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Transcarpathia – also called Carpatho-Ukraine, Subcarpathian Rus or Subcarpathian Ruthenia – lies in the far west of Ukraine and borders on Slovakia, Hungary, Romania and Poland. According to official figures, it is a poor region, even in the Ukrainian context, and is dominated by agriculture and forestry. Tourism has some potential. Given its favorable location, Transcarpathia constitutes a major center for cross-border shuttle trading with and temporary labor migration to neighboring Central European countries. These partly illegal activities are estimated (on average) to double Transcarpathians’ actual incomes and therefore make it easier for the population to cope. This state of affairs is bound to come under threat from the adoption of the Schengen visa regime by Transcarpathia’s/Ukraine’s Central European neighbors as a consequence of EU eastward enlargement, despite positive economic spillover effects of enlargement. Various measures, including EU activities, are suggested to counter possible exclusion effects for the region’s population.

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The views expressed are those of the authors and need not necessarily coincide with the views of the Oesterreichische Nationalbank.

Another issue of Focus on Transition stands ready to provide those who are interested in the developments in Central and Eastern Europe with economic analysis, the most recent information and a set of data. The volume contains a broad variety of topics and therefore reflects the intensive activities of the Oesterreichische Nationalbank in its analyses of Central and Eastern European countries in the second half of 2001.

In terms of events, there were two highlights. In September, a special East Jour Fixe session was organized, convening the Executive Directors and Heads of Research of the central banks of the Czech Republic, Estonia, Hungary, Poland and Slovakia to give their view on the monetary transmission mechanism in their home countries. Peter Mooslechner (Economic Analysis and Research Section of the OeNB) chaired and introduced the event, and Silvia Kaufmann (Economic Analysis Division of the OeNB) provided a theoretical overview.

The second highlight was this year's East-West Conference in early November, which focused on "Convergence and Divergence in Europe." 300 participants from 30 countries gathered in Vienna to follow a broad range of presentations and panel discussions. The record high participation rate reflects the topical nature of the issues and the renown of the speakers.

Due to the tragic events of September 11, the Oesterreichische Nationalbank has been forced to break new ground and to find new solutions for speakers from overseas who were prevented from attending the conference. A video conference and a pretaped presentation helped bridge the gap. Additionally, a panel discussion of distinguished speakers was transmitted over the Internet. Therefore, this conference set a special milestone in terms of conference technology for the OeNB.

Highlighting the ongoing accession process, the release of the Regular Reports on the progress of the applicant countries on their way to EU accession by the European Commission is the most prominent event in these weeks. In a nutshell, the 2001 Regular Reports conclude that all Central and Eastern European accession countries have made considerable progress over the last year toward fulfilling the EU accession criteria. The Commission expects the first accession round to take place in 2004 and to encompass up to ten new Member States (all candidates except for Bulgaria, Romania and Turkey). More information about these Regular Reports is provided in a box embedded in the chapter "Recent Developments." As usual, this chapter mirrors the calendar of economic events between May and November 2001 in five of the most advanced accession countries from a central bank perspective.

Moving on to economic research results, this volume contains a broad variety of contributions. Iikka Korhonen (Bank of Finland) and Jarko Fidrmuc (Foreign Research Division of the OeNB) examined the similarity of supply and demand shocks between the euro area and the accession countries in the 1990s. Although some of the accession countries have a quite high correlation of the underlying shocks with the euro area, for many other accession countries the shocks remain significantly more idiosyncratic.

Boštjan Jazbec's work on the determinants of the real exchange rate in transition economies won the first prize at this year's Olga Radzyner award. Boštjan Jazbec, who is affiliated to the University of Ljubljana, disentangled

different sources of real appreciation over time and across countries and, additionally, stressed the role of structural reforms and factor reallocation in determining the real exchange rate.

Old-age pension systems are not only a very topical issue in western industrialized countries. In accession countries, too, their intermediary function between generations, their problems of financing and their potential role in the financial markets have been receiving more and more attention. János Kun, a visiting economist from Hungary working in the Foreign Research Division, gives some insight into the situation in the Czech Republic, Hungary and Poland. He sketches both the reforms of the existing pay-as-you-go systems and describes measures to create private pension funds. He sheds a critical light on the question whether the benefits (in terms of additional savings and investments) typically ascribed to private pension funds can in fact be observed in the three countries under examination.

Last but not least, Stephan Barisitz from the Foreign Research Division of the OeNB provides insights into developments in Transcarpathia, Ukraine's westernmost region and gateway to central and western Europe. This relatively unknown province of Ukraine functions as an example of a region for which specific challenges will arise, as at least some of the neighboring countries with which the region is highly interlinked are on their way to joining the European Union. The author stresses that a well-devised policy response from the EU will be necessary to counterbalance the negative effects resulting from an eastward shift of the Schengen border after the first round of enlargement.

A further recent highlight was the presentation of the EBRD 2001 transition report in Vienna on November 22. The highly regarded and in fact unique annual report of the developments in the transition economies ends with three main conclusions: First of all, most countries in the region proved more resilient to the global economic slowdown than other emerging markets. The main risks are current account deficits and high energy prices. Second, energy wealth has been a boon in recent years to Russia and to the oil and gas-rich countries in the Caspian region, but reforms are necessary to fully exploit this potential. Third, the region's capacities as an energy producer and exporter are far from fully developed, and serious impediments to investment in the sector remain a major obstacle.

Finally, let me wish all readers of the "Focus of Transition" happy holidays and a prosperous New Year.

I invite you to address any comments or suggestions you may have about this publication, or any of the studies it contains, to:

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Klaus Liebscher
Governor

RECENT ECONOMIC DEVELOPMENTS

Franz Schardax,
Jarko Fidrmuc,
János Kun, and
Thomas Reininger

I Introduction

In the first half of 2001, real GDP in the countries under review (the Czech Republic, Hungary, Poland, Slovakia and Slovenia) continued to grow fastest in Hungary (4.2% against 5.2% in the year 2000).¹)

Hence GDP growth lost momentum in Hungary against the result for 2000. However, growth decelerated even more in Slovenia and above all in Poland while the Czech Republic and Slovakia managed to post higher growth than in the full year 2000.

The deceleration in economic growth in the EU, the largest trading partner of the observed countries (CEEC-5), was felt more tangibly in the region from the second quarter of 2001, when all countries recorded a slowdown in GDP growth in comparison with the first quarter. In the first half of 2001 all observed countries with the exception of Poland managed to maintain or improve their growth differentials relative to the EU in comparison with full-year 2000 results.

Beside the obvious link of lower growth in real exports to the EU, economic developments in Central Europe were also affected by a reduction of investments because of lower EU demand. However, the foreign trade statistics of the third quarter point to an improvement in the contribution of net exports to growth in most of the countries under review, as lower demand for investment goods dampened the growth of imports more than the growth of exports. As a result, some of the CEEC-5 should be in a position to cope relatively well with the worsening economic climate in the near term, in particular as long as private consumption remains strong.

For instance, this should be the case for Hungary, where private consumption grew faster in the second quarter than in the first one and strong current account figures were recorded in the third quarter. A similar picture emerges for the Czech Republic, where GDP growth was driven relatively more by domestic demand in the first half of 2000 as the recovery from the 1997–1999 recession gathered pace. In the third quarter, however, the deterioration of the trade balance came to a halt, which seems to indicate that lower demand for (mainly imported) investment goods was partially compensated by an improvement in net exports.

In Slovenia the slowdown of economic activity was more pronounced, mainly on account of a fall in gross fixed capital formation that could be compensated by the improvement in net exports only to a relatively small degree. Thus, Slovenia is likely to be more affected by the worsening of economic conditions in the EU than the Czech Republic and Hungary. Slovakia is in a different position. The strong recovery of domestic demand (mainly investments) produced a surge in imports while the growth of real exports contracted, resulting in a much stronger negative contribution by net exports to growth. Finally, Poland, which is confronted with weak domestic demand (in particular investments) and the challenge of fiscal tightening needed to avoid an excessive widening of public deficits seems to be in the most difficult situation, as growth in the first half of 2001 was underpinned entirely by net exports.

1 All percentage changes are over the same period of the preceding year unless otherwise indicated.

In contrast to the impact of lower growth in the EU on economic performance in the CEEC-5, the crises in Argentina and Turkey and the events of September 11 did not have a tangible impact on the observed countries; in fact, it was basically limited to a marginal weakening of the Polish and Hungarian currencies.

Unemployment is particularly high in Poland and Slovakia at 15% to 20%. Moreover, the jobless rate in these two countries has recently been rising rapidly, albeit for statistical reasons in Slovakia. Slovenia is the only other country among the observed group in which unemployment also exceeded the 10% mark, but it was on the decline. Unemployment sank in the Czech Republic (8% to 9%) as well as in Hungary (below 6%).

The development of real gross wages (adjusted for CPI inflation) reflected both the conditions on the labor market and the growth situation. Real gross wages merely edged up in Poland and Slovakia and in fact even fell in important sectors; by contrast, they climbed at a rate in tune with the development of real GDP in the Czech Republic and in Hungary.

Consumer price inflation fell steadily to a low of 4.0% in October in Poland. This was the lowest rate in the observed group; the Czech Republic came in with the second lowest result – 4.4% – after prices had accelerated surprisingly fast from January through July 2001. After falling sharply in the third quarter, inflation in Slovakia, Slovenia and Hungary ran to between 7.1% and 7.8% in October. The drop in inflation was bolstered by diminishing oil prices. However, country-specific developments also played a role, e.g. weak domestic demand and the zloty's strength in Poland, and a favorable base effect in the case of food prices and the enlargement of the currency fluctuation band in Hungary.

The divergent cyclical developments also passed through to the current account. In the first half of 2001, Poland, Slovenia and Hungary posted lower current account deficits than in the comparable period of 2000, whereas current account shortfalls expanded in the Czech Republic and Slovakia. However, the substantial widening of the Slovak deficit in the first half of 2001 was largely financed by high net inward foreign direct investment (FDI). Despite the economic slowdown in the EU, current account deficits did not increase in the third quarter and – with the exception of Slovakia – even improved in most cases.¹⁾

The exchange rate developments of the five currencies have been characterized by a wide range of performances, containing an appreciation by 8.6% as well as a depreciation by 5.8%. Among the currencies of the observed countries, the Polish zloty (+8.6%), the Czech koruna (+4.2%) and the Hungarian forint (+0.6%) revalued in nominal terms against the euro during the average of the first 11½ months of 2001 compared to the same period of 2000. (In the year 2000, the nominal appreciation in the year-on-year comparison had already been highest for Poland at 5.5%, followed by the Czech Republic and Slovakia.)

¹ At the editorial close, the current account figures for the Czech Republic were not yet available. However, the trade balance (the largest component of the current account) improved slightly in a year-on-year comparison.

The repercussions of the crisis in Argentina and the cloudier outlook for exports dampened the nominal appreciation of the Polish currency to just under 6% on average year on year in the third quarter, after the zloty had experienced an appreciation of nearly 19% year on year against the euro in June. The widening of the currency band in Hungary at mid-year triggered a nominal appreciation of the forint by 3.7% year on year (first half of 2001: nominal depreciation of 1.6%). Of the currencies covered in this report, the Slovenian tolar posted the most pronounced nominal year-on-year depreciation against the euro in the first 11½ months of 2001; it declined by 5.8% after having lost 5.9% in the year 2000 as a whole. The Slovak koruna depreciated by 1.9% against the euro in the same period.

The most recent interest rate policy steps of the observed countries reflected the divergent inflationary developments. Interest rates were hiked in the Czech Republic at the end of July, and policymakers took a wait-and-see attitude in Slovakia and Slovenia from the beginning of April; rates were cut in Hungary and Poland. However, the nominal interest rate cuts in Poland were not bold enough to bring down the very high real interest rate level substantially.

When the 2001 budget was executed, Slovenia and Poland showed growth-related revenue shortfalls; in Poland, this development has already prompted the passage of a supplementary amending budget. Slovenia, however, is likely to again post by far the lowest public sector deficit (on the order of 1% to 3% of GDP); the deficit is set to reach 3% to 5% of GDP in Poland, for the first time bringing it to the same level as in Hungary (although the deficit comes closer to 5% if the borrowing of the state-owned Hungarian Development Bank is factored in). The IMF expects the Czech Republic to close 2001 with the highest public sector deficit of the countries in this study; however, this deficit of over 6% of GDP does not include the amounts paid to cover past losses of the banking system.

The road map for accession negotiations approved by the European Council of Nice was broadly adhered to: The last round of accession negotiations before the cutoff date took place on October 26, 2001. Out of a total of 31 chapters, 23 were provisionally closed with Cyprus, 22 with Hungary, 21 with Slovenia and the Czech Republic, 20 with Slovakia, 19 with Estonia, 18 with Latvia, Lithuania, Malta and Poland, 12 with Bulgaria and 8 with Romania. Thus, of the Helsinki group, Latvia, Lithuania, Malta and in particular the Slovak Republic were able to catch up with the Luxembourg group in the negotiations. The three chapters of direct relevance for central banks (economic and monetary union, freedom of services, freedom of capital) have already been provisionally closed for all countries under review with the exception of the chapter on freedom of services with Poland. On November 13, the European Commission released the next progress reports (see box). In parallel with the progress in accession negotiations, the dialogue on macroeconomic issues and financial stability between accession countries and the EU was intensified. The main instruments of this process are (i) annually updated mid-term preaccession economic programs (PEPs), (ii) annual fiscal notifications, which provide information on public budgets and debt and which are to be prepared according to the EU's methodology

The European Commission's 2001 Regular Reports¹⁾

On November 13, 2001, the European Commission published this year's regular reports on the progress of the applicant countries on their way to EU accession. This annual review instrument, which assesses the applicants' performance in fulfilling the Copenhagen criteria for EU membership, was introduced by the European Council in Luxembourg in December 1997. This box presents the main conclusions of the 2001 Regular Reports with respect to the Central and Eastern European accession countries, focusing on basic key issues and, in addition, on economic aspects.

The 2001 Regular Reports conclude that all Central and Eastern European accession countries have made substantial progress, over the last year, toward fulfilling the EU accession criteria. The Commission expects the first accession round to take place in 2004 and to encompass up to ten new Member States (all candidates but Bulgaria, Romania and Turkey). A crucial step toward this objective is the successful continuation of the accession negotiations, in particular in the areas of agriculture, regional policies and budget, for which the Commission will table proposals in early 2002. Currently, none of the accession countries fully meets the accession criteria yet. However, in the 2002 Regular Reports, the Commission will presumably recommend the EU entry of a first group of accession countries. The Commission will further strengthen its efforts toward institution building in the accession countries and will, to this end, develop and extend the existing set of instruments within the framework of an Action Plan. For those countries which will not be included in the first accession round, the Commission will prepare an updated road map for the accession negotiations and, if necessary, a revised preaccession strategy. The Commission also pleads to associate all candidates as far as possible to the Lisbon process²⁾ and to keep up efforts to inform the public on the enlargement process and its effects. The European Council in Laeken in December 2001 will discuss the enlargement process and will draw its conclusions, as usual, on the basis of the Commission's assessments and recommendations.

From a central-bank viewpoint, the performance of the accession countries with respect to the economic criteria of EU membership is of particular interest. These criteria are twofold, namely (i) the existence of a functioning market economy and (ii) the capacity to cope with competitive pressure and market forces within the Union. In this year's reports, the Commission concludes that all Central and Eastern European accession countries with the exception of Bulgaria and Romania are functioning market economies which should be able to cope with the competitive pressure and market forces within the Union in the near term, provided they continue with and – in several cases – step up a number of policy measures specified in the individual country reports. In contrast to last year's Regular Reports, the Commission refrains from an explicit ranking of candidates with respect to their performance in fulfilling the economic criteria of EU membership. Still, the reports contain an implicit differentiation among candidates which can be inferred from the remaining necessary adjustment needs that each accession country still has to take and which are specified in the individual country reports. In this context, four points deserve particular attention:

- Latvia, Lithuania and Slovakia are now judged to be able to meet the second economic criterion in the near term, contrary to last year's assessment, when the fulfillment of this criterion was still deemed achievable only in the medium term.
- The overall economic assessments for Estonia and Hungary stand out. These two countries are seen to be able to fulfill the second economic criterion in the near term, provided that they continue with the implementation of their reform programs. The other six countries, however, will have to intensify their reform efforts either generally or in specific policy fields in order to meet this criterion in the near term.
- Poland, which had been grouped together with Hungary and Estonia last year, has fallen back a bit in relative terms, but it continues to score rather well on average.
- Bulgaria and Romania, though lagging behind the other candidates, are also seen as progressing toward the economic criteria, with Bulgaria recording tangible overall advances in this respect.

Source: European Commission, Regular Reports 2001, <http://europa.eu.int/comm/enlargement/report2001/index.htm>.

¹⁾ This box was put together by Peter Backé and Cezary Wójcik.

²⁾ This process focuses on the strategic goal for the European Union to develop a sustainable, highly competitive, knowledge-based economy.

and (iii) Macro-Financial Stability Assessments prepared annually by the European Commission. The dialogue between the Eurosystem and accession countries' central banks continued. At the beginning of December, high-ranking representatives of these institutions will meet at the Berlin Seminar. The following topics will be addressed: (i) financial sector structure and functioning in accession countries, (ii) the impact of capital account liberalization on macroeconomic policies, in particular exchange rate strategies and (iii) ingredients for a successful catching-up process.

2 Individual Country Reports

2.1 Czech Republic: The Sound Recovery of Domestic Demand

More than Offsets the Deteriorating External Environment

Augmenting by 4.0% in the first half of 2001, real GDP grew faster than in 2000 (total GDP growth: +2.9%), slowing down only slightly in the second quarter (+3.9%) compared to the first (+4.1%). On the demand side, exports continued to contribute the lion's share to GDP growth, even if, at 12.7 percentage points of real GDP, they fell slightly short of the overall figure for 2000 (13.5 percentage points); this decline occurred exclusively in the second quarter of 2001. Falling to 15.6% from 18.7% in 2000, real export growth weakened in the reporting period. By contrast, both consumer spending (+3.8%) and gross fixed capital formation (+7.7%) went up vis-à-vis the previous year (total growth in 2000: +1.8% and +4.2%, respectively). Interestingly enough, this did not speed up import growth (first half of 2001: +17.1%; year 2000: +18.7%); the contribution of net exports to GDP growth, at -2.2 percentage points, was therefore only slightly below the overall figure for 2000 (-1.3 percentage points). Most observers expect real GDP growth to weaken slightly during the remainder of 2001 owing to a decline in export demand. The ministry of finance forecasts real GDP to rise by 3.7% over the entire year 2001.

The cyclical upturn slightly improved the labor market situation. Reaching 8.4% in October, the unemployment rate remained below the values recorded at end-2000 and in the comparable month of the previous year (8.5%). In the first half of 2001, real gross wages went up markedly, rising by 4.5%. Labor productivity in industry rose slightly less than nominal wages, but significantly more than real wages, resulting in an increase of unit labor costs by 0.9% in the first three quarters of 2001.

The pace of consumer price inflation speeded up surprisingly fast in summer, rising from slightly over 4% in January to 5.9% in July, only to contract again to 4.4% by October 2001. For the first time in a long time, the net inflation rate, which the Czech National Bank targets, exceeded the 2% to 4% target band for end-2001, coming to 4.7% in July, but subsiding to 2.7% in October. In general, this short-lived rise in inflation is only partly attributable to demand-pull factors.

Growing exports along with the rebound in domestic demand prompted a continued strong expansion of the current account deficit to USD 1,130 million, or 4.3% of the first half GDP of 2001 (first half 2000: USD 688 million or 2.8% of first half GDP). However, compared to the analogous period in 2000, only two thirds of the rise in the current account deficit

are attributable to a growing deficit in the trade balance. In the third quarter the rise in the trade deficit (koruna terms) came to a halt – there was even a very small improvement in comparison with the corresponding period of 2000. Over the entire year 2000, the current account deficit expanded to 4.7% of GDP (USD 2.27 billion), largely owing to climbing oil prices. Amounting to USD 2,275 million (8.6% of the first half-year GDP), net direct investment again surpassed the current account deficit in the first half of 2001, although only 27% of inflows were attributable to privatization transactions. In the review period, the Czech Republic's gross foreign debt changed only slightly, coming to USD 21.0 billion as at June 30, 2001 (year-end 2000: USD 21.4 billion), while foreign currency reserves climbed to USD 14.8 billion at the end of October (year-end 2000: USD 13.1 billion). Gaining 4.2% on average in nominal terms until November 15, 2001, against the euro since the beginning of the year, the Czech koruna's exchange rate has so far continued its modest appreciation trend, which began in the second quarter of 1999. In October, the Czech National Bank intervened directly on the foreign exchange market, after having been absent from the market since March 2000. In the course of 2001, national bank officials had repeatedly criticized the strength of the koruna. Increasing inflationary pressure, however, prompted the Czech National Bank to raise all of its key interest rates by 25 basis points at the end of July 2001 – its first interest rate increase since 1998. The two-week repo rate, which plays a dominant role on the money market, now stands at 5.25%, while the discount and lombard rates come to 4.25% and 6.25%, respectively. After having shown concern regarding inflationary pressures in recent months, in its latest meeting the bank board stressed the relief in inflationary pressures. According to the IMF, the Czech public deficit (excluding privatization proceeds) might be extremely high in 2001, amounting to 11.5% of GDP compared to 5.1% in 2000. A share of 5.1% of GDP would be required to cover inherited losses of the banking sector. Privatization proceeds, which are expected to account for 9.8% of GDP, should play a major role in financing the government deficit. Privatization proceeds may, however, fall short of expectations, which prompted the ministry of finance to consider issuing its first eurobond. Parliament has already passed the budget for 2002 in first reading, making a final approval likely in December. The deficit target for the central government was set at CZK 46 billion (around 2% of GDP), but the government estimates the public deficit excluding privatization revenues at 9% of GDP.

Structural reform mainly emphasized privatization projects in the financial services, energy, telecommunications and the oil/chemicals sectors, where significant progress was made not least owing to the government's massive budget financing needs. However, the very ambitious aims with respect to proceeds and time frame are unlikely to be met. Banking sector privatization was completed with the sale of a 60% stake in Komerční Banka to the large French bank Société Générale. Revenues from this sale came to EUR 1.2 billion, which is high according to market observers. The government intends to announce the winner of the tender for a majority stake in the electricity sector in December. The privatization plan for this industry had

been criticized by the OECD for harming competition. Furthermore, an important transaction took place in the telecommunications sector.

In June, the Constitutional Court repealed essential parts of the amendment to the central bank act, which had entered into force in January 2001; the Court's decision necessitates a reamendment of the central bank act. Before, the EU Commission and the ECB had been among those to criticize the amendment, which was seen as infringing central bank independence. Together with legislative changes to the law on banks, the reamendment of the central bank act is on the parliament's agenda for February 2002.

2.2 Hungary: Exchange Rate and Capital Transactions Liberalized

Real GDP growth declined to +4.2% in the first half of 2001 (year 2000: 5.2%); the growth rate in the second quarter (+4.0%) diminished from +4.4% in the first quarter. On the demand side, exports remained the main motor of growth. At 9.8 percentage points in the review period, the contribution of exports to GDP growth was smaller than in year 2000 as a whole (12.0 percentage points); most of the weakening occurred in the second quarter. The real expansion of exports slipped to 15.5% (2000: +21.8%). In parallel to foreign demand, domestic demand lost pace (+3.9%; year 2000: +5.0%). However, there were shifts within domestic demand. Whereas consumer spending quickened (+4.2%; 2000: +3.3%), gross fixed capital formation sank to +4.2% (2000: +6.6%), and changes in inventory made a much smaller positive contribution. The weakening of gross capital formation growth can be explained by the greater uncertainty about the prospects for international economic developments. The moderation of domestic demand growth slowed real import rises to 14.7% (2000: 21.1%), so that the contribution of net exports to growth remained neutral. On the supply side, the main contributors to growth were manufacturing (+5.0%), construction (+7.5%), the hotel and restaurant sector (+6.3%) and transport and communications (+5.8%).

The period of double-digit increases in output that industry had enjoyed in 2000 came to an end in February 2001. Growth in industrial output slowed sharply in the meanwhile; in June and September industrial output even fell against the corresponding month of 2000. However, in the first nine months of 2001, gross industrial output still advanced by 4.7%; construction was more dynamic at 11.1% growth in the period January to August.

The unemployment rate has been below 6% since March 2001; by regions, northwest Hungary and the capital posted the lowest jobless figures. In September unemployment fell to the lowest level ever recorded, 5.3%. Real gross wages were up by 8.5% in August on the year-earlier result, chiefly because statutory minimum wages were raised by 57% to HUF 40,000 (about EUR 160) at the beginning of the year.

Consumer price inflation stayed above 10% from September 2000 to June 2001. After peaking at 10.8% in May, inflation subsided to 7.6% in October, primarily as a result of a base effect,¹⁾ and because of abating energy prices and the appreciation of the forint. In mid-June, the National

1 Food prices had climbed by 4.0% against the previous month in July 2000, and by 1.6% in September 2000.

Bank of Hungary (NBH) announced an inflation target: 7.0% for the end of 2001 and 4.5% for the end of 2002, with a tolerance band of 1% on either side of the set disinflation path.

The current account shortfall came in at EUR 810 million in the first half of 2001, or 3.1% of semiannual GDP (deficit in the first half of 2000: EUR 866 million or 3.7% of semiannual GDP). This improvement may be pinpointed above all to the result on tourism. Until the end of September the current account deficit improved to EUR 279 million, again on the back of good tourism figures. Net FDI in the first half of 2001 was equivalent to 3.7% of semiannual GDP. At EUR 13.1 billion at end-September 2001, gross official reserves had risen considerably from EUR 12.1 billion or 27.8% of GDP in 2000. However, gross foreign debt rose at the same time, enlarging from EUR 29.7 billion or 68.3% of GDP to EUR 32.4 billion at end-September.

On May 4, 2001, the NBH changed its monetary policy strategy, widening the fluctuation band of the forint against the euro from $\pm 2.25\%$ to $\pm 15\%$. This step entailed a nominal appreciation of the national currency against the euro of 10% until the beginning of July. Then, against the background of the unfolding economic problems in Argentina, Turkey and Poland, the currency depreciated by some 6% and has since been hovering between 2.5% and 7% above the level it had stood at prior to the widening of the fluctuation band. The events of September 11 in the U.S.A. did not make a dent on the Hungarian currency. In mid-June, the last remaining exchange controls were abolished, on the grounds that the broadened fluctuation band required a more liquid exchange market. As already announced at the end of August, the automatic devaluation under the crawling peg system in place since 1995 – devaluation had come to 0.2% a month since April 2001 – was abolished on October 1, and the forint was pegged to the euro, with the fluctuation band of $\pm 15\%$ established in May.

The NBH raised its central bank base rate from 11% to 11.25% in mid-July. This put the base rate at the same level as the unchanged two-week deposit rate (the reference rate). According to the NBH, this consistency between the base rate and the reference rate constitutes a technical simplification of the interest rate structure. Interest rates were lowered by a total of 100 basis points on September 10, October 25 and November 13. The base rate and the two-week central bank deposit rate thus came to 10.25%, the overnight central bank deposit rate to 8.25% and the overnight repo rate to 12.25%. The slowdown in inflation in Hungary and the ECB's rate cuts are cited in the decisions.

In the first nine months of 2001, the general government budget deficit ran to HUF 277.5 billion (roughly EUR 1.1 billion), only 56.3% of the deficit envisaged for the entire year (3.4% of GDP). This favorable development is to be traced among other things to higher-than-expected inflation in the first half. Moreover, some large public investment projects undertaken this year will be funded by off-budget borrowing from the state-owned Hungarian Development Bank. The budget for 2002 already passed parliament together with the budget for 2001. The target for the general government deficit in 2002 was set at 3.2% of GDP.

The Hungarian parliament passed a new Central Bank Act in mid-June that conforms to EU legislation. This new law prohibits central bank lending to the government. The main task of the central bank is cited as attaining and preserving price stability, whereas the bank is to support government economic policy only to the extent that this does not jeopardize the fulfillment of the central bank's main task.

In June, parliament amended the Securities Act, introducing more stringent provisions for acquiring equity in joint stock companies above specific thresholds. The Securities Act is scheduled to be amended at the parliament's fall session, and is to be harmonized with the laws on mutual funds and the stock exchange. The upcoming amendment to the law governing deposits is to abolish anonymous savings accounts on January 1, 2002 (according to the bill, the bearer of the passbook will have to present identification upon making the first withdrawal or payment in the year 2002).

The government decided to sell Postabank, which had been nationalized during a bailout in 1998, to Magyar Posta, the publicly owned post office. The transfer of stocks has not taken place yet, but the post office has already assumed management of Postabank.

The Banking Act had to be amended to pave the way to this acquisition, as prior to this transaction nonbanks in Hungary were only entitled to buy a stake no larger than 15% of a bank.

In November the obligatory membership in the fully funded component of the Hungarian pension system was abolished by parliament, thus reversing some changes in the recently reformed pension system.

2.3 Poland: Monetary Policy Tightening Causes Demand for Capital Goods to Plummet

In the first half of 2001, real GDP advanced by merely 1.6% (compared to 4% in the year 2000), with growth slackening from 2.3% in the first quarter to 0.9% in the second quarter. While real exports probably rose somewhat less in the first half of 2001 than in the entire year 2000 because the year-on-year growth rate dwindled from the first to the second quarter, they remained the demand component which contributed most to GDP growth (roughly 4 percentage points of real GDP). With household demand anemic at +1.6% (year 2000: +2.6%), the decline of real gross fixed capital formation by 3.5% (year 2000: +3.1%) and the strong reduction of inventories could not be offset. The fact that real GDP grew at all is attributable to the rise in net exports; in percentage points of real GDP, net exports contributed more than all other components. In fact, the contribution of net exports to GDP growth expanded further compared to 2000; this was ascribable solely to subsiding import growth and the related sluggish demand for capital goods.

On the supply side, the value added of industry and construction diminished; this reduction was partly offset by the limited rise in the value added of services. Gross industrial production in the review period performed far less powerfully, advancing by 1.6%, than in the year 2000 (+7.1%); in fact, it even contracted by 0.9% in the second quarter.

The official national unemployment rate came to just under 16% during the first seven months, but reached 16.3% in September; according to the ILO methodology, the rate amounted to slightly over 18%. These rates were roughly 2 percentage points above the comparable rates a year earlier.

In the first eight months real gross wages climbed by 1.2% across all sectors (year 2000: +2.5%).

With growth in industrial production having lost considerable steam, rises in industrial labor productivity have also been affected since the second half of 2000. In the first half of 2001 labor productivity growth had fallen to just +6.6% in industry (year 2000: +14.3%). This development caused nominal unit labor cost in zloty, which had been sinking (above all in the first half of 2000), to edge up again year on year in the second quarter of 2001.

In October 2001, consumer price inflation had eased to 4.0% from 6.7% on the average in the first half and from 10.1% in the year 2000. The central bank's target range for inflation in December 2001 is 6% to 8%. The producer price index for industry mounted by just 0.6% over the twelve months to end-September 2001, with the subindex for electricity, gas and water 11.1% higher and the manufacturing subindex 1.4% lower year on year.

In the first half of 2001 export growth quickened to 13.6% (year 2000: 7.2%); the growth rate in the second quarter (+9.8%) had already slackened considerably from 17.6% in the first quarter. The growth rate was on the decline most recently, mainly as a consequence of the pronounced economic slowdown spreading through the euro area and as a result of the positive base effect of the first quarter. Although import growth speeded up marginally to 4.2% in the first half (year 2000: 1.7%) even though domestic demand languished, the much headier pace of exports (including petty cross-border trade) slashed the current account deficit to USD 4.4 billion or 5.2% of semiannual GDP (first half of 2000: USD 5.6 billion or 7.5%; year 2000: 6.3%). Soft domestic demand and the decline in unit labor cost until the first quarter of 2001 along with robust export demand until now were more powerful influences than the strength of the exchange rate in the first half of 2001 and the year 2000. In the third quarter the current account deficit narrowed even more quickly to USD 1.0 billion, falling to less than 50% of the level of the corresponding period of 2000 (USD 2.3 billion). At USD 2.7 billion or 3.2% of semiannual GDP, net FDI largely equaled the result in the first half of 2000 (USD 2.7 billion or 3.6% of semiannual GDP; year 2000: 5.2%). At end-October 2001, gross official reserves including gold came to USD 28.9 billion, somewhat higher than at the end of 2000 (USD 27.5 billion or 17.6% of GDP). Gross foreign debt (including intracompany lending) amounted to USD 68.7 billion at mid-year; excluding intracompany lending, the figure was USD 60.6 billion, nearly unchanged from the end of 2000, when the two aggregates had accounted for 43.7% and 38.3% of GDP.

On average in the first half of 2001 the zloty was up by 12.2% in nominal terms against the euro compared to the same period of the year before. The zloty, feeling the impact of the crisis in Argentina and gloomier prospects for export growth, depreciated markedly in July. Nevertheless, on the average in the third quarter of 2001 the Polish currency remained 5.8% above the

value of the corresponding period of 2000. Most recently, the zloty started to rise again: As of mid-November, the nominal appreciation was about 8% year on year.

The National Bank of Poland adjusted interest rates in five steps in the first ten months of 2001. It cut its reference rate (the rate on 28-day open market operations) by 1 percentage point at the beginning of March and at the end of March, by 1½ percentage points at the end of June, by 1 percentage point at the end of August and by 1½ percentage points at the end of October. These measures brought the reference rate from 19% at the end of 2000 to 13% at the end of October 2001, which still means a very high level of real short-term interest rates, particularly if measured against producer prices. In the first three quarters of 2001, the annualized real monthly interest rates amounted to 17.0% (after 20.3% in the first half of 2001) if measured against the industrial producer price index and to 13.9% if measured against the consumer price index. Poland's highly restrictive monetary policy stance impacted on both cyclical and fiscal developments. The tight monetary policy is also reflected by monetary aggregate developments from mid-2000 to mid-2001. M2 (including foreign currency deposits) grew by 7.1% in nominal terms; in real terms (deflated by the CPI), this virtually amounted to a stagnation. Moreover, domestic lending made no contribution at all to nominal monetary aggregate growth; the rise in the monetary aggregate was caused almost wholly by "other domestic assets of the banking system." Real net lending to the public sector diminished by 18.3%, to the household sector by 8.5% and to the corporate sector by 0.5%.

Budget developments were sidetracked because nominal GDP growth was far lower than originally expected. This budget result was contingent partly on overly optimistic expectations and incorrect estimates on the part of the ministry of finance, partly on the extremely restrictive monetary policy of the National Bank of Poland, which occasioned a severe slowdown in growth and disinflation in excess of the central bank's target. The new government coalition has agreed in principle to limit the central government deficit to PLN 40 billion in 2002 (just under 5% of GDP). The bill the former government (in office until October 19) presented to parliament on October 1, 2001, for the budget for 2002 had contained precisely this target for the central government deficit; the general government deficit with an effect on demand was set at 4.5% of GDP for 2002; the general government deficit in 2001 was assumed to come to 4.3% of GDP. The new government assumes that the deficit for 2001 will be higher still.

The tensions within the old government and the imminent legislative elections (for September 23, 2001) acted as a brake on structural reform. The privatization process was affected as well; in addition, international stock market insecurities had a negative effect on privatization.

2.4 Slovakia: Shoring up the Banking Sector

Augmenting by 2.9% in the first half of 2001, real GDP grew faster than in the previous year (total GDP growth 2000: +2.2%), slowing down only slightly in the second quarter (+2.8%) compared to the first (+3.0%). On the demand side, exports continued to be the main contributor to GDP growth, even if, at 7.7 percentage points of real GDP, they clearly failed to match the overall figure for 2000 (12.2 percentage points). Falling to 10.0% from 15.9% in 2000, real export growth weakened in the reporting period. By contrast, both consumer spending (first half 2001: +2.8%) and gross fixed capital formation (first half 2001: +14.2%) went up faster than in 2000, when the comparable overall growth rates had stood at -3.4% and -0.7%, respectively. This sound recovery of domestic demand boosted imports sharply, which climbed by 15.4% in the first half of 2001 compared to a rise of 10.2% in 2000. With imports surging, net exports, which had been about balanced in the previous year, turned negative: their contribution to growth, which had amounted to 4.4 percentage points over the entire year 2000, was -4.0 percentage points in the first half of 2001.

On the supply side, in the period from January to September 2001, gross industrial output augmented by 5.9%, while construction sector output came to +3.9% over the same period.

In September 2001, the unemployment rate stood at 17.4%, 0.8 percentage points higher than in the corresponding month of 2000. This rise is mainly attributable to the expiration of labor market programs, which had reduced official unemployment figures at the end of 2000. Real gross wages, which augmented by 2.0% in the first nine months of 2001 in industry, subsided by 2.5% and 5.3%, respectively, in the construction and retail sectors.

Consumer price inflation contracted to 7.1% in October 2001, after peaking at 8.0% in June and July and averaging 7.5% in the first six months of the reporting year. Core inflation (annual inflation adjusted for regulated prices, indirect taxes and subsidies) went down in October as well, falling to 4.0% after having peaked at 5.4% in June – the highest level since mid-2000. In the first half of 2001, the National Bank of Slovakia revised its 2001 core inflation target range slightly upward, to 3.6% to 5.3% (from previously 3.2% to 5.3%). However, the annualized overall consumer price index is expected to climb by between 6.7% and 8.2% in December and will thus remain below original expectations.

The negative international environment and the robust growth in domestic demand affected the external sector. The current account deficit, which had come to USD 156 million (1.6% of first-half GDP) in the first half of 2000 and to USD 713 million (3.7% of total GDP) over the entire year, expanded to USD 785 million (8.1% of GDP) in the first six months of 2001. Up to August the cumulative current account gap reached USD 947 million. This deterioration is mainly attributable to the trade performance. Net foreign direct investment, however, remained high in the first half of 2001 (USD 662 million or 6.8% of first-half GDP); further investments were to follow during the summer months (see below). As a consequence,

gross foreign debt has hardly changed up to August (USD 10.8 billion) against USD 10.5 billion at end-December 2000, and official foreign currency reserves have shrunk only marginally since the end of 2000 (USD 4.1 billion), to USD 3.8 billion (around four months worth of imports).

Compared to the livelier exchange rate fluctuations the Slovak koruna had experienced in the past, its exchange rate of around 43 korunas to the euro remained relatively stable during the first 11 months of 2001 (42.7 SKK/EUR at mid-November). In 2000, the National Bank of Slovakia had introduced overnight and 14-day repos. Following a number of rate cuts, the latest of which took place on March 23, 2001, the overnight sterilization rate now stands at 6.0% and the refinancing rate at 9.0%, while the 14-day repo rate comes to 7.75% (as a minimum rate for the lending and maximum rate for the deposit-taking business). The interim target for Slovakia's monetary policy is M2, which is supposed to expand by 16% in the year 2001.

Based on the significant progress in EU membership negotiations, the restructuring of the banking system, the strengthening of the whole financial system and the successful stabilization of the economy, Standard & Poor's upgraded Slovakia's long-term foreign currency debt rating from BB+ to BBB-, lifting it back into investment grade in October 2001. This upgrade was followed by Moody's, which also raised Slovakia's country ceiling for foreign currency bonds and notes from Ba1 to Baa3.

The targets for the central government deficit of SKK 37.2 billion and the public deficit of SKK 37.8 billion (3.9% of GDP) are within easy reach, as the central government's deficit stood at only 52% of the full-year ceiling in October. The government and the IMF had already agreed on a public deficit target of 3.5% of GDP for 2002.

Privatization has speeded up markedly since 2000, with Deutsche Telekom purchasing a 51% stake in Slovak Telecom and MOL (Hungary) buying strategic equity in the Slovnaft refinery.

Moreover, Westfälische Ferngas (WFG) AG Dortmund (Germany) took over 34% of the natural gas group Nafta Gbely. In June 2001, 94.5% of the country's second largest commercial bank, Všeobecná úverová banka (VUB), were sold to the Italian financial group IntesaBci for EUR 550 million. Finally, the authorities accepted the offer for sale of 92.55% of Investičná a rozvojová banka (this includes shares representing 22.99% owned by the state-owned insurance company Slovenská poisťovňa) by the Hungarian OTP Bank for SKK 700 million (approximately EUR 16 million). In order to support banking sector restructuring, the World Bank has approved a 14-year USD 177.3 million EFSAL loan for the Slovak Republic. The necessity of continued structural reform in the Slovak financial sector was highlighted by the fact that Devín banka, a smaller bank, was placed under sequestration on August 24. Moreover, bankruptcy proceedings are underway at three other (small) banks.

2.5 Slovenia: Breakthrough in Bank Privatization

In the first half of 2001, real GDP advanced by 3.0% (compared to +4.6% in the year 2000), with growth slackening from +3.2% in the first quarter to +2.7% in the second quarter. While real exports augmented somewhat less in the first half of 2001 than in the entire year 2000 because the year-on-year growth rate diminished from the first to the second quarter, they remained the demand component which contributed most to GDP growth (roughly 5 percentage points of real GDP). Quickening household demand (+1.8%; year 2000: +0.8%) and the nearly steady acceleration of public spending (+2.7%; year 2000: +3.1%) could not offset the 3.9% decline of real gross fixed capital formation (year 2000: +0.2%) and the substantial drawdown of inventories. The fact that real GDP grew at all is attributable to the rise in net exports; in percentage points of real GDP, net exports contributed more than all other components. Their contribution declined only little from 2000, as the fall in import growth on the back of the weak demand for capital goods largely offset sunken export growth.

On the supply side the value added of manufacturing (+4.8%), transport and communications (+4.4%) and the financial sector (+5.6%) expanded most, whereas agriculture and forestry (-2.2%), mining (-7.8%) and construction (-4.3%) posted the heftiest losses. Overall, there was further structural change. Gross industrial output (including mining) progressed by 3.2% in the first half of 2001.

The unemployment rate came to 11.1% in August 2001, down from 11.7% a year earlier.

Consumer price inflation eased to 7.8% in October, clearly lower than the 8.7% average for the January-through-October period. Services were the main component driving up inflation; they rose by 10.3% from January to October and by 10.5% in October.

In the first half of 2001, the current account deficit stood at USD 46 million (first half 2000: USD 273 million). While exports to the EU diminished in the first half of 2001, Slovenia's presence on the markets of the former Yugoslavia has become more prominent. In total, the country's exports augmented by 6.5% in the first half of 2001 year on year, while imports expanded by just 0.6%. The current account deficit decreased further in the third quarter and the cumulative current account gap for the first three quarters of 2001 fell to USD 28.5 million. In February and April, Slovenia placed ten-year eurobonds worth EUR 400 million. As a consequence, gross foreign debt climbed to USD 6.7 billion at end-August 2001, up from USD 6.2 billion at the end of 2000. Gross official reserves rose markedly to USD 3.88 billion in September from USD 3.20 billion at the end of 2000.

The Bank of Slovenia follows a managed float exchange rate regime. Since the beginning of the year, the Slovenian tolar has depreciated by 5.8% vis-à-vis the euro compared to the corresponding period of 2000. As the rate of inflation has been on the rise since 1999, the central bank has further tightened its monetary policy, which uses the monetary aggregate M3 as an interim target while simultaneously attributing great importance to the development of the exchange rate. As of April 1, 2001, the monetary authority raised its discount rate from 10% to 11% and its lombard rate from

11% to 12%. Although during the first months of the reporting year, M3 growth in Slovenia exceeded the desired bandwidth, the Bank of Slovenia is convinced that it will be able to keep M3 growth between the envisaged 11% and 17% for the entire year 2001.

For 2001, the government's budget deficit target for the total general government sector is 1% of GDP. Even if only 40% of planned income has in fact been recorded during the first six months of 2001, the ministry of finance remains optimistic that it will meet its planned deficit target by the end of the year by means of tight spending controls and increases in excise taxes on gasoline. The central bank is less certain, expecting the deficit to come to 2.7%. As of 2002, budgets are to cover two-year periods. The government has already adopted the draft budget for 2002/03. A deficit of 2.5% is envisaged for 2002. The projected shortfall in revenues resulting from the worsening world economic conditions that was not considered in the initial draft is to be bridged by bringing forward a planned VAT increase from 2003 to 2002.

In the first half of 2001, the government's decision to privatize the country's two largest banks, Nova Kreditna banka Maribor (NKBM) and Nova Ljubljanska banka (NLB) essentially boosted structural reform. In May, the governing parties agreed on reducing the state-held stake in these banks to 25% plus one share. The sale of NKBM stakes has already been announced and is to be completed by end-2001. The prospective buyer should be a strategic investor willing to purchase 65% less one share. A number of bids have been made so far. Further shares are held by pension funds.

The privatization of NLB started with a call for tenders in mid-September and is to be concluded by March 2002. Here, the aim is to find a number of different investors, with one key investor to purchase 34% of the shares. In April, the French bank Société Générale bought a 96.5% stake in SKB Banka, the already privatized third largest Slovenian bank in the course of a friendly takeover worth USD 126.8 million. The pace of privatizing insurance companies is decelerating, because the constitutional court has repealed the respective law. Parliament will now have to draw up a new bill. Furthermore, in the course of the reporting year, parliament will elaborate a bill for the new central bank act to incorporate a number of amendments suggested by the European Commission. Foreign direct investment (FDI) is now to be promoted by a special government program. In the period from January to August 2001, FDI came to USD 157.7 million, thus surpassing the FDI level recorded over the entire year 2000 (USD 109.5 million).

Since July 2001, restrictions on foreign portfolio investment have been lifted, making it easier for foreign investors, inter alia, to purchase long-term securities on the Slovenian capital market by abolishing the quarterly fees foreign investors were previously obliged to pay. Cooperation in the Balkan region has been stimulated with the agreement of the countries of former Yugoslavia, at the end of May 2001, on how to distribute the assets and liabilities of former Yugoslavia.

Cutoff date: November 15, 2001.

