | |
| A Survey of Austria's Capital Markets – Facts and Figures | annually |

## Other Publications

| | |
|---|---|
| New Developments in Banking and Finance | |
| in East and West (Kranichberg 1989) | 1990 |
| Erfahrungen Österreichs beim Übergang von administrativer | |
| Regulierung zur Marktwirtschaft (Moscow 1990) | 1990 |
| Challenges for European Bank Managers in the 1990s | |
| (Badgastein 1990) | 1991 |
| From Control to Market - Austria's Experiences | |
| in the Post-War Period (Warsaw 1990) | 1991 |
| The Economic Opening of Eastern Europe | |
| (Bergsten Conference Vienna 1991) | 1991 |
| Erneuerung durch Integration – | |
| 175 Jahre Oesterreichische Nationalbank | 1991 |
| Striking a Balance – 175 Years of Austrian National Bank | 1991 |
| Transparente Dispositionen – Liberalisierter Devisenverkehr | |
| unter Beachtung internationaler Publizitätsverpflichtungen | 1991 |
| Ausgeglichene Position – Die neue Präsentation | |
| der österreichischen Zahlungsbilanz | 1992 |
| Aktive Bilanz – Ein Jahr vollständig liberalisierter | |
| Devisenverkehr in Österreich | 1992 |
| Economic Consequences of Soviet Disintegration | |
| (Bergsten Conference Vienna 1992) | 1993 |
| Neuorientierung – Internationale Vermögensposition | |
| und Außenwirtschaftliche Investitionsbilanz Österreichs | 1993 |
| Bankwesengesetz 1993 | 1994 |

## Other Publications (cont.)                    Published

| | |
|---|---|
| Internationale Vermögensposition 1992 – | |
| Die grenzüberschreitenden Forderungen | |
| und Verpflichtungen Österreichs | 1994 |
| International Investment Position for 1992 – | |
| Austria's Cross-Border Assets and Liabilities | 1994 |
| Western Europe in Transition: | |
| The Impact of the Opening-up of Eastern Europe | |
| and the Former Soviet Union | 1995 |
| Die Oesterreichische Nationalbank als Unternehmen | 1996 |
| Monetary Policy in Central and Eastern Europe: | |
| Challenges of EU Integration | 1996 |
| Monetary Policy in Transition in East and West | 1997 |
| Die Auswirkungen des Euro auf den Finanzmarkt Österreich | 1997 |
| Die Bank der Banken | 1997 |
| Die Zukunft des Geldes: Auf dem Weg zum Euro | |
| Grundlagen – Strukturen – Termine | 1997 |
| Geld & Währung | 1997 |
| Kompendium von Texten zur Wirtschafts- und Währungsunion | 1997 |
| Nationalbankgesetz 1984 (as of January 1999) | 1999 |
| Information literature on banknote security | recurrently |

## Videos

| | |
|---|---|
| Wie Mozart entsteht (banknote security) | 1990 |
| The Evolution of W. A. Mozart | |
| (English version of "Wie Mozart entsteht") | 1995 |
| Bank der Banken (tasks and functions of the OeNB) | 1991 |
| The Banks' Bank (English version of "Bank der Banken") | 1991 |
| Fenster, Tore, Brücken: Eurogeld aus Österreich | 1997 |
| Das Geld von Morgen | 1997 |
| Der Euro stellt sich vor | 2001 |

## List of the Topics Discussed at the Economics Conferences
## (Volkswirtschaftliche Tagungen)

| | |
|---|---|
| 1975 | Die ökonomischen, politischen und sozialen Konsequenzen der Wachstumsverlangsamung |
| 1976 | Störungsanfällige Bereiche in unserem ökonomischen und sozialen System |
| 1977 | Fiskalismus kontra Monetarismus |
| 1978 | Wirtschaftsprognose und Wirtschaftspolitik |
| 1979 | Technik-, Wirtschaftswachstums-, Wissenschaftsverdrossenheit: Die neue Romantik – Analyse einer Zeitströmung |
| 1980 | Probleme der Leistungsbilanz in den achtziger Jahren |
| 1981 | Systemkrisen in Ost und West |
| 1982 | Forschung und Wirtschaftswachstum |
| 1983 | Ausweg aus der Krise – Wege der Wirtschaftstheorie und Wirtschaftspolitik |
| 1984 | Der Weg zur Welthandelsnation |
| 1985 | Weltanschauung und Wirtschaft |
| 1986 | Vollbeschäftigung, ein erreichbares Ziel? |
| 1987 | Vollendung des Binnenmarktes in der Europäischen Gemeinschaft – Folgen und Folgerungen für Österreich |
| 1988 | Sand im Getriebe – Ursachen und Auswirkungen der Wachstumsverlangsamung in Österreich |
| 1989 | Banken und Finanzmärkte – Herausforderung der neunziger Jahre |
| 1990 | Wettbewerb und Kooperation im Finanzbereich |
| 1991 | Wirtschaftliche und politische Neugestaltung Europas – Rückblick und Perspektiven |
| 1992 | Zukunft regionaler Finanzmärkte in einem integrierten Europa |
| 1993 | Europäische Währungspolitik und internationaler Konjunkturverlauf |
| 1994 | Neue internationale Arbeitsteilung – Die Rolle der Währungspolitik |
| 1995 | Die Zukunft des Geldes – das Geld der Zukunft |
| 1996 | Auf dem Weg zur Wirtschafts- und Währungsunion – Bedingungen für Stabilität und Systemsicherheit |
| 1997 | Die Bedeutung der Unabhängigkeit der Notenbank für die Glaubwürdigkeit der europäischen Geldpolitik |
| 1998 | Wirtschaftspolitik 2000 – Die Rolle der Wirtschaftspolitik und nationaler Notenbanken in der WWU |
| 1999 | Möglichkeiten und Grenzen der Geldpolitik |
| 2000 | Das neue Millennium – Zeit für ein neues ökonomisches Paradigma? |
| 2001 | Der einheitliche Finanzmarkt – Eine Zwischenbilanz nach zwei Jahren WWU |

**List of the Topics**
**Discussed in the Working Papers[1])**

1 For a comprehensive List of the Topics Discussed in the Working Papers please refer to issue no. 12/2001 of "Statistisches Monatsheft."

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| **New York, N. Y. 10151, U.S.A.** | | |

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| **F 75116 Paris, France** | Fax: +33/1/45 24 42 49 |