S T U D I E S

Similarity of Supply and Demand Shocks Between the Euro Area and the Accession Countries¹⁾

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I Introduction

In this paper, we examine the correlation of supply and demand shocks between the Central and Eastern European countries (CEECs) and the euro area. Our purpose is to assess whether the accession countries belong in the same optimum currency area with the current members of Economic and Monetary Union (EMU). At the same time, we use data from the past decade to assess the similarity of the shocks within the euro area. This is the first attempt to examine the similarity between CEEC shocks and shocks in the euro area as a whole, as previous studies have almost uniformly concentrated on the correlation with German (the “core” country’s) shocks.

In practice the supply and demand shocks are recovered from two-variable (output and inflation) vector autoregressive (VAR) models with the help of the decomposition developed by Blanchard and Quah (1989). The different shocks are identified from the VAR residuals under the restriction that demand shocks cannot have a permanent effect on output. The same procedure has been used before to assess whether current Economic and Monetary Union constitutes an optimum currency area, e.g. by Bayoumi and Eichengreen (1993). Our contribution also updates their results (although with quarterly data), and we find that, in general, shocks in euro area countries are quite highly correlated. Moreover, countries like Italy, which earlier were deemed “peripheral,” have become more integrated with the other euro area countries in the 1990s.

The second set of results relates to the CEECs. Although their membership in Monetary Union is several years away even according to the most optimistic assumptions, it is of interest to see how closely these countries correspond to the criteria of an optimum currency area. In all previous studies, the correlation of shocks was calculated against Germany or perhaps France, which are thought to form the “core” of the euro area. However, the German experience in the 1990s may have been unique because of unification, and therefore we feel a correlation with the euro area as a whole is the appropriate benchmark. Moreover, as a common monetary policy is conducted for the whole euro area, it is appropriate to assess how well the CEECs are integrated with the entire euro area, not with single EU countries.

A priori, one could expect a quite high correlation in business cycles, as the CEECs’ foreign trade is conducted largely with the countries of the EU. It turns out that shocks in some accession countries are indeed quite highly correlated with euro area shocks. Especially Hungary and Estonia are very close to smaller euro area countries in this regard. Generally, demand shocks are quite different in the CEECs, perhaps reflecting their different policy priorities during the transition towards a market economy in the 1990s.

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Results indicate that there are accession countries for which prospective membership in EMU would probably not pose too many problems, at least not because of asymmetric business cycles. For other CEECs the asymmetry of business cycles continues to be quite high, and hence early membership in EMU could be problematic.

The paper is organized as follows: The next section reviews literature on optimum currency area theory, as it relates to the accession countries of Central and Eastern Europe.¹⁾ The third section illustrates briefly the aggregate supply-demand model underlying our empirical exercise, and the fourth section describes the method used to recover supply and demand shocks. In the fifth section we proceed to estimate the shocks and assess their nature across countries. The last section offers some concluding remarks.

2 Optimum Currency Area Literature as Applied to Central and Eastern Europe

The optimum currency area (OCA) theory goes back to Mundell (1961). He conjectured that a country would find it more advantageous to peg the external value of its currency if the business cycles of the two countries were highly correlated. In practice the correlation is of course never perfect, but the problem of asymmetric shocks would be alleviated if factors of production could move between countries (or regions). After the breakdown of the Bretton Woods system, the OCA analysis was regularly used to assess the desirability of having a fixed exchange rate in different countries. Generally it was found that especially movement of labor between countries (or even regions) in Europe was extremely slow, making fixed exchange rates undesirable on these grounds.

A revival in the empirical testing of the OCA theory preceded the introduction of EMU in Europe. Usually, empirical studies assessed the correlations between the German business cycle and those in the other potential member countries. Especially influential was the contribution by Bayoumi and Eichengreen (1993).²⁾ They recovered the underlying supply and demand shocks in the prospective members of EMU using the technique developed by Blanchard and Quah (1989). The basic idea is that an economy is hit by two types of shocks, demand and supply shocks. Demand shocks are identified with the help of the restriction that their long-term impact on output is zero. Only supply shocks can have a permanent effect on output. Bayoumi and Eichengreen first estimate two-variable vector autoregressive (VAR) models for real GDP and an implicit GDP deflator. Demand and supply shocks are then recovered from the residuals of these VARs with the help of the aforementioned restriction. Correlation coefficients of different shocks between countries (or, in this case, vis-à-vis German shocks) are used to assess the degree of similarity between the business cycles.

Bayoumi and Eichengreen place special emphasis on supply shocks, as they produce clearer results, and find that the correlation of shocks is quite

1 *If not otherwise indicated, we define the Central and Eastern European countries (CEECs) as Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia.*

2 *They also apply the same method to assess whether the United States is an optimum currency area.*

high for countries like France and Belgium, i.e. countries with close geographical and economic ties with Germany. Also, Dutch and Danish supply shocks are closely correlated with German shocks. These results are naturally quite intuitive. For several decades, these “core” countries have maintained close economic relations in the context of EU membership, and in many cases their economic policies have also quite closely followed German policies. For other EU countries the correlations are not so high, yet they are found to be negative only for Ireland. Correlations of demand shocks are almost uniformly lower. The magnitude of shocks also divides the countries studied by Bayoumi and Eichengreen into two distinct groups. The “core” countries have clearly smaller shocks than the more peripheral countries. In the end, Bayoumi and Eichengreen conclude that the EU is divided into two groups, and that the “core” countries may represent an optimum currency union. The obvious caveat is that they used annual data from 1960 to 1988, and the degree of correlation may have changed in the 1990s with the completion of the Single Market and the liberalization of capital flows. This issue will be taken up later in our own analysis.

For the CEECs, the issue of joining Monetary Union is becoming more and more topical. When the new member countries join the EU, they will be expected to also join EMU at some point in the future.¹⁾ The European Union, including the Eurosystem, has outlined a three-step approach to the monetary integration of candidate countries from Central and Eastern Europe. Kopits (1999) and Backé (1999) describe this approach in detail. Basically, applicants first join the EU, then enter the EU’s exchange rate mechanism (ERM II), and finally, as soon as they meet the convergence criteria, accede to Economic and Monetary Union (EMU). Therefore, the eventual goal for the accession countries as regards monetary arrangements is clear. The issue is the timing of EMU membership and the optimum interim exchange rate arrangement. If there is already a significant degree of correlation between the business cycles of the euro area and the accession countries, the costs of giving up monetary independence may not be very high. This could, in turn, lead to early EMU membership. A more thorough survey of the related literature is provided e.g. by Järvinen (2000).

Frenkel et al. (1999) use a similar approach to the issue of business cycle correlation as Bayoumi and Eichengreen. They recover quarterly supply and demand shocks for various countries, including most of the EU accession countries. Frenkel et al. find that the correlation between shocks in the euro area and in nonparticipating Member States is quite high, as it is for the remaining EFTA countries. The correlation of shocks varies considerably between the euro area (proxied by Germany and France) and the accession countries. However, there are a number of difficulties in interpreting the results. Perhaps the most serious difficulty is with the data used for estimation. Frenkel et al. use quarterly data from the first quarter of 1992 to the second quarter of 1998. The time period is quite short, but this is a problem which cannot really be avoided in such studies. More problematic is the fact that for some of the accession countries, the first two or three years in the

1 There will be no opt-outs from EMU.

sample belong to the period of transformational recession, i.e. in that output losses were related to the change in their economic systems. This makes the interpretation of economic shocks quite difficult. In a longer sample, this problem can be alleviated to a certain degree. This was done by Horvath (2001), but for a smaller set of comparative countries.

There are also some studies which directly address the degree of correlation between business cycles in the euro area (or the EU) and the accession countries. Boone and Maurel (1998) basically calculate correlation coefficients between the cyclical components of industrial production and unemployment rates for the accession countries¹⁾ against Germany and the EU. The trend for industrial production and the unemployment rate is estimated with the Hodrick-Prescott filter. Generally, they find a relatively high degree of cycle correlation for the accession countries with Germany, higher e.g. than for Portugal or Greece. This implies relatively low costs for giving up monetary sovereignty and joining a monetary union with Germany. However, correlations with the EU as a whole are not so high.

Boone and Maurel (1999) use a different methodology from that in their earlier work to assess the similarity between business cycles in the accession countries²⁾ against Germany and the EU. They fit a univariate time series model to the unemployment rate in an accession country, using its own lags and those of EU unemployment. In this framework they ask first how much of the variation in the unemployment rate can be explained by a Germany- or EU-wide shock. Then they look for a correlation in the propagation of the shock. Boone and Maurel find that the share of variation explained by the German shock is fairly high for all accession countries, and highest for Hungary and Slovakia. The accession countries with the highest correlations in impulse responses to a German shock were Poland and Slovakia. Boone and Maurel conclude that the business cycles in these countries are close enough to the German cycle that joining EMU would entail net benefits for them.

Brada and Kutan (2001) look at a slightly narrower concept of the convergence of monetary policy. They concentrate on the movements in the monetary base of the accession countries, Germany and some new EU members. Monetary convergence is assessed in a cointegration framework. Brada and Kutan find that of the accession countries, Cyprus and Malta have to a large degree converged to the German monetary policy, while for the transition countries, convergence is smaller or nonexistent. Interestingly, the degree of convergence does not seem to depend on the exchange rate regime.

Fidrmuc (2001) tests the Frankel and Rose (1998) endogeneity hypothesis of optimum currency area criteria. He shows that the convergence of business cycles relates to intraindustry trade, but he finds no significant relation between business cycles and bilateral trade intensity. Furthermore, he shows that the business cycle (defined as detrended industrial production) in Hungary, Slovenia and, to a lesser extent, Poland strongly correlates with

1 Except for the Baltic countries.

2 Here: the Czech Republic, Hungary, Poland and Slovakia.

the German cycle. Moreover, he finds that because of an already high degree of intraindustry trade, there is significant potential for increasing the correlation between business cycles in the EU and the accession countries (here, the aforementioned three countries plus the Czech Republic and Slovakia).

Korhonen (2001) looks at monthly indicators of industrial production in the euro area and nine accession countries (excluding Bulgaria) in Central and Eastern Europe. The issue of correlation is assessed with the help of separate VARs between euro area production and production (both in logs and first differences) in each of the accession countries. The correlation of impulse responses to euro area shocks is to be taken as evidence of the symmetry of the business cycles. Korhonen finds that the most advanced accession countries (especially Hungary and perhaps also Slovenia) exhibit a rather high correlation with the euro area business cycle. Moreover, correlation seems to be at least as high as in some small current EMU member countries.

Summing up, empirical evidence seems to indicate that economic cycles in the more advanced accession countries are quite highly correlated with the euro area cycle. This seems to be case especially for Hungary and perhaps also for Slovenia. Although the Baltic countries have been included in only a few of the aforementioned studies, there is also some evidence that Estonia has achieved some convergence with the euro area cycle.

What explains this convergence in cycles? Fidrmuc (2001) has already emphasized the importance of intraindustry trade in fostering common cyclical behavior. Kaitila (2001) looks at the accession countries' foreign trade and finds that especially Hungary and Estonia have moved towards more skill-intensive products in their trade with the EU. Foreign direct investment in these countries seems to explain this shift to a large degree. Production of reasonably similar products as in the EU may also account for similarity in economic cycles.

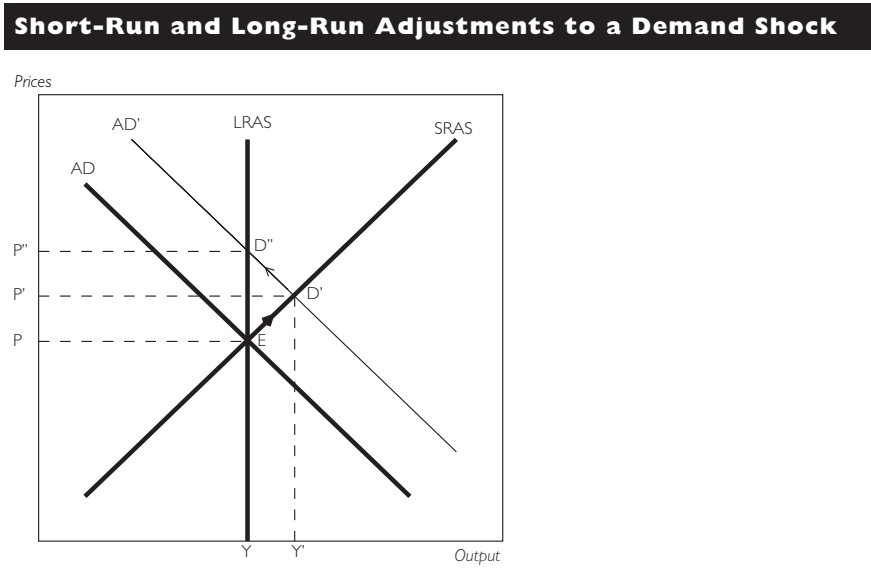
3 Aggregate Demand and Supply Model

McKinnon (2000) remarks that the optimum currency area theory has Neoknesian foundations, given its roots in the 1960s. This framework is based on sticky wages, which cause an adjustment process to a new equilibrium if an economy is hit by demand or supply shocks. The Neoknesian model distinguishes between short-run and long-run equilibria for the economy. Thus, an appropriate policy may reduce the adjustment costs, for example, by the selection of an appropriate exchange rate regime (floating exchange rates against fixed exchange rates or participation in a monetary union).

The early analyses of optimum currency area theory concentrated on the similarity of business cycles among countries and regions supposed to participate in a monetary union. However, the business cycle includes all the shocks affecting the economy in the particular period as well as the influence of past shocks still having a damped influence on the economy. It is therefore important to identify the original shocks affecting members of a monetary union.

In particular, the aggregate demand and supply model allows supply and demand shocks to be identified. This theoretical framework assumes that the long-run aggregate supply curve (LRAS), which is vertical, is likely to differ

Figure 1



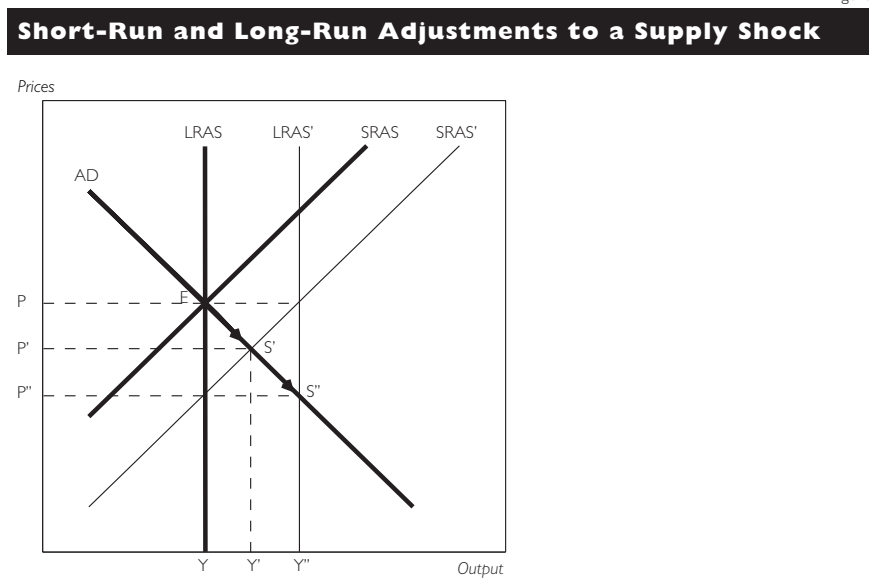
from the short-run supply curve (SRAS), which is positively sloped. The difference between the shape of the short-run and the long-run supply curves is caused by sticky wages. Therefore, higher prices imply lower real wages in the economy in the short run. In the long run, however, real wages adjust to those changes. The aggregate demand curve (AD) is negatively sloped both in the short and the long run. This reflects the assumption that lower prices boost demand.

The effects of a (positive) demand shock are shown in figure 1. As a result of a demand shock,¹⁾ the aggregate demand curve, AD, shifts upwards, as denoted by AD'. As long as wages are sticky, the equilibrium moves from E to the intersection with the short-run supply curve, which is denoted by D'. This raises both output and prices in the short run, depending on the slopes of both curves. In the long run, the equilibrium adjusts further to the intersection of AD' and the long-run aggregate supply curve, as denoted by D''. As a result, output moves back to its initial level, Y, while prices increase further to P''. Figure 2 illustrates the effect of a (positive) supply shock (e.g. higher productivity). In this case, both the short-run and the long-run aggregate supply curves shift right by the same amount. In the short run, the new equilibrium, S', is given by the intersection of the new short-run aggregate supply curve, SRAS', and the aggregate demand curve, AD. Thus, the short-run adjustments include disinflation and a rise in output. Furthermore, the long-run adjustment to S'' goes in the same direction, i.e. it reduces the price level to P'' and increases the output level to Y''.

As a result, the aggregate demand and supply model provides two distinct features of the original shocks affecting the economy. First, only supply shocks have a permanent effect on output. This property will be directly used for the definition of structural models of economies (structural VAR)

1 In this very simple framework, a demand shock could originate e.g. from fiscal or monetary policy, insofar as they have no influence on productivity in the long run.

Figure 2



in the next section. Second, positive demand shocks raise prices (and thus have inflationary effects), while positive supply shocks reduce the price level. This property, which is referred to by Bayoumi and Eichengreen (1993) as an overidentifying condition, will not be used directly in the modeling part. Nevertheless, we will use this condition to assess the performance of our models in the following sections.

4 Identification of Supply and Demand Shocks

In this section we present the methodology used to recover the supply and demand shocks in different economies. We use a structural vector autoregressive (VAR) model with two variables, output and prices. It is assumed that fluctuations in these two variables result from two types of shocks: supply and demand shocks (as in the simplified model sketched in the previous section). Supply shocks have permanent effects on output, whereas demand shocks have only transitory effects. Furthermore, both supply and demand shocks have permanent effects on the price level. A supply shock depresses the price level, whereas a demand shock increases it.

The method used to separate supply and demand shocks is based on Blanchard and Quah (1989). They estimate a two-variable VAR with GDP and unemployment, and proceed to identify the two aforementioned shocks in that framework. Similarly to our own analysis, Bayoumi and Eichengreen (1993) estimate a VAR with the differences of GDP and the price level (in logs) as variables. The joint process of two variables (GDP and prices) can also be written as an infinite moving average representation of supply and demand shocks,

$$X_t = A_0\epsilon_t + A_1\epsilon_{t-1} + A_2\epsilon_{t-2} + A_3\epsilon_{t-3} + \dots = \sum_{i=0}^{\infty} L^i A_i \epsilon_{t-i}, \quad (1)$$

where X_t is a vector of differences of logs of output and prices $[\Delta y_t, \Delta p_t]'$,

ϵ_t is a vector of demand and supply disturbances $[\epsilon_{dt}, \epsilon_{st}]'$, A_i are the 2×2 matrices which transmit the effects of the shocks to the variables, and L^i is the lag operator. The long-run restriction that demand shocks do not affect the level of output is the same as saying that the cumulative effect of demand shocks on the change of output is zero, i.e. $\sum_{i=0}^{\infty} a_{11i} = 0$. Also, it is assumed that supply and demand shocks are uncorrelated and their variance is normalized to unity, i.e. $Var(\epsilon_t) = I$. A finite version of the model represented by equation 1 can be estimated as a VAR. The estimated VAR representation can then be used to recover the original supply and demand disturbances. Because the vector X_t is stationary, the VAR representation can be inverted to obtain the Wold moving average representation. Here, e_t is the vector of residuals from the two estimated equations,

$$X_t = e_t + C_1 e_{t-1} + C_2 e_{t-2} + C_3 e_{t-3} + \dots = \sum_{i=0}^{\infty} C_i e_{t-i}. \quad (2)$$

The variance-covariance matrix of residuals is $Var(e_t) = \Omega$. Equations 1 and 2 directly yield the relationship between the estimated residuals (e_t) and the original shocks (ϵ_t): $e_t = A_0 \epsilon_t$. Therefore, we need to know the elements in A_0 to calculate the underlying supply and demand shocks. The matrices C_i are known from estimation. Knowing that $A_i = C_i A_0$ and $\sum_{i=0}^{\infty} A_i = \sum_{i=0}^{\infty} C_i A_0$ helps us identify A_0 , but to recover the four elements of A_0 we need four restrictions. Two restrictions are simply normalizations defining the variance of the shocks ϵ_{dt} and ϵ_{st} . The third restriction is the assumption that demand and supply shocks are orthogonal, which according to our notation means that $A_0 A_0' = \Omega$. The fourth restriction, i.e. that the long-run response of output to demand shocks is zero, has already been mentioned. The aforementioned restrictions uniquely determine the elements of A_0 , which allows us to recover supply and demand shocks from the residuals of an estimated VAR.

5 Empirical Results

5.1 Data

We use quarterly GDP in constant and current prices. If possible, these data are used to construct the implicit GDP deflator, which is our preferred price variable. However, we have to use the industrial production and producer price index for Romania, Greece and Ireland. If possible, GDP variables are taken from the OECD's Quarterly National Account database, which provides seasonally adjusted data for all EU countries and unadjusted data for the Czech Republic. Data for the other accession countries are collected from national publications.

The length of the time series for the accession countries varies, but usually it starts from 1993 or 1994 (1995 in the case of the Baltic countries and Hungary). The data therefore omit the period of transformational recession in the accession countries. This probably makes the results more applicable for the present time period as well.

For the EU countries, the length of the time series varies as well (in nearly all cases except for Sweden, the time series are basically available from the 1960s or 1970s), but supply and demand shocks are calculated from

SIMILARITY OF SUPPLY AND DEMAND SHOCKS
 BETWEEN THE EURO AREA
 AND THE ACCESSION COUNTRIES

Table 1

Descriptive Statistics of GDP Growth						
Country	Period	Mean	Median	Minimum	Maximum	Standard dev.
Euro area	1991:2–2000:4	0.00487	0.00558	–0.00686	0.01455	0.00458
Austria ¹⁾³⁾	1991:1–2000:4	0.00559	0.00547	–0.01528	0.02872	0.00779
Belgium ¹⁾³⁾	1991:2–2000:3	0.00541	0.00705	–0.02084	0.02135	0.00909
Finland ¹⁾³⁾	1991:2–2000:4	0.00862	0.01619	–0.08415	0.05813	0.04046
France ¹⁾³⁾	1991:1–2000:4	0.00469	0.00606	–0.00534	0.01129	0.00445
Germany ¹⁾³⁾	1991:2–2000:3	0.00400	0.00391	–0.01227	0.02129	0.00667
Greece ²⁾³⁾	1991:2–2000:4	0.00152	0.01674	–0.12312	0.10575	0.06564
Ireland ¹⁾²⁾³⁾	1991:1–2000:1	0.02454	0.02521	–0.07908	0.08884	0.03136
Italy ¹⁾³⁾	1991:1–2000:4	0.00430	0.00472	–0.00893	0.01787	0.00591
Netherlands ³⁾	1991:2–2000:3	0.00718	0.00686	–0.00517	0.01395	0.00471
Portugal ³⁾	1991:2–2000:3	0.00732	0.00708	–0.02371	0.03946	0.01569
Denmark ²⁾	1991:2–2000:2	0.00648	–0.00248	–0.03495	0.06641	0.03034
Sweden ¹⁾	1993:2–2000:4	0.00762	0.00891	–0.01189	0.01800	0.00700
UK ¹⁾³⁾	1991:1–2000:4	0.00585	0.00550	–0.00549	0.01437	0.00422
Bulgaria	1994:2–2000:4	–0.00141	–0.00144	–0.08649	0.08303	0.03888
Czech Republic	1994:2–2000:4	0.00668	0.04130	–0.06646	0.07113	0.05765
Estonia	1995:2–2000:4	0.01587	0.05667	–0.14005	0.13157	0.08778
Hungary	1995:2–2000:4	0.00807	0.03802	–0.12438	0.08329	0.07200
Latvia	1995:2–2000:4	0.01274	0.00571	–0.04432	0.08567	0.03368
Lithuania	1995:2–2000:4	0.01264	0.06846	–0.17199	0.19273	0.12944
Poland	1995:2–2001:1	0.01076	0.04317	0.17140	0.12211	0.10592
Romania ²⁾³⁾	1992:1–2000:4	–0.00460	0.00670	–0.17980	0.09910	0.06706
Slovakia	1993:2–2000:3	0.01733	0.01125	–0.01561	0.10674	0.02232
Slovenia	1994:1–2000:4	0.00990	0.01558	–0.05554	0.07816	0.03921

Source: Own calculations.

¹⁾ Seasonally adjusted time series.

²⁾ Industrial production.

³⁾ Descriptive statistics for a subrange of the entire period available. The indicated period was used for the estimation of the VARs presented below. The whole time series were used for the robustness analyses as indicated in the text.

Table 2

Descriptive Statistics of Inflation						
Country	Period	Mean	Median	Minimum	Maximum	Standard dev.
Euro area	1991:2–2000:4	0.00495	0.00459	–0.00431	0.01483	0.00430
Austria ¹⁾	1991:1–2000:4	0.00493	0.00445	–0.00200	0.01133	0.00332
Belgium ³⁾	1991:2–2000:3	0.00489	0.00439	–0.00007	0.01092	0.00307
Finland ³⁾	1991:2–2000:4	0.00471	0.00095	–0.02344	0.04409	0.01777
France ¹⁾	1991:1–2000:3	0.00375	0.00370	–0.00025	0.01355	0.00267
Germany ¹⁾³⁾	1991:2–2000:3	0.00489	0.00443	–0.00184	0.01730	0.00472
Greece ²⁾³⁾	1991:2–2000:4	0.01807	0.01737	–0.00978	0.04636	0.01399
Ireland ²⁾³⁾	1991:2–2000:4	0.00522	0.00559	–0.01276	0.02784	0.00890
Italy ¹⁾	1991:1–2000:4	0.00898	0.00788	–0.00062	0.02570	0.00576
Netherlands ³⁾	1991:2–2000:3	0.00513	0.00529	–0.00236	0.01228	0.00336
Portugal ³⁾	1991:2–2000:3	0.01301	0.01221	–0.01261	0.03648	0.01101
Denmark ²⁾	1991:2–2000:2	0.00578	0.00708	–0.02129	0.02347	0.01172
Sweden ¹⁾	1993:2–2000:4	0.00401	0.00381	–0.00984	0.01117	0.00468
UK ¹⁾³⁾	1991:1–2000:4	0.00716	0.00705	–0.00442	0.01953	0.00511
Bulgaria	1994:2–2000:4	0.15321	0.08257	–0.22360	1.55597	0.36166
Czech Republic	1994:2–2000:4	0.01689	0.01684	–0.03754	0.04884	0.01961
Estonia	1995:2–2000:4	0.02552	0.03285	–0.06083	0.13362	0.04978
Hungary	1995:2–2001:1	0.03108	0.02708	–0.00048	0.12375	0.02994
Latvia	1995:2–2000:4	0.02758	0.04170	–0.04848	0.10281	0.04162
Lithuania	1995:2–2000:4	0.01675	0.01267	–0.01940	0.07593	0.02448
Poland	1994:2–2000:4	0.03610	0.03111	–0.00130	0.12168	0.02217
Romania ²⁾³⁾	1992:1–2000:4	0.14882	0.09642	0.02044	0.42776	0.11649
Slovakia	1993:2–2000:3	0.01733	0.01125	–0.00130	0.08155	0.02232
Slovenia	1994:2–2000:4	0.01660	–0.01520	–0.07816	0.23386	0.08895

Source: Own calculations.

¹⁾ Seasonally adjusted time series.

²⁾ Index of producer prices.

³⁾ Descriptive statistics for a subrange of the entire period available. The indicated period was used for the estimation of the VARs presented below. The whole time series were used for the robustness analyses as indicated in the text.

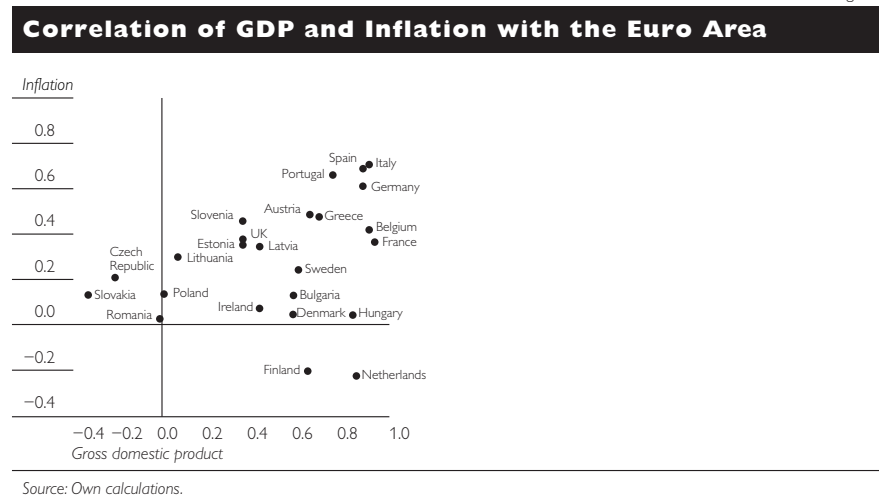
models with an estimation period starting from 1991. This restriction was chosen in order to ensure a better comparability between the EU and the accession countries. Nevertheless, the comparison of the estimations for the entire period available and for the 1990s confirms the robustness of our results for all countries. Time series for the euro area (excluding Greece so far), as published by Eurostat, are available only as of the beginning of 1991.

Both real GDP and the GDP deflator were rebased to 100 in 1995 for all countries. We use the first differences of the natural logarithm of the transformed series for our estimations. Tables 1 and 2 give descriptive statistics of the first difference of output and price series.¹⁾

5.2 Correlation of GDP and Inflation

There is mixed evidence as to the convergence of business cycles in the EU and the CEECs. First of all, during the period of the central planning system, the level of GDP in the CEECs grew slowly in relation to Western European countries. The divergence between Western and Eastern Europe speeded up in the 1970s and the 1980s. Thus, the increasing welfare gap between market and central planning economies in Europe was one of the major reasons for the introduction of early reforms in some countries of Central and Eastern Europe. There were few signs of convergence between the CEECs in this period. Estrin and Urga (1997) find only limited evidence of convergence in the former Soviet Union or within various groups of Central European command economies. More surprisingly, Fidrmuc, Horvath and Fidrmuc (1999) conclude that the Czech Republic and Slovakia did neither converged between 1950 and 1990 nor within a subsample from 1970 to 1990.

Figure 3



1 We also performed unit root tests for the series. It is quite obvious even from a merely visual observation of the data that the series have to be differenced once to be rendered stationary, and this was indeed confirmed by augmented Dickey-Fuller (ADF) tests. These are not reported here, but are available from the authors upon request.

Several authors report increasing similarities of business cycles between the EU (mainly Germany) and the CEECs since the introduction of the economic reforms. As mentioned in the previous section, Boone and Maurel (1998 and 1999) find a significant convergence between business cycles (as measured by unemployment rates) in Germany and select CEECs (the Czech Republic, Hungary, Poland and Slovakia). Similarly, Fidrmuc (2001) shows increasing convergence of business cycles in the CEECs with those in the EMU countries after 1993. Indeed, our data set confirms that the business cycles in some CEECs have become more similar to the business cycle of the EU area since 1993 (see table 3). At the beginning of the 1990s, production development in the CEECs was determined by the so called “transitional” recession. However, the economic recovery in these countries has been strongly influenced by their growing exports to the EU. As a result, the EU’s business cycle has increasingly determined the developments in the CEECs’ economies since 1993.

In particular, the correlation of real GDP growth¹⁾ between the euro area and Hungary (0.83 between 1995 and 2000) has been slightly higher than the corresponding correlation of euro countries on average (0.81 between 1991 and 2000). The business cycles of Slovenia, Estonia and Latvia also followed the pattern of euro area development. By contrast, GDP development in the Czech Republic, Lithuania, Poland and Slovakia has been dominated by domestic factors.

Table 3

Country	GDP growth			Inflation		
	Euro area ¹⁾	Min ²⁾	Max ²⁾	Euro area ¹⁾	Min ²⁾	Max ²⁾
	Austria	0.64	0.17	0.66	0.48	0.03	0.87
Belgium	0.91	0.48	0.84	0.41	0.03	0.89
Finland	0.63	0.17	0.76	-0.21	-0.08	0.20
France	0.93	0.60	0.89	0.36	0.06	0.77
Germany	0.88	0.35	0.83	0.60	-0.07	0.92
Greece	0.42	0.44	0.70	0.06	0.17	0.83
Ireland	0.69	0.15	0.47	0.47	0.05	0.51
Italy	0.88	0.47	0.84	0.68	-0.25	0.70
Netherlands	0.85	0.59	0.90	-0.23	-0.25	0.20
Portugal	0.75	0.52	0.83	0.65	-0.08	0.92
Denmark	0.57	0.08	0.63	0.04	-0.47	0.28
Sweden	0.59	0.10	0.62	0.23	-0.07	0.85
UK	0.35	-0.02	0.76	0.37	-0.24	0.57
Bulgaria	0.57	-0.03	0.60	0.12 ³⁾	-0.27 ³⁾	0.61 ³⁾
Czech Republic	-0.22	-0.63	0.26	0.20	-0.53	0.74
Estonia	0.35	-0.51	0.70	0.34	-0.58	0.82
Hungary	0.83	0.05	0.83	0.04	-0.59	0.78
Latvia	0.42	-0.29	0.67	0.34	-0.62	0.83
Lithuania	0.06	-0.63	0.61	0.29	-0.65	0.86
Poland	0.00	-0.35	0.50	0.13	-0.54	0.75
Romania	-0.03	-0.20	0.34	-0.28	-0.20	0.68
Slovakia	-0.34	-0.51	0.10	0.12	0.11	0.69
Slovenia	0.35	0.11	0.57	0.45	-0.47	0.77

Source: Own calculations.

See tables 1 and 2 for data description.

¹⁾ Correlation of national indicators with those of the euro area.

²⁾ Minimum and maximum value of correlation vis-à-vis the individual euro area countries.

³⁾ Excluding 1997:1–1997:4.

1 In order to deal with seasonality, we report correlation for the fourth difference of quarterly data for the entire period available for the selected countries.

Beyond the coordination of the business cycles, table 3 and figure 3 reveal a possible relation between the similarity of GDP development and inflation. Those countries displaying a high and positive correlation of seasonally adjusted GDP growth also show a high and positive correlation of seasonally adjusted prices, and vice versa. This relation is likely to be caused by the increasing competition pressure prevailing in the Single Market.

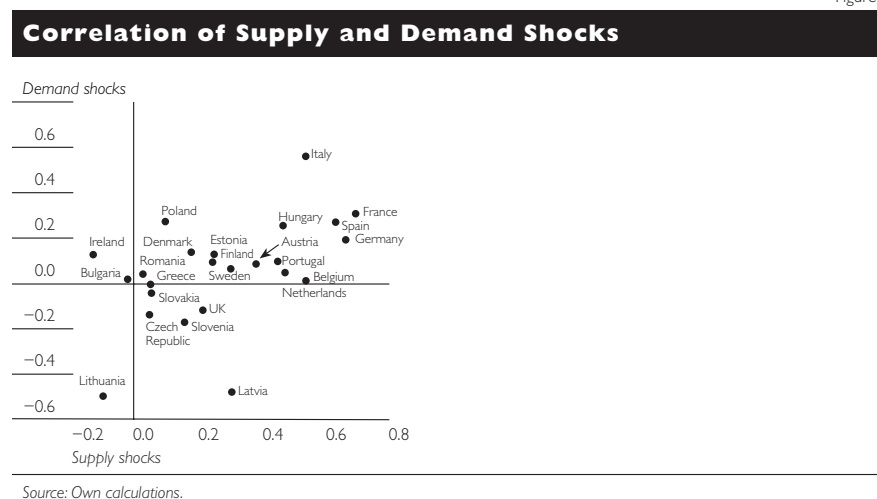
Given the GDP and inflation correlation in figure 3, we can identify two or three country groups. First, we have a group of candidate countries with a low similarity of both price and GDP development. This group includes the Czech Republic, Lithuania, Poland and Slovakia. The second group includes EU countries and Estonia, Latvia and Slovenia. From the point of view of GDP development, Denmark, Ireland, Hungary, Bulgaria, Finland and the Netherlands also belong to this group. However, these countries recorded a different price development than the euro area. Therefore, they should be viewed as a different group or subgroup.

In general, the CEECs are a less homogeneous group than the EU countries or the euro area. Furthermore, this is also true for particular regional groupings in Central and Eastern Europe (e.g. the so-called Visegrad countries or the Baltic states). The policy implications of these results are, however, restricted because they do not reveal the role of demand and supply shocks.

5.3 Correlation of Supply and Demand Shocks

Our assessment of the correlation between supply and demand shocks in different countries starts by estimating two-variable vector autoregressive (VAR) models for all the individual countries and the euro area. In the VARs our variables are changes in (the log of) real quarterly GDP (industrial production for Ireland) and in (the log of) prices. For the series that are not seasonally adjusted, we also included three seasonal dummies. The lag length of the VARs was chosen according to sequential likelihood ratio tests for different lag lengths. Usually, this was also the same lag length as the one chosen by the Akaike information criterion. In practice, the optimum lag

Figure 4



length was usually two, sometimes three quarters.¹⁾ The overidentifying restriction mentioned in section 3 (i.e. that the accumulated effect of a supply shock on prices is negative) was satisfied in almost all VARs. The only exceptions were the Baltic countries, Finland and Poland.

From the estimated VARs we recovered the underlying supply and demand shocks as described in the previous section. Table 4 and figure 4 show the contemporaneous correlation between supply and demand shocks in the euro area as a whole and (in the first column of the blocks of the table) in individual countries. The next two columns of each block, in turn, give the minimum and maximum pairwise correlations vis-à-vis individual respective euro area countries (excluding Greece and Ireland) for both types of shocks.²⁾ Some interesting results emerge. First, for present members of EMU, our correlation coefficients are generally lower than those obtained vis-à-vis German shocks in Bayoumi and Eichengreen (1993). This is quite natural, as we use quarterly data, which are bound to be noisier than the annual data used by Bayoumi and Eichengreen. However, for many countries formerly dubbed “peripheral,” the correlation especially of supply shocks seemed to be quite high during the 1990s. In this respect, our results are more or less in line with Frenkel et al. (1999), who calculate correlation vis-à-vis quarterly German and French shocks. However, they do not calculate correlations with shocks of the euro area as a whole.

A comparison of figures 3 and 4 reveals two interesting features. First, supply and demand shocks are less strongly correlated in the selected countries than GDP growth and inflation. Second, we can again find two nearly separate country groups. The first group includes all EU countries except Ireland and Greece,³⁾ as well as Hungary and possibly Poland. These countries show a relatively high correlation of at least one type of the decomposed shocks. The second group includes the CEECs as well as Greece and Ireland. Latvia and Lithuania are revealed to be outliers whose demand shocks show a high negative correlation with the euro area.

Both findings indicate that the Blanchard and Quah decomposition of VAR residuals may lead to significantly different policy conclusions with regard to the OCA criteria. In particular, Estonia and Latvia are found to have a development of both GDP growth and inflation similar to that of the euro area, despite largely idiosyncratic supply and demand shocks.

In table 4 the correlations are calculated vis-à-vis euro area shocks. Therefore, it is quite natural that this indicator is high for the largest euro area countries, like Germany and France. Also, the supply shocks of the Benelux countries and Austria are highly correlated with the euro area (correlation coefficient around 0.4–0.5), which is not surprising. But supply shocks in countries like Portugal and Italy have also been quite highly correlated with the entire euro area (correlation 0.45–0.50). The continuing integration of European economies – first within the Single Market and then in

1 Details on VARs are available from the authors upon request.

2 The whole correlation matrix of supply and demand shocks between the analyzed countries is available from the authors. The text below refers to the whole set of computed correlations.

3 Note, however, that we use industrial production and producer prices for these two countries.

Table 4

Country	Supply shocks			Demand shocks		
	Euro area ¹⁾	Min ²⁾	Max ²⁾	Euro area ¹⁾	Min ²⁾	Max ²⁾
	Austria	0.38	-0.22	0.48	0.08	-0.08	0.36
Belgium	0.53	0.08	0.47	0.00	0.01	0.46
Finland	0.30	-0.22	0.49	0.06	-0.21	0.18
France	0.69	0.26	0.60	0.30	-0.11	0.60
Germany	0.66	0.11	0.48	0.18	-0.19	0.35
Greece	0.05	-0.04	0.23	-0.01	-0.07	0.34
Ireland	-0.14	-0.51	0.16	0.13	-0.21	0.25
Italy	0.52	0.11	0.55	0.57	-0.07	0.41
Netherlands	0.47	0.07	0.60	0.04	-0.10	0.39
Portugal	0.45	0.10	0.44	0.09	-0.11	0.28
Spain	0.22	0.08	0.55	0.16	-0.21	0.60
Denmark	0.18	-0.12	0.36	0.13	-0.11	0.19
Sweden	0.24	-0.16	0.22	0.09	-0.36	0.31
UK	0.21	-0.07	0.31	-0.13	-0.24	0.25
Bulgaria	-0.03	-0.29	0.37	0.03	-0.18	0.33
Czech Republic	0.04	-0.02	0.29	-0.15	-0.57	0.20
Estonia	0.25	-0.17	0.41	0.12	-0.46	0.20
Hungary	0.46	-0.10	0.67	0.25	-0.52	0.44
Latvia	0.30	-0.14	0.48	-0.49	-0.53	0.01
Lithuania	-0.11	-0.36	0.36	-0.49	-0.25	0.32
Poland	0.08	-0.42	0.34	0.28	-0.24	0.49
Romania	0.02	-0.29	0.34	0.03	-0.28	0.08
Slovakia	0.05	-0.48	0.18	-0.05	-0.30	0.41
Slovenia	0.15	-0.20	0.37	-0.18	-0.16	0.49

Source: Own calculations.

See tables 1 and 2 for data description.

¹⁾ Correlation of national shocks with shocks of the euro area aggregate.

²⁾ Minimum and maximum value of correlation vis-à-vis the individual euro area countries.

preparation for Monetary Union – has apparently also brought more peripheral countries closer to the “core.” It is also interesting to note that the three EU countries still outside EMU – Denmark, Sweden and the UK – have an almost identical correlation of supply shocks with the euro area (0.18–0.24). However, they differ clearly in the correlation of demand shocks, where Denmark and Sweden do not stand out from the participating Member States, but the UK has a negative correlation. This would imply that Denmark and Sweden have geared their economic policies more to the core euro area countries during the 1990s, whereas the UK has not. Of course, Denmark’s currency has been pegged to the Deutsche mark and to the euro for over 20 years, which has obviously affected its aggregate demand management. In the case of opt-outs, our results differ markedly from those of Frenkel et al. (1999), most likely owing to our longer estimation period.

For demand shocks the situation is somewhat different, and correlations are generally clearly lower than was the case in Bayoumi and Eichengreen (1993). If demand shocks are to a large extent a result of national economic policies, a low correlation is perhaps to be expected. However, the launch of EMU may also mean that the correlation of demand shocks will be higher in the future.

Quite a different picture emerges for the accession countries. There is a handful of countries which have a fairly high correlation of supply shocks with the euro area. Especially Hungary stands out with both a high correlation of supply (0.46) and demand shocks (0.25). Also Estonia (0.25) and Latvia (0.30) seem to have quite a high correlation of supply shocks. Hungary

is very highly integrated with the EU both through foreign trade and direct investment (Fidrmuc, 2001), and the same applies to Estonia, whose major trade partner, Finland, accounts for more than one third of exports. For many accession countries, however, the correlation of supply shocks is below 0.1. Lithuania even has a negative correlation, which may be caused by the country's peculiar production structure.¹⁾ However, it should be noted that the estimation period for the Baltic countries and Hungary was slightly shorter than for the other accession countries, which may bias the results somewhat, although the difference in estimation periods is not too large.

As with the current members of EMU, the correlation of demand shocks is generally lower than that of supply shocks. Hungary and Poland stand out as having at least as high a correlation as many current EMU members. Also Estonia has quite a high correlation of demand shocks with the euro area, whereas the other two Baltic countries are negatively correlated. Some accession countries (e.g. Slovakia and Slovenia) show very little correlation with euro area demand shocks.

Figure 4 plots the supply and demand shocks. We can see that the largest members of EMU have the highest correlation of both supply and demand shocks, which was to be expected. It is interesting to note that the present members of EMU are all clustered fairly closely together. Also, Denmark and Sweden appear to be quite close to the smaller participating members, as are Estonia and especially Hungary. Other accession countries are further away.

Pairwise correlations between countries are also notably high. It may be somewhat surprising that even for most "core" countries, the correlation with German shocks was quite low in the 1990s. German unification and the economic boom which it entailed in the country has undoubtedly been a major influence. Austria has the highest correlation with German supply shocks (0.48). Correlations vis-à-vis France are generally clearly higher.²⁾ Countries with a supply shock correlation of over 0.3 with France are Germany, Italy, the Netherlands, Belgium, Austria, Portugal, the UK and Hungary. Also for demand shocks, correlations with French shocks are higher than with German shocks.

There are also some interesting regional clusters of correlations among accession countries and also among some current EU countries. For example, Hungarian and Polish supply shocks seem to be quite correlated. Estonian supply shocks are highly correlated with Lithuanian, Polish and Swedish shocks.³⁾ Also Latvian and Lithuanian supply shocks are correlated, as are Danish and Polish supply shocks.

1 For example, oil refining accounts for a sizeable share in industrial production.

2 This finding is supported by Horvath (2001).

3 And Slovenian shocks, but this would be harder to explain by regional proximity or close economic ties.

6 Conclusions

In this paper, we have assessed the correlation of supply and demand shocks between the euro area and EU accession countries during the 1990s. In addition, we have estimated corresponding correlations for most present EU countries. Supply and demand shocks were recovered from structural vector autoregressive models.

Some clear results emerge for accession countries. First, the correlation of supply shocks differs considerably from country to country. Second, some countries are at least as well correlated with euro area shocks as are many current members of EMU. The two countries with the highest correlation of supply shocks are Hungary and Estonia. Not coincidentally, these two countries have also received most foreign direct investment on a per capita basis and have very extensive trade relations with the countries of the euro area (and the EU in general). Hungary also has a high correlation of demand shocks. For many other accession countries, the degree of correlation is clearly lower. This even holds true for many advanced transition countries, e.g. the Czech Republic and Slovenia. In Latvia and Lithuania, demand shocks are negatively correlated, even though for Latvia, the correlation of supply shocks is positive.

For the present EU members our results differ from those of some previous studies, which mainly used data up to the beginning of the 1990s. We find that some countries previously considered “peripheral” (such as Italy and Portugal) are actually quite highly correlated with euro area shocks. Moreover, many present EMU members are more correlated with French than with German shocks, which may perhaps be explained by the influence of German unification. Therefore, mere correlations with German shocks could give a quite misleading picture of true economic convergence, both for the accession countries and the present members of EMU. Our results support the claim that closer economic policy cooperation within the EU has also increased the correlation of business cycles among member countries. This obviously has implications for the accession countries as well.

Concerning the accession countries, our findings seem to at least partially confirm results of e.g. Boone and Maurel (1999), Fidrmuc (2001) and Korhonen (2001). In all these studies the Hungarian economic cycle is quite well correlated with the European cycle. The same applies to Slovenia and perhaps also to Estonia. The latter two are very small economies geographically close to the EU, and therefore it is not surprising that their economic cycles are correlated with that of the EU (or euro area). For the other accession countries, the correlation was perhaps not very high during the 1990s, but the situation may have changed over time. This issue is left for further research.

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Determinants of Real Exchange Rates in Transition Economies

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I Introduction

Although real exchange rates in transition economies have similar paths, the question remains whether the initially distorted economic environments in these economies have played any role in determining real exchange rate behavior since the beginning of the transition process. Also, one should ask whether the real exchange rate path in transition economies was indeed determined only by supply-side factors neatly introduced into the exchange rate story by the productivity differential approach. It seems that demand factors played an important role in determining real exchange rates in transition economies. The arguments for this view can be grounded either in increased demand for nontradables, which were previously not available in the markets of transition economies, or in changed government consumption, which as a result of market reform now redirects its final destination to the market for nontradables. This line of approach to real exchange rate determination in transition economies would necessarily follow the conclusions from empirical studies on growth in transition economies (in particular, Berg et al., 1999; Havrylyshyn, Izvorski and van Rooden, 1998). Those studies generally suggest that the initial conditions do matter, although they can be overcome by appropriate policy measures to correct the unfavorable starting points in transition economies. If this were the right approach, then one would be able to distinguish different factors that affect the real exchange rate in transition economies. The evidence from transition economies suggests that the experience of all transition economies with respect to productivity growth, trade liberalization, and capital inflows has not been the same.

Recent studies on real exchange rate behavior in transition economies support the argument to use the productivity approach to explain the trend appreciation of the real exchange rate in transition economies (Halpern and Wyplosz, 1996 and 2001). There is vast potential for gains in productivity in transition economies both through more efficient use of existing resources and technologies and through upgrading technology. However, this approach should also take into account the initial conditions in transition economies at the beginning of reforms, as they significantly determined the macroeconomic policies and structural changes implied by the overall stance of the economies in those times. Decades of central planning have resulted in distorted structures of these economies. Industries had become overwhelming in the composition of output due to the emphasis of central planners on material production, while services were largely neglected. The structure of the economy was reflected in distorted price levels, as empirical studies on price development in transition economies indicate. Transition and the introduction of market-determined prices along with other market-enhanced reforms have brought about massive changes in output, employment and, last but not least, in relative prices. To analyze structural changes in transition economies, it is therefore useful to use the approaches that take

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into account the real changes in the fundamentals rather than models with established patterns of developments in market economies. As such, the productivity approach to real exchange rate determination serves as a natural candidate for analyzing the real exchange rate in transition economies.

The aim of this paper is to empirically test a model of real exchange rate determination in transition economies.¹⁾ A digression from the standard approach to real exchange rate determination in transition economies is presented in section 2. It is argued that central plans determined relative prices and the labor market in such a way that it was inevitable for the real exchange rate to appreciate once structural reforms in transition economies began. It is shown that the productivity differential between labor productivity in the tradable and nontradable sectors, private demand for nontradable goods, real government consumption, and structural reforms implemented to correct distortions inherited from the pretransition central planning period do negatively affect the real exchange rate and, as such, contribute to real exchange rate appreciation. Section 3 describes data and determinants of the real exchange rate. Sections 4 and 5 present key results. The empirical findings seem to confirm that transition – when looking only at real exchange rate behavior – is over once progress in structural reforms no longer affects the real exchange rate's determination relative to other factors. Section 6 provides some conclusions.

2 Model of Real Exchange Rate Determination in Transition Economies

To explain the price differential, assume that there is an economy-wide wage that is equal to the marginal product of labor in each sector. To the extent that there are differences in productivity between countries, wages will differ as well. In less developed countries, productivity is generally lower than in more developed countries. While this applies to both sectors of the economy, there is evidence that the productivity gap is larger for tradables than it is for nontradables. Also, the scope for productivity gains is more limited in nontradables than in tradables. Because of this, the price of nontradables will typically be lower in less developed countries than in industrial countries. Since the overall price level is a weighted average of the price levels of tradable and nontradable goods, the general price level will be lower in less developed countries, with the difference being a function of the proportion of goods that are nontradable and the price differential for nontradables (Richards and Tersman, 1996). Coorey, Mecagni and Offerdal (1996) provide evidence of the difference between overall price levels for selected transition economies and the overall Austrian price level in 1993 and conclude that the differences between the price levels range between 65% to 90% in favor of Austrian prices. For some nontradables, this difference is even wider. In Moldova, for example, the price of communications services reached only 4% of the equivalent Austrian price in 1993. Richards and Tersman (1996) provide evidence of lower prices in the Baltic countries

1 See Jazbec (2000 and 2001) for a full derivation of the model of real exchange rate determination in transition economies.

when comparing them to countries with similar income levels. When comparing the Baltic countries with their neighbor Sweden, they conclude that, for example, in Latvia in early 1994, the general level of consumer prices was no more than 35% of the Swedish level, or no more than 40% of the U.S. level. They point out, however, that part of this estimated differential may be due to quality differences. Nonetheless, the difference is substantial and requires an explanation that may be grounded in subsidies to the tradable sector, which mainly comprised industry and manufacturing in the previously centralized economies.

The real wage is an increasing function of the targeted real wage determined by pretransition levels, and positive shocks to the demand for labor determined by productivity parameters in both sectors of the economy and government consumption. The more distorted the pretransition equilibrium wage is (the higher the equilibrium wage determined by the central plan's objective to produce more of the industrial good relative to services is), the higher the pressure of the union is to negotiate for higher wages once transition starts. It is established that the nominal wage is an increasing function of the real wage determined by the pretransition structural parameter, η , which takes into account a distorted measure of the transition economy, productivity parameters and government consumption. The nominal wage is, therefore, determined as follows:

$$W = W(\omega(\eta), a_T, a_N, G), \quad (1)$$

where W is the nominal wage; $\omega(\eta)$ represents the average real wage depending on the structural parameter, η ; a_T and a_N represent the technology parameters specific to the production of tradable and nontradable goods, respectively; and G stands for real government consumption of nontradable goods.

All variables enter the nominal wage equation with positive signs, as expected. The only indeterminacy may arise from the sign of a_N , which can take either a positive or negative value. However, it is assumed that an increase in nontradable sector productivity in transition economies increases demand for labor to satisfy private sector demand in the tradable and nontradable sectors by less than the increase in tradable sector productivity. The nominal wage equation is one of the most important equations in this framework, since the real economy parameters enter the real exchange rate measure via the nominal wage equation. It is assumed that the price of tradables is determined in the world market and, therefore, is given exogenously to a transition economy. For this reason, the price of tradables could be normalized to 1 in order to provide the following expression for the real exchange rate measure:

$$\frac{1}{P_N} = \frac{\Phi - 1}{\Phi} \left(\frac{a_N}{W(\omega(\eta), a_T, a_N, G)} \right), \quad (2)$$

where P_N is the price index for nontradable goods and Φ is share of nontradable goods consumption in total private consumption.

The real exchange rate measured as the relative price of tradables in terms of nontradable goods, therefore, negatively depends on the productivity differential, the share of nontradable consumption in total private consumption and real government consumption. The parameter that measures the extent of structural misalignment inherited from the central plan, η , enters the real exchange rate equation with a positive sign. The regression equation used in the next section is presented as follows:

$$\begin{aligned} \log(P_T/P_N)_{i,t} = & \alpha_{oi} - \alpha_1 \log(a_T - a_N)_{i,t} - \alpha_2 share_{i,t} \\ & - \alpha_3 govreal_{i,t} + \alpha_4 lab_{i,t} + \varepsilon_{i,t}, \end{aligned} \quad (3)$$

where $(P_T/P_N)_{i,t}$ is the relative price of tradables in terms of nontradable goods; $(a_T - a_N)_{i,t}$ is the productivity differential between tradable and nontradable goods production and is measured in terms of labor productivity in both sectors; $share_{i,t}$ represents the share of nontradable consumption in total private consumption; $govreal_{i,t}$ is the share of government consumption in GDP measured in constant prices; and $lab_{i,t}$ represents the structural misalignment variable. It is proxied for by the ratio between labor employed in the tradable sector versus labor employed in the nontradable sector. The sign of all coefficients is negative except the sign on the structural variable, which enters the equation with a positive sign. This constitutes the positive correlation between the real exchange rate and the labor employed in the tradable sector relative to the nontradable sector. For this reason, the structural variable proxied for by the labor ratio represents the parameter that measures the rigidity of the labor market to structural changes in the economy. As for the rest of the story, this rigidity is assumed to be exogenously determined in the economy and thus independent of all other right-hand side variables in equation (3). This is a relatively stringent assumption on the structure of a transition economy, and its validity can be seriously questioned. However, the right set of structural variables believed to determine the appropriate framework for analysis of transition has yet to be found.

3 Determinants of the Real Exchange Rate

Data used to construct price indices, productivity measures, demand variables and structural parameters cover 19 transition economies.¹⁾ Each transition economy is observed from the start of its most serious stabilization attempt as defined by Fisher, Sahay and Vegh (1996). This implies that the relative price of tradables in terms of nontradables is set to 1 in the year of the most serious stabilization attempt. The implicit GDP deflator for industry in each country represents the price of tradables. Analogously, the implicit GDP deflator for services defines the price of nontradables. The criterion for the period of observation was the year after which the relative price of tradables in terms of nontradables started to consistently decline. However, this criterion has not been followed in all cases.²⁾ Differ-

1) Armenia, Azerbaijan, Belarus, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Poland, Romania, Russia, Slovak Republic, Slovenia, Ukraine and Uzbekistan.

2) Exceptions are Belarus, Romania and Russia, where the relative price of tradables has indeed increased. For these cases, the beginning of the observed period starts after the initial depreciation.

ent periods of observation were examined and compared to each other. For all countries, the period of observation ends in 1998. The longest series runs from 1990 to 1998, while the shortest covers the period from 1995 to 1998. The whole sample includes 122 observations.

For the purpose of analysis, two sectors were distinguished: tradable and nontradable. While theoretical literature on real exchange rates relies upon the division of commodities into tradables and nontradables, it is almost impossible to construct these two groups of commodities in reality. An obvious benchmark for tradability should be the extent to which the particular good is actually traded. For example, the sector is defined as tradable if more than 10% of total production is exported. In general, one would label manufactures as tradables and services as nontradables. However, this is quite impossible at this stage in transition economies. In what follows, the tradable sector is represented by the industry sector, which includes manufacturing; gas, electricity, and water; mining and quarrying; and construction. The reason that all other subsectors besides manufacturing were included in the measure for the tradable sector was that for some countries sectoral data and data on international trade flows were not available. To ensure consistency, all tradable sectors in different countries include gas, electricity, water; mining and quarrying; and the construction sector, although one could doubt their tradability. A more substantial problem arises from the inclusion of nonmarket services in the variable representing the nontradable sector. However, the reasons for the inclusion of nonmarket services in the total services sector are the same as for the construction of the tradable sector variable. It is believed that, on average, these complications fade away, although in specific cases they could represent the main reason for the different behavior of relative prices, as argued later.

The independent variable is the relative price of tradables in terms of the price of nontradable goods. The implicit sectoral GDP deflators for industry and services are used to proxy for the price indices in these two sectors. The relative price takes value 1 at the beginning of transition and enters the regressions in logarithms.

Data on the right-hand side of equation (3) fall into the following categories:

- Productivity measure. This variable is solely represented by the productivity differential between labor productivity in the production of tradable goods and labor productivity in the production of nontradables ($(a_T - a_N)_{i,t}$). The productivity differential measures the extent of the Harrod-Balassa-Samuelson effect on the real exchange rate. The rationale for using labor productivity instead of total factor productivity (TFP), which would theoretically follow from the specification of the production function, is merely determined by data availability. To construct the TFP measure, one would need reliable data on capital stock in transition economies, which is quite impossible since there are problems related to the physical extent of capital stock as much as to pricing of capital in these economies. This problem is especially relevant in measuring the capital stock in the service sector. For the time being, it is assumed that labor productivity would consistently represent the effect

of the productivity differential on the real exchange rate measure. The labor productivity variable was constructed from the sectoral GDP figures measured in constant prices divided by the labor employed in that sector. In the case of the nontradable productivity variable, problems arise mainly from the inclusion of government services in the total services sector. On the other hand, tradable sector productivity suffers from the broader definition of the tradable sector. Usually, one would consider the tradable sector to be mainly represented by manufacturing. In the case of transition economy data, this sophistication was relatively impossible. The productivity measures in both sectors, therefore, reflect the complications of data availability rather than conceptual issues. Data on sectoral GDP in constant prices were gathered from national accounts collected by World Bank desk economists. Labor data were obtained from ILO publications and from EBRD desk economists. The productivity differential variable enters equation (3) in logarithms.

- Demand variables. These variables consist of the share of nontradable consumption in total private consumption ($share_{i,t}$) and real government consumption measured in percent of GDP ($govreal_{i,t}$). The share of nontradable consumption in total private consumption is believed to measure the shift of private consumption from tradables to nontradables. It is expected that this variable should have a substantial impact on the relative prices in transition economies, since product variety as well as the liberalization of economies have greatly improved since the beginning of transition. One possible explanation of the increased effect of private demand for nontradables on the real exchange rate could be found in a surge of capital flows into the region. Some of the capital inflows were directed to private consumption. Consequently, the price of nontradable goods increased and caused the appreciation of the relative price of tradables. The change in the share of nontradable consumption in total private consumption should, therefore, negatively affect the relative price of tradables in terms of nontradables. Government consumption is assumed to fall only on nontradable goods. Therefore, the private consumption of nontradables is equal to value added in services minus government consumption. Total private consumption is the sum of nontradable and tradable consumption. The latter is equal to value added in tradable goods plus the deficit in the trade balance. De Gregorio, Giovannini and Krueger (1993) argue that the nominal government expenditure over nominal GDP is by construction correlated with the real exchange rate. For this reason, real government consumption over real GDP is used to construct the real government consumption measure ($govreal_{i,t}$).
- Structural variable. As follows from the model, the preference of central plans in the pretransition period for the industry sector meant a larger number of workers in industry compared to employment in services. Once transition started, the number of workers in industry declined while employment in services increased. To capture this effect, the structural variable ($lab_{i,t}$) was constructed by dividing the number of workers employed in industry by the number of workers employed in services.

The same line of argument as in the case of constructing the tradable and nontradable sectors is relevant for constructing this variable. As transition progresses, the structural variable should decline and positively affect the relative price of tradables in terms of nontradable goods. The reasons for a decline of the labor ratio throughout the transition process should be attributed to the structural changes in the transition economies, and are thus exogenous to other right-hand side variables in the regression equation (3). To impose the latter, the structural variable ($lab_{i,t}$) was instrumentalized by the structural reform index constructed by De Melo, Denizer and Gelb (1996), and total credit to the private sector (EBRD Transition Report, 1999). Also, the structural reform index itself was used in a few regressions to avoid possible misspecification of the instrumental variable. However, the results do not differ significantly. Empirical work on growth in transition economies is mainly driven by the search for an appropriate set of variables to distinguish transition economies from their developed counterparts, and that would more thoroughly explain the output behavior in the region. In the case of exchange rate behavior, this argument is even more pronounced.

The possible effects of explicit different initial conditions in transition economies was captured by country-specific dummies, which transferred the regression analysis to the estimation of unbalanced panel data with fixed effects. A dynamic specification of equation (3) was not possible due to short time series, especially for the group of FSU countries.

Due to potential endogeneity, the structural variable approximated by the ratio between labor employed in the tradable sector and labor employed in the nontradable sector was instrumentalized by the structural reform index and credit to the private sector in transition economies. In a few regressions only the structural reform index was used. The results, however, did not change substantially. The structural reform index was originally constructed by de Melo, Denizer and Gelb (1996) and covered the period from 1990 to 1996. The updates from 1996 are constructed on the basis of the EBRD Transition Reports (1997 and 1998) and presented in Havrylyshyn et al. (2000). The structural reform index is a weighted average of three sub-indices: the index of internal liberalization, which scores price liberalization and the dismantling of trading monopolies in domestic markets; the index of external liberalization, which measures the removal of trade controls and quotas, moderation of tariff rates, and foreign exchange restrictions; and the index of private sector conditions, which measures the progress in privatization and financial sector reforms (de Melo, Denizer and Gelb, 1996; Berg et al., 1999).

4 Empirical Results

Table 1 reproduces the results of the regression of equation (3) for the full sample of 19 economies, each observed in the time of transition. The total number of observations is 122. The results of the basic equation (A.1) in table 1 support the earlier findings that the productivity differential, the share of nontradable consumption in total private consumption, and real gov-

ernment consumption negatively affect the real exchange rate, thereby contributing to real appreciation. The labor ratio between labor employed in tradables to labor employed in nontradable goods production enters the regression with a positive sign, as predicted by the model. This suggests that any delay in structural reforms – relatively high values of the labor ratio variable at the beginning of transition relative to its end values – in general tends to act as a restraining force on the real exchange rate.¹⁾

To test for possible differences across regions (CEE, Baltics, and FSU), variables with region-specific slopes are added to the basic regression (A.1). In so doing, it is argued that significant coefficients on multiplicative dummies would reflect different effects of single variables on the determination of the real exchange rate across regions. As expected, the results are not very satisfactory, which can mostly be explained through relatively short time series and, more importantly, by the fact that on average there were no significant differences between regions. This conclusion may come as a surprise; however, on average the dynamics of different independent variables are not substantially different when the process of transition is measured in transition time from the beginning of the most serious stabilization plan implemented in each country.

Regression (A.2) adds eight interaction terms to test for different joint effects of independent variables on real exchange rate determination among three groups of transition countries. As expected, most of the interaction terms are not significant. A joint Wald test on the significance of all Baltics and FSU-specific variables, respectively, cannot reject the null hypothesis of all respective country-dummy coefficients being zero. F-statistics on joint Baltics dummies is equal to 3.991, while F-statistics on joint FSU dummies is slightly higher, 4.396, but still not big enough to reject the null hypothesis.

To test for the significance of individual pairs of interaction terms, regressions from (A.3) to (A.7) are employed. In so doing, the possible isolated effects of independent variables on the real exchange rate across different groups of countries are examined. To test the joint effect of demand variables on real exchange rate determination, regression (A.3) adds four multiplicative dummies, two for each group of countries. Again, the coefficients on real government consumption and private nontradable consumption are not significantly different from zero, although they are correctly signed. It is argued later that demand variables played a more important role in determining the real exchange rate in the Baltics than in other regions. A negative sign of coefficient on demand variables in the Baltics corresponds to this line of argument.

Regressions (A.4) and (A.5) separately test the significance of the effect of private nontradable and government consumption, respectively, on the real exchange rate in the Baltic countries and the FSU. The results are along the line of regression (A.3) and merely replicate the conclusions from regres-

1 The dispersion of the country-specific constants of the fixed-effects panel estimates – not reported here – is quite large. In effect, it appears that the country-specific constants act like country dummies, increasing the goodness of fit, but it is difficult to give an objective interpretation of the factors explaining the variation in economic performance among countries.

sion (A.3). Again, the results are expected – although statistically insignificant – especially for the government variable, as the Baltic countries struggled to establish sovereignty from the Soviet Union in the early days of transition and strengthened the role of government in the economy. Inclusion of region-specific productivity measures produces regression (A.6). The results indicate that, on average, the productivity differential played a less important role in determining real exchange rates in the FSU than in the CEE and Baltic countries.

Regression (A.7) tests for possible differences in real exchange rate determination with respect to the effect of structural parameters. All three coefficients on structural reform variables are not significantly different from zero. The results from regression (A.7) are not surprising to the point that, on average, the transition countries began with the transition process along the same lines of implementation of reforms. As empirical models on growth in transition show, all transition economies were sequencing their reforms from macroeconomic stabilization via microeconomic liberalization to institution-building. All variables in the model are normalized to the beginning of the stabilization program in each economy; for that reason the sequencing of reform should be the same in all countries, if one accepts the assumption that

Table 1

Fixed-Effects Panel Estimates

(Relative Price of Tradables in Terms of Nontradables)

Variable	Dependent Variable: $\log(P_T/P_N)_{i,t}$						
	(A.1)	(A.2)	(A.3)	(A.4)	(A.5)	(A.6)	(A.7)
$\log(a_T - a_N)_{i,t}$	-0.868* (0.169)	-1.332* (0.141)	-0.888* (0.177)	-0.869* (0.173)	-0.885* (0.171)	-1.175* (0.126)	-0.890* (0.176)
Share _{i,t}	-1.656* (0.219)	-1.854* (0.233)	-1.685* (0.187)	-1.672* (0.195)	-1.663* (0.218)	-1.568* (0.212)	-1.695* (0.236)
Govreal _{i,t}	-0.749* (0.379)	-1.595* (0.497)	-0.711* (0.754)	-0.762* (0.389)	-0.682 (0.737)	-0.812* (0.401)	-0.635* (0.360)
Lab _{i,t}	0.644* (0.202)	0.021 (0.276)	0.555* (0.009)	0.639* (0.205)	0.568* (0.205)	0.865* (0.251)	0.31 (0.363)
Baltics							
Lab*Bal		1.035* (0.273)					0.471 (0.189)
Share*Bal		0.2 (0.517)	-0.18 (0.539)	-0.071 (0.572)			
Prod*Bal		-1.476* (0.694)				-1.002 (0.714)	
Gov*Bal		1.313* (0.672)	-0.504 (0.838)		-0.492 (0.793)		
FSU							
Lab*FSU		1.757* (0.734)					0.301 (0.575)
Share*FSU		0.594 (0.549)	0.092 (0.434)	0.056 (0.415)			
Prod*FSU		1.035* (0.273)				0.729* (0.211)	
Gov*FSU		1.829* (0.882)	1.099 (1.033)		1.038 (1.023)		
Adj. R ²	0.853	0.886	0.851	0.85	0.883	0.876	0.851
N	122	122	122	122	122	122	122

Source: Author's calculations.

Note: Numbers in parentheses are for heteroscedasticity-adjusted standard errors. The * indicates that the coefficient is significantly greater or smaller than zero, as appropriate, at a 5% level. Country dummies are not reported.

all countries followed the same stabilization program. As most transition countries accepted the external technical assistance provided by the World Bank or the International Monetary Fund, the assumption about similarities of the transition process becomes plausible.

The robustness of all other coefficients does not change substantially by substituting the labor ratio variable with the reform index in regressions (A.1) to (A.7). The results presented in table 1 are fully consistent with the view that structural reforms in transition economies contributed to the real appreciation trend observed in the region from the beginning of transition. Since all regressions are run in transition time, the results indicate that we can still expect further appreciation of the real exchange rate in those economies that started with transition later. Most FSU countries were still in the fourth or fifth year of the transition process in 1998 compared to more advanced transition economies. While other factors started to play a more significant role in determining the real exchange rate in those economies at later stages of the transition process, it is expected that the real exchange rate in FSU countries will replicate the behavior of the early starters.

5 Accounting for the Real Exchange Rate

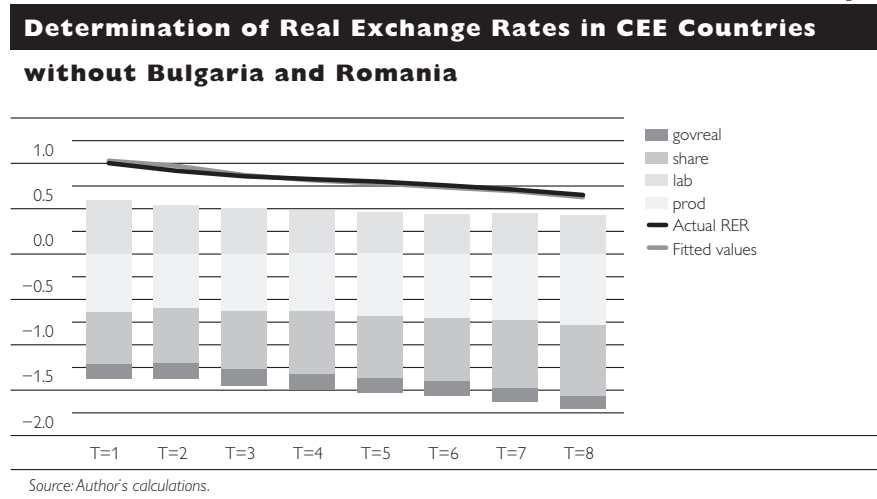
For each time period, summing the product of each right-hand side coefficient and the corresponding data for each variable, and then averaging either over all countries or over the different groups of countries will calculate the contribution of each group variable. The results from the basic regression (A.1) underlie figures 1 to 3 and relate to the evolution of the real exchange rate in transition economies. Stacked columns represent the level of the real exchange rate in each year. The portions of columns correspond to actual contributions that each variable had to the level of the real exchange rate in each year of the transition process. The sum of all portions of a column and country-specific constants add up to the fitted value for the real exchange rate level in the respective year. Nonetheless, it is the dynamics of the contribution of each set of variables that is interesting in explaining the determination of the real exchange rate in transition economies.

Figure 1 shows that on average, structural reforms contributed the most to the level of the real exchange rate in the first five years of the transition process in CEE countries. In the third year of transition, however, the productivity differential between labor productivity in the tradable and non-tradable sectors, and private demand for nontradables, respectively, began to dominate the real exchange rate. Government consumption played a minor role in the combination of factors believed to determine the level of the real exchange rate.

Figure 3 could, however, lead to wrong conclusions as to which factors were the most important contributors to the real exchange rate determination in transition economies, since it only depicts averages for all transition economies. While the fifth year of transition represents the year 1998 for almost all FSU countries, CEE countries on average entered the eighth year of transition in 1998. Since the year 1998 was crucial, especially for FSU countries because of the Russian financial crisis, wrong conclusions could be drawn from an analysis limited only to an average across all transition

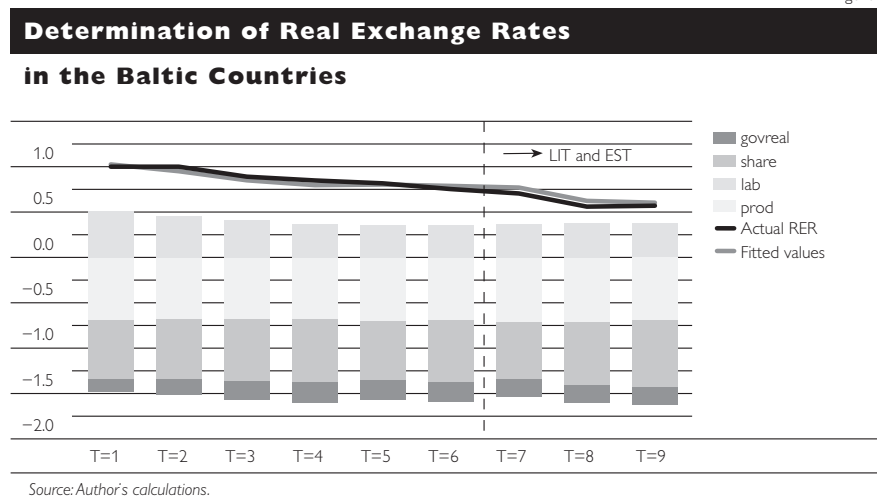
economies. Also, only Hungary and Poland entered the ninth year of transition; therefore, the last column represents the average only for Hungary and Poland. To grasp the different dynamics of the transition process, figures 2 and 3 present accounted levels of real exchange rates for the Baltics and the FSU, respectively.

Figure 1



In the Baltic countries, the structural parameter development was similar to that of CEE countries. However, the demand factors, both private consumption of nontradable goods and government consumption, respectively, had a more pronounced effect on the real exchange rate than in CEE countries. A dotted line in figure 2 indicates the period in which only the average over Lithuania and Estonia is shown. In these two countries, demand factors significantly contributed to real exchange rate appreciation in the last years of the transition process, while the productivity measure seemed to play a minor role in determining the real exchange rate throughout the whole transition period in the Baltic countries. In this respect, the Baltics were different from CEE countries, where it was shown that supply-side factors played a

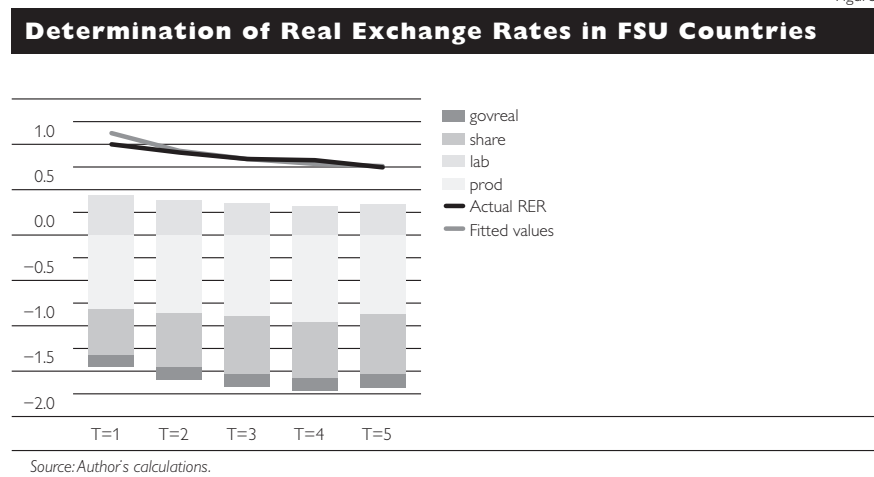
Figure 2



more important role in determining the real exchange rate – at least later in transition.

Figure 3 presents the development of real exchange rate determinants in FSU countries. Unlike in the Baltics, structural reforms and productivity differentials were the most significant contributors to real exchange rate appreciation during the five years of transition experienced in FSU countries. However, the fifth year of transition in that region coincided with the Russian crisis; for that reason, one could say that the FSU would have still continued with structural reforms had the Russian crisis not prevented it from doing so. In contrast to other regions, structural reforms and productivity differentials went almost hand in hand right from the beginning of transition in FSU countries, although it seems that the development of the productivity differential was less intense than the dynamics of structural reforms. The breakdown of this relationship occurred in the fifth year of transition when the Russian crisis took place. While the intensity of structural reforms remained almost the same, the productivity differential decreased rather substantially relative to the period prior to 1998. In addition, private demand for nontradables increased. Nonetheless, the correct story for the behavior of real exchange rates in FSU countries cannot be grounded only on such a short period of time; therefore, only speculations on the right factors determining real exchange rates in FSU countries could be cast.

Figure 3



On the one hand, part of the reason for the real exchange rate determination in FSU countries can be attributed to more adverse initial conditions relative to other transition economies, as is regularly acclaimed in growth models. As transition took off in that region, structural reforms and productivity improvements in the tradable sector relative to the nontradable sector improved almost simultaneously, accounting for worse macroeconomic and entrepreneurial conditions before transition relative to other parts of the region. However, on the other hand, failure to clearly account for the real exchange rate determination in FSU countries could be attributed to variable construction in estimating equation (3). As established earlier, the labor ratio in FSU countries may suffer from a misspecification if an increase in the share of workers employed in the agriculture sector is not taken into account,

namely if the ratio between workers employed in the tradable to nontradable sector is corrected by an increase in the share of workers employed in the agriculture sector, then structural reforms in FSU countries progressed less than indicated in figure 3. For that reason, one could say that the real exchange rate appreciation in FSU countries during the first five years of transition could be attributed mainly to the Harrod-Balassa-Samuelson effect. Moreover, as structural reform indices show, the reforms are far from over in FSU countries relative to the values of the structural reform indices in CEE countries and the Baltics, respectively. The values of the structural reform index for each country are shown for the period of observation used in the estimation of equation (3).

Under the maintained assumption that the regression equation (A.1) is well-specified, it is expected that progress in structural reforms in FSU countries toward reforms to the extent carried out in the CEE and Baltic countries will cause further real exchange rate appreciation in that region. In that respect, FSU countries are different from the CEE and Baltic countries, where structural reforms were more advanced and other factors began to dominate real exchange rate appreciation.

6 Conclusions

This paper presents an empirically tested model suitable for the analysis of real exchange rate appreciation in transition economies. The structural models of the real exchange rate seem to be the most appropriate approach employed to analyze the commonly observed real appreciation trend in transition economies. For that reason, the model of De Gregorio, Giovannini and Krueger (1993) was extended in order to introduce a variable representing the structural reform progress in transition. Similar to growth models of transition (Berg et al., 1999; Havrylyshyn, Izvorski and van Rooden, 1998), it was shown that adverse initial conditions and structural reforms affected the real exchange rate measured as the relative price of tradables in terms of nontradable goods only in the first five years of the transition process. After that period, other factors began to dominate real exchange rate determination. All countries entered the sample in the year when their most serious stabilization attempt was introduced. In so doing, it was possible to distinguish the extent of the reforms implemented in each group of transition countries and their impact on real exchange rate determination.

Since only advanced transition economies have been engaged in transition for more than five years, speculations are cast for further developments in the real exchange rate in less advanced transition economies. It is argued that they will observe trend appreciation determined by structural reforms at least as long as they catch up with the more advanced economies. While the CEE countries have experienced an increase in the productivity differential between labor productivity in the tradable and nontradable sector at the later stages of transition, the demand factors seemed to play a more pronounced role in determining the real exchange rate in the Baltic countries. Although an explicit analysis of the external competitiveness in the theoretical framework employed in this paper is not possible, one could argue that the increased effect of demand factors on the real exchange rate in the Baltic

countries at later stages of transition caused a loss of external competitiveness reflected in a current account deficit, which is on average higher than in more advanced CEE countries.

One could argue that the analysis of the real exchange rate in transition economies should also account for the surge in capital flows observed from the beginning of transition and different exchange rate regimes maintained by monetary authorities in transition economies. Again, an explicit analysis is not possible. However, exchange rate regimes seemed not to play any direct role in explaining output performance in different transition economies. The fixed exchange rate regime was used mainly to better contain inflationary pressure and, as such, it affected real output growth only indirectly through better inflation performance. However, it seems that the fixed exchange rate regime did indeed affect the real exchange rate negatively in the case of the Baltic countries (they introduced a currency board as the most extreme fixed exchange rate regime). The link between the fixed exchange rate regime and real exchange rate appreciation measured by a fall in the relative price of tradables and nontradables seems to be established through an increase in capital flows if these mainly increase domestic consumption rather than investment. Measured in cumulative per capita terms in the 1991–97 period, foreign capital flows were indeed among the biggest in Estonia and Latvia (EBRD Transition Report, 2000). For that reason, it could be that Bulgaria, Estonia, Latvia and Lithuania were the only countries in 1998 still maintaining a fixed exchange rate regime (Fisher and Sahay, 2000).

The question of the exchange rate regime is becoming important in the light of EU enlargement, as five of the CEE countries are expected to join the EU (Coricelli and Jazbec, 2001). If convergence between incomes per capita will occur, rates of growth in CEE countries will be much faster than in EU countries. With flexible prices, such an adjustment in the real exchange rate would occur through an increase in the price of nontradables. In this respect, choosing the appropriate exchange rate regime before adopting the euro will be crucial for the processes of real and nominal convergence in transition economies.

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Old-Age Pension Systems in the Czech Republic, Hungary and Poland

János Kun¹⁾

I Introduction

Old-age pension expenditure is usually the single highest expenditure position among general government expenses in European countries, including the European transition economies. Imbalances of the pension system may endanger the equilibrium of the government budget and of the whole economy as well. Moreover, pension systems may have an impact on the evolution of the capital markets. Therefore, the subject of pension systems is of relevance to central banks as well.

The paper investigates the old-age pension systems of three advanced EU accession countries from Central and Eastern Europe, namely the Czech Republic, Hungary and Poland. The pension systems of these countries evolved in line with those of other continental European countries in the first decades of the 20th century. After World War II, the pension systems lost the capital base they had had beforehand and became pay-as-you-go (PAYG) systems. The connection between contributions and pensions loosened during socialism. Pensions were financed from the state budget.

After the collapse of socialism, the link between contributions and benefits was strengthened and pension systems were separated from the state budget. Contributions to the pension fund were calculated in such a way that the payments of pensions out of the fund were covered. Due to the transformation crisis which swept the region at the beginning of the 1990s, however, unemployment and early retirement rose sharply, which upset the balance of the pension funds, at least in Hungary and Poland. All three countries streamlined their systems, increased retirement ages in order to cope with an aging population, tightened preconditions for early retirement, and Hungary and Poland established a mandatory funded pillar beside the PAYG system. Voluntary funded pension systems were established as well. Foreign owners dominate the pension fund industry. A still small but rising stock of domestic savings is accumulated in pension funds. It is questionable, however, how far pension funds increase domestic savings and what kind of an effect they have on the domestic capital markets. The part of the contributions which is diverted to the mandatory funded pillar is of course missing from the PAYG system and has to be compensated from the budget, which entails additional government borrowing. On the one hand, this neutralizes the savings effect, and on the other hand makes the fulfillment of the Maastricht criteria more difficult. Participation in voluntary funds is inspired by tax incentives, which means that part of the savings stock is foregone tax revenue and another part may be reallocation from other types of savings because of the tax incentives.

The paper is structured as follows: After a short historical review of pension systems in general, the evolution of the pension systems in the Czech

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Republic, Hungary and Poland is investigated from their beginnings, through socialism up to the transformation crisis of the early 1990s. A summary of the reforms of the PAYG systems after the transformation crisis follows. After that, the characteristics of the mandatory and voluntary private funds and their impact on the domestic capital markets are outlined. The article concludes with the outline of probable future developments as known in November 2001.

2 Evolution of the Concept of Pensions

In rural societies with multigeneration families, even elderly people can find their work in the division of labor within the family, and the elderly who are not able to fend for themselves can be supported by their family. Therefore, the concept of old-age care and old-age pensions evolved with urbanization, which went hand in hand with the split of multigeneration families. The first pension arrangements were elaborated already in the Middle Ages by guilds in the form of mutual assistance and by mainly commercial enterprises which promised to pay old age benefits; they recorded their obligations in the form of book entries. These obligations were not enforceable in case of bankruptcy and were not centrally regulated. The pensions were not portable: they were payable only when the employee retired from the company which made the promise. These arrangements increased loyalty towards the employer.

The first occupational pension plan was set up for veteran soldiers in the U.S.A. at the end of the 18th century. By the 19th century, pensions for public sector employees became current in the U.S.A. and in Western Europe (World Bank, 1994).

The first general pension regulation was introduced by *Chancellor Bismarck* in Germany in 1889. It was a contribution-financed obligatory insurance focusing mainly on dependent employees. Other groups of the workforce were added later. Its aim was to maintain the accustomed living standard of the insured after retirement. According to the concept, its budget is separate from central government and has a government guarantee. This insurance system has become widespread in continental Europe. Originally, these pension plans had a capital base, because the first disbursements from the system began years after the first contributions were paid in by the participants. But being government-run systems, their investments tended not to be effective, and the reserves were depleted during or after World War II, if not earlier. Since then, benefits have been paid out from the contributions of the active generations under the *pay-as-you-go (PAYG) system*. Benefits are not closely related to contributions: they are usually set taking into account the number of years during which contributions were paid and wages in the last years of working life. The number of years taken into account is increasing: for example in Austria at present the 15 best years are considered (Wöss, 2000b). A version of the Bismarckian system currently gaining popularity is the so-called *notional defined contribution* system in which contributions or the share between the contribution base and the average wage are recorded on a notional account which yields notional interest. Usually, the nominal average wage growth is set as the "interest rate." At the time of retirement the accumulated "capital" is converted into an annuity

(see Wöss, 2000a for Sweden and Germany). This version is gaining popularity also in the transition economies.

Another universal pension concept derived from the British economist *Sir William Beveridge* aimed at protecting all citizens against old-age poverty. The system bears the name of its originator. In this system the benefit is flat and is tax-financed. It has become widespread in the Anglo-Saxon world (Müller, 1998). The Beveridge system is complemented in some countries with earnings-related PAYG systems and in others with occupational pension funds which are either mandated by law or by collective agreements between employers and employees.

The first *mandatory privately managed capitalized pension system* was set up in Chile in 1981. After the fall of the Pinochet regime, the Chilean example became popular in Latin America and in the former socialist world, where several countries followed, wholly or partly replacing the PAYG system (Müller, 2000). In these systems, benefits depend on the contributions which individuals and their employers pay to the fund, on the yields on the investments of the fund and on life expectancy at the time of retirement. The individual and/or the employer may choose among competing private funds and may change the fund. Portability is assured. The funds are regulated, and there is a government guarantee on a minimum amount of pension. The scheme has been promoted vigorously by the World Bank, which provides technical assistance to the countries intending to introduce it.

Beside the mandatory pension systems, most countries also have *voluntary pension plans*. Voluntary plans are run by insurance companies, pension funds or by the enterprise employing the individual. Since World War II, these systems have usually received preferential tax treatment and have been regulated by the government. Portability is usually assured. They are more widespread in the Anglo-Saxon world, where the mandatory PAYG pension systems provide a lower average pension in relation to average wages (this is referred to as the *replacement ratio*).

Pension systems are inseparable from taxation systems. Governments usually provide preferential taxation to their pension systems by not taxing pension contributions and investment returns on pension reserves. In some regimes benefits are tax-free as well, but even if benefits are taxed, levying taxes at the time of retirement is an incentive, because marginal tax rates are usually lower for pensioners than for active workers. It is often the case that tax preferences are available up to a certain ceiling only (Vittas, 1998).

3 Evolution of the Pension Systems in the Czech Republic, Hungary and Poland until 1989

The Czech Republic and Hungary today and part of present-day Poland were part of the Austro-Hungarian Empire before World War I. Another portion of Poland was part of Germany. It comes as no surprise, then, that all of the mentioned territories introduced the Bismarckian model of social insurance. The first laws, which were enacted before World War I, covered employees, with blue-collar workers and agricultural workers joining later (Müller, 1999). The pension systems were usually capitalized. In Hungary, for example, the first insurance scheme was established in 1913 for government

employees. Separate institutions were formed for private employees and industrial workers in 1928. An institute for agricultural workers was formed in 1936 (Szabó-Csemínszky, 2000). The institutions were self-governed, the representatives of the employers and the insured had equal shares in the governance. In case of a tied vote, the representative of the government decided. The institutions were supervised by the Minister of the Interior, had to observe investment rules, and from 1931 onward were obliged to grant preferential loans to the health insurance fund. Similar systems with separate institutions for various segments of the workforce were established in Czechoslovakia and in Poland.

As a consequence of World War II, the assets of the pension funds were depleted in all three countries. Real estate and enterprises in which they had shares were destroyed, bank deposits and bonds lost their value in inflation, and what was left was confiscated by the occupants or by the upcoming socialist governments (Szabó-Csemínszky, 2000).

The connection between contributions and pensions loosened during socialism. The system was gradually extended to all professions not covered before. Privileged groups (e.g. miners, workers in the heavy industry, uniformed services workers) got preferential treatment. Pensions were financed from the state budget, and the portion of payroll tax set aside for pensions or used to actually cover pension expenditure was not earmarked. In Poland, employees' contributions to pensions were abolished. The first reversal occurred in Czechoslovakia in 1968 when the Pension Fund was separated from the state budget and the Social Insurance Institute was established.

The retirement age was reduced from 65 years for men and 60 years for women to 60 and 55 years, respectively, in Hungary already in 1944, and in Czechoslovakia in 1956. The reduction of the entitlement age in Poland applied to privileged groups only and was introduced in 1954. At the beginning of the period, pensions were inflation adjusted on an ad hoc basis, which caused an erosion of already established pensions. Only Poland introduced an indexation of pensions. A law from 1982 prescribed that pensions be adjusted every year to take account of average wage increases, but because of financial difficulties, the law was not applied until 1986 (Müller, 1999).

4 The Pension Systems of the Czech Republic, Hungary and Poland after the Collapse of Socialism

In the first years of transition to a market economy, pension insurance was separated from the state budget also in Hungary and Poland. Contributions to the pension fund were calculated in such a way that the payments of pensions out of the fund were covered by these contributions. Contributions were divided between employees and employers in the Czech Republic and in Hungary, while Poland continued the previous regime in which only employers made contributions.

Applying the traditional method of calculating start-up pensions, the wages of the last three to five years of employment were taken into account. Employers often availed themselves of the opportunity to provide higher wages to employees before retirement in order to assure higher pensions. Because of strict wage regulations and the compressed wage structure in

socialism, these manipulations, however, had a limited impact on overall pension payments. Once wage restrictions had been abolished in the context of the transition to market economy, the danger of exorbitant start-up pensions intensified. Therefore, ceilings on new pensions were introduced: the assessment base was restricted to between twice and two and a half times the average wage in all three countries. In addition, higher wages are taken into account on a declining scale in the Czech Republic and Hungary, which in the latter case affects about two thirds of the newly established pensions (Antal et al., 2000). The range of annual wages taken into account for the assessment of start-up pensions has increased: in the Czech Republic all wages after 1986, in Hungary after 1988 are considered. In Poland, the better half of the years after 1980 were taken as the assessment base, a regulation which was in effect until the pension reform of 1999.

5 Effects of the Transformation Crisis

At the beginning of the 1990s a transformation crisis swept through the region. The crisis proved to be a necessary “investment” to divert the economies onto a sustainable growth path, but it does not change the fact that GDP contracted dramatically. Unemployment, which had been forgotten in these countries during socialism, increased sharply. These developments had a serious effect on the PAYG pension systems. Table 1 indicates the years in which GDP and unemployment performed worst. The unemployed did not pay pension contributions and employees who reached an age at which they could retire usually opted for early retirement over unemployment. This behavior was justified by the fact that the experience and expertise of older workers became less valuable during transition, so that people close to retirement age had difficulties finding new employment. Early retirement was even promoted by the governments. Early retirement worsens the so-called system dependency ratio, i.e. the ratio between pensioners and contributors. The worsening occurs in two ways: not only does the denominator (the number of contributors) decrease, but the numerator (the number of pensioners)

Table 1

Old-Age Pension and Economic Indicators			
	Czech Republic	Hungary	Poland
	%		
System dependency ratio			
1989	54.4	51.4	38.9
1996	60.5	83.9	61.2
Old-age dependency ratio			
1989	33.5	35.0	28.0
1996	32.0	35.6	29.9
Replacement ratio			
1989	63.8	63.3	53.3
1996	56.0	56.7	72.5
Pension expenditure in percent of GDP			
1989	8.3	9.1	6.6
1996	9.0	8.5	14.5
GDP of the worst year (1989 = 100)			
	-13.1	-18.1	-16.9
	(1992)	(1993)	(1991)
Unemployment of the worst year (%)			
	3.5	11.9	16.4
	(1993)	(1993)	(1993)

Source: Müller (1999), BIS database, Ministry of Social and Family Affairs, Budapest, own calculations.

increases at the same time. Table 1 shows the dramatic worsening of this ratio in Hungary and Poland. The very small change in the old-age dependency ratio (retirement-age people in percent of working-age people) proves that though aging is a problem in Hungary and Poland, the worsening of the system dependency ratio was at that time attributed almost entirely to the changed economic environment. The Czech economy could weather the economic crisis at the beginning of the 1990s with a much smaller increase in unemployment. But even in the Czech Republic early retirement has become widespread, which has increased the system dependency ratio in spite of the favorable demographic tendencies reflected in the declining old-age dependency ratio.

The *replacement ratio* (average pension in relation to average wages) decreased between 1989 and 1996 in the Czech Republic and in Hungary due to less-than-full indexation of pensions; therefore, pension expenditure in percent of GDP increased only 0.7% in the Czech Republic and in Hungary even decreased between 1989 and 1996. The decrease in Hungary was the consequence of the austerity package introduced in March 1995, which reduced pension expenditures by around 1.5 percentage points of GDP. The Polish case needs further explanation. Polish pensions, especially of people who had retired decades before, were very low before transition. This is indicated by the relatively low share of pensions in GDP and by the low replacement ratio in 1989. The Polish government reassessed all pensions in 1990–91 using a different formula than before, which resulted in an increase in pensions. Some pensions would have been decreased under the new formula, but the Constitutional Court revoked the decrease, declaring the reduction of already established pensions unconstitutional (Crombrugghe, 1997).

For comparison,¹⁾ the OECD average of pension expenditure in relation to GDP was 10% in 1995 and varied in a wide range between 5% (Canada) and 17% (Italy). The ratio in Austria was 13.7% (Keuschnigg et al., 2000).

6 Pension Reforms after the Transformation Crisis

The increase of pension expenditure and the rise in the system dependency ratio prompted the governments in all countries under review to reform their pension systems. The reforms aimed at streamlining the PAYG system in all countries under review, at establishing a mandatory privately managed capitalized pension system in Hungary and in Poland and at establishing a voluntary privately-managed capitalized pension system in all countries under review.

In the Czech Republic, the urgent need for reforms was less pronounced because the pension system was in surplus in spite of the worsening system dependency ratio. To improve this ratio, the modification of the pension law in 1996 increased the retirement limit to 62 years for men and 57–61 years for women depending on the number of children. The increase will enter into force in stages until 2007. According to the 1996 law, pension fund

¹ Comparisons among countries have to be treated with caution because of the different taxation rules for pensions. If taxation rules are preferential, the same ratio means a higher share of net pensions in GDP.

surpluses, which amounted to from 0.3% to 1.1% of GDP in the first half of the decade, will not be fed into the budget as before, but are to be put into a separate account and used to counterbalance further deficits (the separate account is kept by the Treasury). However, the pension fund slipped into deficit in the second half of the 1990s, and in the year 2000 the deficit amounted to 0.9% of GDP. The situation will worsen after 2010 for demographic reasons, which will probably necessitate a further increase of the retirement age (Czech Republic, 2001).

The Hungarian pension law was modified in 1995: the retirement age was increased to 62 years for both men and women. The increase will enter into force gradually until 2008. According to calculations by demographers, this increase would enable the pension system to cope with the retirement of the large baby-boom generation born after World War II: the old-age dependency ratio would not reach the 1995 level until 2040 (Augusztinovicz and Martos, 1997).

The Hungarian government decided in June 1995 to carry out a further pension system reform in spite of the reassuring calculations confirming the sustainability of the Hungarian pension system. The same decision was taken in Poland in December 1994. As the subtitle of the World Bank's book on the old-age crisis (1994) suggests, the goal of the reforms was to "protect the old and promote economic growth." The World Bank provided large-scale assistance in drawing up the new system in both countries.¹) The Hungarian Parliament adopted the pension reform package in July 1997. Representatives of the ruling parties who had material interests in voluntary private fund management played a role in the smooth adoption. The Polish Parliament adopted the package in two tranches in August 1997 and in December 1998 (Orenstein, 2000). The new Hungarian pension system came into effect in January 1998, the Polish system one year later.

Both countries introduced a two-pillar compulsory pension insurance system. In Hungary people who entered the workforce after September 1998 were obliged to join a mandatory pension fund, which, according to World Bank terminology, can be called the *second pillar*. Those already employed had the option to join a fund by the end of August 1999. Under the original bill, joining above 47 years of age would have been prohibited, because above this threshold the change to the new system is definitely disadvantageous, as joining a fund would mean losing 25% of the accrued pension rights from the PAYG system. However, the Constitutional Court declared this discrimination unconstitutional, and it was revoked. In Poland, joining the new system was compulsory for people under 30, optional for those between 30 and 50, and not allowed for persons above 50.

The *first pillar* is a reformed version of the previous PAYG system. In Poland, a brand-new PAYG system has been introduced; it is a notional defined contribution system. For those not joining the second, capitalized pillar, the old pension law remains in force. In Hungary, the reform of the first pillar was smaller: the eligibility criteria (number of contribution years

¹ The World Bank permanent representation played a prominent role in Budapest, and a World Bank official was appointed head of the Office of Plenipotentiary of Social Security Reform in Warsaw.

needed to receive an old-age pension) were increased, and the indexation of existing pensions was changed from wage indexation to the so-called *Swiss indexation* formula, which is the arithmetic average of nominal wage increase and the consumer price index.¹⁾ This is less advantageous for pensioners, because wage increases are usually higher than price increases. The same first-pillar pension law applies to those who join the second pillar, and for those who do not, only the parameters for the calculation of the start-up pension will differ: those who join the second pillar will get a 25% smaller pension from the first pillar.

The old rule that all contributions are paid by the employer was discontinued in Poland with the adoption of the new pension law in 1998 (this applies also to those who remain in the old system). The employer pays 24% and the employee 21%, out of which 9 percentage points are paid into the capitalized fund in case the employee decides to join. Contributions peak at the amount levied on a wage 2.5 times the national average, so that no contributions are collected for amounts above this level (Müller, 1999). A remarkable feature of the Polish system is the newly established Demographic Reserve Fund, to which 1 percentage point of the contributions are transferred. The assets of the reserve fund can be used to offset a deficit which may arise from adverse demographic tendencies.

In Hungary, taking the regulation at the launch of the reform, the employer pays 24% and the employee 8%, out of which 6 percentage points go to a capitalized fund provided the employee has joined one. The employees' contribution to the capitalized system should have increased to 8% by 2001. This would have been in conformity with the rule of the first pillar that persons who join the second pillar receive a 25% smaller pension from the first pillar than those who do not join. However, the government which came to power mid-1998 decided not to divert the extra 2% to the second pillar and instead reduced the employers' contribution by 2 percentage points to 22%. This move is ambiguous. It was certainly justified to reduce wage costs and increase the competitiveness of the Hungarian economy, but it has the side effect that the pension anticipated from the second pillar when the decision to join was made diminishes (Augusztinovics, 1999). The maximum wage subject to contribution is twice the national average.

Even after the introduction of the capitalized second pillar, the majority of the pension a retiree will receive will come from the PAYG system. People who enter the new system at the beginning of their career will get a 20% or 25% smaller pension in Poland and Hungary from the first pillar compared to a situation in which only the first pillar would have been reformed but the second pillar would not have been introduced. This means that if a shock similar to the transformation crisis at the beginning of the 1990s occurred, it would still have a negative impact on the general government budget, though the impact would be 20% to 25% smaller.

The future will show whether the pension from the capitalized scheme will make up for the loss caused by the reduction of benefits from the PAYG

¹ *Swiss indexation was introduced in 2000. In that year the wage increase had a weight of 70%, as it was a transition year.*

system. Assumptions vary over a wide range, depending on the parameters they use. It has to be taken into account that running the system is also quite costly. International evidence indicates that management costs consume 1% to 4% of the assets annually (Orszag and Stiglitz, 1999; Schiff et al., 2000). Murthi et al. (2001) computed that UK private funds would pay 40% more pension if they worked with no costs. The cost level of the Hungarian and Polish systems is not transparent because the administrative costs of running the individual accounts are deducted from the contributions, and asset management costs are deducted from the capital under management.

7 Characteristics of the Mandatory Pension Funds

Mandatory pension funds do not need registered capital in Hungary; they are by law nonprofit organizations. They can be established by the employer, by vocational chambers, unions, local governments and by voluntary pension funds.¹⁾ The founder has to provide estimates before registration, showing that membership will presumably reach 2,000 persons. The funds can be closed (e.g. allowing membership only for certain vocations, employees of certain enterprises) or open to the general public. The largest funds were established by voluntary funds; banks and insurance companies stand behind them. Assets can be managed by the fund or by a fund management company, and the administration can be outsourced as well (Law of the Republic of Hungary no. 82 of 1997).

In Poland, pension funds are managed by general pension fund societies, which are joint stock companies. Their registered capital must be at least EUR 4 million, and own capital must not decline below EUR 2 million. Assets of the fund society and the fund in which the assets of the fund members accumulate have to be kept separately. The pension fund societies are profit-oriented: they collect a fee from the fund, the magnitude of which is limited by law.

The funds have to observe detailed investment rules which prescribe the maximum proportion of various kinds of assets (e.g. listed shares, bonds, etc.) in the portfolio of the fund. An independent depositary has to be employed in both countries to control the lawful operation of the fund.

The funds are supervised by specialized government agencies in both countries: by the Hungarian Financial Supervisory Authority in Hungary and by the Superintendency of Pension Funds in Poland. In addition to the supervision, there is a guarantee fund in both countries to which the pension funds have to contribute. If the assets of the guarantee fund cannot meet the obligations, the state provides the ultimate guarantee. In Poland, if a fund achieves a return which is lower than half the average profit in a 24-month period or which is 4 percentage points lower than the average profit in the same period (whichever is smaller), it has to be offset to the minimum level from the special reserve account of the fund or from the own capital of the fund society. If the reserve account or the capital are insufficient, the pension fund society is declared bankrupt, the assets of the members are offset to the

1 Voluntary pension funds are covered in one of the next sections.

minimum level by the guarantee fund, and the assets of the members are transferred to another fund managed by another fund society (UNFE, 2000).

In Hungary, if a pension fund cannot meet its obligations or if the capital of a member at retirement does not reach the amount which is necessary to pay an annuity which is at least one quarter of the pension from the PAYG system, the guarantee fund replenishes the account to the required level (Law of the Republic of Hungary no. 82 of 1997). It means that the Hungarian guarantee is more comprehensive: it protects to an extent against unfavourable capital market developments as well, while the Polish guarantee covers losses due to the poor management of a particular fund only.

In Hungary, the employer has to transfer the contribution to the private pension funds directly while in Poland the Social Security Institute, the administrator of the PAYG system, collects the contributions for the private funds as well and retransfers the amounts to them. The latter solution seems to be technically more effective, because the employer needs to make transfers only in one direction, and problems arising from the improper provision of data can be sorted out at the Social Security Institute. (The Hungarian private pension funds have identification problems for 5% of the contributions, which increases administration costs.) In fact, though, the Polish Social Security Institute often has arrears in transferring the contributions, which in November 2001 amounted to EUR 1.1 billion. The government plans to make up for the outstanding amounts with special Treasury bonds.)

Table 2

**Key Data on Mandatory Pension Funds in Hungary and Poland
at End-2000**

	Hungary	Poland
Number of funds	25	20
Number of members (million)	2.2	10.4
Share of members in the six largest funds (%)	80	69
Assets in EUR million	570	2,560
out of which: government papers (%)	77.9	54.6
bank deposits (%)	0.2	1.8
shares (%)	14.7	38.4
other bonds (%)	2.3	0.4
others (%)	4.9	4.8
Real yields on assets (%)	– 3.3 ¹⁾	0.9 ²⁾
Assets in percent of gross household savings	2.4	4.7 ³⁾

Source: Hungarian Financial Supervisory Authority (2001), UNFE Quarterly Bulletin 2000/4, www.unfe.gov.pl, own calculations.

¹⁾ Year 2000.

²⁾ Annualized between September 1999 and September 2001. Taken from the slides shown at a conference on the Polish Model of Pension Fund Supervision held in Warsaw November 8 to 9, 2001.

³⁾ Bank savings.

The number of mandatory funds is decreasing in Hungary from an initial 43. A negative correlation between size and efficiency was detected (Balló, 2001). The cause may be high recruiting costs, and the fact that large funds use the high-priced asset management services of banks and insurance companies which stand behind them and that the administration of the separate accounts of fund members is undertaken by specialized subsidiaries of the bank or insurance company for a considerable fee. With a single exception, the banks and insurance companies are foreign-owned, so it can be stated

1 Interfax Poland Weekly Business Report, November 6, 2001.

that the majority of the mandatory pension fund market is controlled by foreigners.

The situation is similar in Poland. Though 61% of the shareholders of the funds are Polish, if we take the Polish entities representing foreign capital as foreigners, the share of Polish capital in the aggregate capital of the pension funds is only 16%. No relation between the size of the fund and efficiency could be detected in Poland (UNFE, 2000).

There is a high concentration of funds in both countries. The negative real yields on assets in Hungary is attributable to the low performance of the Budapest Stock Exchange: capitalization declined by 18% in 2000 due to falling share prices. At the same time real yields on government papers decreased as well. In spite of the positive real return, the Polish scene is even more gloomy than the Hungarian one, because between September 1999 and September 2001, when the pension funds attained an annualized yield of 0.9%, investment in simple money market instruments would have delivered an annual real interest of 10.1%.

Theoretically, it can be debated whether the assets of the mandatory funds can be regarded as additional savings for the economy, because the amount which is diverted from the PAYG systems to the mandatory funds has to be replenished, considering that the expenses of the PAYG systems do not diminish until the first generation that is a member of the capitalized system retires.

The state budget is tapped for replenishment, and privatization revenues are also foreseen for this purpose in Poland. The Hungarian central budget supplemented its Social Security Fund by 0.5% of GDP and the Polish budget respectively by 0.7% in the year 2000 for the forgone revenue of that year (Hungary, 2001; IMF, 2001). Poland introduced the definition of "economic deficit," which corresponds to the general budget deficit minus the contributions to the mandatory private pension funds.¹⁾ The Polish authorities argue for this definition to judge the magnitude of the deficit of government finances while saying that contributions to the mandatory pension funds add to national savings and therefore reduce the impact of the public finance deficit on the savings level of the economy (OECD, 2001). The IMF values the fiscal stance of Poland according to this definition.²⁾

However, there is no evidence that the EU accepts this kind of correction to the general government deficit. Therefore, the prospective fulfillment of the Maastricht budget deficit criteria will be more difficult for countries which have introduced mandatory capitalized pension systems. In fact, the Hungarian government reasoned that it did not increase the contributions to mandatory pension funds from 6% to 8% because more people converted to the new system than foreseen, which boosted the government deficit.

1 Besides, the economic deficit includes compensation payments for income losses due to high inflation in the early 1990s amounting to 0.2% of GDP, but this circumstance is not material to our investigation.

2 The IMF Staff Report on the Article IV consultations with Hungary are confidential; therefore, it is not clear how the IMF considers voluntary private pension funds in connection with the general government deficit.

8 Voluntary Pension Funds

Due to the reduction of the assessment base discussed before, pensions of individuals with higher incomes have a lower replacement ratio after retirement. This stands in contrast to the Bismarckian concept of pension systems aimed at ensuring that retirees would enjoy the same standard of living they were accustomed to before retirement. In order to make up for this deficiency, voluntary retirement funds were introduced in all three countries under review: in the Czech Republic and in Hungary in 1994, and in Poland in 1999. They are fully capitalized private funds. Benefits depend on the paid-in contributions and accumulated returns on the personal accounts of the participants. The funds are regulated and supervised by the state; however, there is no state guarantee on the assets. In countries with mandatory funds, the supervisor is the same as that for mandatory funds; in the Czech Republic, the supervisor is the Ministry of Finance.

The legal form of the funds is different in the three countries. The fund is a joint stock company in the Czech Republic, which has to be established with a registered capital of approximately EUR 1.5 million. All funds are open to any employee working for any enterprise. The assets of the shareholders of the joint stock company and the assets of the fund members are not separate, and shareholders decide on how the profit should be divided between the shareholders and the fund members. The only statutory restriction is that the shareholders must not get more than 10% of the profit (Law of the Czech Republic no. 42 of 16 February 1994). Foreigners have strong and mostly majority ownership in many of the funds (Ministry of Labor and Social Affairs, 2001).

In Hungary, the funds are mutual benefit societies which can be established by at least 15 natural persons, do not require own capital and are not profit-oriented. Funds can be established by groups of employees of an enterprise, which may assist the operation of the fund e.g. by providing office space. These funds can be closed to nonemployees (Law of the Republic of Hungary no. 116 of 1993). The largest funds have been established by banks and insurance companies in such a way that the employees were the founders "on paper" as private individuals. These funds welcome all participants and even advertise their services. The majority of the banks and insurance companies are foreign-owned.

In Poland, only enterprises may found pension funds, and only employees of those enterprises may be fund members. The founder has to prove that at least half of the employees intend to participate (UNFE, 2001). The funds have no start-up capital, and their assets have to be managed separately from those of the enterprise. Instead of establishing an own fund, the enterprise may establish a contract with an investment fund, with a mutual insurance society or with an insurance company for the benefit of the employee.

Similar investment rules apply to voluntary funds and to mandatory funds (see above), and the employment of an independent depositary is also prescribed.

Participation in the system for both employers and employees is encouraged by tax incentives and state contributions. Employers may contribute only if employees do the same. In Hungary, incentives are extremely advanta-

geous: employers' contributions are tax-free at up to two times the monthly minimal wage every month, which comes to EUR 320 in 2001 and will increase to EUR 400 in 2002. Employees may deduct 30% of the contribution from their income tax up to a ceiling of EUR 400 a year.¹⁾ The deduction in the first five years of the operation of the system was even higher, 50% (Matits, 2000). Taking into account the marginal income tax rate of 40% in Hungary, the state not only gave contributors preferential tax treatment, but also provided a subsidy. Under the present legislation, benefits are tax-free for the time being, but will be taxed after 2013.

Incentives are less generous in the Czech Republic. The minimum contribution of a participant is EUR 36²⁾ annually; in this case the state contribution is an additional 50%. The share of the state contribution decreases as the participant's contribution augments: at an annual EUR 180 contribution, the state contributes an additional 30%. If participants contribute more than EUR 180, they may deduct up to EUR 360 of the amount above this limit from their personal income tax base yearly. 28.5% of the assets of the funds consisted of state contributions at the end of the year 2000. Employers can contribute tax-free up to a ceiling of 3% of the employee's wage or salary (Ministry of Labor and Social Affairs of the Czech Republic, 2001). Under the present legislation, benefits are tax-free.

In Poland, employers' contributions of up to 7% of the wage of the employee are tax-free. These benefits apply also to enterprises which do not establish their own pension funds but contribute to an employee's life insurance contract with an insurance company or a mutual insurance society or which have a contract with an investment fund.

At the time of retirement, the employee may withdraw the accrued capital in the fund as a lump sum or may convert it into an annuity. The individual has more information on his or her life expectancy than the annuity provider, and it is probable that those participants with a higher life expectancy will choose an annuity. Therefore, annuity providers will have to be very cautious in determining the annuity (Brunner and Pech, 2001). Most

Table 3

**Key Data on Voluntary Pension Funds in the Czech Republic,
Hungary and Poland at End-2000**

	Czech Republic	Hungary	Poland ¹⁾
Number of funds	19	116	74
Number of participants (million)	2.3	1.1	0.03
Assets in EUR million	1,300	860	..
of which: T-bills and bonds %	84.1	76.5	..
liquid assets %	5.9	1.6	..
stocks %	10.0	14.1	..
others %	..	7.8	..
Assets in % of gross household savings	..	3.6	..
Real yields on assets (%)	0.0 ²⁾	- 2.9	..

Source: Ministry of Labor and Social Affairs of the Czech Republic (2001), Hungarian Financial Supervisory Authority (2001), own calculations.

¹⁾ Mid-October 2001 (information on assets is not available).

²⁾ Approximate.

1 For people who retire before 2018, the ceiling is EUR 520. An exchange rate of 250 HUF/EUR was used.

2 An exchange rate of 33.3 CZK/EUR was used.

probably, annuities will not be favorable for the pensioner; therefore, it is expected that most of the capital will be withdrawn as a lump sum. In the end, it is possible that voluntary pension funds will function as a long-term savings vehicle and not as a vehicle for old-age security. It is even more probable in the Hungarian case, where the accrued capital can be withdrawn tax-free after ten contribution years. In the Czech case, if the accrued capital is withdrawn before retirement, the state contribution has to be repaid.

The low number of funds in the Czech Republic compared to the other two countries reflects the fact that funds need their own start-up capital in the Czech Republic only. The number of funds is decreasing both in Hungary and in the Czech Republic. In the peak year, 1994, the Czech Republic had 44 funds, and Hungary had 145 even in 1999. Funds are at the establishing stage in Poland because legislation governing funds was passed in 1999. At end-1999 only three funds were registered. The very low number of participants also reflects the establishing phase. Assets of voluntary pension funds do not account for a substantial share of household savings, but taking into account the subsidies and tax incentives, the actual savings are 30% to 50% less. When estimating the real effect of the voluntary private pension funds on savings, one has to take into account that part of the savings displaces other savings instruments because of the incentives. The OECD (1998) surveyed 28 studies which investigated the saving displacement issue mainly in connection with the tax-favored U.S. 401(k) accounts. The survey came to the conclusion that the net savings effect of the tax-favored accounts is about 20% to 30%.

As in the case of the mandatory funds, the developments of the Budapest Stock Exchange had a negative impact on the yields of the voluntary funds in the year 2000. The Czech Stock Exchange had a bad year as well, though the decrease was smaller. The PX Global Index, the main index of the Prague Stock Exchange, diminished by 3%. This, and the larger share of stocks in overall assets in the Hungarian case, may be the reason why the Hungarian funds had a negative yield while the Czech funds came through with zero yield. It may be a bit of a consolation that the Hungarian voluntary funds performed somewhat better than the mandatory ones, because voluntary funds have fewer administrative expenses (Hungarian Financial Supervisory Authority, 2001; Ministry of Labor and Social Affairs of the Czech Republic, 2001; Prague Stock Exchange <http://ftp.pse.cz>).

9 The Effect of Pension Funds on Financial Markets

As table 4 indicates, the share of stocks which domestic pension funds held in their portfolio at end-2000 represented 1.1% to 2.7% of the market capitalization of the exchanges of Budapest, Prague and Warsaw. In terms of the free float of the exchanges, the share of domestic pension funds is higher. According to the calculation of The Economist,¹⁾ the share of free-float stocks of the Warsaw Stock Exchange held by Poland's funds reached 10% in August 2001.

1 *The Economist*, September 1, 2001.

The funds are far from exhausting their statutory limits of stock holdings in the Czech Republic and in Hungary. This situation is understandable in times of bearish markets. The Polish funds are more risk-friendly and have nearly exhausted their limits. It is expected that they will account for 40% of the free float of the Warsaw stock exchange by 2004. However, at least for the time being, domestic pension funds are clearly outweighed by foreign portfolio investors, who held 19% to 26% of the capitalization of the exchanges of the three capitals at end-2000 (Scharfax and Reininger, 2001).

Table 4

**The Effect of Pension Funds on the Financial Markets
at End-2000**

	Czech Republic	Hungary	Poland
Share of stocks held by pension funds in % of stock market capitalization	1.1	0.8 (mandatory) 0.9 (voluntary)	2.7
Share of debt securities held by pension funds in % of debt security market capitalization	9.2	3.0 (mandatory) 3.9 (voluntary)	3.8
Statutory limits on stock holdings in % of total assets	25	30 (mandatory) 40 (voluntary)	40
Statutory limit on foreign investment in % of total assets	no limit ¹⁾	10 ²⁾ (mandatory) 20 ³⁾ (voluntary)	5

Source: Scharfax and Reininger (2001), Hungarian Financial Supervisory Authority (2001), Ministry of Labor and Social Affairs of the Czech Republic (2001), Law of the Czech Republic no. 42 of 16 February 1994, UNFE (2000), own calculations.

¹⁾ Foreign investment is allowed in OECD government and central bank papers only.

²⁾ The limit has been increased to 20% for 2001 and 30% afterwards.

³⁾ The limit will be increased to 30% in 2002.

At the present time, the three countries' pension funds are not exploiting their foreign investment limits. For example, in Hungary foreign investment accounts for only 2% of the assets of the funds. The reason may be the better knowledge of the domestic markets and the fact that at least until now, securities of the countries in question have promised higher returns than Western ones. But the market situation may change, and knowledge of foreign markets can be acquired especially if we take into account that the funds are predominantly foreign-owned. As soon as the countries join the EU, foreign investment limits will have to be lifted under the principle of the free movement of capital. Restrictions may continue to exist under the pretext of currency mismatch restrictions, but when the countries join the euro area, restrictions on investment at least in other euro area countries will cease.

10 Looking Toward the Future

The Czech government intended to introduce a new voluntary occupational pension fund scheme in 2002, which would coexist with the present state-contributory supplementary pension insurance system. Like the Hungarian and Polish voluntary funds, the new funds would not need own capital, would be established by the enterprises, and only employees of the founder would be able to participate. Administration and asset management would be outsourced. Similar tax incentives as in the present system would apply. The government presumed that the new system would be more transparent than the present one, and that it would be cheaper to operate. However, the

Chamber of Deputies voted down the bill in October. The ruling Social Democrats, who now have a minority government, announced that they would submit the bill again after the elections in fall 2002.

The Hungarian Parliament abolished the mandatory character of the second pillar in November. From January 2002, even new entrants to the workforce will be permitted to choose whether they want to join the second pillar or not. Those who wish to join will be permitted to pay 6 percentage points of their social security contribution to a private fund. Every member of the now existing mandatory funds will be given the option to return to the PAYG system. If the member decides to quit the fund, his or her accumulated assets will be transferred to the social security fund. The guarantee that the pension from the second pillar should reach 25% of the pension from the first pillar will be abolished. The PAYG system is scheduled to be changed in a next legislative step: a notional defined contribution scheme will be developed approximately on the design of the new Polish system.

The Polish authorities plan to merge the insurance, pension fund and health insurance supervision. The official goal is to reduce costs and increase efficiency.¹⁾

II Conclusions

The pension systems of the Czech Republic, Hungary and Poland developed in line with those of continental Europe until the end of World War II. In the socialist era, the relation between contributions and benefits loosened, and no alternative or supplementary funds evolved alongside the state-run pension system.

After the collapse of socialism, the relation between contributions and benefits improved and the retirement age was increased. The goal of the changes was to cope with the problems of an aging population in the long run and to overcome the challenges of the transformation crisis in the short run. This crisis increased unemployment and early retirement and caused imbalances in government finances to a large extent because of the pension obligations. The pension system diversified. Voluntary private pension funds were introduced in all three countries, and mandatory private pension funds established in Hungary and Poland were patterned on Latin American funds. The partial switch to the funded system has entailed considerable transition costs, which are being borne by the state budget. Like other segments of the financial system of these countries, the funds are dominated by foreign owners.

The funds have only a limited impact on overall household savings. Their impact on the domestic securities markets is still negligible compared to that of foreign institutional investors. For the time being, foreign investment by the funds is restricted, but restrictions have to be eased substantially when the countries join the European Union and later the euro area.

1 Some observers point out that the initial goal might be to eliminate the head of the pension fund supervision, who is claimed to be associated with a party which was a member of the previous coalition (Reuters Business Briefing, November 5 and 8, 2001).

The Czech Republic and Hungary recently introduced or plan to introduce further significant changes in their pension systems. The changes aim at increasing the equitability, efficiency and transparency of the system. The future functioning of the systems will show whether these aims have materialized. Furthermore, institutional stability and predictability is also of great importance, especially in this segment of the financial sector with which practically all members of society are or will be affiliated and about which they have to learn to make long-term informed decisions.

Cutoff date: November 15, 2001.

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Transcarpathia – Ukraine's Westernmost Region and a Gateway to Central and Western Europe¹⁾

I Introduction to the Region

Stephan Barisitz²⁾

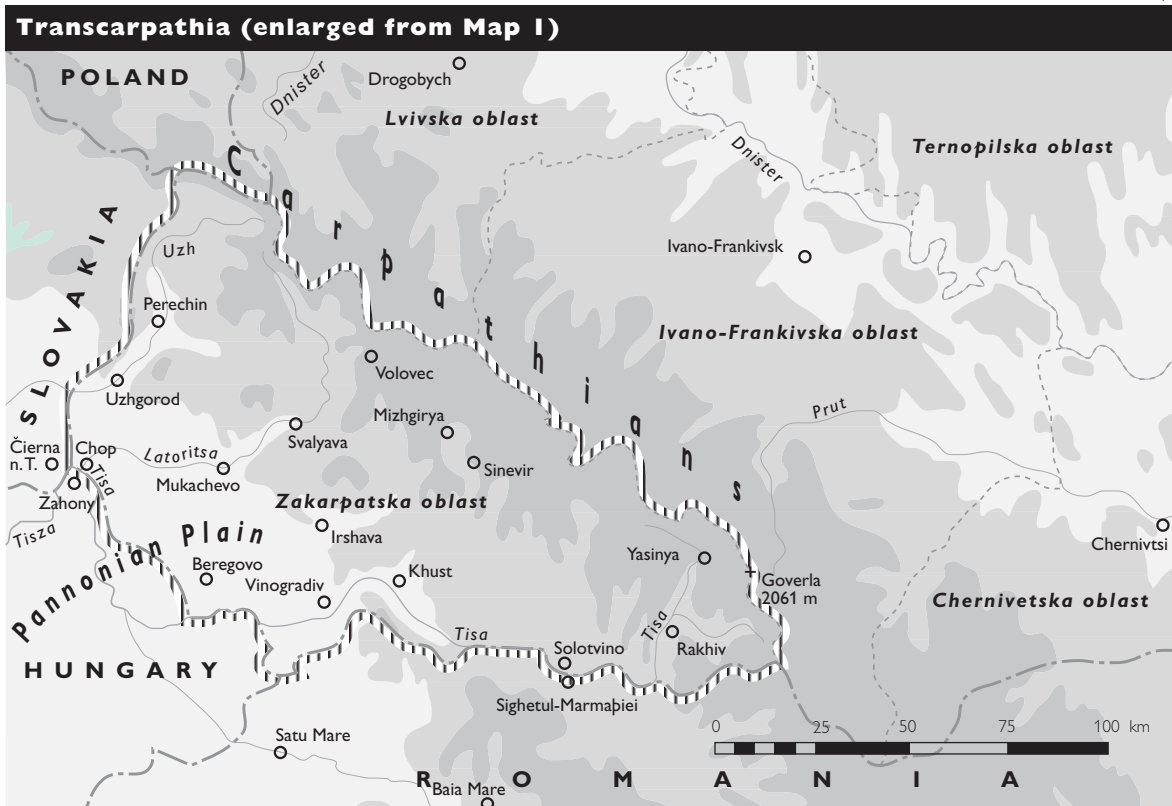
Transcarpathia – although only about 500 km to the east of Vienna – is a largely unknown region. Transcarpathia – also called Carpatho-Ukraine, Subcarpathian Rus, or Subcarpathian Ruthenia – covers an area of 12,800 km² and has about 1.3 million inhabitants. The region lies in the far west of Ukraine, on the western slope of the Carpathian mountains; part of it stretches into the lowlands of Pannonia (the Danubian Basin). It is officially called “Zakarpatska Oblast” and constitutes the westernmost Ukrainian administrative region. To the west and south, Transcarpathia borders on Slovakia, Hungary and Romania; it possesses a small strip of border with Poland, while adjacent Ukrainian oblasts (Lvivska Oblast and Ivano-Frankivska Oblast) lie on the eastern side of the crest of the Carpathian mountains. Zakarpatska Oblast is thus surrounded on three sides by EU accession candidates (see map 1).

The upper reaches of the Tisa (Tisza) river run through the region whose southeastern part displays a largely alpine character. About half of Transcarpathia is covered by forests. Most inhabitants of the oblast are Ruthenians

Map 1



- 1 A substantial part of the information on which this article is based was gathered during an excursion to Transcarpathia in June 2001 in which the author took part. The excursion was organized by the Austrian Institute of East and South-East European Studies (Österreichisches Ost- und Südosteuropa-Institut – OSI).
- 2 Foreign Research Division, Economic Analysis and Research Section, OeNB. I am grateful for comments from Doris Ritzberger-Grünwald, Peter Backé, Jarko Fidrmuc, János Kun, Thomas Reiningger and Irene Mühlendorf. The views expressed in this article are those of the author and do not necessarily coincide with those of the Oesterreichische Nationalbank.



Source: Österreichisches Ost- und Südosteuropa-Institut (Austrian Institute of East and South-East European Studies).

or Ukrainians with Ruthenian dialects; furthermore, there is a relatively large Hungarian ethnic minority (about 12% of the population). Other smaller minorities are Russian, Romanian, Slovak, Roma and German-speaking. The most important cities are the regional capital of Uzhorod (near the western border of the region, population: 127,000), Mukachevo (more centrally located, population: 89,000) and Khust (further to the east). Agriculture, forestry and related industries dominate the regional economy. The region has few mineral resources, among them iron and nonferrous ores, lignite and rock salt (near the town of Solotvino in the southeast). But mineral and thermal waters are abundant. Very little even general literature on Transcarpathia is available to the Western public.

Throughout its history, Transcarpathia has been a politically and economically peripheral land, in fact continually a borderland, a relatively poor region that has never surpassed a quite modest level of economic development (Beaudoing, 1999, p. 11). For many centuries under Hungarian, then Austro-Hungarian rule, Transcarpathia became part of the Czechoslovak Republic in 1919, was annexed again by Hungary in 1939 and incorporated into the USSR in 1945. Since 1991, Transcarpathia has been an administrative region of independent Ukraine. Feudalism and remnants of feudal structures remained dominant in Transcarpathia until the beginning of the 20th century. But local industrial development (furniture, small-scale metallurgy, chemical plants, artisan trades) started to gain some importance in the final decades of the 19th century. Public infrastructures were improved in the

interwar period. Still, agriculture and forestry dominated the economy at least until the mid-20th century. Rural poverty has been a persistent feature of the region.

The Soviet authorities exploited the regional forests in a comprehensive, but inefficient way. Clear-cutting was often practiced, and environmental matters were taken into account even less than in the past. The resulting land erosion aggravated recurring floods. The collectivization of Transcarpathian agriculture was accomplished in 1950. In the 1950s the Soviets also started to rebuild and enlarge the existing meager tourist infrastructure (sanatoria, rest homes) and create some holiday resorts. In the 1960s and 1970s the central planners implanted some consumer goods and machine building industries in the oblast. Four important oil and gas pipelines were built through the region in the postwar period. The last one, finished at the beginning of the 1980s, transported natural gas to Western European markets (and continues to do so). This underlines the strategic importance of Transcarpathia as a transport link to Central and Western Europe.

2 Transcarpathia in Comparison to Other Ukrainian Regions: Peculiarities, Strengths and Weaknesses

After the dissolution of the Soviet Union, the collapse of central planning and of the CMEA foreign trade organization of the former socialist countries, Ukrainian independence at end-1991 ushered in a protracted and difficult period of market-oriented economic reforms. This period was accompanied by a decade of economic contraction, which in Ukraine, according to official statistics,¹⁾ only came to an end in 2000, when GDP increased by a hefty annual 6.0% (after a decrease of 0.4% in 1999). In the first half of 2001 the GDP expansion accelerated to 9.1% (year on year). Ukraine is a centralized state in which most public and budgetary activities are concentrated at the central state level. The country consists of 24 oblasts (provinces), among them Transcarpathia (Zakarpattia, Zakarpatska Oblast), the capital city Kiev (Kiiv) and the Autonomous Republic of Crimea (Avtonomna Respublika Krim).

Transcarpathia, all in all, constitutes a relatively low-income and economically less developed region of Ukraine. Its share in the total territory of the country is 2.12% and its population share on January 1, 2000, amounted to 2.58%. In 1989, Transcarpathia's share in Ukraine's population had amounted to 2.43%.²⁾ These latter population data are important benchmarks against which the numbers below can be measured. Some systematic statistical comparisons between Transcarpathia and Ukraine are given in table 1. As the table shows, *gross value added* in Transcarpathia amounted to 1.34% of Ukrainian gross value added in 1996 and 1.37% in 1998. Gross value

1 The source of the following data and comparisons in this chapter is *Derzhavnyi komitet statistiki Ukraini (2000)*. This source, however, does not give estimates for the size of the informal sector, which is known to be substantial in Transcarpathia and Ukraine. The next chapter will attempt to shed some light on the informal sector.

2 The small rise of this share is due not so much to a rise in the number of inhabitants of the region, which went from 1.25 million in 1989 to 1.28 million in 2000. It is rather related to the decline of Ukraine's population from 51.7 million to 49.7 million during this period.

added per Transcarpathian inhabitant thus only came to about 54% of the country's average, the lowest of all Ukrainian regions.¹⁾ Household money income and expenditures were likewise far below average, although they slightly caught up from 1997 to 1999. Transcarpathia has been a long-standing net recipient of regional subsidies from the authorities in Kiev.

On the other hand, it appears that economic recovery was somewhat quicker in Ukraine's westernmost region and that economic activity there may have reached the turning point already in 1998 or 1999. Transcarpathian industrial output by 1996 is reported to have fallen to about 30% of its level of 1990, whereas overall Ukrainian industrial production was "only" halved. This appears to reflect the country's uneven contraction throughout the 1990s, with a shrinking economy being increasingly dominated by base industries (power, fuels, steel, etc.) at the expense of the manufacturing industries (Clement, 2001, p. 16). Given that Transcarpathia's industrial structure was characterized by the latter branches, it was one of the regions to bear the brunt of contraction. But in the following years, developments were partly reversed, and Transcarpathia recorded a swifter industrial recovery. Textile production reached a high level, and in 1999 the region produced almost a quarter of Ukrainian knitwear. But shoe manufacturing apparently suffered the opposite fate. Still, on the whole, manufacturing and light industry seem to be leading the industrial recovery, with these activities responding favorably to the devaluation of the last two years, and Transcarpathia benefiting from it.

In 2000 the industrial structure of the region was dominated by the woodworking industry (38% of output), followed by the food industry (25%), light industry (12%) and engineering and metalworking (9%). The region's share in Ukraine's agricultural production grew over the entire decade. This is particularly true of the meat, milk and potato output. Transcarpathia accounts for almost 7% of Ukrainian forestry production. In 2000, about 4% of the country's private farms were located in its westernmost region. Transcarpathia's share of employment in collective agricultural enterprises steadily declined throughout the 1990s. Despite this structural improvement, the authorities point to the continuing problem of agricultural overpopulation and shortage of cultivated land.²⁾

Fixed capital investment, while recovering in the late 1990s, has always been below average in Transcarpathia. The same goes for the availability of public and private telephones. But residential construction, particularly private construction, expanded strongly in 1999. Almost 10% of all residential buildings put into service in rural areas of Ukraine were located in Transcarpathia. The region accounted for only 1.5% of all exports and 1.3% of all imports of the country in 1999. Its share of attracted FDI comes to about 2.3%. In 1999, 2.7% of Transcarpathian industrial output was produced by private firms, as opposed to merely 0.2% in all Ukraine. In 1999 Transcarpathia was one of the leading regions with respect to privatization activities.

1 *The next poorest jurisdictions were Chernivetska Oblast (Czernowitz province) and the City of Sevastopol.*

2 *Zakarpatska oblasna derzhavna administratsiya (2001b, p. 13).*

Table 1

Transcarpathia as a Share of Ukraine: Various Indicators			
Indicator	Transcarpathia	Ukraine	Transcarpathia as a percentage of Ukraine
Territory (in km ²)	12,800	603,700	2.12
Population (1989, million)	1.252	51.452	2.43
Population (January 1, 2000, million)	1.284	49.711	2.58
Gross value added (actual prices, UAH million)			
1996	932	69,287	1.34
1998	1,138	82,834	1.37
Industrial output (real)			
1990	100	100	
1995	38	52	
1996	30	50	
1998	38	49	
1999	47	51	
Consumer goods output (1999, actual prices, UAH million)	311.4	20,995.6	1.48
of which: food	116.9	12,030.6	0.97
nonfood, incl. light industry	155.7	6,935.2	2.25
Textile production (in million m ²)			
1998	5.7	89.9	6.34
1999	0.5	50.2	1
Knitwear production (in million m ²)			
1995	2.0	27.0	7.4
1998	1.1	6.6	16.67
1999	2.3	9.7	23.71
Agricultural production (comparable prices, UAH million)			
1990	759	48,629	1.56
1995	606	31,634	1.92
1999	548	23,603	2.32
Gross harvest of grain (in thousand tons)			
1990	306	51,009	0.6
1995	197	33,930	0.58
1999	176	24,581	0.72
Gross harvest of potatoes (in thousand tons)			
1990	337	16,732	2.01
1995	327	14,729	2.22
1999	378	12,723	2.97
Meat production (in thousand tons)			
1990	67	4,385	1.53
1995	49	2,294	2.14
1999	47	1,695	2.77
Milk production (in thousand tons)			
1990	375	24,508	1.53
1995	352	17,274	2.04
1999	363	13,362	2.72
Forestry output (1999, UAH thousand)	35,377.2	521,292.2	6.79
Private farms (number, beginning of year)			
1996	1,054	34,778	3.31
2000	1,400	35,884	3.9
Fixed capital investment (comparable prices, UAH million)			
1990	1,063	55,368	1.92
1995	143	16,097	0.89
1999	169	12,197	1.39
Fixed capital investment in residential construction (comparable prices, UAH million)			
1990	168	8,970	1.87
1995	54	3,353	1.61
1999	74	2,173	3.41
Retail trade turnover (UAH million)			
1995	231.7	11,964.0	1.94
1999	511.0	22,151.1	2.31

Table 1 cont.

Transcarpathia as a Share of Ukraine: Various Indicators			
Indicator	Transcarpathia	Ukraine	Transcarpathia as a percentage of Ukraine
Commercial bank credits extended to economic entities (1999, UAH million)	77	11,783	0.65
Exports of goods (1999, USD million)	169.5	11,581.6	1.46
Imports of goods (1999, USD million)	158.8	11,846.1	1.34
Direct foreign investment (cumulated, USD million)			
end-1998	64.9	2,810.7	2.31
end-1999	73.8	3,247.9	2.27
1/4/2001	91.5		
Small-scale enterprises (number)			
1995	1,512	96,019	1.57
1999	5,774	197,127	2.93
Entities by type of ownership after privatization (beginning of 2000, number)			
private	511	13,189	3.87
collective	1,144	53,512	2.14
Unemployment rate (1999, %)			
overall	12.4	12.0	
urban	14.3	14.3	
rural	10.8	6.3	
Average annual number of employees in collective agricultural enterprises (in thousand)			
1990	87	3,481	2.5
1995	39	2,926	1.33
2000	16	2,319	0.69
Household money expenditures (UAH million)			
1997	716	47,932	1.49
1999	1,041	59,518	1.75
Sanatoria and rest facilities with medical care (places)			
1990	4,509	154,484	2.92
1995	4,307	158,507	2.72
1999	4,073	154,782	2.63
Hotels: capacity (number of beds)			
1995	2,606	130,869	1.99
1999	2,363	104,224	2.27
Registered crimes (thousand)			
1990	3.5	369.8	0.95
1995	7.6	641.9	1.18
1999	6.6	558.7	1.18
Reforestation of forest stock (hectares)			
1990	2,825	37,458	7.54
1995	2,348	38,441	6.11
1999	2,258	38,582	5.85
Emission of pollutants into the atmosphere:			
– stationary sources (thousand tons)			
1990	38.2	9,439.1	0.4
1995	13.2	5,687.0	0.23
1999	7.0	4,116.0	0.17
– mobile sources (thousand tons)			
1990	106.3	6,110.3	1.74
1995	23.5	1,796.5	1.31
1999	37.7	1,747.0	2.16

Source: Derzhavniy komitet statistiki Ukraini: Statistichniy Shchorichnik Ukraini za 1999 rik (State Statistics Committee of Ukraine: Statistical Yearbook of Ukraine for 1999), Kiev 2000.

Migration movements into and out of Transcarpathia (according to official data) in 1999 were below average (in relation to inhabitants). But out-migration clearly prevails. The unemployment rate (according to surveys) is slightly above the national average, especially in rural areas. The ratio of jobless persons to vacant jobs is much higher in Transcarpathia than in the country as a whole, although this seems to have improved in 2000. With respect to tourism, Transcarpathia remains equipped above-average with the infrastructure of sanatoria and rest facilities with medical care. This cannot be said of hotels, but the region has recently moved nearer to the average. The incidence of registered crimes remains below average in Ukraine's westernmost region. Environmental pollution due to accidents appears to be minor. The emission of pollutants into the atmosphere is also below average.

Given the above figures, the Transcarpathian economy will hardly take off until productive investment recovers substantially.

3 Selected Features of the Oblast's Contemporary Economic Development

3.1 Recovery and Privatization of Agriculture

Whereas in 1990, Transcarpathian agricultural production accounted for about 1.6% of total Ukrainian farm output, this share (measured on the basis of comparable prices) expanded to 2.3% in 1999 and in all probability rose further in 2000 and 2001. The share of private farms in Transcarpathia in the total number of Ukrainian private farms grew from 3.3% in 1996 to 3.9% in 2000. However, the share of the former in total private cultivated land remained modest. The region's share in the number of employees in collective agricultural enterprises declined from 2.5% (which would correspond to its population share) to 0.7% in 2000.

The comeback of farming activity in Transcarpathia is certainly also related to an acceleration of privatization in recent years. A presidential decree of December 1999 allows former members of collective farms to leave with their share of land and property. In April 2000, Ukraine's collective farms were officially disbanded or transformed into private cooperatives. Furthermore, Transcarpathia appears to be one of the few regions of the former USSR and Ukraine where private agricultural skills were not wiped out or severely compromised in the decades following the traumatic Soviet collectivization of the beginning of the 1930s. As pointed out above, agriculture was collectivized in Ukraine's westernmost region only in the second half of the 1940s. Therefore, more people have some living memory of private agricultural activities in Transcarpathia than in other regions.

Local farmers have doubtlessly reacted swiftly to the privatization decrees. Most of them have obviously opted to reestablish individual family farms. Some are still receiving titles to their land. The return to private agriculture is often done in a quite hands-on manner. A number of villages in Transcarpathia exhibit the ruins of collective farm buildings and installations that have been physically destroyed, while sometimes only a short distance from these ruins new private farm houses are springing up (with some of them probably using the bricks of the defunct kolkhoze buildings). Although land cannot be sold yet, leasing to private operators has increased. As of mid-

2001, the draft Land Code was still before the Ukrainian parliament. Once adopted, it would allow farmers to trade land and to use it as collateral, which should stimulate finance for agriculture.

In the high country, cultivated land stretches to areas in higher altitude than in comparable alpine regions, which would be dominated by pastures. This would underline the importance of subsistence activities in the mountains. After the Gorbachev anti-alcohol campaign in the mid-1980s had led to the destruction of an estimated 80% to 90% of vines in Transcarpathia, vineyards are slowly recovering. Now new sorts of wines are being produced in the area, too. Stimulated by agricultural production, local food processing activities are gaining momentum. Forests are generally in state ownership, but forestry licenses can be granted to private businesses. Like in the case of food processing, the oblast authorities are attempting to attract more wood processing activities to the region.

3.2 Floods and Reconstruction

Transcarpathia has been a victim to floods not only since Soviet times, but for centuries. Apart from the above-mentioned Soviet legacy, there are probably also other important reasons for the floods. According to the oblast administration authorities,¹⁾ a study by a commission of the Ukrainian Academy of Sciences points to two main reasons for the floods: global warming and a regional climate of abundant rain. The most recent major floods occurred in November 1998 and March 2001. The inundations also ravaged parts of northeastern Hungary.²⁾ Despite the key importance of woodcutting activities for the regional economy, they have been somewhat curtailed by the authorities in recent years, apparently in response to environmental concerns.

Some anecdotal evidence would suggest the effects of recent floods to be considerable, but not outright catastrophic, at least not at the overall regional level. While some villages in the mountain valleys as well as the lowlands have been hit hard, it seems that the better-off lowland settlements are more successful in coping with the calamities. Some of the lowland villages most damaged by the 2001 flood are currently witnessing busy and intensive private reconstruction activity.³⁾ At least in these cases, people have obviously not resigned. On the other hand, given the lack of means and insufficient external assistance, the survival of a number of settlements in the high coun-

1) As explained by officials of the Economic Department of Zakarpatska Oblast at a meeting with the excursion team in June 2001.

2) To illustrate the devastating effects of the floods, here is the account of a news agency report on the flood of March 2001: "Following the recent floods, 251 villages in the Transcarpathian region of Ukraine remained partly under water on Friday morning ... Seven people died in the floods, 1,600 houses were destroyed, 12,000 people were evacuated, three villages lost their electricity and six telephone exchanges were put out of action ... Sixteen road stretches with a total length of 61.1 kilometers have been damaged. Six road bridges have been destroyed, and nine villages cut off. Railroad traffic has been stopped along five stretches" (Ukraine: In Transcarpathia 251 villages remain partly flooded. Interfax News Agency – Daily News Bulletin, March 16, 2001). As of September 2001, 10,000 people were still homeless as a consequence of the floods (Ukraine: Government Provides Additional UAH 25 Million to Enable Zakarpattya Region to Handle Aftermath of March Flooding. Ukrainian News, September 17, 2001).

3) This refers e.g. to the village of Tekovo (Vinogradiv Rayon) on the Tisa, which the excursion team visited.

try is apparently seriously threatened.¹⁾ NATO announced recently that it planned to hire experts to carry out research work in the region as part of a pilot project to help Ukraine create an effective flood protection system in the Tisa river valley in the Carpathians.²⁾

3.3 Shuttle Trade with Transcarpathia's Western Neighbors, Border Controls and the Informal Economy

Although foreign trade, as measured by official statistics, does not play a significant role for Transcarpathia and its population, so-called "shuttle trade" in all evidence does. As the word suggests, such cross-border trade tends to be carried out by individuals "shuttling" back and forth, in fact fulfilling private trade arbitrage functions between countries featuring considerable price, tax and/or income differences. In Russia, such traders are called "chelnoki." After the collapse of the USSR, the previously strict official travel regime was relaxed between Ukraine (and some other CIS countries) on the one hand and most central European countries on the other. Therefore, since 1992 shuttle trading between Transcarpathia (and other Ukrainian border regions) on the one hand and Poland, Slovakia, Romania, and particularly Hungary, on the other, expanded strongly. The intensity of shuttle trading with Hungary is favored by good travel connections within the Pannonian plain, the relative proximity of large cities (including Budapest) and, probably, the ease of communication between the large ethnic Hungarian minority living near the Transcarpathian border and Hungarians.

The most important shuttle trade comprises the sale of (often smuggled) Ukrainian alcohol (vodka), cigarettes and gasoline in Hungary and Slovakia and the purchase of various consumer goods and durables in the latter countries.³⁾ At least until the beginning of 2000, an average of around 20,000 Ukrainian shuttle traders a day are reported to have passed into Hungary, Slovakia or Romania. Moreover, many Ukrainians are legally or illegally employed on farms or building sites across the border. More than 100,000 people (no less than 15% to 20% of the workforce) of Transcarpathia are estimated to – at least temporarily – work illegally outside the country. They reportedly earn up to USD 250 a month, about six times what they would receive in Ukraine.⁴⁾ This may generate a major injection of money and resources into the Transcarpathian economy. Representatives of the oblast administration actually estimate that shuttle trade makes up an amount equal to the entire amount of official foreign trade and that the informal sector in fact doubles measured economic activity and income.⁵⁾

1 *Ein Paradies – von Katastrophen geschlagen. Aufzeichnungen einer Reise durch die ukrainischen Karpaten. Neue Zürcher Zeitung, August 14/15, 1999, p. 6.*

2 *Ukraine: NATO will ein Pilot-Projekt über Schaffung eines wirksamen Schutzsystems gegen Hochwasser in der Karpatenregion am Fluss Tisza ausführen. ITAR-TASS, August 6, 2001.*

3 *For instance, cross-border trade of gasoline is reportedly triggered by the fact that the price in Ukraine is 40 cents per liter and in Hungary USD 1 per liter (as of June 2001).*

4 *Worried in western Ukraine. The Economist, October 2, 1999, p. 33.*

5 *These estimates were given by officials of the Economic Department of the oblast administration during the meeting with the excursion team.*

These stunning facts and assessments are in line with casual observations according to which official statistics classifying Transcarpathia as the poorest region of Ukraine seem at odds with reality. On the other hand, the informal sector is more or less strongly present everywhere in Ukraine, and official statistics generally fail to appropriately capture this. Still, the unique geographical position of Transcarpathia enabling ubiquitous border trade and labor migration probably reflects conditions conducive to a particularly large expansion of the informal sector. Sizeable earnings from the informal sector are likely to be a major source of financing of small business startups and investments in (legal or illicit) private initiatives and enterprises from agriculture to catering to tourism. This is of particular importance, given that bank credits to small enterprises, farms and households are quite scarce for various reasons (e.g. lack of information, insufficient creditor rights and unreliable contract enforcement). Another factor “stimulating” (the flight to) the informal economy is very high (income) taxation coupled with the instability of taxation rules.

In recent years there have been discussions among central European countries on the (re)introduction of visas for citizens of CIS countries, in particular for Ukrainians, owing to two main factors: The EU accession candidates have been increasingly confronted with the EU’s demand that future members should bring their visa policies into line with those of EU Member States. This refers especially to the Schengen agreement on passport-free travel within the “Schengen zone.” Another factor is the above-mentioned large number of illegal economic migrants from Ukraine and the apparent implication of many of these people in criminal activities (Duleba, 2001, p.14). Against this background, the Czech and Slovak governments introduced visa requirements for Ukrainians as from mid-2000. The Ukrainian government swiftly reciprocated the measure and introduced visas for Czechs and Slovaks from the same date.

The Hungarian authorities have greater reservations about introducing a visa regime for Ukrainian citizens, given the large minority of ethnic Hungarians (more than 150,000) in Transcarpathia and their contacts with Hungary. In April 2001 the Hungarian foreign minister announced that Hungary did not intend to introduce visas for Ukrainian citizens before accession to the Union. If by the time it joins the EU Hungary is obliged to introduce visas for Ukrainian citizens, Budapest will attempt to soften the regime, implying the establishment of additional border crossing points and the modernization of existing ones, the liberalization of the visa issuing procedure, the creation of more consulates, and the like.¹⁾ To date, Poland and Romania have not taken any specific steps with respect to the visa issue.²⁾

In June 2001 the Hungarian parliament adopted the “Act on Hungarians Living in Neighboring Countries” (Act LXII/2001), which bestows special

1 *Ukraine: Hungary will not introduce visas for Ukrainian citizens before accession to the EU. Interfax Ukrainian News (Interfax News Agency), April 18, 2001; Ukraine: Hungarian report views future Hungarian border guard, Schengen system. BBC Monitoring European – Political, July 31, 2001.*

2 *Poland will not tighten border controls with Ukraine in wake of terrorism. Interfax News Agency – Daily News Bulletin, September 18, 2001; Weikert (2001).*

rights on ethnic Hungarians living beyond the borders of the Republic of Hungary. The law i.a. makes available to those eligible a special identity card, a three-month work permit in Hungary on an annual basis, and some medical, educational and cultural benefits.¹⁾ While Slovakia and particularly Romania, which harbor large Hungarian ethnic minorities, have initially reacted negatively and protested against the enactment of the law, no strong reaction of Ukraine was recorded.

Whatever the consequences of the Hungarian status law, there can be no doubt that the introduction of visa regimes (even if in simplified versions) by Ukraine's central European neighbors would considerably complicate or even disrupt the life of shuttle traders and render illegal work more difficult, thus effectively dealing a blow to Transcarpathia's economic well-being. Up to a point, this can already be gauged from the initial effects of Slovakia's visa measure. The introduction of the visa regime in Slovak-Ukrainian relations is reported to have triggered a decline of about 75% in the number of people crossing the common border in the second half of 2000. Most of all, the measure affected inhabitants of the neighboring regions of Eastern Slovakia and Transcarpathia, including black marketeers and informal workers. Whereas petty crime has indeed shrunk, there are signs that organized crime may have largely evaded strict border controls.

At the beginning of 2001 the Slovak and Ukrainian authorities negotiated a slight easing of the visa regime. Apart from other clearly identified categories of citizens (e.g. diplomats, transport personnel, World War II veterans) residents of the 83 villages straddling both sides of the Slovak-Transcarpathian (Ukrainian) border were exempted from paying charges for visas.²⁾ Furthermore, visa charges for people whose visits are of a "humanitarian character" (such as education, science, art, religious purposes, visiting relatives, visiting graves of cousins) were reduced by 50% (Duleba, 2001, p. 15).

Table 2

Regional Structure of Transcarpathia's Foreign Trade

first quarter of 2001

Region/country	Exports		Imports		for comparison: Ukraine 2000	
	USD million	%	USD million	%	Exports	Imports
Total	59.42	100	47.78	100	100	100
CIS countries	1.15	1.9	0.89	1.9	30.8	57.6
of which: Russia	0.92	1.5	0.61	1.3	24.1	41.7
Austria	13.71	23.1	10.57	22.1	1.1	1.3
Germany	15.04	25.3	9.28	19.4	5.1	8.1
Hungary	11.89	20	10.98	23	2.3	1.2
Italy	4.31	7.3	4.6	9.6	4.4	2.5
Slovakia	3.27	5.5	1.98	4.1	1.6	0.9
Netherlands	1.57	2.6	0.85	2	1	1.1
Czech Republic	1.53	2.6	0.98	2	1.3	1.2

Source: Derzhavnyi komitet statistiki Ukraini – Zakarpatske oblasne upravlinnya statistiki: Ekonomichne ta sotsialne stanovishche zakarpatskoi oblasti – Statistichnyi byuleten za sichen-kviten 2001 roku, Uzhgorod 2001, pp. 103–104; WIIW (ed.), *Countries in Transition 2001 – WIIW Handbook of Statistics*, Bratislava, 2001.

- 1 See text of the law on the website of the Ministry of Foreign Affairs of Hungary (www.kum.hu/kulugy/fejlec/index2.html); EU: Hungary defends status law, EU urges consultations. Reuters News Service, July 17, 2001.
- 2 An individual Slovak entry visa reportedly costs no less than USD 200, a small fortune for an ordinary Ukrainian. – Ukraine: La Ruthénie, ou la tentative de créer la dernière nation d'Europe. *Le Temps*, May 22, 2001.

Still, according to most recent estimates, the number of Ukrainians passing the border to Slovakia has fallen by about two thirds since imposition of the visa obligations (Weikert, 2001).

3.4 Foreign Trade, Special Economic Zone and FDI

By comparison to other regions Transcarpathia is not a major center of foreign trade. With its favorable and strategic location, the oblast of course functions as a Ukrainian gateway to central and western Europe and vice versa (as the four important pipelines and the plans for a Trans-European transport corridor running through Transcarpathia amply demonstrate). But the region itself does not generate a relatively large amount of exports and imports, even if the above-mentioned official estimates of informal activities are factored in. Even if official data on Transcarpathia's exports and imports were doubled (while at the same time leaving figures on other regions unchanged), the area would still account for less than 3% of Ukraine's foreign trade turnover. Its share of FDI (less amenable to informal activities) amounted to 2.3% in 1999, which is somewhat below its share in Ukraine's population.

In 2000 (according to official statistics), Transcarpathia's most important export products were sawn timber, plywood, paper, furniture and other wood manufactures (about 30%), electrical machinery parts and accessories (25%), textile clothes, knitwear and knitted goods (20%), wine, cognac, mineral water, salt, wild fruit and berries, mushrooms and confectionery. The region's main imports include electrical and mechanical machinery and equipment (around 35%), cotton and textile fabrics and goods (15%), plastic and plastic manufactures (5% to 10%), alcohol, soft drinks, vehicles and oil products. Transcarpathia is therefore integrated into the international division of labor by exporting machine parts and importing finished machinery and equipment. Transcarpathia purchases foreign raw materials for its textile and clothing industry and sells garments and finished goods abroad. It largely draws upon its own resources to export timber and wood products, wine, mineral water, salt and the like. Approximately a third of Ukraine's furniture exports are estimated to come from Transcarpathia. The region's foreign trade balance has been slightly positive in recent years.

The most important external trading partners are *Austria*, Germany, Hungary, Italy, Slovakia, the Czech Republic, the U.S.A. and the Russian Federation.¹⁾ Transcarpathia is an important net provider of services, in particular transport services, to its foreign partners. As of end-1999, total accumulated foreign direct investment in Transcarpathia amounted to USD 73.8 million. By end-March 2001 it had grown to USD 91.5 million.²⁾

1 *In the first quarter of 2001, 23.1% of Transcarpathia's exports went to Austria and 22.1% of its imports came from Austria. Germany was the destination of 25.3% of the region's exports and the source of 19.4% of its imports. Hungary took 20.0% of its deliveries and generated 23.0% of its purchases. Italy follows with 7.3% and 9.6% respectively. – See: Derzhavniy komitet statistiki Ukraini – Zakarpatske oblasne upravlinnya statistiki (2001, pp. 103–104).*

2 *In contrast, as of January 1, 2001, total registered FDI (investment contracted/pledged but not necessarily already realized) came to USD 162 million. – See: Zakarpatska oblasna derzhavna administratsiya (2001a, p. 42).*

The most important branches of FDI were timber and wood processing, the food industry, domestic trade, the textile and leather industries and light industry. Hungarians, Americans, Austrians, Germans, Slovaks, Czechs and Russians are the major foreign investors. The largest and most renowned FDI ventures are the following: “Fischer-Mukachevo” (production of skis and hockey sticks), Eno-Mebli Ltd (located in Mukachevo; furniture), Sten Ltd (located in Mizhgyrya; sawn timber, furniture), MOL-Zakarpattya (filling stations), Green Ray (canned food), Skilur (wine), Le-Go Ukraine (located in Chop; sewing goods, women’s clothes), Henkel-Uzhgorod Ltd (laundry detergents and domestic chemical products), Sanders-Vinogradovo (textile clothes). As of mid-2001, a project of Skoda Auto (a Czech firm owned by Volkswagen) and Avtotrading (a Ukrainian company) was in preparation to set up an assembly plant of Skoda cars in Transcarpathia. The plant was to launch production in the fall of the year.

In recent years, the Ukrainian authorities have attempted to render Transcarpathia more attractive for domestic and foreign investors by creating some fiscal investment incentives. At the beginning of 1999 the “Law on the Special Regime for Investment Activity in the Transcarpathian Oblast”¹⁾ came into force. This law grants special tax and customs privileges to investors who realize investment projects worth at least USD 250,000 in priority fields of economic activity as defined by the Council of Ministers of Ukraine. The law is valid for activities in the entire area of the oblast. The latter is not the case with respect to the “Presidential Decree on the Special Economic Zone ‘Zakarpattya,’”²⁾ which was issued at the end of March 2001. This piece of legislation defines a territory of about 740 hectares comprising part of the border town Chop as well as places in Uzhgorod and Mukachevo (the airport and railroad interport). Upon registration as a subject of the Special Economic Zone (SEZ), the investor can claim specific profit tax, personal income tax and value added tax reductions as well as exemptions from customs duties for economic activities and processing carried out in the zone and imports and exports connected with these.

Table 3

Structure of FDI¹⁾ in Transcarpathia

as of April 1, 2001

	USD million	%
Total:	91.54	100
of which:		
food processing industry	20.17	22.0
wood processing	18.95	20.7
domestic trade	17.93	19.6
textile and leather industry	10.02	10.9
production of machines and electrical equipment	4.08	4.5
hotels and restaurants	2.92	3.2
transportation	2.13	2.3

Source: Derzhavnyi komitet statistiki Ukraini – Zakarpatske oblasne upravlinnya statistiki: *Ekonomichne ta sotsialne stanovishche zakarpatskoi oblasti – Statistichnyi byulleten za sichen-krvten 2001 roku, Uzhgorod 2001*, pp. 85–86.

¹⁾ Cumulated.

- 1) *Zakon Ukraini pro spetsialniy rezhim investitsiynoi diyalnosti u Zakarpatskiy oblasti (1998).*
- 2) *Ukaz Prezidenta Ukraini pro spetsialnu ekonomichnu zonu “Zakarpattya” (2001).*

Table 4

The Most Important Foreign Investors in Transcarpathia**as of April 1, 2001**

	USD million	%
Total	91.54	100
of which:		
Hungary	16.40	17.9
U.S.A.	15.71	17.2
Austria	12.80	14.0
Germany	11.61	12.7
Slovakia	9.08	9.9
Ireland	5.95	6.5
Sweden	3.20	3.5

Source: Derzhavnyi komitet statistiki Ukraini – Zakarpatske oblasne upravlinnya statistiki: *Ekonomichne ta sotsialne stanovishche zakarpatskoi oblasti – Statistichnyi byuletyn za sichen-kviten 2001 roku, Uzhgorod 2001, p. 87.*

As of August 2001, the investment law of 1999 has reportedly already been applied to more than 50 investment projects, whereas the SEZ decree has attracted pledges amounting to about USD 11 million. Given the very short period of validity of the SEZ decree, this small figure cannot yet be judged as disappointing. The oblast authorities expect additional capital expenditure of around USD 50 million in the year 2001 to be triggered by the special legal conditions for investment in Transcarpathia.¹⁾

3.5 Tourism and Recreation

Given the beauty of its natural endowments, Transcarpathia certainly has a rich potential for tourism. The diversity of the landscape, vast forestlands, mountains, scenic river valleys, puszta-like plains and a temperate continental climate create conditions for year-round recreation, including skiing in winter. Ample mineral and thermal water resources have contributed to the development of health care and medical institutions. As referred to earlier, a modest infrastructure of tourist centers and sanatoria already emerged in Soviet times. Its geographic location makes Transcarpathia relatively easily accessible for car, bus and train tourists from e.g. Hungary, Slovakia, Poland, Austria and the Czech Republic. According to official information, some 300,000 people (mostly domestic tourists) visit Transcarpathia every year.²⁾

But since the collapse of the USSR it appears that the tourist and health care infrastructure inherited from the Soviet era has not received much investment. Transcarpathia's share in the total number of places in sanatoria and rest facilities with medical care in Ukraine is reported to have steadily declined from 1990 (2.9%) to 1999 (2.6%). On the other hand, the region's share of hotel beds increased in the second half of the 1990s. One of the reasons for the lack of investment in Soviet-era infrastructure appears to be that many of these facilities are owned by or assigned to the labor unions, which used to administer them (almost free of charge to patients) in the past but which now do not seem to have sufficient means at their disposal to finance necessary renovations and capital expenditures.

¹ Zakarpatska oblasna derzhavna administratsiya (2001a, p. 43).

² Zakarpatska oblasna derzhavna administratsiya (2001b, pp. 45–46).

This property rights situation has also contributed to blocking outside and foreign investment. The upper Tisa valley (in the southeastern corner of Transcarpathia around Rakhiv and Yasinya), which could eventually be a thriving ski and summer alpine holiday area comparable to e.g. Zakopane in Poland or Bled in Slovenia, has seen virtually no investment in recent years and a vast drop in numbers of visitors since the end of the organized sanatorium system (Boss, 2001, p. 29). However, today at least some sanatoria in the oblast partly work on a commercial basis, with visitors paying for their stays.

Bureaucracy is certainly an important factor confronting (foreign) investors in the region. Some elements of tourist infrastructure may need to be substantially overhauled or (re)created from scratch. There are few tourist offices (relegated to the biggest towns), and the few existing tourism brochures, leaflets and publications on interesting sights and places can be very hard to come by. On the other hand, some new private hotels, bed & breakfast establishments and restaurants have been springing up here and there. Prices are modest, and amateurism in service can be compensated by enthusiasm.

All in all, Transcarpathia with its natural treasures and relatively clean environment today presents itself in a pioneer stage of tourism development. While the old structures no longer function properly, new ones have yet to take their place. Obviously, huge efforts will be needed to improve the sector.

4 Outlook: Transcarpathia, Ukraine and EU Eastward Enlargement

The accession of Transcarpathia's western and southern neighbor countries to the EU is bound to considerably alter economic conditions for the oblast and its population. Hungary, the Czech Republic, Slovakia and Poland can be expected to join the Union just a few years from now. Romania may follow sometime after that. At least in the medium term, accession can be expected to generate additional economic growth in the new EU members. Ukraine and Transcarpathia stand to benefit from spillover effects of this additional growth. Transcarpathia borders on regions within the just mentioned countries that feature below-average income and above-average unemployment levels – regions that thus are relatively poor (Roemisch, 2001, pp. 6, 8). The prospect that the accession countries and their regions adjacent to Transcarpathia will receive at least some structural funds from Brussels should have a specific positive impact on demand for Transcarpathian and other Ukrainian goods and resources. On the other hand, the prospect of being left out of the integrating zone may likewise entail sizeable exclusion and trade diversion effects, especially for a “border economy” with the structural characteristics of Transcarpathia.¹⁾

As mentioned in section 3.3, upon joining, future Member States will be asked to prepare for joining the Schengen zone and thus to introduce visa

¹ Regarding the overall effect, according to theory “even the excluded country can gain in absolute welfare terms – if the growth effects of integration are strong and insider-outsider trade costs are low,” as Manzocchi and Ottaviano (2001, p. 246) put it.

requirements for Ukrainians and other citizens of CIS countries. The Czech Republic and Slovakia already introduced their visa regimes in mid-2000; Slovakia softened its regime somewhat at the beginning of 2001. Hungary and Poland have not yet introduced visa regimes. If estimates of the oblast administration that the informal sector (particularly shuttle trade and illegal workers) accounts for a 50% share of total exports and of income of the region are accurate, a Schengen-type closing off of the border between the enlarged Union and Ukraine could have detrimental effects on the material well-being of Transcarpathians and western Ukrainians. These effects in the worst case could even spill over into a political destabilization of border regions. The impact would, of course, be less harmful if at least some of the shuttle trade and other informal activities were able to “evolve” quickly enough into “normal” wholesale/retail trading sectors, possibly with the financial help of Hungarian and other capital.

There appears to be no empirical study that tries to gauge or forecast the effect of EU enlargement plus Schengen border controls on Transcarpathia and western Ukraine. Moreover, Transcarpathia’s situation and characteristics do not seem to be readily comparable to those of regions adjacent to former EU entrants, like western Hungary or southern Bohemia and Moravia with respect to Austria or northwestern Russian oblasts with respect to Finland.¹⁾

In any case, the question arises of whether economic exclusion effects can be countered or alleviated. Since, at least in the medium term, it will probably not be possible to do away with the Schengen visa obligations, any realistic efforts of the authorities would have to be directed toward improving the border-crossing infrastructure and enhancing its efficiency as much as possible. This might be achieved in different ways. Visa conditions could be made less restrictive and visa fees cut, at least for inhabitants of bordering territories (along the lines of the recent Slovak measure, but bolder). A number of additional border-crossing points could be opened and existing ones modernized, new consulates set up, bureaucratic procedures (where they exist) streamlined, the costs of issuing Ukrainian passports could be reduced and similar measures taken. Upgrading and increasing the suppleness of border-crossing infrastructure will certainly require financial assistance from the EU. Via Phare and Tacis programs, this assistance should be offered to staff and facilities on both sides of the future eastern border of the Union. Some first efforts in this respect have already been undertaken within the framework of the Tacis Cross Border Cooperation Program,

1) For example, a comparison of the effects of EU accession and imposition of the Schengen regime by Austria (in the mid-1990s) on western Hungarian komitats with the impact of future accession and adoption of Schengen controls by Hungary on Transcarpathia would be misleading for a number of reasons. In the mid-1990s Hungary already had a free trade agreement with the Union (as part of its “Europe Treaty”), whereas Ukraine is far away from such an agreement. Western Hungary was much more integrated via formal economic ties, e.g. FDI, with Austria and Western Europe than Transcarpathia is today with Hungary. On the other hand, illicit trade and labor of western Hungarians in Austria was evidently less developed than the respective activities of Transcarpathians in Hungary today. Finally, the visa regime that Austria applied to Hungarians was in fact less restrictive than the one that the Hungarian authorities will probably be asked to subject Ukrainians to (or the one that the Slovak authorities have already introduced).

which was launched a few years ago and covers regional jurisdictions in CIS countries on the eastern side of the border (including Transcarpathia). But according to a report by the European Court of Auditors, the program has had very little impact so far and has suffered from delays, inadequate financing, lack of coordination with the Phare programs for candidate countries and other administrative obstacles.¹⁾

The “Carpathian Euroregion,” founded in 1993, constitutes an organization aiming at improving transborder cooperation between adjacent administrative areas along or near the Carpathian mountain chain in five countries (Hungary, Poland, Romania, Slovakia and Ukraine). One of more than 100 “Euroregions” today, it was the first such entity founded only by Central and Eastern European countries. With the Transcarpathian oblast lying in the center of the Carpathian Euroregion, the latter may present an adequate forum for attempts to strengthen the border-crossing infrastructure. In contrast to the aforementioned individual EU programs, the Carpathian Euroregion covers jurisdictions on *both* sides of the border. Unfortunately, so far the Euroregion has not been very successful in intensifying transborder connections and relations (Duleba, 2001, p. 13; Verseck, 2001).²⁾ Its activities do not appear to be high on the priority agenda of its member states. Perhaps EU eastward enlargement and its implications will make the entity’s activities more dynamic. But for this to happen, the Euroregion would probably need more encouragement and coordinated support from the EU itself (Batt and Wolczuk, 2001). The Carpathian Euroregion and other such entities straddling the eastern border of the enlarged Union could even provide a kind of decentralized institutional framework for EU regional “outreach” activities of various kinds to facilitate life in the borderlands.

Another element that could improve links between the enlarged EU and Transcarpathia and the rest of Ukraine would be the realization of the European Transport Corridor no. 5, linking Trieste, Budapest, Lviv, Kiev and Volgograd. In Transcarpathia and Ukraine, this project has not yet gotten off the ground, given the necessity to rehabilitate the existing Chop-Kiev highway and to renew the railroad line Lviv-Chop. Highway operating concessions to foreigners (as granted in Hungary) are not yet possible under Ukrainian legislation. A credit agreement between Ukraine and the EBRD according to which the EBRD will provide a loan of EUR 75 million to finance modernization of the Chop-Kiev highway was signed in December 2000, but has not yet become operable because Ukraine has not fulfilled all conditions attached to the loan.³⁾ Two public enterprises were established a few years ago to facilitate goods transportation across Transcarpathia (and further through Ukraine): the automobile terminal Avtoport Chop (situated

1 For instance, work on improving the Zahony-Chop border-crossing point between Hungary and Transcarpathia/Ukraine (see map) only started in October 2000. See Europe Information service (2001).

2 For more general information on the Carpathian Euroregion and its activities, see Illes (1996); Slovakia: Foundation announces Carpathian Euroregion programs for 2001. SITA – Slovak Press Agency, March 5, 2001; <http://www.carpathianfoundation.org/languages/en/tcer.php>.

3 Transport – Cabinet Intends to Reform Financing of Roads. Ukrainian News, October 20, 2001.

in the SEZ “Zakarpattia”) and the firm Zakarpatinterport, which supplies various types of transport services.¹⁾

In the long term, the visa issue may not be the decisive factor for the future of the Ukrainian “gateway,” “window” or “bridge” to Europe, as Transcarpathia is often called. Informal or illegal activities should not constitute a main pillar of any economy, although the future visa regime may also hamper some legal commercial activities. Schengen or not, major advantages of the oblast remain: its strategic transport location extending into central Europe, the beauty, originality and relative cleanness of its natural environment, its very low wage level (even in comparison to central European countries), combined with a good general level of education of the partly multilingual population.

These are strong arguments in favor of sizeable foreign direct investment in the region. Looking beyond accession, as new EU member countries converge to and finally “lock into” the euro, Transcarpathia (and Ukraine) could, on balance, find themselves in a position to gain in competitiveness, particularly wage competitiveness vis-à-vis its immediate neighbors. This follows from the continued exchange rate flexibility that the hryvnia will enjoy compared to the euro. On the other hand, a euro-triggered acceleration of FDI in the new member countries could further increase their productivity lead over Transcarpathia, thereby counteracting any gains in competitiveness via hryvnia depreciation.

The fact that not much FDI has yet found its way to Transcarpathia is obviously linked with the difficult investment climate in the region and Ukraine as a whole. Rendering the “Special Regime for Investment Activity in the Transcarpathian Oblast” more generous and beefing up the SEZ program would help.²⁾ Encouragement from the European Union and from former CMEA trading partners-turned-EU members just across the border, showing from their own experience how things can be successfully done and improved and which things better to avoid, may facilitate the efforts of the central authorities in Kiev to move ahead with economy-wide structural and institutional reforms which could create the preconditions for unblocking investment flows and validating Transcarpathia’s comparative advantages. These measures would need to include simplifying and stabilizing tax legislation and the tax system of Ukraine, enhancing property rights and creditor rights, improving the efficiency of the court system and the reliability of enforcement of law.

1 *Zakarpatska oblasna derzhavna administratsiya (2001a, p. 35).*

2 *This would, of course, only constitute a second-best solution to improving the overall investment conditions in the country at large.*

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O E N B A C T I V I T I E S

Convergence and Divergence in Europe – The OeNB's East-West Conference 2001

This year's East-West Conference took place from November 4 to 6 at the Inter-Continental Hotel in Vienna and was entitled "Convergence and Divergence in Europe." Experiences with convergence and divergence in the European Union as well as the challenges arising during the convergence process of Central and Eastern European countries (CEECs) with the European Union were at the centerstage of this conference. Moreover, the meeting not only focused on convergence at the country level, but also dealt with the development of regions within individual countries.

A sizeable number of key experts, renowned academics and high-level civil servants addressed the conference. The gala dinner speech was held by Leszek Balcerowicz, President of the National Bank of Poland and architect of the Polish transformation program. The speakers engaged in very productive and stimulating discussions, and many participants from the general audience joined the debate when the floor was opened at the end of each session. The conference thus provided a forum for communication and for a lively exchange of views.

Session I: Introductory Session

The conference was opened by OeNB Vice Governor *Gertrude Tumpel-Gugerell*. In her welcoming remarks she outlined the conference program and then went on to sketch important issues concerning the background to this conference. The income-per-capita levels of the CEECs are generally far lower than in the European Union and at the same time far from being homogeneous among these countries themselves. Moreover, in recent years real growth rates in the accession countries stood at relatively moderate levels; unemployment rates are still high or have increased even further in some countries. Gertrude Tumpel-Gugerell maintained that economic policy should aim at fostering real growth in a stability-oriented environment and warned against taking premature efforts to comply with Maastricht nominal convergence criteria.

The first session, chaired by Gertrude Tumpel-Gugerell, started with an overview of the history of convergence and divergence in Europe, presented by Ivan T. Berend, Professor at the University of California Los Angeles. At the turn of the 19th century, the Industrial Revolution in the West generated a rapid and sustained real growth of 2% to 4% per annum (instead of the typical 0.2% to 0.3% preindustrial revolution growth). The gap between the rapidly moving, locomotive-driven core and horse-driven trudging peripheries widened tremendously during the first sixty years of the 19th century. The only former peripheral region to miraculously gain economic power – after eradicating illiteracy and establishing a modern society and legal-constitutional system – was Scandinavia during the last third of the 19th century. Import-substituting industrialization, which was characteristic of peripheral countries in the period between the two World Wars, did not help them close up to the West, which underwent a profound technological and structural modernization process. In recent decades, in the case of some of the former peripheral countries that are now new members of the European Union, in particular Spain and Ireland, the participation of multinational corporations in economic activity has been decisive for the catching-

up process, with the EU structural and cohesion funds helping eliminate regional lags. Ireland and the Mediterranean countries made spectacular adjustments. They are well on their way to closing up to the western core countries. A united western and southern Europe is in the making. With successful changes in their economic systems, with macroeconomic stabilization and privatization, the western rim of Central and Eastern Europe, i.e. Estonia, Poland, the Czech Republic, Slovakia, Hungary and Slovenia, not only recovered from the deep crisis of the early 1990s, but made good progress in restructuring their economies and introducing modern technology. These countries are likely to be able to join the European core in 10 to 25 years' time.

Vitor Gaspar, Director General of the European Central Bank, lectured on the topic of "The Impact of Monetary Union on Market Integration," based on a paper jointly prepared with *Francesco Mongelli*, advisor at the European Central Bank. Gaspar singled out three key areas of interest, namely trade, prices and financial markets. With respect to the impact of EMU on trade, strong increases in intra-euro area trade are predicted by gravity models which show that the impact of a common currency is an order of magnitude larger than the effect of reducing a moderate exchange rate volatility to zero, while retaining separate currencies. The impact on prices, theoretically founded in the Law of One Price, appears to be visible in a reduced volatility of relative prices across borders, as border effects are reduced to 20% of their previous levels. This indicates significant effects of EMU on price determination. However, geographical distance still matters for price formation. With respect to financial markets, tests based on the Feldstein-Horioka criterion of international financial integration point towards greater integration of financial markets within the euro area. Further evidence of integration is found in small interest rate differentials. Additional effects of EMU are the increasing importance of sectoral information relative to country information in the determination of equity returns. In general, *Vitor Gaspar* pointed out that it would be premature to draw any strong policy conclusions from the research in this field, since time series are still too short to provide definitive answers. In particular, it is difficult to identify a distinct euro effect in the data. The question and answer session focused on the question whether a fast entry of EU accession countries to the euro area might imply gains in terms of trade, prices and financial markets that would outweigh the costs of output losses expected from quickly diminishing inflation rates.

Session II: Past Convergence Within the European Union

Session II focused on past convergence within the European Union and was chaired by *Peter Mooslechner*, Director of Economic Analysis and Research at the OeNB. The session started with a presentation on "Growth, Convergence and EU Membership," delivered by *Maria Antoinette Dimitz* and *Doris Ritzberger-Grünwald*, economist and Assistant to the Head of Division, respectively, of the OeNB's Foreign Research Division, who presented a paper written with *Jesús Crespo-Cuaresma* from the University of Vienna. The study examines the impact of European integration on the long-term growth of the current EU Member States. The econometric estimation of this impact was

performed by means of panel data methods. In their study, the authors find a significant positive effect of the length of EU membership on long-term economic growth. This result appears to be inconsistent with neoclassical exogenous growth theory, according to which economic integration does not have a lasting impact on growth. While previous empirical studies have tended not to find any such growth bonus of economic integration among countries, the authors even find that the positive effect is higher for countries with an income level that is below an estimated threshold. This asymmetric growth bonus can thus be interpreted as a convergence-stimulating effect of EU membership on long-term growth. The authors suggest that technology spillovers are an important underlying factor of this growth bonus associated with EU membership. However, other factors, such as the stabilization of expectations within the framework of the European Exchange Rate Mechanism or changes in the institutional framework triggered by European integration, may also have played a role. As the study is based on historical data for the current EU Member States, direct policy implications for accession countries are limited. The fact that the income levels of all candidate countries currently lie below the estimated threshold may suggest that these countries would disproportionately profit from EU membership. However, the structural and institutional differences in these economies as compared to the current Member States are still huge in some cases. In the discussion the question was raised whether the equation could have been tested with other variables. Another issue was that financial flows from the EU had not entered the equation, which, as the authors pointed out, was mainly a problem of data availability.

Concerning determinants for successful regional developments in catching-up countries, *Angel de la Fuente*, Professor at the Universidad Autónoma de Barcelona, presented his study "On the Sources of Convergence: A Close Look at the Spanish Regions." This paper investigates the sources of productivity convergence using panel data for the Spanish regions. The underlying growth concept the author applies in his work is that of beta convergence. As a framework, he developed a simple descriptive growth model that allows for factor accumulation, technological diffusion and rate effects from human capital while including fixed regional effects to allow for unobserved factors. His results indicate that technological catching-up, the equalization of educational levels and the redistribution of employment across regions account for most of the observed reduction of regional disparities. He also found that, even after checking for factor stocks and flows as well as technological diffusion, very significant cross-regional differences in estimated TFP (total factor productivity) levels remain, which indicate that important variables must have been omitted and that a more disaggregated analysis would be necessary.

Under the heading of "The Restructuring of Industrial Regions Within the Present EU: The Case of Styria. Comments on Lessons for Other Regions," *Michael Steiner*, Professor at Karl-Franzens-Universität Graz and Director of Joanneum Research, compared industrial regions in the CEECs to the situation of old industrial areas in Austria 15 or 20 years ago, when it became obvious that their production processes were outdated. This was

demonstrated using the example of Styria, which had been a stronghold of Austria's nationalized manufacturing industries and therefore was hit seriously by the decline of certain sectors and, as he argued, showed high similarity to other structurally weak regions in today's Europe. He argued that the vulnerable economic structure in Styria was not only the result of managerial shortcomings, but also a consequence of policy failures. As examples for strategies and instruments to restructure industrial regions, Michael Steiner mentioned mergers and concentration, decentralization and the improvement of infrastructure. By way of conclusion, he stated that first, successful economic adjustment called for new policy strategies and instruments (described by the key words of "clustering" and "networking"); second, the process of convergence was similar in some regions of the CEECs to that of Styria in that certain institutional preconditions are required; and third, that the evolution of regions was not an automatic process. In the question and answer session that followed, Steiner stressed that the process of knowledge transformation would have to play a key role in the successful enlargement of the European Union.

**Special Topic: German Reunification –
A Special Case with General Lessons?**

Karl-Heinz Paqué, Professor of International Economics at Otto-von-Guericke University Magdeburg, presented a lecture on the state of the East German economy 11 years after German reunification. His paper was entitled "German Reunification: A Special Case with General Lessons?" Paqué pointed out that in the period from 1990 through 1996, the process of convergence of East Germany's productivity levels to those in West Germany was very fast. The private sector was restructured rapidly and the infrastructure was quickly reorganized with the help of investments from the united German government. However, since 1996, labor productivity has stagnated at only two thirds of the level of West Germany. East German manufacturing goods lacked innovative originality and the quality required to compete at an international level. Large-scale industrial decline as well as high unemployment were the results. In his view, East German manufacturing is still too small, too little export-oriented as well as too little geared toward producing highly innovative product ranges ("innovation gap"). Karl-Heinz Paqué presented two policies that might be able to close this gap: attracting enough innovative direct investment from West Germany ("knowledge import") and developing an endogenous innovative industrial base in the region ("knowledge creation") to reduce the very high mobility of skilled labor. In his view, there are two options for developing the East German economy's innovative capacity: first, the redirection of tax incentives and subsidies away from supporting general purposes and toward promoting commercial R&D activities in the East, and second, the continuation of fiscal support to the East to promote universities and public research institutions. Karl-Heinz Paqué concluded that a number of general lessons could be drawn from the German post-reunification experience: first, full convergence of post-socialist economies with Western productivity levels could not be expected for a long time to come; second, the proximity to western industrial centers

would not only have advantages, but also disadvantages in terms of high inter-regional labor mobility, which, in turn, could lead to a brain drain; third, to foster a sustainable catching-up process, it was important to close the innovation gap.

Keynote Speech: Theoretical Underpinnings of Growth and Convergence

The keynote speech was delivered via a live teleconference from New York by *Xavier Sala-I-Martin*, Professor of Economics at Columbia University, on the topic of “Growth and Convergence: Theoretical Underpinnings.” The lecture aimed at giving three reasons why convergence was of interest, alongside with a restatement of the main definitions involved. First, advances in the field of growth theory at the beginning of the 1990s raised a renewed interest in the empirics of growth. The goal was to test the new endogenous growth theory against the old neoclassical model, since the old growth theory, unlike the new one, predicted convergence across countries. The result was that beta convergence, i.e. a negative relationship between the level of income and the rate of income growth, does not hold, but conditional beta convergence, i.e. a negative relationship between the level of income and the rate of income growth controlling for variables which characterize the steady state of the economy (for instance, the savings rate), does hold. This result was also confirmed when tested at the level of European regions. The second reason for the renewed interest in convergence was the evaluation of government policies. Xavier Sala-I-Martin pointed out research indicating that the increase in cohesion funds in the 1990s had coincided with the slowdown of convergence across European regions, thus constituting a policy failure. The third reason is related to globalization and so-called anti-globalization criticism. A further measure of convergence is sigma convergence, i.e. the change in the degree of income-per-capita dispersion, which was shown to have increased over the last decades at a global level of aggregation when taking countries as units of analysis. But when considering people as units of analysis, sigma convergence did take place mainly owing to rapid real growth in India and China. The question and answer session focused on various growth-influencing factors including the diffusion of technology, the absorptive capacity of poor countries for new technologies, problems related to the diversion of resources by governments and the role of multinationals in innovation. Moreover, the usefulness of measuring convergence on the basis of “gross domestic product” was questioned.

Session III: The Accession Countries’ Achievements in Real Convergence to the European Union

Session III focused on the Central and Eastern European EU candidate countries’ achievements in real convergence since the beginning of transition and was chaired by Pierre van der Haegen, Director General at the European Central Bank. The session began with a presentation on “Catching-Up and Structural Change,” delivered by *János Gács*, Project Leader at the International Institute for Applied Systems Analysis (IIASA). He analyzed major macro-level changes on the production and utilization sides of GDP as well

as structural changes in the industrial sector. The most important development on the production side of GDP has been the substantial reduction of previously overdeveloped industrial activities on the one hand and the emancipation of service activities on the other. Restructuring measures in manufacturing varied substantially across the candidate countries. Good performance in the phase of output recovery was not necessarily associated with large structural shifts. Even if a large share of “screwdriver operations” in multinational networks may distort the picture of manufacturing structures, the countries that attracted the largest part of FDI either managed to achieve high structural shifts in their industries or to develop subsectors with potentially high unit values, or both. On the utilization side of GDP, János Gács noted that substantial fluctuations had taken place. The expectations, however, that high domestic savings rates and relatively high domestic investment ratios would support the evolving real convergence process have been realized only in a few countries. Moreover, in some of these economies substantial proportions of domestic savings were wasted because of banking sector problems. This development emphasizes the importance of utilizing foreign savings, particularly in the form of direct investment, which is also crucial for sustaining the large efficiency gains dominating the period of recovery from 1995 to 1999.

Jozef Konings, Professor at Katholieke Universiteit Leuven and Director of LICOS, presented an analysis of the restructuring of industrial firms in Poland and Romania based on firm-level data. First, he introduced some aggregate restructuring measures, taking the degree of gross job creation, destruction and reallocation in an economy as a proxy. Next, in his investigation of firm-level restructuring, he drew a distinction between defensive restructuring (mainly proxied by labor shedding) and strategic restructuring (measured by investment). He showed that restructuring was a very heterogeneous process in which both defensive and strategic reorganization takes place even within narrowly defined sectors. The focus on strategic restructuring was stronger in Poland, whereas the extent of defensive restructuring was higher in Romania, where the restructuring process had started later. Other important findings of Konings’ presentation may be summarized as follows: (i) large firms are more likely to engage in defensive restructuring and less likely to engage in strategic restructuring; (ii) firms with higher output levels have lower levels of defensive restructuring and higher levels of strategic restructuring; (iii) firms operating in export-oriented sectors engage less in defensive restructuring and tend to favor strategic restructuring; (iv) import penetration and concentration levels have no effect on restructuring; (v) private firms engage in more defensive and more strategic restructuring, with foreign-owned firms achieving a higher extent of restructuring than domestic-owned companies.

Roman Roemisch, research economist at The Vienna Institute for International Economic Studies (WIIW), analyzed the development of regional disparities within the accession countries. He showed that there were large disparities between the regions around capital cities and other regions in the respective countries. In general, the former display significantly higher levels of GDP per capita as well as much more favorable unemployment rates than

the latter. Moreover, he showed that regional divergence had, in recent years, increased in accession countries, which is mainly attributable to a boom in the various capital cities, whereas the other regions had almost remained constant in their respective positions. Roemisch also analyzed the problem why certain regions perform better in economic terms than others. According to his analysis, the most important factor in determining the stage of a region's development was its economic structure, which was, in most cases, inherited from the past communist era. Regions with large (and noncompetitive) industrial or agricultural conglomerates had low levels of GDP and high levels of unemployment, whereas regions with a mix of industries (including light industry) or a large share of services enjoyed a considerably better situation. Another factor that influenced the regions' economic performance was the distance to western borders. Regions that lie closer to the West generally have – *ceteris paribus* – higher levels of GDP and lower levels of unemployment. Moreover, capital cities themselves generated positive (although small) spillovers for their surrounding areas. In addition, agglomeration effects exerted significant and positive influences on regional GDP and unemployment levels. Regions where production was concentrated or which were able to offer a relatively large market were able to exploit positive spillovers, economies of scale and economies of scope, networking externalities as well as increasing forward and backward linkages in production.

Jarko Fidrmuc, economist at the OeNB's Foreign Research Division, and *Iikka Korhonen*, economist at the Bank of Finland Institute for Transition Economies, presented a joint paper on the correlation of supply and demand shocks between the euro area and EU accession countries during the 1990s as well as on the corresponding correlations for most present EU countries. Supply and demand shocks were recovered from structural vector autoregressive models. According to the authors, in the case of the accession countries, the correlation of supply shocks differs greatly from country to country. Some countries are at least as well correlated with euro area shocks as many current EMU members are. The three countries with the highest correlation of demand and supply shocks are Estonia, Hungary and Poland. Fidrmuc and Korhonen argued that this may be explained by the fact that these countries received the highest level of foreign direct investment on a per capita basis among the accession countries and that they have very extensive trade relations with the euro area countries (and the EU in general). The authors also showed that Hungary has a high correlation of demand shocks as well. For many other accession countries, the degree of correlation is clearly lower. This holds even for a number of advanced transition countries. The results for the present EU members showed a different picture than a number of previous studies which mainly used data up to the beginning of the 1990s. The authors find in particular that some countries previously considered "peripheral" (such as Italy and Portugal) are actually quite highly correlated with euro area shocks. Moreover, many present euro area members are rather correlated with French than with German shocks.

Session IV: How to Balance Real and Nominal Convergence in the Accession Countries

Session IV was devoted to the issue of how to balance real and nominal convergence in EU accession countries in general, focusing in particular on examining the challenges for monetary and exchange rate policies in the convergence process. The session was chaired by *Peter Mooslechner*. It was organized as a round table with the Heads of Research of six accession countries' central banks, thus opening the possibility for active and original inputs by representatives from the CEECs.

In his introductory statement, Peter Mooslechner sketched some of the interrelations between real and nominal convergence, highlighting, *inter alia*, that risks for real growth (temporarily) may well result from premature efforts toward achieving full nominal convergence very quickly. In addition, the process of real convergence will probably be accompanied by further strong capital inflows. Under a currency board arrangement, such capital inflows may lead to inflationary pressures via additional money supply growth, while under a floating exchange rate regime they may introduce significant exchange rate movements. When assessing the degree to which the countries represented in the session already fulfill the optimum currency area (OCA) criteria, Mooslechner raised the question of whether the actual entrance into the European Union's internal market would constitute a significant asymmetric shock despite the existence of free-trade provisions under the Europe Agreements.

Aleš Čapek, Executive Director of the Monetary Department of the Czech National Bank, pointed out that real convergence was a long-term process. This implies a trend real appreciation, which is an equilibrium process and may amount to 2% to 3% per annum. However, real appreciation may also be driven by other factors, such as price deregulation and indirect tax increases. How real appreciation manifests itself depends on the exchange rate regime. Under a fixed rate, it will show up as higher inflation. Under a floating rate, it may also come as nominal appreciation. In the run-up to E(M)U participation, the Czech Republic, which follows an inflation targeting strategy, intends to combine a modest nominal trend appreciation with a small inflation differential to the euro area. After accession to the euro area, fiscal policy will be the only macroeconomic policy tool for aggregate demand management. It is thus of paramount importance to increase the maneuverability of fiscal policy, which is currently still limited in a number of respects.

Uroš Čufer, Director of the Analysis and Research Department of the Bank of Slovenia, stressed that Slovenia already fulfilled the standard real convergence benchmarks for participation in a monetary union. However, further progress in this area would still be highly welcome. There is no long-term conflict between nominal and real convergence, as the long-run Philips curve is vertical. The central bank can foster convergence by aiming for price stability, strengthening banking supervision and avoiding major and/or lasting macroeconomic disequilibria.

Paweł Durjasz, Director of the Research Department of the National Bank of Poland, stated that the real convergence challenge for Poland was bigger

than for other advanced accession countries, as the GDP-per-capita ratio was still relatively low, while Poland was more advanced on the way toward nominal convergence than the southern European EU countries were at the beginning of the 1990s. In his view, Poland has no alternative to direct inflation targeting at the current stage. Owing to fiscal and labor market rigidities, the recent disinflation leap has been rather costly, but it helped reduce the current account deficit to sustainable levels. The main challenges for the years to come are the Balassa-Samuelson effect (which should, however, not exceed 2% per annum, and should thus not pose an insurmountable problem in terms of meeting the inflation criterion) and the convergence play (the risks of which can be minimized by a gradual lowering of inflation earlier on).

István Hamecz, Managing Director of the Economics Department of the National Bank of Hungary, argued that participation in the euro area was a positive net present value project for Hungary and that the country therefore planned to join Economic and Monetary Union as early as possible (i.e. around 2006). Hungary will grow faster as a member of EMU (by around 0.5 percentage points per annum), while its costs and risks are limited (and have to be compared to the costs and risks of joining later, e.g. on the exchange rate front). The Balassa-Samuelson effect and the inflation it entails will not constitute a major problem for Hungary, as this effect will presumably be relatively limited in size. Hungary is currently more advanced in fulfilling the OCA criteria than the countries of southern Europe were five years before joining the euro area. The same was true, in Hamecz's view, for Hungary's advances toward nominal convergence.

Marián Nemeč, Director of the Institute of Monetary and Financial Studies of the National Bank of Slovakia, sketched the current state of his country on the way to convergence with the European Union. He reported progress in recent years, while also pointing at still remaining weaknesses, in particular in several areas of structural reforms and, relatedly, in the country's fiscal position. Given the uncertainties involved along the remaining path toward convergence, a flexible monetary framework is most appropriate and implicit inflation targeting, the strategy currently followed by the National Bank of Slovakia, appears to be suitable to support further convergence while leaving open the possibility to react to unforeseen developments.

Märten Ross, Deputy Governor of the Bank of Estonia, pointed at the successful functioning of the currency board in Estonia since 1992 and argued that this arrangement was a good option to foster convergence. He maintained that nominal exchange rate stability had not affected competitiveness negatively and therefore not hampered real convergence, either. Estonia will probably have a trend growth of 3 percentage points above EU levels, which will translate into an inflation differential of about 2 percentage points. Convergence, he stated, needed a careful handling of public spending. Furthermore, a long-term strategy was key to coping with the fact that convergence is not a stable process.

The ensuing discussion centered around a number of issues, in particular the appropriate level of medium-term inflation targets, the impact of price deregulation on (short-term) inflation performance and potential risks on the way to further convergence.

Gala Dinner Speech

Leszek Balcerowicz, President of the National Bank of Poland, delivered the dinner speech. He focused on long-term real convergence processes and factors underpinning successes and failures in this respect. Taking a global view, Balcerowicz said that catching-up failures had emerged in most of the non-Western world, in all of Latin America until 1990, in all communist and in many post-communist countries. Among catching-up successes one can name Chile, China, some postcommunist countries and some Asian “tigers.” What are the root causes of failures or a lack of convergence? Most striking seem to be huge public failures: overblown and harmful state interventionism, lack of authority where the state is necessary, namely in the supply of public goods, the rule of law and the protection of capital-owners. As Leszek Balcerowicz put it, typical manifestations of public failures are étatism or its extreme form, communism, the establishment of government firms, protectionism, monopolism, high tax levels, high redistribution, and the like. Some rich countries’ models should not be emulated by developing or transition economies. In Balcerowicz’s opinion, the model to emulate would be the German model of the 1950s, and not that of today. Fundamentally, the question is not that of state or market, the question is what kind of state is appropriate? The most successful type of state would obviously appear to be a rational, limited state that focuses on the efficient supply of public goods, on macrostability and law and order. In this sense, state restructuring should be a central component of market-oriented reforms. All in all, in Balcerowicz’s assessment, Francis Fukuyama was right: You cannot devise a radically better system for growth than a free market system. The victory of free markets and democracy indeed appears to have brought about the “end of history.” What are currently the most important challenges for the European transition economies? According to Leszek Balcerowicz, the countries concerned should limit protectionism, curb imprudent fiscal policies, foster competition and cut subsidies.

Session V: Does the Financial Sector Contribute to Real Growth?

Session V dealt with the question of the financial sector’s contribution to real growth. The session was chaired by *Eduard Hochreiter*, Senior Adviser and Head of the Economic Studies Division at the OeNB.

Joseph Bisignano, Senior Adviser of the Bank for International Settlements, had chosen the heading “Searching for Schumpeter: The Financial Sector and Economic Growth in Industrial Countries” for his presentation on the experiences of developed industrial countries and the importance of the financial sector for real sector developments. According to Bisignano, the Austrian economist Joseph Schumpeter can be associated with endogenous growth theory (“creative destruction”) and with the finance and growth school, which picks up his argument that financial intermediation not only helps encourage savings, but also assists in a variety of ways with efficiently allocating financial capital. He came to six concluding points: First, the elimination of factors leading to so-called “financial repression” is by itself unlikely to contribute much to growth without attention to reform in legal, informa-

tional and corporate governance infrastructures. Second, financial systems appear to be strongly path-dependent and slow to change. Major adjustment often only occurs after a serious financial crisis. Third, to contribute to growth, financial systems need to have the possibility to adjust endogenously. Exogenous regulatory and political constraints which restrict endogenous adaptation can seriously inhibit and even retard economic growth (as e.g. in Japan in the 1990s). Fourth, while there is ample evidence that financial development contributes to growth, a good deal of this relationship appears to work in both directions: growth also encourages financial development. Fifth, there is some evidence to suggest that, for a similar system of creditor and shareholder rights and legal contract enforcement, neither bank-centered nor market-based financial systems have an unambiguous comparative advantage over each other. And last but not least, while there appears to be a sort of evolution from bank- to market-centered financial structures resulting from declines in transaction and information costs, there have been major reversals in the financial structure of some countries which are difficult to explain. In conclusion, the search for Schumpeter and the so-called Solow residual requires a close look at the institutional infrastructure, in particular the judicial system, and at regulations which may constrain the adaptability of markets and intermediaries. In the ensuing discussion the question was raised why there is so much inertia in economic and financial institutions.

Andy Mullineux, Professor at the Birmingham Business School, University of Birmingham, presented a work jointly prepared with his colleague *Victor Murinde* on "Financial Sector Convergence in Europe." Mullineux started his presentation with a brief snapshot of the current situation in the financial sector of the CEECs, which was primarily based on a study by Schardax and Reinger (see Focus on Transition 1/2001, OeNB). He foresees that the ongoing consolidation process of the financial sector in the CEECs will probably end up with a European-style bankassurance system coupled with an increased reliance on capital markets, while domestic stock exchanges will soon have outlived their usefulness in Europe. He stated that he was currently working on an application of econometric tests for (conditional beta) convergence (hitherto popularized in growth literature) to determine whether there has been a shift toward convergence in the banking systems first of the accession countries, and then for a group of advanced accession countries and selected groups of EU countries. Models are specified for each of the main elements on the demand as well as the supply side of the banking sector. While final results of these tests were not available yet, Andy Mullineux presented the results of a previous paper that had applied a similar approach to a heterogeneous group of transition economies (including Russia and Ukraine) in the period from 1993 to 1997. According to these results, the banking systems of the transition economies seem to have converged on the EU model only in certain key aspects of their intermediated roles, while overall convergence still remains to be achieved especially in terms of bank loans to the government as well as regarding the mobilization of time and savings deposits. However, convergence in these areas is likely to result from further capital market developments in the respective countries. Responding to the

question why any beta convergence of financial sectors should be expected, Mullineux pointed to the globalization of financial services and capital markets as the driving force.

Franz Schardax, economist at the OeNB's Foreign Research Division, gave an overview of the state of the financial sector in three advanced transition economies (Czech Republic, Hungary and Poland). He dealt in detail with the funding structure of the private and the public sector and derived conclusions on whether the financial sector had contributed to growth in these countries. For the corporate sector, domestic bank loans are the most important source of external funding in the three countries under review, with foreign loans increasingly gaining importance, while the capital markets' contribution to external funding is negligible. Overall, in relation to gross fixed capital investments, total external corporate funding (1999–2000 average) in Hungary was even higher than in Spain (which served as an example of a catching-up economy within the euro area). The ratio between external corporate funding and gross fixed capital investment was somewhat lower in Poland and far lower in the Czech Republic than in Spain. In contrast to the private sector, capital markets are the most important source of funding for the public sector, with domestic nonbanks and foreign investors playing an important and (with the exception of the Czech Republic) increasing role on the demand side for government debt securities. Based on the ratio between total external corporate funding and gross fixed capital investment, Franz Schardax concluded that the domestic and foreign financial sector was likely to have contributed to growth in Hungary. No firm conclusions could be drawn with regard to Poland, whereas for the Czech Republic the financial sector did not seem to have played a positive role in growth. Future prospects are brighter, however, as banking sector consolidation and privatization have recently been completed. During the discussion the question was raised whether initial public offers (IPOs) as part of the privatization process crowded out equity-based funding for the corporate sector. In answering, Franz Schardax pointed out the strong involvement of foreign investment in these IPOs and the fact that part of the privatization revenues was used to finance fiscal deficits.

Session VI: Prospects of Central and Eastern European Countries Other than Current Accession Countries

Session VI dealt with the issue "Is There Somebody Left Out in the Cold? Prospects of CEE Countries Other than Current Accession Countries." This question relates to a large number of economies situated in two regions, the western Balkans and Eastern Europe (the CIS). While at least some of these countries may eventually join the EU, others will become direct neighbors of the enlarged European Union and thus gain even more importance for the EU than they have now. The chairman of this session, *Michael Landesmann*, Professor and Director of The Vienna Institute for International Economic Studies (WIIW), briefly underlined that disparities in income-per-capita levels between advanced accession countries and other transition countries, including the CIS countries, had increased significantly during the 1990s.

Vladimir Gligorov, Professor and Senior Economist at the WIIW, who stepped in at short notice as a substitute for George Stubos, adviser to the Bank of Greece, who unfortunately had to cancel, focused on the western Balkans (Albania, Bosnia-Herzegovina, Croatia, Macedonia and the Federal Republic of Yugoslavia) and the wider area of south-eastern Europe (also including the accession candidates Bulgaria and Romania). The entire region is extremely heterogeneous, with many countries burdened by widespread poverty and unemployment, various macroeconomic disequilibria, slow structural adjustment, limited competitiveness, weak institutions and an insufficient rule of law. Despite these shortcomings, economic and financial links to the EU are strong. Some of these countries have even unilaterally adopted the euro. But their economic integration is hardly ever accompanied by an integration of values and politics, as Vladimir Gligorov pointed out. This appears to reveal an inconsistency in public preferences in the countries concerned. In his view, the EU has not yet been able to influence this inconsistency in any decisive manner. With the prospect of possible future accession far off, vested domestic interests and corruption may repeatedly maintain the upper hand in struggles to shape economic policy. After a tortuous decade, it was not before 2000 that the entire region registered positive real growth. But this positive result is unlikely to be repeated in 2001 because of the crisis in Macedonia.

The ensuing discussion focused on the high diversity existing within the region, with some countries, e.g. Croatia, recently making strong efforts to move nearer to the European Union and to catch up with the accession countries. Gligorov felt that if the EU's policy toward the western Balkans was more active, e.g. via offers to negotiate Europe Agreements, this would make the prospects of accession more readily visible and would thus contribute to overcoming the aforementioned inconsistency of public preferences.

Hermann Clement, Deputy Director of the Osteuropa-Institut in Munich, spoke of the development of Russia and Ukraine and their relations with the EU. Both countries are rich in natural resources and have a well-trained labor force, but Ukraine lacks Russia's energy resources. Following a long transition crisis, both countries boasted remarkable economic growth rates of 5% to 10% annually over the past two years. Considering the extreme contraction of investment and slow structural changes, sustaining the current level of growth will be a major challenge. While stabilization policies have brought positive results, the two countries cannot expect a significant increase in FDI inflows without accelerating reforms. The EU supports transition in both countries via the Tacis program, the Partnership and Cooperation Agreements, and the Common Strategies. The EU's share in these countries' total foreign trade is far below its corresponding shares in the foreign trade of the accession countries or south-eastern European economies. This is particularly true for Ukraine, which (unlike Russia) does not supply energy to the European Union. Raw materials and semifinished products still dominate the export structures of both countries. Russia, as one of the dominant energy suppliers to the EU, uses pipelines through Ukraine's territory. Energy policy, therefore, plays a significant role in the EU's relations with both countries. With the enlargement of the EU, its share in the overall trade of

Ukraine and Russia will rise by about 7 to 8 percentage points, while the energy component of trade will augment further. Hermann Clement judged calculations of potential Ukrainian and Russian losses through EU enlargement to be exaggerated. Both countries should gain from EU enlargement, particularly in the long term. He added that in his assessment, the most important factor stimulating Ukraine's growth during the past two years was the strong devaluation of the hryvnia.

The discussion centered on the question of why the EU accounted for such a low share in total Ukrainian exports and on possible adverse impacts of enlargement on the Ukrainian economy. Concerning Russia, the proposal to increase domestic savings was criticized on the grounds of the already existing high current account surplus, while capital outflows as well as the highly unequal income distribution were cited as the crucial problems.

In any case, there was overall agreement that the emergence of any new dividing lines crossing our continent should be avoided, that it is in the vital interest of the (enlarged) EU that its strategic neighbors become prosperous countries and that therefore, convergence in a broader sense stretches beyond the European Union's borders.

Luncheon Speech

In his luncheon speech, *Klaus Liebscher*, Governor of the Oesterreichische Nationalbank, stressed the importance of the euro area as an anchor of stability in Europe and in the world. Given the current weakening of global growth, EMU, among other factors, contributed to avoiding possible exchange rate or financial tensions in Europe. Perseverance in structural reforms of product, capital and labor markets is necessary to sustain the euro area's strength. According to Klaus Liebscher, the topic of the 2001 East-West Conference, "Convergence and Divergence in Europe," is pivotal with regard to the historical integration process in Europe. Central and Eastern European transition and the preparation for EU accession are largely about convergence in a very broad sense. Institution-building and human capital formation are proceeding in these countries. Per capita incomes remain much lower in most "transition economies" than in the present-day European Union, while inflation continues to be somewhat higher on average. In Liebscher's view, the pace of further disinflation in accession countries should be determined in line with the overall economic situation, in particular with the need of countries to increase real convergence. The Maastricht inflation criterion should not be seen as an immediate requirement, but rather as an objective of central banks during the period of ERM II. Prudent accession and enlargement policies will further strengthen the euro as a major and stable cornerstone of the international monetary system.

Session VII: Policy Challenges Within the (Enlarged) EU: How to Foster Economic Convergence

Session VII was designed as a panel discussion concluding this year's East-West Conference. The panel, chaired by *Jean-Pierre Patat*, Director General of the Banque de France, dealt with "Policy Challenges Within the (Enlarged) EU: How to Foster Economic Convergence?"

Val Koromzay, Director of the OECD's Country Studies Branch, presented empirical evidence on cyclical convergence in the euro area during the 1990s. Based on a set of indicators, he compared the classical catching-up countries (Finland, Greece, Ireland, Spain, the Netherlands and Portugal) with the remaining euro area member states, denoted as the core group. High differences in the national inflation rates, which are partly attributable to the Balassa-Samuelson effect, make an appropriate monetary policy more difficult. Euro area-wide coordinated discretionary fiscal policy may here the power to influence the business cycle. National fiscal policy, on the other hand, is not a very powerful tool for dealing with cyclical divergence, as the automatic stabilizers, although working in the right direction, have a very limited impact and leakages through imports by these small and open economies are sizeable. According to Koromzay, the most effective tools are measures to promote labor market flexibility and to foster intra-euro area trade, structural policy and an effective income policy.

Vasco Cal, General Coordinator of the Cohesion Report of the European Commission, summarized the main aspects of the second Report on Economic and Social Cohesion, which was adopted by the European Commission in January 2001. In this report the Commission analyzes the regional disparities in a Europe of 27 Member States and the contribution of Community policies – i.a. structural policies – to cohesion. In spite of visible progress in terms of economic growth resulting from the Structural Funds, many EU regions are still lagging behind. Compared with the present situation, regional disparities would more than double in an enlarged European Union of 27 countries. While there is no doubt as to the continued need to provide assistance to the less developed regions of the EU, the financial aspects and the focus on national or regional development will still have to be discussed in due time before the expiration of the EU's current medium-term financial outlook that covers the period until 2006. The report points out the disadvantages of the present type of zoning and opens up the possibility of indirect zoning to be determined by the individual Member States or of selecting priority topics instead of specific recipient areas.

Judy Batt, Senior Lecturer at the University of Birmingham, argued that the implementation of the Schengen border and visa regime would run counter to fostering economic convergence between regions on both sides of the eastern border of an enlarged European Union. Border trade and temporary work spells on the western side of the border would be hampered and many people in the countries east of the EU's new eastern border would suffer in their economic well-being. In the worst case, Schengen (or even the prospect of the future implementation of Schengen) might spur migration and also foster anti-western attitudes. All this could destabilize the situation in the regions beyond the Union's eastern border, which would, in turn, have a negative impact on the EU's new eastern border regions. Judy Batt called on the EU to rethink its neighborhood policies and to set up a special task force to promote those Euro regions which encompass the eastern regions of accession countries that are likely to join the European Union in a first wave and the western regions of other Eastern European countries like Romania and Ukraine.

Stanislaw Gomulka, Professor at the London School of Economics, started from the proposition that the process of EU and EMU accession carries high risks and challenges for the accession countries, while holding only small risks and challenges for EU incumbents. Moreover, while risks are prevalent in the period up to EU and EMU integration, (large-size) benefits will mainly materialize after joining the euro area. Given their low current saving rates, accession countries will have to tap external savings if they want to grow quickly, or to raise domestic savings substantially, which would, however, hamper growth. A high growth strategy would entail the risk of a boom-bust cycle. For the current members, in turn, EU enlargement would not be very costly, given the small size of accession countries in GDP terms.

The initial statements of the panelists were followed by a lively discussion which focused, on the one hand, on the impact of enlargement on the western border regions of eastern European countries that are not included in (the first wave of) the enlargement process. While several participants shared Judy Batt's concerns, positive effects were also pointed out, in particular spillover effects that will presumably result for these regions from enlargement.

Another hot topic was the Polish convergence process. In particular, there was a debate about the role of monetary and fiscal policies both in the short and in the longer run and on the need to raise domestic savings.

Furthermore, Vasco Cal was confronted with Xavier Sala-I-Martin's critical assessment of the effectiveness of the EU's regional policy. He argued that disparities among EU Member States and among regions of the EU as a whole were reduced during the 1990s, while disparities among regions within individual Member States did indeed increase. However, the reduction of the latter was not an aim of EU structural policy, but had to be pursued by means of the regional policies of individual Member States.

Val Koromzay was asked about the usefulness of the European Union's Stability and Growth Pact in mitigating cyclical fluctuations. He implied that the Pact may be a useful instrument when dealing with fiscal policy-induced shocks. However, in his view, the Pact cannot cope with divergences that are attributable to other reasons and it may, in fact, even dampen the functioning of automatic stabilizers. Therefore, expenditure ceilings instead of the current deficit ceilings should be considered.

Concluding Remarks

The conference was rounded off by *Gertrude Tumpel-Gugerell*. In her concluding remarks, she stressed that economic convergence was not simply an automatic process and that there was a risk of long-term divergence. To avoid the latter, first, there is a need for an appropriate institutional development, in particular of the legal and administrative systems. In the case of the accession countries, these should be strengthened in the ongoing preparations for EU membership. In addition, Tumpel-Gugerell highlighted the findings of Angel de la Fuente that technological catching-up, the equalization of educational levels and the redistribution of employment across regions accounted for most of the observed reduction of regional disparities within the analyzed country, Spain. Second, the discussion on the interrelationship between

nominal and real convergence revealed that there is a range of rather different perceptions and concepts about how to reach these goals, in particular on the balance and interaction between them. Third, a well functioning financial sector is a precondition for dynamic economic growth. Thus, structural changes in the financial sector should promote the financial intermediation of saving to real investment. At the same time, making the financial sector more efficient will improve the effectiveness of monetary policy to achieve a reasonably low inflation rate in that it strengthens the interest rate transmission channel. Finally, Gertrude Tumpel-Gugerell expressed her conviction that the discussions had deepened the understanding of convergence processes in the European Union as well as of the strategic and fundamental challenges that accession and other transition countries are confronted with in their efforts to catch up with the European Union.

Presentation of the Olga Radzyner Award 2001

This award was established in order to commemorate Olga Radzyner, who headed the OeNB's Foreign Research Division until her tragic death in August 1999 and who was the driving force behind building up and expanding the OeNB's array of transition- and accession-related activities. The Award is bestowed on young economists for excellent research focused on monetary and finance issues in economics. This year's winners were:

- *Boštjan **Jazbec** (Slovenia) from the University of Ljubljana*
- *Tomáš **Holub** (Czech Republic) from the Czech National Bank*
- *Tomasz **Piskorski** (Poland) from the European University Institute in Florence.*

Boštjan Jazbec receives this award for his research paper entitled "Model of Real Exchange Rate Determination in Transition Economies," presented at the University of Ljubljana. Tomáš Holub obtains the award for his Ph.D. thesis "Three Essays on Central Banking and Credibility," submitted to Charles University Prague. Tomasz Piskorski is presented with this award for his master's thesis on "Welfare Aggregation of the Heterogenous Agents and the Effectiveness of the Central Bank Stabilization Policies in the Monetary Union," submitted at Katholieke Universiteit Leuven.

Lectures Organized by the Oesterreichische Nationalbank

Lecture by Andrzej Sławinski

The Reactions of the Exchange Rate and Bond Prices to Changing Fundamentals: The Case of Poland

On November 16, 2001, Andrzej Sławinski, Professor at the Warsaw School of Economics and advisor to the President of the National Bank of Poland, delivered a lecture on “The Exchange Rate and Bond Price Reactions to Changing Fundamentals: The Case of Poland.”

In his lecture, Professor Sławinski described the behavior of the exchange rate and bond prices in Poland and their response to changing fundamentals. The first part of the presentation dealt with the movements of the exchange rate of the zloty after its flotation. Subsequently, he analyzed price developments in the Polish bond market.

Professor Sławinski showed that in 1999–2000 the zloty-dollar rate (the U.S. currency plays a dominant role in the domestic foreign exchange market) largely followed the euro-dollar rate. This meant that the zloty was in fact relatively stable against the euro. According to Andrzej Sławinski, this relative stability of the zloty reflected investors’ neutral stance towards Poland. Inflation went up and the current account deteriorated further, but investors assumed that Poland would cope with both problems. The relative stability of the zloty, despite deteriorating fundamentals, appeared to be a kind of credibility dividend earned by the Polish monetary authorities during the 1990s.

The situation changed, however, during the first half of 2001, when a kind of speculative bubble developed, according to Professor Sławinski. In autumn and winter 2000, the economy was slowing down, inflation was receding and the current account started to improve. All this produced strong expectations of interest rate cuts. Bond prices were rising sharply. This uptrend came to a halt in January 2001, when the anticipated cut in interest rates did not materialize. The reductions in February and April were smaller than previously discounted in bond prices. Thus bond prices fell in spite of the fact that interest rates had been lowered. The fall in longer-term bond prices was not accompanied by an outflow of portfolio capital from Poland. Instead, investors changed the structure of their portfolios. They reduced their share in longer-term bonds and stepped up their share in shorter-term bonds and foreign exchange swaps. Accordingly, bond prices were falling, but the zloty was appreciating. The most spectacular symptom of the zloty’s appreciation was that it gained against the dollar despite the (simultaneous) weakening of the euro against the U.S. currency.

Foreign exchange swaps were used to speculate on the appreciation of the zloty. Investors borrowed dollars to buy zloties and sell them in the spot leg of a foreign exchange swap. The net result was a purchase of zloties in forward transactions. The rising demand on the forward market pushed up the zloty’s forward rate. The covered arbitrage caused the spot rate to appreciate in parallel.

This entire situation was a rational bubble. Investors assumed that the zloty would depreciate sooner or later, but speculated on its appreciation, assuming that the probability of the zloty’s value in the future spot market

being above the forward rate was higher than the probability of the zloty falling to a level at or below that of the forward rate, as implied by the interest rate differential.

Two additional factors contributed to the forming of the bubble: First, there was the large interest rate differential, which made against-the-trend speculation very expensive. Foreign exchange dealers could afford only very short-term intra-day speculation to test the appreciation trend. The second factor, which weakened stabilizing speculation, was the prevailing uncertainty on the scale and timing of foreign exchange inflows related to privatization.

The sharp fall of the zloty between July 6 and 11, 2001, resulted in turbulences in the financial markets of Argentina, Turkey and South Africa. After a few days, the zloty stabilized again. Nonetheless, the exchange rate trajectory of the Polish currency was derailed.

In the second part of his presentation, Andrzej Ślawinski addressed the development of bond prices in Poland. In the period from 1999 to 2000, bond prices in Poland exhibited a downward trend. However, they were relatively stable in the sense that they followed the depreciation of the euro against the dollar. This meant that the prices of Polish bonds mainly mirrored the changing value of the dollar, in which the zloty is priced. This reflected investors' neutral sentiment toward Poland, a stance which resulted from their assumption that the Polish monetary authorities would cope with the deteriorating fundamentals.

In the first half of 2001, bond prices ceased to follow the movements of the zloty, as smaller-than-expected cuts in interest rates drove down longer-term bond prices and the zloty witnessed speculative appreciation. The fall in bond prices was stopped in July 2001 because the sharp depreciation of the zloty at that time reduced the exchange rate risk. Since July 2001 the movements of the exchange rate and the bond prices have again correlated. In July, bond prices started to rise sharply despite the information that the budget had deteriorated to an unexpectedly large extent. Rising bond prices resulted from strong expectations of interest rate cuts. The factors producing these expectations were the slowdown in the economy, the fall of inflation to below the bottom of the central bank's inflation target range and the improvement on the current account.

An interesting phenomenon was that in September 2001 bond prices were rising sharply in spite of portfolio capital outflows in the period before the general election. Bond prices were pushed up by falling yields on the London interest rate swap market. Working through the asset swap market, the price arbitrage transmitted the reduction in yields from the interest rate swap market to the bond market. This explains why bond prices went up despite the outflow of portfolio capital.

The final part of Andrzej Ślawinski's presentation consisted of the main conclusions. First, exchange rate movements might not reflect market expectations on fundamentals because foreign exchange markets are dominated by short-term speculation. The stabilizing longer-term speculation, which takes into account the expected changes in fundamentals, is usually weak. In the case of Poland, there are two factors that produce a tendency

toward zloty appreciation which may not be related to the current economic situation and the balance of payments. The first is the large interest rate differential, which makes a shortening of the zloty very expensive, as this means receiving low interest on the dollar or the euro and paying high interest on the zloty. The other factor that tends to strengthen the zloty despite a deterioration in fundamentals is the uncertainty about the volume and timing of privatization flows. This makes stabilizing speculation very risky because it may bring large losses if it coincides with capital inflows.

Second, the behavior of bond prices basically reflects market expectations on fundamentals, as yields on bonds react to market expectations on the future course of the economy and the related central bank actions. Nonetheless, due to the large and volatile risk premium and the relative shallowness of the market, the prices of bonds are very volatile. This makes it difficult to derive information on the expected interest rates from the yield curve.

In the ensuing discussion, the following issues were raised: the impact of EU accession on capital flows and exchange rate policy, the potential risks of future ERM II participation before the final adoption of the euro, the impact of the pursued high-interest rate policy on the exchange rate and on economic growth, the effects of political developments on the behavior of prices on the financial markets in Poland as well as potential threats to the independence of the Polish central bank.

Lectures by Alexander Auböck and Martin Raiser

Presentation of the EBRD's Transition Report 2001

On November 22, 2001, Alexander Auböck, Director of the EBRD offices in the Czech Republic and the Slovak Republic, and Martin Raiser, Senior Economist and member of the editorial team for the Transition Report at the European Bank for Reconstruction and Development, presented the EBRD's latest Transition Report in a lecture at the conference center of Café Landtmann in Vienna. The event, which drew strong public interest, was chaired by Peter Backé, Special Adviser for Central and East European Issues and EU Enlargement Matters in the OeNB's Foreign Research Division. Drawing on the EBRD's experience as an investor in 27 countries of Central and Eastern Europe and the Commonwealth of Independent States (CIS), the Transition Report offers a comprehensive analysis of each country's progress in its transition toward market economy, while providing general in-depth overviews of important structural developments. The current issue of the Transition Report focused in particular on the energy sector. Alexander Auböck gave an overview of the EBRD's activities and then concentrated on some large energy projects. Today the EBRD is the biggest creditor bank for the entire region under review. The EBRD has made cumulative commitments of EUR 18.6 billion for 742 projects, thus helping to raise a total project volume of EUR 50 billion according to Alexander Auböck. Given the reform progress in Central Europe and the EU accession candidate countries, the EBRD intends to gradually shift the weight of commitments further east and southeast.

Martin Raiser initially pointed out that the EBRD saw current economic developments in Central and Eastern Europe (CEE) as well as the CIS economies as “a bright spot” on an otherwise dim global economic landscape. The EBRD forecasts that after 5.5% growth in 2000, the entire region is set to expand by 4.3% in 2001. Growth is expected to continue in 2002, albeit at a lower pace – about 3%. However, an extended worldwide slump would further weaken the outlook. Martin Raiser emphasized that the resilience arises from the ongoing reform efforts of these countries to meet the conditions for EU accession, as well as from Russia’s recovery, which was spurred by high energy prices and a competitive currency. Russia has also benefited from clear progress in the structural reform efforts of the Putin administration. In particular, the countries of Central Europe and the Baltics are forecast to grow by 2.9% in 2001 and 2.7% in 2002, which is somewhat slower than the expected economic expansion in southeastern Europe (4.0% in 2001, 3.8% in 2002), Russia (5.5%, 4.0%) and the other CIS (6.7%, 3.9%). While growth in Central Europe and the Baltics is being hit harder by the slowdown in trade with the European Union, southeastern Europe is still benefiting from the recovery in Romania and Yugoslavia.

The EBRD expects inflation rates to continue to decline in most countries, notably in Central Europe and the Baltics, whose average annual inflation rate is forecast to decrease from 5.6% in 2001 to 4.5%. According to the EBRD transition indices, the Federal Republic of Yugoslavia as well as Uzbekistan, Tajikistan and Ukraine have made the biggest structural reform strides in 2001. On the other extreme, Turkmenistan even featured some backtracking on reform. General risks arise from a declining demand for exports – especially from the EU – and the subsequent rise in current account deficits, from fiscal weaknesses and, particularly in the case of Russia, from lower prices for oil and other raw materials and their continued volatility. If growth falters in Russia, forecasts for the entire CIS would have to be revised downwards.

According to Martin Raiser, sustained progress in reform remains vital even in the relatively advanced countries of Central Europe. In order to counter a deterioration of external balances, fiscal discipline should be reinforced. In any case, there would currently not appear to be any scope for fiscal stimulation measures. If stimulation is necessary, a prudent loosening of monetary policy would appear to be more adequate, given the aforementioned relatively modest level of inflation in Central Europe. Martin Raiser went on to say that the Transition Report’s special section on the energy sector acknowledges that energy wealth has been a boon in recent years to Russia and the oil- and gas-rich countries in the Caspian region. The report argues, however, that too little has been done to turn this wealth into a source of long-term growth. The region’s potential as an energy producer and exporter is far from developed and serious impediments to investment in the sector remain a major obstacle.

Moreover, the countries of the region can do a lot more to promote the efficient use of energy. As a whole, the CEECs and the CIS remain highly inefficient in their use of energy, using between four (Central Europe and the Baltics) and 13 (CIS) times as much energy relative to GDP as Western

Europe. A major improvement for the energy sector could be achieved by far-reaching price reforms, Martin Raiser stressed. For many years, poorly targeted consumer subsidies and the frequent granting of privileges to favored producers have wasted potential revenues from energy resources, thus reflecting distorted developments and mismanagement. All this should be eliminated by raising energy prices for households and industrial consumers, while building an institutional framework that supports private investment in the power sector and subsidizes those unable to afford higher energy prices. But energy price reforms in transition economies remain a delicate and difficult undertaking, owing to consumers' limited ability to pay. Therefore, adequate social protection measures appear indispensable. In general, resource management in energy-rich transition economies should be improved in order to avoid a "Dutch disease" problem.

The ensuing lively discussion dealt with a number of topics, such as the prospects and implications of a further weakening of the external balances of the Central European transition countries. Another topic was the importance of EU accession for the speed and perseverance of reforms in candidate countries. It was agreed that to sustain this momentum, the credibility of the accession process must be maintained through the effective reform of EU institutions and measures to help meet the costs of accession in the transition economies. According to Martin Raiser's assessment, the major driving force in the economic growth of most CIS countries, particularly of Ukraine with its impressive growth rate surpassing 9% in the first half year, is Russia's expanding internal demand. This comes despite the fact that Russia's GDP growth has weakened this year. In the EBRD's view, Poland's structural adjustment policies have been quite successful all in all; Poland's current problems are rather of a macroeconomic nature, to which an unfavorable macroeconomic policy mix has contributed. Asked about returns on the EBRD's investments, Alexander Auböck responded that the Bank's commitments are long term and that the net level of capital flows from the EBRD to the target countries is still almost as high as the gross level.

The “East Jour Fixe” of the Oesterreichische Nationalbank – A Forum for Discussion

The East Jour Fixe of the Oesterreichische Nationalbank, a series of meetings initiated in 1991 as a forum in which economists, members of academia, government officials and other experts on Eastern Europe meet to discuss specific transition issues, looks back on a long tradition. The meetings are opened with speeches held by experts about key topical issues related to transition economies. High-profile discussants are invited to comment on the contributions, and finally policymakers, analysts and researchers engage in an exchange of views during the general discussion, which is given ample room on the agenda.

In the second half of 2001, the East Jour Fixe series was continued with an outstanding event on the topic “The Monetary Transmission Mechanism,” a much discussed issue these days. The Oesterreichische Nationalbank brought together high-ranking economists representing the Eurosystem as well as the accession countries. This East Jour Fixe went beyond the scope of the traditional design of the forum; the main presentation by Silvia Kaufmann, OeNB, was followed by presentations by the chief economists of the Czech National Bank, the National Bank of Slovakia, the National Bank of Hungary, the National Bank of Poland and the Bank of Estonia.

Contributions by Peter Mooslechner,

**Silvia Kaufmann, Aleš Čapek, Paweł Durjasz,
István Hamecz, Marián Nemeč and Ilmar Lepik**

The Monetary Transmission Mechanism in Austria, the Eurosystem and in Central and Eastern Europe

I Background

The 42nd East Jour Fixe was held at the OeNB on September 7, 2001, and centered on the topic “The Monetary Transmission Mechanism.” This was an East Jour Fixe meeting to which not just one speaker and one or two discussants were invited along the usual lines, but a special meeting at which five high-ranking CEEC central bank economists and an OeNB economist held presentations on a single topic. The event was chaired by Peter Mooslechner, Director of the Economic Analysis and Research Section, OeNB.

Silvia Kaufmann, an economist in the Economic Analysis Division of the OeNB’s Economics Department gave the main presentation, in which she described the Eurosystem’s Monetary Transmission Network (MTN), the various theoretical approaches to the monetary transmission mechanism (MTM) and some empirical results on the credit channel in Austria.

Her speech was followed by presentations by the following directors and heads of research from several accession country central banks:

- Aleš Čapek, Executive Director of the Monetary Department of the Czech National Bank (CNB);
- Ilmar Lepik, Head of the Central Bank Policy Department of the Bank of Estonia;
- István Hamecz, Managing Director of the Economics Department of the National Bank of Hungary;

- Paweł Durjasz, Director of the Research Department of the National Bank of Poland (NBP);
- Marián Nemec, Head of the Institute of Monetary and Financial Studies of the National Bank of Slovakia.

Their contributions sketched the specific experiences of the respective countries with the transmission of monetary policy.

The written statements of the participating lecturers are presented below.

2 Introduction by Peter Mooslechner

2.1 Monetary Transmission – East and West:

A Look at One of the Core Monetary Policy Topics from Different Perspectives

This contribution to the Focus on Transition is quite special in several respects:

First, our topic today – the Monetary Transmission Mechanism – is without a doubt one of the core research topics in the area of monetary theory and policy. However, it is not specifically related to Western or Eastern European economies or to transition economies in general.

Second, the choice of today’s topic is closely related to the Oesterreichische Nationalbank’s participation in the MTN, the Monetary Transmission Network of the Eurosystem, in which we at the OeNB have invested a lot of research work over the last two years.

Finally, based on our recent findings on monetary transmission, we are currently working on a special issue of our quarterly publication Focus on Austria aimed at documenting the whole range of this work. The publication also encompasses contributions by outstanding international experts in this field, such as Frederic S. Mishkin, Arturo Estrella and Jack Selody.

2.2 How Does Monetary Transmission Work?

Questions of monetary transmission are very closely linked to the efficiency of monetary policy and involve many parts and structural factors of an economy, from financial markets to investment behavior.

Given the large structural adjustments that have taken place in the accession countries over the last ten years, there is much interest in an original view from these countries, in particular about the changes in monetary transmission observed so far and about the related challenges for future monetary policy.

As the effects of monetary policy on the real economy work with long and varying lags, monetary policy has to be characterized by a forward-looking orientation. A profound economic analysis of the effects of monetary policy decisions should help argue the case for a longer-term perspective. The major goal of analyzing the monetary transmission mechanism is of course to improve the effectiveness of monetary policy. But the topic of monetary transmission is not only relevant from the monetary policy point of view alone.

Monetary transmission is also important because of its link to financial stability, which has moved to the center of policymakers’ attention in recent

years. Issues such as how monetary policy decisions affect the financial position of firms and banks are of crucial relevance for financial stability. The OeNB started to publish a semiannual Financial Stability Report in 2001 and will continue to strengthen its analytical efforts in this field.

What do we actually know about how the transmission mechanism works? Perhaps less than central bankers would like to know. The transmission mechanism is complex and probably not stable over time. Hence, monetary policy decisions have to be taken under uncertainty, and economists differ in their views about how and to what extent monetary policy measures affect the real economy. Nevertheless, there are a few things we do assume to know: Monetary policy decisions are transmitted to the real economy through several channels – the interest rate channel, the wealth channel, the exchange rate channel and the credit channel. These channels are largely interlinked and operate simultaneously.

2.3 EMU Changes the Framework of Monetary Policy

The establishment of Economic and Monetary Union (EMU) as well as recent U.S. monetary policy steps have strengthened the interest in the transmission mechanism of monetary policy all over the world. In particular, as the national financial systems within EMU have developed along different lines, there is an increasing interest in possible asymmetric effects that monetary policy may have across countries, firms, banks and also across time. The main focus of the work of the Eurosystem Monetary Transmission Network (MTN), which comprises experts from the ECB and participating national central banks, is the analysis of the credit channel. The MTN represents a pivotal effort to gain a better understanding of monetary transmission under conditions of EMU, as the traditional channels of transmission may be weakened while other channels become more important. The research of the network will culminate in a conference in December 2001 at which the results of a number of studies performed at the euro area and at individual country levels will be presented.

2.4 The Euro Already Plays a Significant Role in Central and Eastern Europe

As a result of the size and the economic clout of the single currency area in Europe and the growing integration of the financial markets of the participating countries, the euro stands every chance of becoming a currency of global importance. The euro's chances are in fact best in Central and Eastern Europe, where the currencies the euro has replaced, above all the Deutsche mark, traditionally played a key role.

A more detailed analysis shows that the single currency has become particularly important as a unit of account in international goods and service trade in the CEECs. Moreover, the euro is likely to play an ever larger role on the Central and Eastern European forex markets. The same is true of the euro as an investment and issuing currency for private users in the CEECs and, in the longer term, for the pricing of goods and on the stock exchange.

Even today, the euro is a key currency for Central and Eastern Europe. In most of the CEECs monetary policy strategies and exchange rates play a vital

role, at least in the countries where they are a key monetary policy indicator. In nearly all cases it is the euro upon which the CEECs' currencies are oriented, or to which they are formally linked. In the case of the managed float countries, this is reflected among other things by the fact that since the beginning of 1999, all these countries without exception have used the euro as a reference currency. The countries which avail themselves of an exchange rate peg mostly peg their currency only to the euro or to a basket in which the euro predominates. The trend toward the euro is becoming ever stronger. This process will continue in the upcoming years. The euro will obtain an even more central position as an anchor currency in Central and Eastern Europe than today.

Having played the role of a nominal anchor in most accession countries since the start of economic transformation, the exchange rate of the euro was designed as the main instrument (intermediate target) to achieve disinflation, while the applied interest rate policy was to a large extent supportive to comply with this intermediate target. In some countries, monetary targets were pursued alongside exchange rate targets, in particular before the capital account was substantially liberalized. This dominance of the exchange rate as a main channel for monetary policy transmission is very much in line with Austria's historical experience with exchange rate targeting before joining the European Union.

2.5 The Continued Importance of the Exchange Rate Channel – Strengthening the Interest Rate Channel

While the central banks in the main advanced accession countries have reoriented their monetary policy strategy to formal or informal targeting, empirical studies show that in emerging markets and transition countries the pass-through from the exchange rate to inflation is still generally high. At the same time, the traditional policy channels central banks in mature market economies rely on can become less effective. In transition countries, in particular, the impact of interest rate changes on credit has been found to be weak, owing to highly interest-inelastic lending policies of commercial banks burdened by nonperforming loans, less developed financial markets and strong capital inflows. Certainly, the situation differs from country to country, depending, for instance, on the level of domestic credit to GDP, on the situation of the banking sector and on the development of financial markets.

As the Central and Eastern European accession countries are generally small and open economies and do not yet have fully functioning interest rate channels for transmission, the exchange rate still has a major impact on inflation performance in these countries, irrespective of the monetary strategy chosen. Therefore, the question arises to what extent the exchange rate is taken into account in the conduct of monetary policy under a strategy of inflation targeting.

It should be stressed that other arguments have also played a role in the abandoning of the exchange rate as a nominal anchor and in the choice of (informal or formal) inflation targeting. These arguments include:

- the need to introduce a process of learning with an interest rate-based monetary strategy in a timely manner;

- the need to introduce a process of learning with a floating exchange rate in a timely manner; and
- the need to have the exchange rate undergo a process of testing by the markets in order to find an equilibrium exchange rate.

However, one important task for monetary policy consists in strengthening the interest rate channel via structural reforms within the financial sector and via measures to deepen domestic capital markets.

2.6 Monetary Transmission:

From Theory to Monetary Policy Strategy in Accession Countries

Traditionally, the East Jour Fixe serves as a forum for discussion between decision-makers involved in the formulation of economic policies on the one hand and representatives from universities and research institutes on the other hand. The 42nd East Jour Fixe is a first in that some information on the institutional framework in which recent empirical research on monetary transmission is done at the OeNB and in the Eurosystem is presented at the outset, with the aim of providing (i) an overview of key theoretical approaches to explaining monetary transmission and (ii) showing some first results of empirical research on the credit channel in Austria. But, of course, the main interest during this East Jour Fixe is in monetary transmission in Austria's neighbors in Eastern Europe which are on their way to joining the European Union. Therefore, it was a particular privilege to have the 42nd East Jour Fixe as an opportunity to present the comments of distinguished researchers from the central banks of no less than five advanced accession countries on the subject of monetary transmission. Their joint contributions constitute an outstanding opportunity to obtain a very comprehensive picture of monetary transmission and related monetary policy strategy issues in the accession countries.

3 First Contribution: Silvia Kaufmann¹⁾

The Monetary Transmission Mechanism:

Its Various Channels and Evidence on the Credit Channel in Austria

The monetary transmission mechanism is relatively easy to define: It is how monetary policy actions are transmitted to the real economy. More specifically, the analysis usually focuses on one of the three features that characterize the monetary transmission mechanism. First, there is the source of the mechanism, the monetary policy action, which has to be identified or measured. Last, we have the impact it has on real or nominal economic aggregates; it is at this point that the monetary policy effects are investigated. And in between, there is the mechanism that triggers the impact of the action. Here, we will focus on the latter, and therefore we will assume below that there is some monetary policy action, i.e. that it is irrelevant whether policy actions are domestic or foreign in case countries adhere to a fixed

¹⁾ Oesterreichische Nationalbank, Economic Analysis Division. The text represents a summary of an introductory presentation held at the OeNB's 42nd East Jour Fixe on September 7, 2001, prepared jointly with Maria Teresa Valderrama, Economic Analysis Division. The views expressed are those of the author and in no way commit the OeNB.

exchange rate regime. Moreover, we assume that policy actions are observable, and the usual, straightforward approach is to take the changes in a short-term interest rate as a measure for the monetary transmission mechanism. An alternative approach is to use monetary policy shocks identified with structural vector autoregression including relevant variables (see Bernanke and Mihov, 1998). Moreover, we presume that monetary policy is transmitted to some economic end variables, like GDP and its components, unemployment and inflation. We do not assess whether the impact is transitory or permanent, and which variable reacts first.

Below, the various channels of transmission that have been brought forth in the literature are briefly presented to depict the revival of interest in this subject in the Eurosystem countries. This interest led to the installation of the Monetary Transmission Network (MTN). To illustrate the work and the effort that has been initiated within this group, a short summary of the evidence on a credit channel at work in Austria, obtained by analyzing individual firm and bank data, concludes the report.

The interested reader might refer to the MTN's set of working papers published in the Working Paper Series of the European Central Bank (ECB) for results on all other Eurosystem countries.¹⁾ Concise descriptions of specific features of the transmission mechanism in Central and Eastern European accession countries, as well as results on investigations that have been performed on it so far, can be found in the short reports by Aleš Čapek (Czech Republic), Paweł Durjasz (Poland), István Hamecz (Hungary), Marián Nemeč (Slovakia) and Ilmar Lepik et al. (Estonia) following this report.

3.1 The Various Channels²⁾

A rough classification of the main channels differentiates them by means of the variables through which the effect of monetary policy is propagated to the real economy. The traditional models, in particular the interest rate, the exchange rate, and the asset price channel, focus on macroeconomic variables and represent the core on which monetary policy relies to be effective. Within these models, changes in the relative price of money affect the behavior of (some broad, homogeneous group of) economic agents in the same way or in a general manner. And as such, this influences the economy as a whole. The microfoundation of the transmission mechanism has been developed more recently (Bernanke and Gertler, 1995; Christiano et al., 1996; Kashyap and Stein, 1995). The basic assumption of the so-called credit channel models is that economic agents (individual banks, firms or consumers) are heterogeneous, and exposed to asymmetric informational and moral hazard problems in the (imperfect) credit market, whereby the intensity of their exposure is affected by individual-specific characteristics. On the supply side of the credit market, the transmission of monetary policy works through the bank lending channel that arises because of competition among

¹ The working papers of the MTN are available at www.ecb.int.

² See Mishkin (1995 and 1996) for a nicely readable overview of the various channels along with an assessment of their relevance for the financial system of an economy.

banks for liquidity. The balance sheet channel operates on the demand side of the credit market, where a decrease in asset prices due to a restrictive monetary policy leads to a deterioration of collateral and to an increase in debt repayment default.

It is obvious that the relevance of these microeconomic aspects within the financial system of an economy has to be assessed, as their strength influences the potential for financial crisis. A financial sector suffering asymmetric informational problems might amplify the impact of restrictive monetary policy through adverse selection among borrowers.

Hence there has been an interest revival in the monetary transmission mechanism within the Eurosystem countries. This is especially true because the availability of individual bank and firm balance sheet data has grown and because econometric techniques to investigate on this topic have developed over the last two decades.

The short reports on the financial structure and the transmission mechanism of the Czech Republic, Estonia, Hungary, Poland and Slovakia nicely exemplify the changing relevance of the various channels under different monetary policy settings in transition economies. Since the implementation of inflation targeting in most countries (the exception being Estonia with its currency board arrangement), the interest rate and the exchange rate channel can be observed to be at work. However, the specific feature of each country's financial system, e.g. a large share of direct foreign corporate financing, excess liquidity in the banking system, a low debt-to-equity ratio of the private sector, virtually stifle the potential effects of a credit channel.

3.2 The Eurosystem's Monetary Transmission Network (MTN)

In fall 1999, the Heads of Research of the ECB and of the national central banks (NCBs) of the Eurosystem countries decided to establish the MTN. For the conduct of monetary policy within the euro area, they perceived it as crucial to improving the understanding of monetary policy transmission within the Eurosystem countries. The temporary research initiative coordinates, within a broader context, investigations using data sets, harmonized as far as possible, and model specifications to obtain comparable information on structural aspects of the euro area bearing on the transmission mechanism. Within a smaller, though not subordinated, context each member is free to investigate more sophisticated models, or models adapted to specific features of the countries, or to investigate special transmission mechanism issues. Overall, the research is expected to yield evidence on the relevant channels of the transmission mechanism in individual countries and in the euro area as a whole.

3.3 The Credit Channel in Austria

By way of conclusion, I would like to present a summary of two papers that gather evidence on the credit channel in Austria. It represents work that has been done in addition to the investigations that flow directly into the MTN.

3.3.1 Firm Data: Evidence on the Credit Channel

Valderrama (2001) estimates an accelerator investment demand equation using a panel of Austrian firms' yearly balance sheet and income statement data covering the period from 1979 through 1999. The data make it possible to compute a firm-specific user cost of capital that is included in the analysis. To assess the existence of the balance sheet channel, cash levels and debt ratios act as indicators of the firm's net worth. Variables like the firm's size, age, trade credit share, and the firm's largest loan share supplied by one bank act as indicators of the firm's ability to access external funds, and their relevance is indicative of the bank lending channel having additional distributional effects on firms.

Financial variables are indeed significant determinants of investment demand in Austria (see table 1). Moreover, monetary policy has distributional effects among firms. The investment demand of a firm is less sensitive to changes in monetary policy (proxied by changes in user cost of capital) the higher the largest loan share supplied from one bank is, and the higher the trade credit share is. Thus, firms which have a strong bank relationship (a house bank) or a strong relationship with other firms suffer less from policy changes. However, traditional firm-specific characteristics like size or age are not the relevant variables to discriminate between financially constrained and unconstrained firms.

Table 1

Investment Demand					
GMM two-step estimators in first differences					
Criteria	All	Discrimination by			
		Size <148 empl.	Age <10 yrs	Trade credit >60%	House bank >80%
Variables					
lagged investment	0.111 ¹⁾	0.088 ¹⁾	0.085 ¹⁾	0.077 ¹⁾	0.085 ¹⁾
total effect of net sales	- 0.014 ¹⁾	- 0.029 ¹⁾	- 0.016 ¹⁾	- 0.014 ²⁾	- 0.026 ²⁾
total effect of user cost of capital	- 0.126 ¹⁾	- 0.140 ¹⁾	- 0.155 ¹⁾	- 0.084 ¹⁾	- 0.110 ¹⁾
total effect of cash level ratio	0.204 ¹⁾	0.213 ¹⁾	0.216 ¹⁾	0.208 ¹⁾	0.116 ¹⁾
total effect of debt ratio	- 0.091 ¹⁾	- 0.103 ¹⁾	- 0.106 ¹⁾	- 0.029 ¹⁾	0.000 ¹⁾
Percentage of firms	100%	46%	17%	25%	39%
Sargan test	0.5650	0.7413	0.7589	0.4115	0.8551
m1 ³⁾	- 15.98 ¹⁾	- 15.67 ¹⁾	- 15.67 ¹⁾	- 15.81 ¹⁾	- 15.71 ¹⁾
m2 ⁴⁾	0.38	- 0.17	- 0.20	- 0.10	- 0.13

Source: Oesterreichische Nationalbank (OeNB).
¹⁾ Significant at the 1% level.
²⁾ Significant at the 5% level.
³⁾ Test of first-order autocorrelation.
⁴⁾ Test of second-order autocorrelation.
Size: firms with less than 148 employees.
Age: firms which have been established in the last ten years.
Trade credit: firms with a share of trade credit on short-term debt of more than 60%.
House bank: firms with the largest loan share supplied from one bank being more than 80%.

3.3.2 Bank Data: Evidence on the Bank Lending Channel

Frühwirth-Schnatter and Kaufmann (2001) investigate the lending reaction of banks after interest rate changes, using a panel set of quarterly individual bank balance sheet data covering the period 1990:2 to 1998:4. The model allows, in addition to the usual cross-sectional asymmetric response, an asymmetric response of bank lending to interest rate changes over time

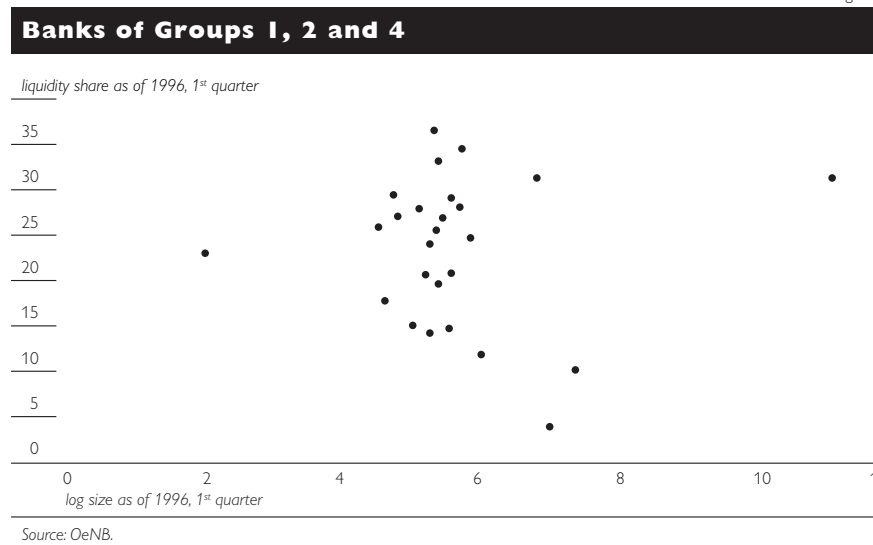
(Kiyotaki, 1998; Kiyotaki and Moore, 1997a and 1997b). Cross-sectional asymmetry arises if the ability of substituting external liquidity for decreases in deposits differs between banks. The asymmetry over time relates to the economic stance, whereby in periods of subdued growth liquidity constraints are exacerbated. Here, the group and the time indicators are both part of the model estimation. The results (see table 2) show that the bank lending reaction differs significantly between economic regimes. Most of the banks in general fall into one group, while a few form the remaining groups. The classification is characterized by the extent, and the timely reaction, of bank lending to interest rate changes. However, the classifications cannot be characterized by means of the bank features (like size and liquidity strength) typically thought to determine the bank lending channel. The scatter plot in figure 1 reveals that mainly small banks form the remaining groups; a large bank with an unusually high liquidity level also falls into one of these groups.

Table 2

lagged intr.rate	$i_t=1$ group-specific parameters				$i_t=0$ group-specific parameters				time effect	
	β_{1t}^G	β_{2t}^G	β_{3t}^G	β_{4t}^G	$\beta_{1t}^G - \beta^{Rt}$	$\beta_{2t}^G - \beta^{Rt}$	$\beta_{3t}^G - \beta^{Rt}$	$\beta_{4t}^G - \beta^{Rt}$		β^{Rt}
	dir _{t-1}	-3.97 (-4.54)	3.66 (1.64)	0.44 (0.63)	-2.37 (-2.10)	-2.90 (-3.13)	4.73 (2.14)	1.51 (1.89)		-1.30 (-1.12)	-1.06 (-2.65)
dir _{t-2}	-0.82 (-1.13)	-0.93 (-0.80)	0.19 (0.53)	4.29 (3.34)	-2.69 (-3.49)	-2.80 (-2.35)	-1.68 (-3.69)	2.42 (1.88)	1.87 (5.73)	
dir _{t-3}	4.40 (3.61)	-0.53 (-0.45)	0.38 (1.07)	2.74 (2.63)	2.40 (1.94)	-2.53 (-2.11)	-1.62 (-3.48)	0.74 (0.69)	2.00 (6.46)	
dir _{t-4}	-0.88 (-1.04)	-2.26 (-1.68)	-0.07 (-0.28)	-2.74 (-2.57)	1.26 (1.42)	-0.11 (-0.08)	2.07 (5.50)	-0.60 (-0.55)	-2.14 (-6.48)	
sum	-1.27 (-1.14)	-0.05 (-0.03)	0.95 (2.20)	1.93 (2.03)	-1.93 (-1.14)	-0.72 (-0.03)	0.28 (2.05)	1.26 (2.03)	x x	

Source: OeNB.

Figure 1



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4 Second Contribution: Aleš Čapek

Selected Aspects of the Monetary Transmission Mechanism in the Czech Republic

Monetary policy in the Czech Republic is implemented in the regime of inflation targeting. The regime is based on the forecasting of inflation in the time horizon relevant for the length of the monetary transmission, on a comparison of the forecast with the inflation target and, in case of a difference between the two, on the adoption of monetary policy measures with the aim to bring inflation back to the inflation target in the medium term. The two important preconditions for the implementation of this regime thus are a good forecasting ability and a relatively good knowledge of the monetary transmission mechanism, enabling an adequate response of monetary policy to the deviation of the inflation forecast from the inflation target.

The Czech National Bank is using a spectrum of methods to forecast inflation, ranging from one simple equation to structural multiequation models. The process of forecasting is also accompanied by expert judgment, which shapes the final result of the forecasting process. The forecasting activity is organized along the quarterly forecasting exercise consisting of a sequence of phases and meetings of the forecasting team, including several issues meetings devoted to the presentation and discussion of partial analyses of relevant “issues” in the time horizon of the forecast, the setting of scenarios of exogenous variables, the presentation and discussion of preliminary results, alternative scenarios and simulations of external shocks and finally the preparation of the final version of the forecast. The forecast then consists

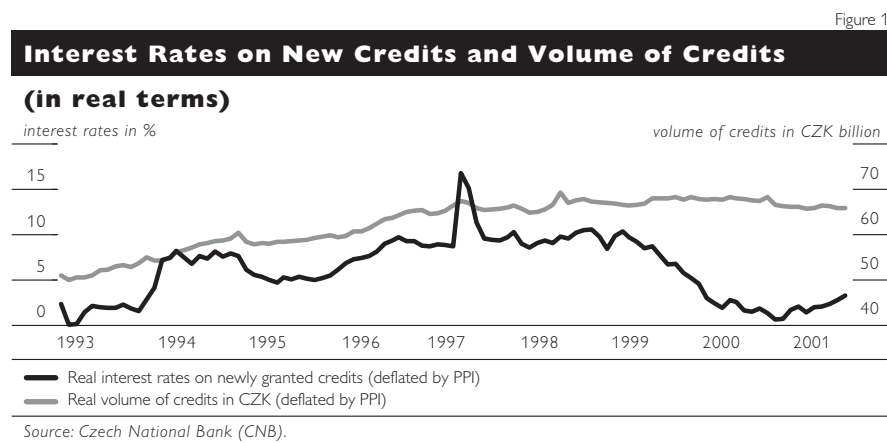
of a short end, which is rather detailed and, next to econometric tools, uses relevant detailed information on short-term developments, and a medium-term end based on a medium-term forecasting model which is less detailed and focuses on the interrelation of main macroeconomic variables.

The process of forecasting uses certain standard assumptions about the monetary transmission mechanism. The medium-term forecasting model, for example, includes the exchange rate channel both in its “short” (interest rates → exchange rate → import prices → inflation) and “long” (interest rates → exchange rate → external balance → output gap → inflation) versions and also the interest rate channel (interest rates → domestic demand → output gap → inflation).

The coefficients of the model in some cases are calibrated using the results of external models and judgment rather than estimated on the basis of the Czech data. The attempts to use the Czech data as a basis for estimation have produced nonsatisfactory results, and in a number of cases they were in disaccord with economic theory or simple common sense. The reasons are the often-mentioned problems of empirical research in transition economies, i.e. the short time series of data available for estimation, their quality and problems of comparability in time due to methodological changes connected with the harmonization of the statistical activity to Western standards. The statistical data are also affected by the structural shocks occurring during the transition period and by certain transition-specific phenomena.

These problems are also related to some of the monetary transmission channels. One good example is the *credit channel*. According to the theory of adverse selection, periods of relatively high interest rates should be accompanied by the slowdown of credit activity and low interest rates should lead to an increased willingness of the banks to lend. The development in the Czech Republic is in conflict with these assumptions. The increases in interest rates in 1994 and 1996 were accompanied by dynamic credit activity and the sharp decline in interest rates in 1999; 2000 was a period of stagnation of credit activity or even of a decline of the real amount of credits.

A reasonable interpretation of this development is possible only if structural, transformation-related trends in the banking sector during this period

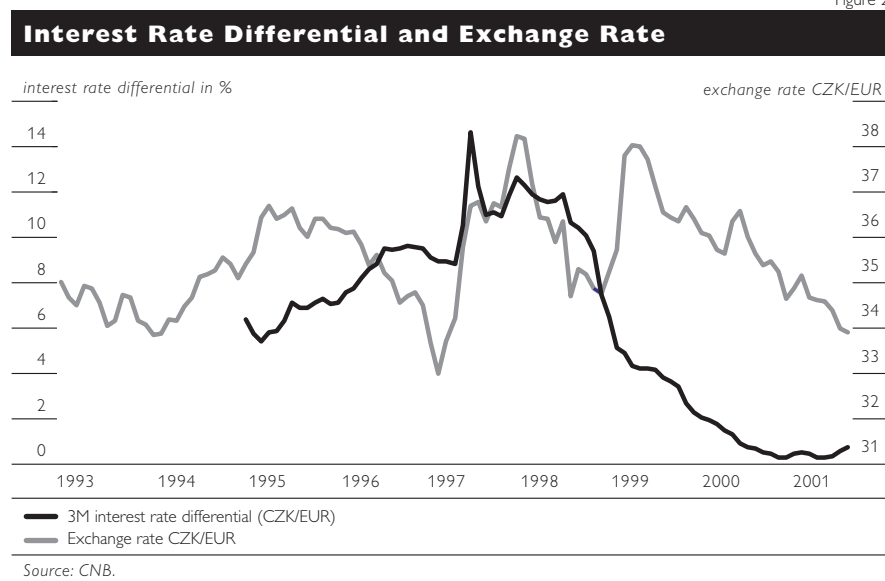


are taken into account. In the first period of dynamic credit activity, most of the big banks were still state owned. At the same time new private banks came into being. The propensity to lend was high in both groups of banks. Next to financing the new firms, the big banks were also financing the old big enterprises, and in their effort to establish their position in the market the new banks followed an aggressive credit policy. All this happened in a situation where there was a lack of information about banks' clients given banks' very short financial history, where information on the existing big enterprises under the new market conditions during transition was irrelevant and where there was also a lack of traditions (and regulations) in terms of disclosure and transparency.

This development contributed to the overheating of the economy during 1994–96, to the worsening of internal and external imbalances and finally to the financial turbulence of 1997; this entailed macroeconomic restriction and economic recession. The increase of bad loans in banks' balances together with the strengthened banking regulation and the privatization of big banks has led to very prudential behavior and to a reduction of credit activity in spite of the considerable decline in interest rates.

Another example where the simple logic of transmission fails at first glance is the link between interest rates and the exchange rate in the exchange rate channel. In spite of quite big fluctuations in the interest rate differential against the euro during the last years, it is difficult to find a longer-term systematic development of the two variables. One reason is the change in the exchange rate regime, in 1997, from the fixed band to managed floating. Furthermore, in recent years the appreciation of the currency has been related to big inflows of FDI partly in connection with the privatization of state property, and the interest rate differential has begun to play a minor role. The currency was appreciating also during the period of a virtually zero interest rate differential against the euro and an even negative differential against the dollar.

Figure 2



These two examples illustrate how certain transition-related phenomena may affect the development of macroeconomic variables and thus lead to a distorted view on the functioning of the monetary transmission mechanism.

A closer, more disaggregated look and a detailed analysis, however, find reasonable relations among the variables, indicating that some elements of the monetary transmission mechanism perform quite well and in accord with economic theory.

This is the case e.g. for the link between *interest rates and narrow money*, which is then a good explanatory variable for the development of private consumption. The large swings in interest rates during the past years explain the development of the M1 monetary aggregate quite well. Also, the relation

Figure 3

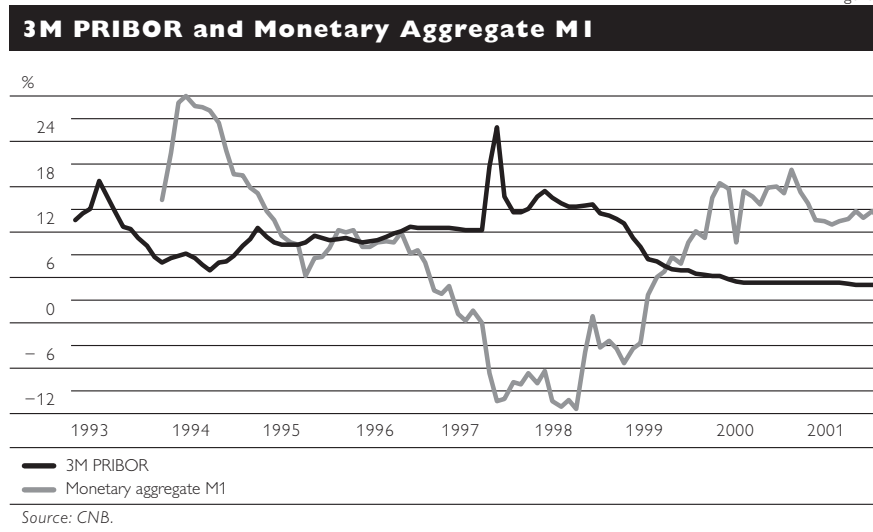
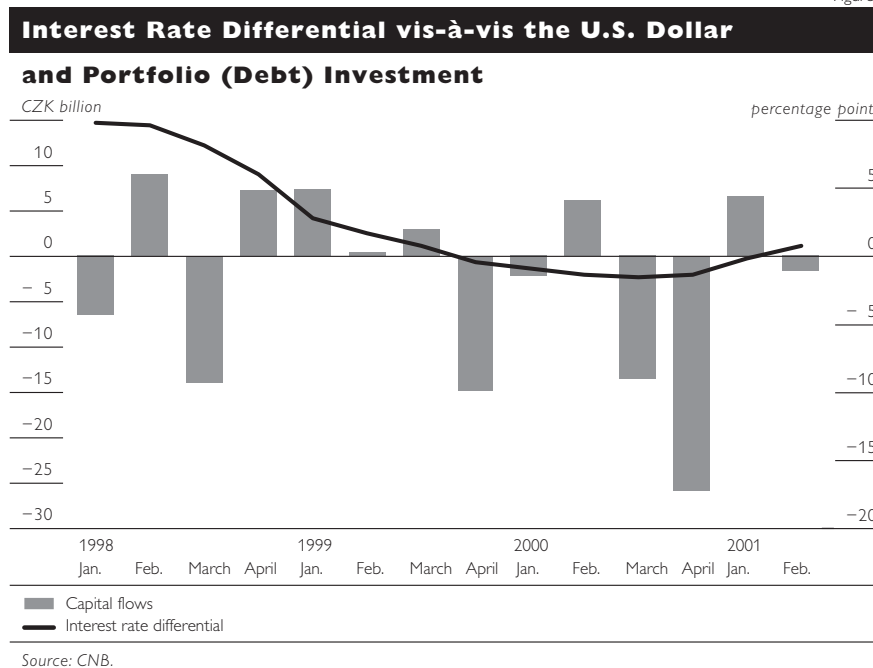


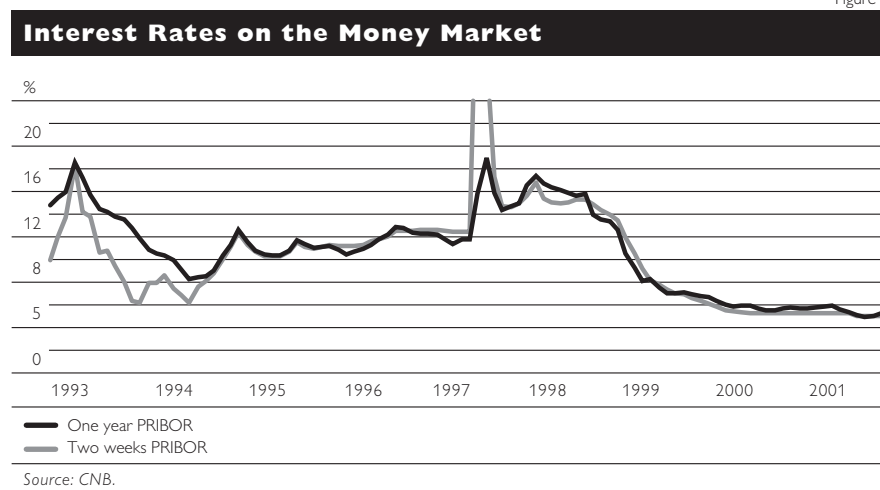
Figure 4



between the *interest rate differential and the flows of interest rate-sensitive items in the financial account* of the balance of payments seems to fit the expected theoretical framework well. It is only true that this factor of exchange rate determination is overshadowed by the above big inflow of FDI.

It also seems that the transmission from short- to longer-term interest rates works quite well and the development of the yield curve provides valuable information on the inflation expectations and the stance of monetary policy. The inflation expectations channel plays an important role in the regime of inflation targeting. In fact, the central idea behind the regime is that the central bank, which pursues a credible monetary policy, affects inflation expectations and thus inflation itself by setting the inflation target. In this context, some of the "mechanical" elements of the traditionally perceived transmission mechanism may not work in an ideal textbook way, but the central bank may still be quite effective in influencing inflation.

Figure 5



There are some episodes worth mentioning in this connection. At the beginning of 1998, for example, the Czech National Bank introduced the new regime of inflation targeting. This was in a period of relatively high inflation, macroeconomic instability and high inflation expectations. Though there were clear signs that the economy was headed towards an economic slowdown, the yield curve was quite steep, reflecting the uncertainties in the economy. In this situation, the central bank announced its inflation target and the disinflation strategy, and in the effort to win credibility followed a policy of high interest rates. This strategy seemed to succeed, and in the second half of 1998 inflation expectations declined and the yield curve became inverse. In the following period the central bank decreased the monetary policy rates to levels close to those of the euro area.

5 Third Contribution: Ilmar Lepik, Tõnu Palm and Rasmus Pikkani¹⁾

The Monetary Transmission Mechanism: The Estonian Experience

5.1 General Background

Financial sector reform in 1992 started in conditions of fixed exchange rates under a currency board arrangement (CBA) and liberal external policies, involving most importantly the immediate abolition of most restrictions on capital account transactions. No capital controls have been in effect since 1994. In this environment, the strength of the financial sector became a crucial issue almost immediately, given the limited lender-of-last-resort (LLR) ability of the CBA. Additionally, bearing in mind that fiscal stability is one of the cornerstones of the CBA, the real economy was faced with hard budget constraints from the beginning of the reforms.

5.1.1 The Financial Structure in 2001

Estonian financial intermediation is based on the universal banking model; therefore, the banking sector has a dominant role and the share of the securities market is quite low. The Estonian banking market represents a concentrated, mainly foreign-owned and fully privatized market. However, some differences compared to advanced financial markets remain, stemming from (i) the smallness of the country, (ii) the short period of development, and (iii) the status of Estonia as an EU accession country. It is important to stress the high international integration via both the real economy and the financial markets: a remarkable share (close to 50%) of the Estonian real economy is financed on an intracountry basis or directly from European financial markets. This feature also has some implications for transmission issues.

5.1.2 The Banking Sector

Over recent years, the Estonian banking sector has proven its enhanced creditworthiness and competitiveness as compared to earlier periods or to the situation prevailing in other advanced transition countries. The share of private ownership in the total capital of the banking sector reached some 96% already by end-1997. Rapid improvements in the legal and regulatory infrastructure have resulted in a generally sound banking system and practices comparable to the best international standards.

Table 1

Selected Indicators of Banking						
	1996	1997	1998	1999	2000	June 2001
Number of banks	13	11	6	7	7	7
Total assets, EUR million	1,467	2,594	2,620	3,008	3,695	4,112
Assets to GDP, %	44	63	56	62	68	72
Foreign ownership, %	33	44	61	62	84	86
Share of two largest banks in assets, %	40	47	85	85	84	83
Capital adequacy, %	12.4	13.6	17.0	16.1	13.2	14.2

Source: Bank of Estonia (BOE).

¹⁾ The authors wish to thank Kadri Ojasalu for her valuable contributions to the paper.

However, the progress to present stability has not been easy or straightforward. The number of credit institutions had dropped dramatically from 42 banks in 1992 to 11 by end-1997. The succeeding so-called second-wave restructuring after the banking crisis in 1998 reduced the number of banks to 6, down from 11. In 1999, a new bank got a license from the Bank of Estonia, so there are 7 banks currently in the market. Essential consolidation and foreign capital inflows into the Estonian banking sector have improved its credibility by strengthening the rules for internal governance and promoting operational efficiency. Financial conglomerates of Swedish and Finnish origin hold 82% of banks' share capital. Estonian banking groups' consolidated capital adequacy ratio is a comfortable 14% on the average, with no bank below the 10% minimum limit.

5.2 Money Markets and the Yield Curve

5.2.1 Money Markets

The Estonian kroon money market comprises short-term interbank deposits and loans, debt securities and forex forwards and swaps, as the government issues no Treasury bills. Compared to forex forward or debt securities markets, the interbank money market is more short-term, with the main trading volumes in the less-than-three-month segment. Comparing by turnover, the deepest segment is the forward market. Consequently, the integration between the three markets is stronger through interest arbitrage at the short end of the maturity spectrum. Unlike in many other countries, government securities have not been the main driving force of the development of nonbank financial markets in Estonia due to prudent fiscal policies. Therefore, the securities market in Estonia consists primarily of the equity market, and the debt market has developed only according to private sector instruments and needs, being mainly a primary market with private placements and a modest secondary market.

5.2.2 Yield Curve Issues in the Absence of Government Securities

The absence of a long-term government securities market means that there is no "classic" benchmark yield curve in Estonia. However, there are a number of alternative ways to derive the cost of Estonian kroon funds in the Estonian financial market. One possibility for the construction of the Estonian kroon yield curve is to use money market instruments up to the one-year segment, and euro interest rates adjusted for the forward premium of the Estonian kroon and corporate bonds for the longer maturities. Foreign exchange markets in Estonia are relatively deep compared to other markets, and daily price quotations for funds up to three years are available. Given the key role of the banking sector in financial intermediation, a representative yield curve (or credit curve) can be derived from bank lending rates. Empirical analysis shows that the Estonian credit curve dynamics (e.g. changes in the spread of longer- and short-term rates) particularly at the sectoral level, include some information about ex ante developments in the real sector. However, the interpretation of credit curve signals is somewhat complicated, as shifts in the credit curve are subject to a variety of demand- and supply-related

factors. Among the supply-related factors are changes in risk assessments, the cost of funds, competition and the like.

5.3 Monetary Transmission

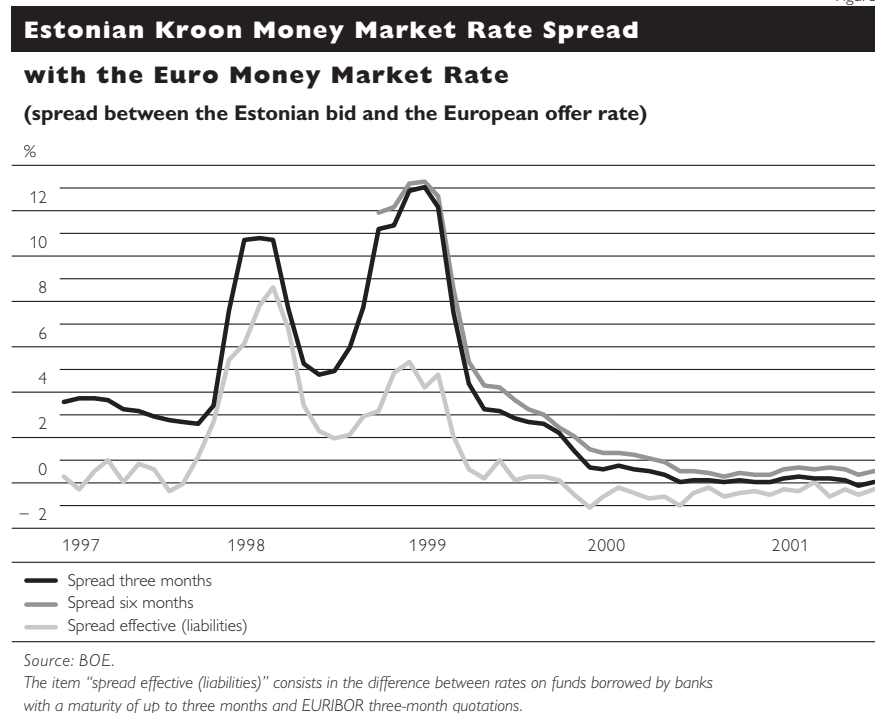
5.3.1 From Foreign to Domestic Rates

The basic features of the Estonian monetary system are (i) the fixed exchange rate against the euro, (ii) the absence of traditional monetary policy instruments, and (iii) free capital movements. Therefore, the first link in the transmission chain is the link between domestic and foreign money markets. The Estonian money market can be considered an internationalized market: TALIBOR quotations involve the three biggest domestic commercial banks and two foreign (Scandinavian) banks. The operational framework encourages commercial banks to manage their liquidity not through the domestic money market, but rather through mainly European markets. Additionally, the unlimited and free-of-charge forex window offered by the central bank in the framework of the currency board arrangement enhances foreign asset-based liquidity management.

5.3.2 Short-Term Rates

Considering spreads between domestic and foreign (three-month) money market quotations, one can observe a clear decline over a longer time horizon. Unfortunately, shocks from the years 1997 and 1998 significantly distort this process. In spite of the shock periods, it is possible to identify a steady long-run decline in the spreads. The average monthly decline in the spread has been around 7 basis points (or 83 basis points a year using the simplest linear trend; see figure 1). Even if the money market spreads

Figure 1

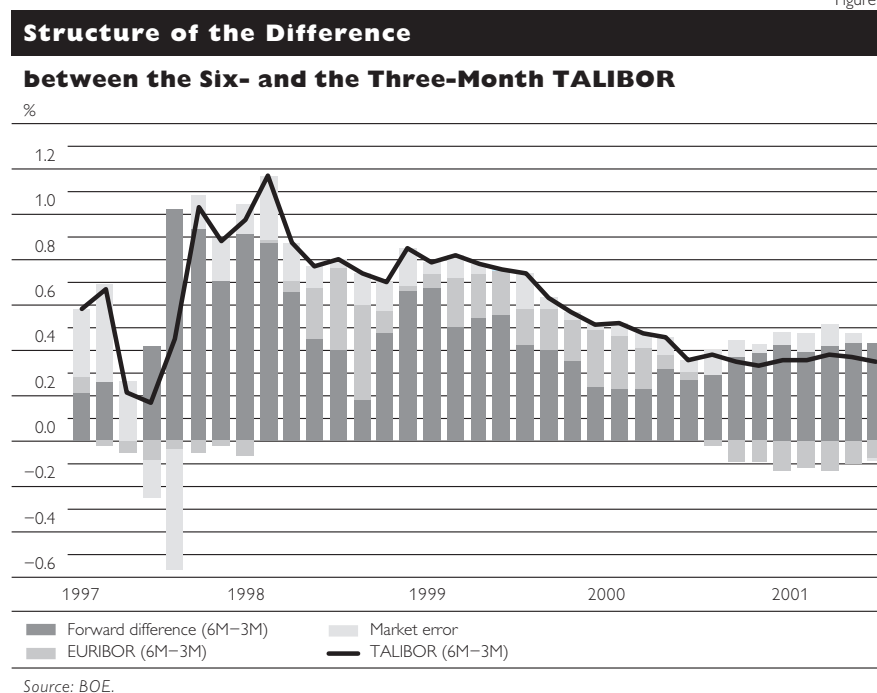


diverge significantly from this oversimplified trend over the shock periods, the effective spread measure gives some support to the calculated trend line.¹⁾ Arbitrage opportunities between Estonian and euro money markets have squeezed the spread in 2000 and 2001 to extremely low levels. As a result, all movements on the foreign money market are transmitted directly to domestic money market rates. A further reduction of the spreads between domestic and foreign money market offer rates depends on the liquidity conditions and the competitiveness of the domestic money market.

5.3.3 Longer Rates

Technically, the domestic money market yield curve consists of the European yield curve and the Estonian kroon's forward points differential (see figure 2), reflecting the prevailing risk premium between Estonia and the euro area. The low difference between technical calculations and actual quotations supports the effectiveness of domestic money market quotations. This technical error measure has steadily declined with the waning influence of the Russian crisis and has been relatively stable since the second half of 1999. From these developments it can be concluded that when there are no pressures on the foreign exchange forward market, the domestic money market yield curve mimics the European one quite closely.

Figure 2

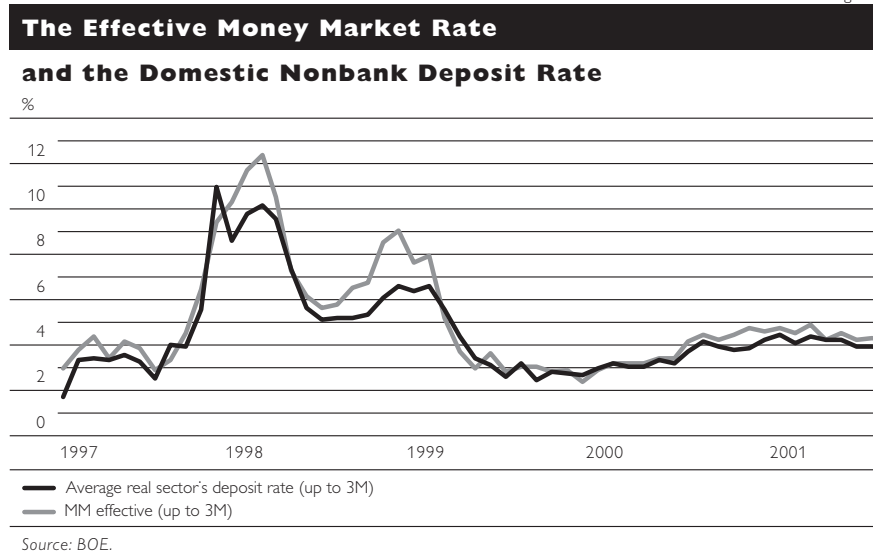


1 This rate is subject to relatively high fluctuations, as the number of commercial banks on the market is low and the group of banks borrowing in the individual time periods is not homogeneous.

5.3.4 Transmission to Retail Rates

The critical question in the Estonian transmission process is the role of domestic and foreign money markets. If money markets were used only or mostly for liquidity management, then interest rate developments on these markets would not necessarily transmit to domestic retail rates. But if these markets are also used to acquire new funds to finance banks' assets, developments on these markets should transmit into retail rates more directly. For an indirect test of the role of the domestic money market, prices paid on domestic nonbank deposits and on foreign financing could be compared by asking e.g. by how much the price of different liabilities differs. If rates move together, financing through foreign money markets and the use of domestic nonbank deposits can be treated as close substitutes, and transmission from effective money market rates should be significant. As there is a direct connection through arbitrage between the domestic effective money market rate and the foreign money market rate, this would mean that there is a direct transmission channel through money market rates into retail rates. In the Estonian case, there is clear evidence of close comovements between the effective money market rate and the interest rate on domestic nonbank deposits with a maturity of up to three months denominated in kroon, in euro and in euro component currencies (see figure 3). This finding supports the hypothesis of the close substitutability of domestic deposits and financing through both foreign and domestic money markets,¹⁾ making domestic deposit rates heavily dependent on foreign rates and on monetary shocks (which make the effective money market rate diverge from its convergence path).

Figure 3



1 The observed correlation between the rates is even slightly higher if only kroon-denominated liabilities are studied.

5.3.5 Impact on Economic Activity and Inflation

The influence stemming from relatively small changes in the base interest rate on the Estonian economy is hardly identifiable. To list some of the transitory processes directly or indirectly influencing this process, nominal and real convergence and financial sector restructuring should be mentioned. For example, real convergence causes a situation in which the credit demand curve is in constant movement as more and more households and enterprises cross the line of "creditworthiness." In addition, partly because of the fixed exchange rate, fluctuations abroad can amplify the volatility of Estonian inflation. That, in turn, will export higher uncertainty into inflation expectations, and this makes the real ex ante interest rate harder to estimate. This process magnifies the "normal" inflation differential caused by the price convergence path (which has been estimated to be currently in the range of between 2 and 3 percentage points), and also makes the inflation component in real interest rates relatively more important than changes in nominal rates.

Finally, the increasing importance of direct foreign financing and leasing financing are currently the most important factors of financial sector restructuring that influence the monetary transmission process. Direct foreign financing, more prominent in the financing of the tradable and export-oriented sectors, lowers the banks' ability to dictate lending rates for this sector.

6 Fourth Contribution: István Hamecz

Monetary Transmission in Hungary

The purpose of this short note was to shed some light on the views of the National Bank of Hungary (NBH) on the monetary transmission mechanism. Given the improved prospect for accession to the EU around 2004, the NBH reformulated its monetary framework in June 2001. In this new monetary framework, the NBH has abandoned the exchange rate as a nominal anchor and now targets inflation directly.¹⁾ In the following paragraphs, I will go into the conventional channels of monetary transmission one by one, but given the recent change, most of the evidence refers to the previous monetary regime.

In the textbook analysis of monetary policy, interest rates play a crucial role. Following this tradition, I will examine the interest rate channel first, then I will take the money and credit view and finally I will analyze the exchange rate channel.

Interest rate transmission has two parts. The first step is the transmission of policy rates²⁾ to market rates and commercial bank rates, and the second is the effect of market rates on aggregate demand. Since 1995, the effective policy rate of the NBH has been on the liability side of its balance sheet due to the liquidity surplus resulting from capital inflows. Transmission

1 *The Quarterly Report on Inflation, the main publication of the NBH, covers actual economic and monetary developments and related new research. It can be accessed on the Internet at http://mnbweb/english/4_public/inflrep.htm.*

2 *See Árvai, Zsófia (1998), Interest Rate Transmission between 1992 and 1998, NBH Working Paper 10, for an in-depth analysis of this first part.*

between the policy rate and the interbank and government securities rates has been fast and full. Transmission between market rates and commercial bank rates has been efficient; spreads between market rates and commercial bank rates stabilized below 200 basis points for corporate lending rates in 1997 and for household deposit rates in 1998. Commercial banks try to smooth the effect of temporary fluctuations in official and market rates (e.g. the NBH interest rate hike during the Russian crisis) in their lending and deposit rates. The degree of smoothing depends on the interest rate sensitivity of bank clients; smoothing is strongest for household deposit rates, as their supply is the least sensitive.

While in the past the transmission of policy rates to market rates and further to bank rates was efficient, the interpretation of this is not straightforward given the problem of endogeneity. As the past monetary regime was a version of a fixed exchange rate with free capital movements, policy rates were not set independently by the central bank, but rather determined by foreign rates and by the risk premia demanded by foreigners to hold domestic bonds. The monetary authority could maintain nonequilibrium rates only for short periods, as the associated capital flows prevented large and sustained divergences from the equilibrium rate from prevailing for a longer time.¹⁾

Even though the first part of the interest rate transmission was efficient and fast, the evidence on the second part casts serious doubt on the central bank's ability to directly use this channel for policy purposes. In fact, in the Hungarian case we have never found any statistically significant relationship between interest rates and aggregate demand or any of its components.²⁾ Despite the missing statistical evidence on the transmission from interest rates to aggregate demand, the interpretation at the NBH has always been that this is primarily attributable to the fact that we have a too short time series with several breaks, which prevents a proper identification. As a consequence, in actual policymaking at normal times we tried to avoid “too high” or “too low” real interest rates to prevail for a longer period if possible.

Not completely unrelated to the interest rate channel is the *money and credit channel*. As far as *money demand*³⁾ is concerned, we were able to establish a long-term cointegration relationship between a narrow monetary aggregate, household cash and other macroeconomic variables, but this long-term relation is inappropriate for policy purposes due to short-term instability and the control problem. As far as the credit channel is concerned, the characteristics of the Hungarian economy are important. The first stylized fact is that both the household and the corporate sector have low but quickly rising leverage levels, as is visible in the next table.

1 See more on this issue for example in Barabás, Gyula and István Hamecz, (1997), *Capital Inflow, Sterilisation and the Quantity of Money*, NBH Working Paper 3.

2 See some of the research available in English, such as Zsoldos, István, (1997), *Savings and Portfolio Decisions of the Hungarian Households 1980–1996*, NBH Working Paper 4, or Árvai, Zsófia and Péter Menczel, (2000), *Savings of Hungarian Households 1995–2000*, NBH Working Paper 8.

3 See Csermely, Ágnes, (2000), *Money Demand in Hungary*, mimeo, NBH.

Table 1

Credit Outstanding in Hungary											
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Total corporate ¹⁾	28.6	28.1	25.3	22.0	21.8	23.2	25.0	26.1	27.6	29.6	34.5
HUF ¹⁾	25.0	24.5	21.0	16.7	14.9	12.4	11.3	12.0	12.6	12.7	13.5
FX ¹⁾	3.6	3.6	4.4	5.3	7.0	10.8	13.8	14.1	14.9	16.9	21.0
Households ²⁾	23.9	15.2	12.5	11.7	10.7	8.9	6.6	5.3	5.4	5.6	6.7

Source: National Bank of Hungary (NBH).

¹⁾ As a percentage of GDP.

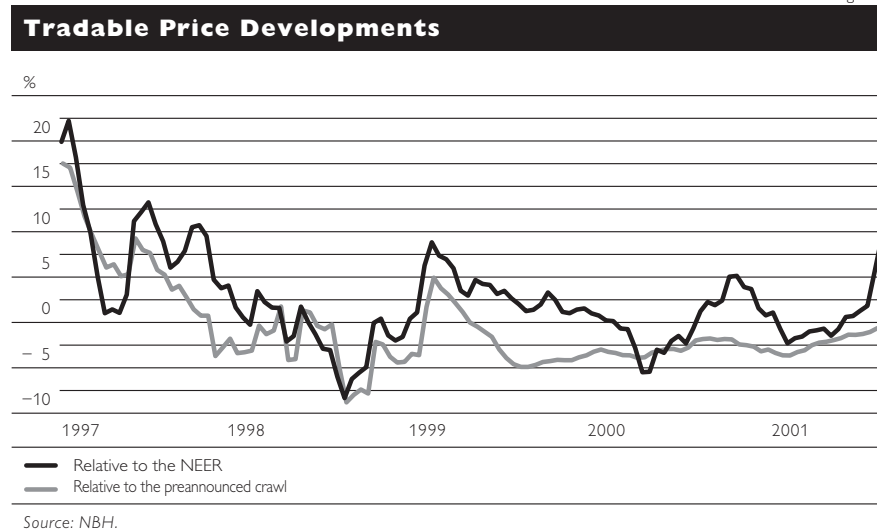
²⁾ As a percentage of disposable income.

The second stylized fact is that foreign exchange credit still dominates corporate sector borrowing. Based on these stylized facts and some additional research, our assessment is that the credit channel is not only weak, but it is hardly under the control of monetary policy at this stage of development.

After a decade of tightly managed *exchange rate* regimes, the NBH switched to inflation targeting in June 2001. As a result of this step, the exchange rate was resigned from the role of the primary objective of monetary policy. However, the exchange rate retains its prominent role in monetary transmission, since in small countries like Hungary, the exchange rate channel is the central banks' most powerful and fastest means of influencing domestic prices.

From the end of 1996 until the end of the crawling band regime, the prices of traded products and the nominal exchange rate moved together. In this period the nominal exchange rate can be regarded as a nominal anchor that efficiently disciplines the price development of traded goods. In fact, prices followed the path of the preannounced devaluation, as intraband movements of the exchange rate and changes in cross rates are hedged or absorbed by the profit margin. The gap between tradable and nontradable prices, the so-called internal real exchange rate, has, however, been relatively stable since the consolidation of the crawling band regime (1996). The difference between the dynamics of the two commodity groups can be attributed primarily to the so-called Balassa-Samuelson effect, while demand effects

Figure 1



have also played a (minor) role in determining the price gap between tradables and nontradables. These two facts were at the heart of monetary policy in the crawling peg regime.

The widening of the exchange rate band alters the exchange rate passthrough. It became more difficult to distinguish between temporary and permanent exchange rate changes. The degree of the exchange rate passthrough is highly dependent on market participants' perception of its nature as temporary or persistent. Given the short time since the change in the exchange rate regime, no numerical estimates of the passthrough can be derived from the historical analysis of the Hungarian data. Accordingly, the Bank has used the experience of other small open European countries to draw conclusions about the expected impact of an exchange rate change on Hungarian tradable goods prices. Five countries, similar to Hungary in size and openness, have been analyzed (the Czech Republic, Greece, Sweden, Ireland and Portugal). The National Bank uses the average of the Czech and Greek figures to estimate the exchange rate passthrough in Hungary, as the belief is that Hungarian monetary policy will show the closest resemblance to these two countries.

7 Fifth Contribution: Paweł Durjasz¹)

Experiences with the Monetary Transmission Mechanism in Poland

7.1 Introduction

Economic transition is a hard time not only for individuals, but certainly also for the central banks. Deep transformation of the micro- and macroeconomic structures, frequent changes of exchange rate regimes, unpredictable fiscal imbalances, and short and unreliable data series create an environment where empirical evidence on how the economy reacts to monetary policy shocks is extremely vague. Bringing down inflation from moderate to low levels without a sufficient knowledge of the monetary transmission mechanism (MTM) is a hard task. The Polish experience suggests, however, that implementation of direct inflation targeting (DIT) helped reasonable transmission patterns to emerge within a few years.

7.2 Monetary Policy with Imperfect Transmission Knowledge

The Monetary Policy Council (MPC) announced the introduction of DIT in the fall of 1998. The crawling peg had been already replaced by a gradually widened crawling band since 1995. With the capital account practically opened and especially after the Asian crisis, the sentiment was strong to further liberalize the exchange rate. On the other hand, monetary targeting did not seem very tempting either, given the unpredictable changes in money demand. The final introduction of DIT was supported by a further widening of the exchange rate band (to $\pm 10\%$), refraining from foreign exchange interventions (and finally floating the zloty in April 2000), as well as restrict-

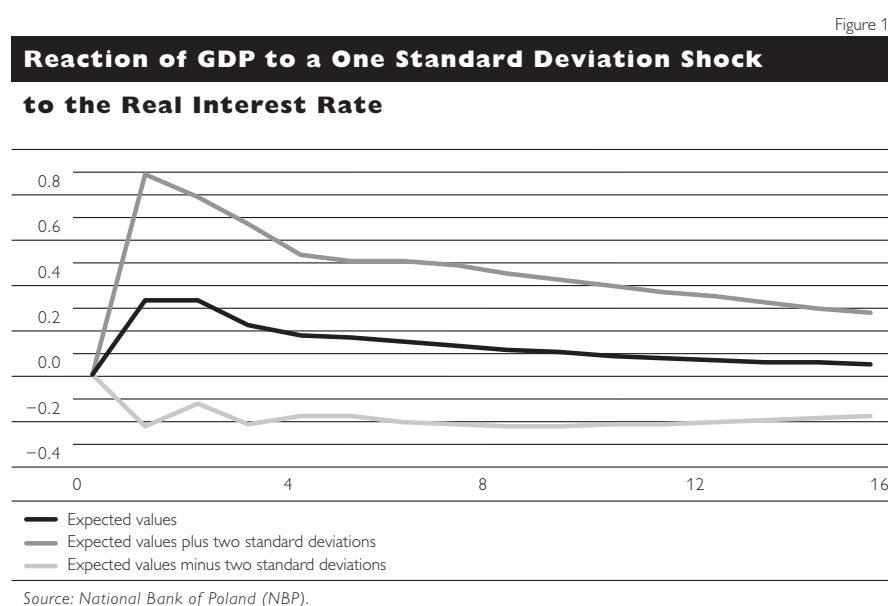
¹ *Research Department, National Bank of Poland. I would like to acknowledge the assistance of Michał Brzozza-Brzezina and Tomasz Lyziak (both NBP) in the preparation of this presentation. The standard disclaimer applies.*

ing open market operations to short-term instruments. Monetary authorities, however, lacked good knowledge of the MTM at that moment.

After the Russian crisis of 1998, inflation started to fall sharply (below 6% at the beginning of 1999) and the economy slowed down. The MPC reacted by lowering key interest rates by 500 basis points within three months. The relaxation proved too strong. In mid-1999 household credit growth accelerated to almost 50% on a yearly basis. Inflation – although partially driven by supply side factors – rebounded sharply to above 11% in July 2000. The current account deficit exceeded 8% of GDP in the first quarter of 2000. Although all this forced the MPC to aggressively tighten monetary conditions already in the fall of 1999, the steps came too late to prevent inflation from overshooting the target range for 1999 and 2000. Credit, inflation and the current account were brought back under control by the end of 2000; however, the negative consequences of a very tight monetary stance, including sluggish GDP growth and rising unemployment, followed.¹⁾ The inflation target for the year 2001 will most probably be undershot.

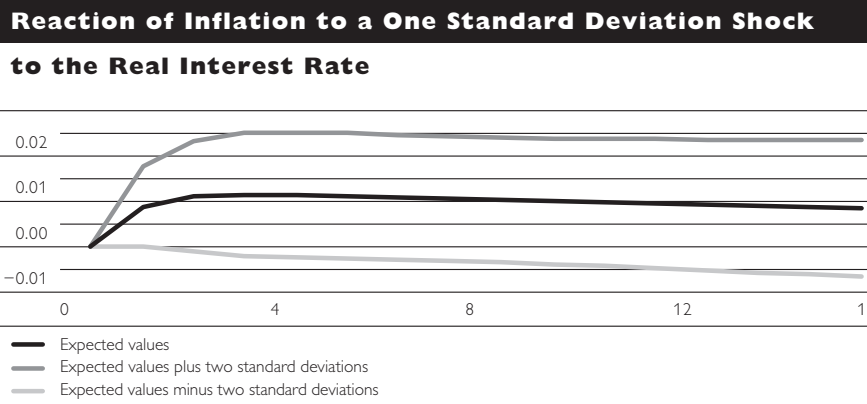
7.3 Direct Inflation Targeting and the Emergence of the Monetary Transmission Mechanism (MTM)

With these experiences it is easy to criticize Polish monetary authorities for implementing direct inflation targeting without prior sufficient knowledge of how an economy reacts to changes in interest rates. I would argue, however, that it did not make sense to wait with the old exchange rate-based regime until the transmission of interest rates was well described. The following graphs show *reaction functions of inflation and GDP* to a positive (rising) interest rate shock from a simple vector autoregressive (VAR) system, as in 1998, when DIT was introduced.



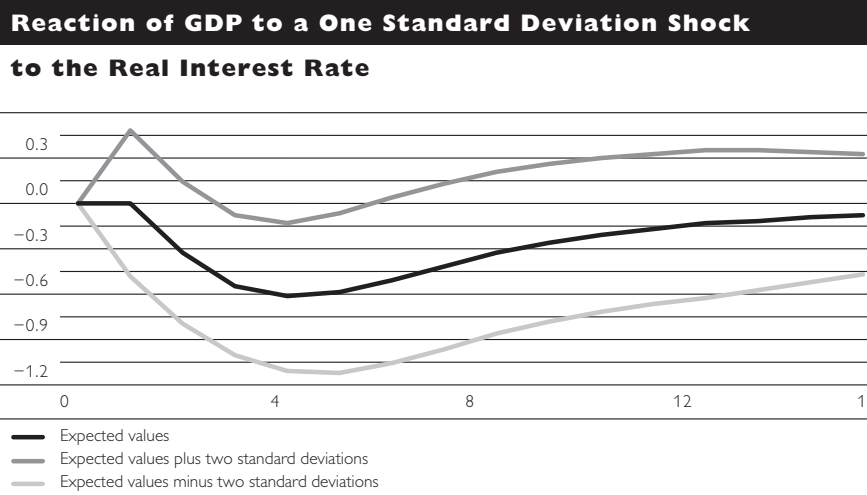
1 Of course, this cannot be attributed solely to monetary policy.

Figure 2



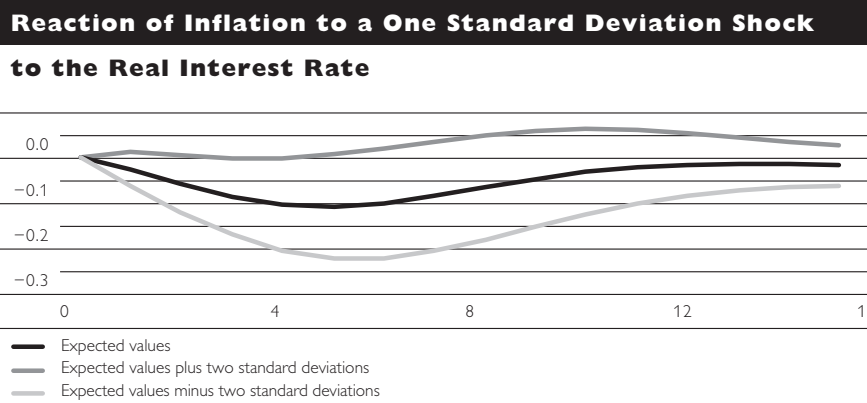
Source: NBP.

Figure 3



Source: NBP.

Figure 4



Source: NBP.

Both reaction functions were obviously of a different shape than predicted by theory. One can argue that in the environment dominated by fixed and quasi-fixed exchange rate regimes, interest rate-based channels could have never been activated and identified. Another two graphs present impulse response functions obtained from VAR systems in 2001, only 3½ years after the introduction of DIT in Poland.¹⁾

Both reaction functions are similar to those obtained for most industrial economies, with a hump-shaped negative response of real and nominal variables to a monetary policy shock. According to these VAR simulations, it takes four to five quarters for monetary policy to exert its maximum impact upon GDP and about six to eight quarters to fully affect inflation. Almost certainly the introduction of an interest rate-based policy regime with a floating exchange rate helped to obtain these results. Now, with accumulated knowledge about the MTM, the National Bank of Poland is better equipped to pursue a DIT strategy.

7.4 The Monetary Transmission Mechanism in Poland

The use of MTM in Poland does not mean that it works without problems. Other results obtained from the small *structural model of monetary transmission* in Poland (based on the model developed by Battini and Haldane for the UK)²⁾ show that both the speed and scale of adjustment of inflation to the interest rate impulse are weaker than in the UK. According to this model, the maximum reaction in Poland occurs in the ninth quarter compared to five to six quarters in the UK, and the reaction in the UK is three times deeper (Mahadeva and Sinclair, 2001). A similar comparison for the reaction of the output gap indicates that the maximum impact of interest rate impulses takes place in the seventh quarter in Poland. In the UK the maximum impact occurs in the fourth quarter and is twice as strong as in Poland.

The fastest and strongest (in the short run) channel of transmission in Poland remains the *exchange rate channel*.

It is important to note that the MTM in Poland is changing continuously and might be stronger now than suggested by these results based on past data. Econometric problems with capturing the link between short-term interest rates and inflation are magnified by the fact that both variables have been falling almost monotonically since the beginning of 1990s (Christoffersen and Wescott, 1998).

The factors impairing the functioning of the MTM in Poland refer mainly to the *bank lending channel* and originate in the Polish banking system. Excess liquidity makes banks less dependent on central bank credit and weakens the impact of central bank headline rates, as they affect only the yields on the assets of commercial banks. Relatively large holdings of treasury securities allow banks to apply buffer-stock behavior (Azyiak, 2000). A limited responsiveness to monetary policy in the past had also been connected with the structure of the banking system and some regulatory privileges enjoyed by

1 *Monetary transmission reaction functions have been studied by Brzoza-Brzezina (2000).*

2 *Łyziak (2001).*

state-owned banks (explicit deposit guarantees, weak budget constraints; Opiela, 1999).

Wealth effects are considered unimportant for the MTM in Poland, because the total value of bonds and equity held by households is estimated at only 5% of GDP.

As the transmission mechanism settles down and data series grow, it becomes possible to undertake further research. It is crucial to improve forecasting tools, therefore continuous efforts are made to estimate the parameters of a stable and reliable Phillips curve, to reestimate structural models and to apply various approaches to the estimation of the output gap.

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8 Sixth Contribution: Marián Nemec

Transmission Mechanism of Monetary Policy in Slovakia:

A Brief Overview of Recent Analyses

Research in this area has a very short history of no more than a decade in Slovakia; at the same time most of the analyses have been performed in the past two to three years. The aim of this contribution is to give a brief overview of basic findings of analyses concerning the transmission mechanism of monetary policy in Slovakia.

Even in developed countries different observers have various views of how monetary policy influences the real economy. This is the case despite decades of theoretical and empirical research and “standard” economic developments.

The subject is all the more demanding in transition economies, including Slovakia. The Slovak economy has undergone significant structural changes in recent years, and short and questionable time series data make econometric analyses very problematic. Nevertheless, several attempts have been made in this area to identify relevant relations. However, the obtained results have not yet been sufficiently persuasive to be used directly in monetary policy practice. Since the National Bank of Slovakia abandoned the currency peg in October 1998, no clear-cut monetary policy has been chosen, also due to the fact that the necessary preconditions for such a policy have not been

fulfilled yet. A clear description of the monetary transmission mechanism is one of the decisive preconditions.¹⁾

Already when the exchange rate peg was used as the nominal anchor of monetary policy, initial research began on demand-for-money topics. By estimating the Partial Adjustment Model, Nemec (1997) and subsequently Carsky and Gavura (1997), by including also the Error Correction Model estimation, came to conclusions about certain statistically significant relations among money, output and inflation. However, the results did not show the attributes required to be considered as robust and reliable for monetary programming. Later (Nemec, 1998 and 1999), by simple analysis of the sectoral velocity of money developments, certain signs of stability were recognized in households' demand for money; these results have not, however, been confirmed by econometric analysis. A more recent study by Alquist (2001) suggests that a relatively acceptable money demand function can be found for Slovakia, although standard criteria of stability are not completely fulfilled.

There were several attempts to describe the transmission mechanism both from the qualitative and quantitative side. Dovciak (1998) described four basic channels of the monetary policy transmission mechanism. According to his analysis, the exchange rate channel played the key role in the transmission mechanism. The theoretical assumptions concerning the interest rate channel have not been confirmed. Chuda and Sevcovic (2000) found that increases of the NBS's interest rates are transmitted through the financial system to increases of other interest rates and that they have a significant impact on credit creation. However, the results are evaluated as not very satisfactory in all cases.

After abandoning the exchange rate peg and changing to a more inflation-oriented monetary policy, the need for a better understanding of inflation factors emerged.

Gavura (2000 and 2001) used Granger causality tests and constructed a simple multivariate model of inflation. He states that there is a reasonable link between the exchange rate and inflation measures. At the same time, he finds some evidence that movements in broad money may also influence certain representations of inflation, although these relationships are not strong and tight. The lack of a clear statistical linkage between changes in the short-term interest rates and changes in inflation also results from this analysis. The author concludes that the power of inflation forecasting models in Slovakia still appears to be modest, especially when the forecast extends to a horizon of more than one year.

Hajnovic (2001a) examines inflation in a more structured manner. The influence of economic policy measures, such as price liberalization in 1991, tax reform in 1993, economic stabilization measures in 1999, and the like are judged. Inflation is characterized as a process with a relatively high autonomous component, relatively high inertia and with significant

1 Since October 1998 the NBS has conducted monetary policy based on implicit inflation targeting and a flexible exchange rate regime. The Bank intervenes in the market to stabilize exchange rate fluctuations, but not to prevent fundamental movements.

stochastic influences. He also sets conditions for the disinflation process in the future, which will be influenced by the development of core inflation, the conduct of deregulation and by the impact of other elements. Like in other cases, deficiencies in data prevent an exact evaluation of the results.

In his comprehensive analysis based on a structural VAR model with six endogenous (core CPI, exchange rate, unit labor costs, M2, real GDP and the real interbank interest rate) and four exogenous (the German CPI index, the oil price in SKK, the index of regulated prices and net credit to government) variables, Kuijs (2001) made an important step in monetary transmission mechanism examination by applying a complex approach.

The emphasis was on finding meaningful relationships and suitable simulation properties consistent with data, as opposed to finding the best statistical fit. The analysis suggests that fairly standard textbook relationships for a small, open economy can be found in the data for Slovakia, although the interest rate channel of monetary policy is still modest in magnitude. It was found that (Kuijs, 2001, p. 11–12)

- the main direct determinants of inflation were foreign prices, the exchange rate, wage costs, with some additional impact from aggregate demand;
- no direct impact of monetary policy on prices could be found (from either monetary aggregates or interest rates);
- there was a statistically significant indirect impact of monetary policy on prices via the impact of monetary policy on the exchange rate, wage costs, and (moderate effects) on aggregate demand; and that
- aggregate demand in turn had a direct impact on prices, the exchange rate and wage costs.

These findings then led to the conclusion that standard monetary policy transmission mechanisms, on which central banks in more mature open industrialized economies rely, were present in Slovakia.

There is not, however, a straightforward link between such conclusions and monetary policy decisions. In his recent study, Hajnovic (2001b) urges that there is a need for a deeper qualitative understanding of the processes behind changes of various monetary and real economy variables. He points out that due to the structural changes – such as the liberalization of the economy, its integration with international financial markets, the increasing substitution between domestic and foreign financial resources – the character of the transmission mechanism has been changing as well. There are also further topics which influenced the transmission process, such as the changing economic situation of banks and enterprises, but also inflation expectations and the credibility of the central bank. All these issues have to be taken into account by the econometric modeling of the transmission mechanism of monetary policy so that the results could give a reliable basis for assessing the impacts of monetary policy actions. In this respect, further research is under way in the NBS.

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9 Close

After these six presentations, the chairman, Peter Mooslechner, thanked all lecturers for the effort they took to provide these interesting in-depth contributions and expressed his hopes for a further dialogue on this topic, which is of paramount importance to all central banks. The 42nd East Jour Fixe was rounded off by a lively discussion on the issues raised by the presentations.

Technical Cooperation of the Oesterreichische Nationalbank with Countries in Transition

In 2001, the OeNB continued and intensified its cooperation activities with transition countries in Central and Eastern Europe, the western Balkans and the CIS republics both at a bilateral and at a multilateral level.

At the bilateral level, the OeNB held four one-week seminars exclusively designed for central bankers at the Joint Vienna Institute (JVI) covering the following topics: "Preparing for EMU" (February 19 to 23, 2001), "Banking Supervision Today and Tomorrow – Recent Experiences and Future Capital Regulation" (March 5 to 9, 2001), "From Financial Accounting to Central Bank Planning and Budgeting – Actual Accounting Issues; Operational and Strategic Planning; Cost Accounting" (September 3 to 7, 2001) and "Monetary and Banking Statistics" (October 1 to 5, 2001). The OeNB still observes an ongoing strong demand for these seminars and a highly positive reaction of the participants, and will therefore continue this series in 2002 with four highly specialized seminars on the following topics: "EMU after the Cash Changeover" (March 18 to 22, 2002), "Human Resource Management at the OeNB" (June 17 to 21, 2002), "Payment Systems – Future Challenges" (October 7 to 11, 2002), and "Banking Supervision Today and Tomorrow – Recent Experiences and Future Capital Regulation" (November 4 to 8, 2002).

In addition to these seminars, the OeNB strengthened its bilateral technical cooperation activities with central banks in transition countries by organizing consultations, lectures and various study and information visits to the OeNB.

Within this framework, the OeNB hosted a study visit from the Banking and Payments Authority of Kosovo on the "changeover to the euro" in February 2001. Moreover, the OeNB welcomed a high-ranking delegation from the National Bank of Romania (NBR) in February, which came to Vienna to exchange views on "banknote production and coins." In June, a one-day study visit was organized for two specialists from the Bank of Slovenia on the topic "disaster recovery plan and procedures." Three experts of the National Bank of Ukraine (NBU) visited the OeNB for three days in July to gather information on "SAP-R3." In August, the OeNB hosted a four-day information visit for a high-ranking delegation of the National Bank of Kazakhstan on "human resource management." A two-day study visit for experts of the National Bank of Yugoslavia (NBY) in the OeNB's Internal Audit Division in December is currently under preparation. Furthermore, staff members of the National Bank of Hungary (NBH) will pay two study visits to the OeNB in the first half of 2002, the first to cover the topic "central bank legal harmonization," the second to cover the issue "communication strategy."

Close bilateral cooperation was also continued with the Czech National Bank (CNB). In June 2001 two representatives from the CNB visited the OeNB for ten days to gain a broad insight into "value-at-risk models." A high-ranking delegation from the OeNB was invited in July to the CNB to discuss issues on the "cash changeover." In October, two representatives from the CNB visited the OeNB for two days to exchange views on "technical cooperation activities," and in November, two senior translators of the CNB were welcomed for a two-day study visit at the OeNB to discuss

the experience of the translators of the Foreign Research Division with EU accession and the changes it necessitated for the OeNB's language service unit.

The demand for short-term bilateral workshops at the requesting central bank also continued to increase. Within this framework, the OeNB held a one-day workshop on "The Changeover to Euro Banknotes and Coins" at the Croatian National Bank in April 2001. Furthermore, the OeNB held a one-day workshop on "The Preparation of EU and EMU Accession – the Central Bank's Experience" with the National Bank of Slovakia (NBS) as well as a two-day workshop on "Human Resource Management" with the National Bank of Poland (NBP), both in June 2001. Following a request from the National Bank of Hungary (NBH), the OeNB will arrange a two-day workshop in Budapest on "Future Capital Standards proposed by the Basel Committee and the European Commission – Review of Regulatory Capital Requirements for Credit Institutions," "Supervising Derivative Transactions" and "Practical Experience from EU and ECB Working Groups Concerning Future Developments on Banking Regulations and Macroprudential Systemic Issues" in the first half of 2002. Furthermore, the OeNB plans a two-day workshop on "The Central Bank's Role in Payment and Settlement Systems" at the training center of the National Bank of Belarus in Minsk within the year 2002.

In addition, an increasing demand for forwarding of written material was registered and a number of inquiries, e.g. on the "cash changeover," "cash operations in Austria," and "restructuring of the remuneration system concerning the recognition of long staff service times," were handled in written form.

Apart from these short-term cooperation activities, the OeNB further enhanced the close cooperation with its counterparts in candidate countries by hosting a two-month research visit of an economist from the Czech National Bank (CNB) to prepare a research study on "the labor market and its implications for inflation in the Czech Republic" in October and November 2001 at the OeNB's Foreign Research Division. Research visits enable both the sending and the receiving central bank to jointly study and discuss transition issues. Moreover, the OeNB hosted a three-month traineeship for an employee of the National Bank of Slovakia (NBS) on "coordinating international relations of a central bank" at the European Affairs and International Financial Organizations Division from October to December, 2001. A further six-week internship on this subject for an employee of the Czech National Bank is planned for spring 2002.

At the multilateral level, the OeNB is currently taking part in the EU-financed Twinning Programme on "Strengthening the Capacity of the Romanian Institutions for the Prevention and Control of Money Laundering" in cooperation with Italy. Furthermore, the OeNB's participation in the Phare project on the topic "Management, Information Systems and Computerization of Accounting of the National Bank of Romania" was concluded in May 2001. Within the framework of IMF-coordinated technical assistance, a representative of the OeNB took part in a two-week IMF mission to Lithuania on "Legal, Technical and Organizational Aspects of the Forth-

coming Repegging of the Currency Board” in March 2001. In addition, a representative of the OeNB participated in the Foreign Exchange Reserve Management Outreach Program, which focuses on helping governments and central banks improve the quality of their policy frameworks for managing the efforts of volatility in the international monetary and financial system.

The Austrian authorities, i.e. the Austrian Ministry of Finance and the OeNB, remain committed to supporting the Joint Vienna Institute (JVI), both financially and by contributing to the JVI’s academic program. In addition to the four one-week seminars held by the OeNB every year and the organization of several lectures for JVI seminar groups, the Austrian authorities jointly organize two one-week seminars at the JVI. The topics of these Austrian seminars in 2001 were “Foreign Direct Investment Policy” (May 14 to 18, 2001) and “The Challenge for Structural Reforms: Design, Implementation, Experience” (November 26 to 30, 2001). On account of the overwhelming demand, these seminars will be repeated in September (23 to 27) and October (21 to 25) 2002, respectively. Moreover, as in the previous years, the JVI’s course in Applied Economic Policy (AEP) includes an “Austrian segment” financed jointly by the Austrian authorities. In the first part of this segment, experts from a variety of academic and organizational backgrounds spend three days presenting lectures devoted to specific features of Austria’s market economy, such as the political and economic structure, social partnership, issues of fiscal federalism, incomes policies, Austria’s experience with EU accession and the introduction of the euro. In the second part, the so-called study tour, participants spend three days visiting companies, state and local government authorities, banks, media centers and the like to gain an insight into the structures of Austria’s economy and administration. The program for each study tour is organized by the OeNB, and the study tour is accompanied alternately by an OeNB representative and by a representative of the Austrian Ministry of Finance.

S T A T I S T I C A L A N N E X

Gross Domestic Product

	Bulgaria	Czech Republic	Estonia	Hungary	Latvia	Lithuania	Poland	Romania	Russia	Slovak Republic	Slovenia
Annual change in %											
1991	-11.7	-11.6	x	-11.9	x	x	-7.0	-12.9	- 5.0	-14.6	-8.9
1992	- 7.3	- 0.5	-21.6	- 3.1	x	x	+2.6	- 8.8	-14.5	- 6.5	-5.5
1993	- 1.5	+ 0.1	- 8.2	- 0.6	-14.9	-16.2	+3.8	+ 1.5	- 8.7	- 3.7	+2.8
1994	+ 1.8	+ 2.2	- 2.0	+ 2.9	+ 0.6	- 9.8	+5.2	+ 3.9	-12.7	+ 4.9	+5.3
1995	+ 2.9	+ 5.9	+ 4.3	+ 1.5	- 0.8	+ 3.3	+7.0	+ 7.1	- 4.1	+ 6.7	+4.1
1996	-10.1	+ 4.3	+ 3.9	+ 1.3	+ 3.3	+ 4.7	+6.0	+ 3.9	- 3.4	+ 6.2	+3.5
1997	- 7.0	- 0.8	+10.6	+ 4.6	+ 8.6	+ 7.3	+6.8	- 6.1	+ 0.9	+ 6.2	+4.6
1998	+ 3.5	- 1.2	+ 4.0	+ 4.9	+ 3.9	+ 5.1	+4.8	- 4.8	- 4.9	+ 4.1	+3.8
1999	+ 2.4	- 0.4	- 0.5	+ 4.2	+ 1.1	- 4.2	+4.1	- 2.3	+ 5.4	+ 1.9	+5.2
2000	+ 5.8	+ 2.9	+ 6.4	+ 5.2	+ 6.6	+ 3.7	+4.0	+ 1.6	+ 8.3	+ 2.2	+4.6
1999											
1 st quarter	+ 0.8	- 2.0	- 2.5	+ 3.2	- 0.6	- 1.6	+1.6	- 4.6	- 2.7	+ 1.9	+2.9
2 nd quarter	+ 2.7	- 1.1	- 2.2	+ 3.3	- 0.2	- 2.0	+2.9	- 3.2	+ 2.2	+ 2.9	+7.8
3 rd quarter	+ 4.8	+ 0.4	- 0.8	+ 4.2	+ 1.2	- 6.6	+5.0	- 3.6	+10.8	+ 0.5	+4.5
4 th quarter	+ 1.0	+ 1.0	+ 2.5	+ 5.9	+ 3.9	- 4.8	+6.2	- 1.4	+10.5	+ 2.3	+5.5
2000											
1 st quarter	+ 4.5	+ 3.2	+ 6.5	+ 6.5	+ 6.1	+ 4.6	+5.9	+ 0.9	+ 9.0	+ 1.5	+6.2
2 nd quarter	+ 5.7	+ 2.4	+ 7.8	+ 5.6	+ 5.0	+ 0.9	+5.0	+ 3.3	+ 8.6	+ 1.9	+3.4
3 rd quarter	+ 6.1	+ 2.4	+ 7.3	+ 4.5	+ 6.6	+ 6.1	+3.1	+ 1.8	+ 8.8	+ 2.5	+5.5
4 th quarter	+ 6.5	+ 3.8	+ 6.0	+ 4.2	+ 8.7	+ 3.9	+2.4	+ 0.4	+ 6.8	+ 2.9	+3.5
2001											
1 st quarter	+ 4.5	+ 4.1	+ 5.8	+ 4.4	+ 8.3	+ 4.4	+2.3	+ 4.8	+ 4.9	+ 3.0	+3.2
2 nd quarter	+ 5.1	+ 3.9	+ 5.0	+ 4.0	+ 9.2	+ 5.7	+0.9	+ 5.0	+ 5.3	+ 2.8	+2.7

Source: WIIW (The Vienna Institute for International Economic Studies); Estonia, Latvia, Lithuania: IMF; Russia: national sources from 1999. Quarterly data: national sources. Due to revisions quarterly data may not match annual data.

Industrial Production

	Bulgaria	Czech Republic	Estonia ¹⁾	Hungary	Latvia	Lithuania ¹⁾	Poland	Romania	Russia	Slovak Republic ²⁾	Slovenia
Annual change in %											
1991	-20.2	-21.2	x	-16.6	x	- 4.9	- 8.0	-22.8	- 8.0	-19.4	-12.4
1992	-18.4	- 7.9	x	- 9.7	-34.6	-51.6	+ 2.8	-21.9	-18.0	- 9.3	-13.2
1993	- 9.8	- 5.3	x	+ 4.0	-38.1	-34.7	+ 6.4	+ 1.3	-14.1	- 3.8	- 2.8
1994	+10.6	+ 2.1	- 2.1	+ 9.6	- 9.5	-29.8	+12.1	+ 3.3	-20.9	+ 4.8	+ 6.4
1995	+ 4.5	+ 8.7	+ 2.0	+ 4.6	- 6.3	+ 0.9	+ 9.7	+ 9.4	- 3.3	+ 8.3	+ 2.0
1996	+ 5.1	+ 2.0	+ 3.5	+ 3.4	+ 1.4	+ 3.5	+ 8.3	+ 6.3	- 4.0	+ 2.5	+ 1.0
1997	- 5.4	+ 4.5	+15.2	+11.1	+ 6.1	+ 8.0	+11.5	- 7.2	+ 1.9	+ 2.7	+ 1.0
1998	- 7.9	+ 1.6	+ 3.2	+12.5	+ 2.0	+ 9.3	+ 3.5	-13.8	- 5.2	+ 5.0	+ 3.7
1999	- 9.3	- 3.1	- 1.7	+10.4	- 8.8	- 9.6	+ 3.6	- 2.2	+11.0	- 3.6	- 0.5
2000	+ 5.8	+ 5.1	+12.8	+18.6	+ 3.2	+10.7	+ 6.8	+ 8.2	+11.9	+ 9.1	+ 6.2
2000											
January	+ 5.2	+ 3.9	+12.0	+18.2	+ 4.3	+ 6.9	+ 7.9	- 6.3	+14.1	+ 2.0	+ 2.5
February	- 0.3	+ 5.1	+14.9	+24.1	+ 3.6	+14.3	+16.5	+ 4.1	+16.7	+13.3	+11.8
March	+ 8.6	+ 5.2	+12.8	+20.4	+ 2.0	+ 6.0	+ 6.7	+ 5.0	+12.3	+ 8.6	+ 7.5
April	+ 3.3	+ 2.8	+ 9.4	+12.6	- 3.8	-14.0	+ 5.2	+ 4.3	+ 9.5	+ 7.0	+ 7.6
May	+ 8.3	+ 6.5	+20.3	+29.0	+10.0	+ 0.7	+12.1	+ 9.0	+14.2	+10.2	+10.8
June	+ 8.0	+ 6.1	+16.3	+19.8	+ 5.6	- 3.9	+13.4	+10.6	+12.4	+ 7.7	+10.3
July	+ 0.8	+ 5.5	+10.3	+19.9	- 2.9	- 2.8	+ 7.8	+11.3	+11.9	+ 8.1	+ 8.1
August	+ 6.3	+11.0	+15.8	+23.1	+ 5.5	+17.2	+ 9.2	+10.3	+13.2	+ 9.9	+ 7.0
September	+10.4	+ 3.7	+12.5	+16.9	+ 1.5	+ 7.5	+ 5.0	+ 7.5	+10.7	+ 9.6	+ 3.7
October	+ 4.9	+ 9.0	+13.7	+16.2	+ 5.5	+ 4.8	+ 7.1	+ 9.0	+13.9	+15.4	+ 3.1
November	+ 6.6	+ 4.3	+12.1	+15.7	+ 2.4	+19.0	+ 4.8	+ 7.1	+11.6	+10.7	+ 5.7
December	+ 1.6	+ 1.4	+ 4.9	+11.9	+ 2.3	+20.2	- 2.2	+ 2.3	+ 3.9	+ 8.3	- 2.5
2001											
January	- 6.5	+13.8	+ 9.3	+19.1	+ 8.9	+28.0	+10.1	+16.3	+ 7.8	+11.0	+ 8.9
February	+28.0	+ 6.5	+ 4.7	+ 9.9	+ 6.0	+16.1	+ 0.1	+ 9.8	+ 3.1	+ 2.9	+ 2.8
March	+ 2.1	+ 9.8	+ 5.0	+ 2.2	+ 7.7	+ 3.5	+ 2.9	+ 7.4	+ 4.7	+ 2.5	+ 2.9
April	+ 1.6	+11.3	+ 5.0	+ 8.4	+10.5	+16.8	+ 3.6	+12.6	+ 7.0	+ 4.4	+ 9.4
May	+ 4.0	+ 6.9	+ 7.1	+ 7.9	+ 6.1	+31.1	- 0.9	+13.0	+ 7.0	+ 6.4	+ 1.2
June	+ 0.2	+ 3.7	+ 2.5	- 1.2	+ 6.1	+18.9	- 4.7	+ 5.0	+ 3.7	+ 6.5	- 3.9
July	+ 6.8	+ 9.3	..	+ 2.4	..	..	+ 0.9	+ 5.3	+ 4.5	+ 7.9	+ 6.4
August	+10.3	+ 3.0	..	+ 3.0	..	..	+ 0.4	+ 4.5	+ 5.1	+ 2.9	+ 2.9
September	+ 2.7	+ 1.1	..	- 5.8	..	..	- 3.8	+ 2.5	+ 3.8	+ 4.7	- 1.1

Source: Annual data: WIIW; Estonia, Latvia, Lithuania: national sources. Monthly data: national sources.

¹⁾ Industrial sales.

²⁾ From 1999 change in % against 1998 monthly average.

Unemployment Rate

	Bulgaria	Czech Republic	Estonia	Hungary	Latvia	Lithuania	Poland	Romania	Russia	Slovak Republic	Slovenia
<i>End of period (%)</i>											
1991	11.1	4.1	x	x	x	x	11.8	3.0	x	11.8	10.1
1992	15.2	2.6	x	9.8	2.3	x	13.6	8.2	5.2	10.4	13.4
1993	16.4	3.5	1.8	11.9	5.8	4.4	16.4	10.4	6.0	14.4	15.4
1994	12.8	3.2	1.5	10.7	6.5	3.8	16.0	10.9	7.7	14.6	14.2
1995	11.1	2.9	2.1	10.2	6.5	6.2	14.9	9.5	9.0	13.1	14.5
1996	12.5	3.5	2.6	9.9	7.2	7.0	13.2	6.6	9.9	12.8	14.4
1997	13.7	5.2	2.7	8.7	7.0	5.9	10.3	8.9	11.2	12.5	14.8
1998	12.2	7.5	2.7	6.7	9.2	6.8	10.4	10.4	13.3	15.6	14.6
1999	16.0	9.4	4.0	6.3	9.1	8.3	13.0	11.8	12.2	19.2	13.0
2000	17.9	8.8	5.9	5.7	7.8	12.6	15.1	10.5	9.6	17.9	12.0
2000											
July	18.3	9.0	4.8	6.6	8.2	11.6	13.7	10.8	10.0	19.4	11.9
August	18.0	9.0	4.9	6.5	8.1	11.8	13.8	10.5	9.8	17.4	11.7
September	17.8	8.8	4.9	5.7	7.9	11.8	14.0	10.2	9.8	16.6	11.7
October	17.8	8.5	5.5	6.2	7.8	11.7	14.1	10.2	9.8	16.1	11.9
November	17.7	8.5	5.8	6.0	7.8	12.1	14.5	10.3	9.7	16.7	11.9
December	17.9	8.8	5.9	5.7	7.8	12.6	15.1	10.5	9.6	17.9	12.0
2001											
January	18.5	9.1	6.6	6.0	7.9	13.1	15.7	10.8	9.8	19.8	12.2
February	18.7	9.0	6.5	6.3	8.0	13.2	15.9	10.8	9.9	19.7	12.0
March	18.4	8.7	6.8	5.6	8.1	13.2	16.1	10.4	9.4	19.2	11.8
April	18.5	8.5	6.7	5.8	8.0	12.8	16.0	9.9	9.0	18.3	11.7
May	17.8	8.1	6.5	5.7	7.9	12.3	15.9	9.3	8.5	17.5	11.7
June	17.1	8.1	6.0	5.4	7.8	12.1	15.9	8.8	8.3	17.8	11.7
July	16.8	8.5	6.0	5.7	7.7	12.1	16.0	8.4	8.3	18.0	11.3
August	16.7	8.5	..	5.8	..	..	16.2	8.1	8.1	17.8	11.1
September	16.5	8.5	..	5.3	..	..	16.3	..	8.1	17.4	..
October	..	8.4	..	..	..	..	16.4	..	8.7	17.3	..

Source: WIW; Estonia, Latvia, Lithuania: national sources.

Consumer Price Index

	Bulgaria	Czech Republic	Estonia	Hungary	Latvia	Lithuania	Poland	Romania	Russia	Slovak Republic	Slovenia
<i>Period average (annual change in %)</i>											
1991	+ 338.5	+56.6	x	+35.0	x	x	+70.3	+170.2	+ 92.6	+61.2	x
1992	+ 91.2	+11.1	x	+23.0	+243.3	x	+43.0	+210.4	+1,526.5	+10.0	+207.3
1993	+ 72.8	+20.8	+89.8	+22.5	+108.8	+410.2	+35.3	+256.1	+ 873.5	+23.2	+ 32.9
1994	+ 96.0	+10.0	+47.7	+18.8	+ 35.9	+ 72.2	+32.2	+136.8	+ 307.0	+13.4	+ 21.0
1995	+ 62.1	+ 9.1	+28.8	+28.2	+ 25.0	+ 39.7	+27.8	+ 32.3	+ 197.5	+ 9.9	+ 13.5
1996	+ 121.6	+ 8.8	+23.1	+23.6	+ 17.6	+ 24.6	+19.9	+ 38.8	+ 47.8	+ 5.8	+ 9.9
1997	+1,058.4	+ 8.5	+10.6	+18.3	+ 8.4	+ 8.9	+14.9	+154.8	+ 14.8	+ 6.1	+ 8.4
1998	+ 18.7	+10.7	+ 8.2	+14.3	+ 4.7	+ 5.1	+11.8	+ 59.1	+ 27.6	+ 6.7	+ 8.0
1999	+ 2.6	+ 2.1	+ 3.3	+10.0	+ 2.4	+ 0.8	+ 7.3	+ 45.8	+ 85.7	+10.6	+ 6.1
2000	+ 10.3	+ 3.9	+ 4.0	+ 9.8	+ 2.7	+ 1.0	+10.1	+ 45.7	+ 20.8	+12.0	+ 8.9
2000											
July	+ 8.6	+ 3.9	+ 4.1	+ 9.6	+ 2.9	+ 1.4	+11.6	+ 44.5	+ 19.1	+ 9.2	+ 8.8
August	+ 11.0	+ 4.1	+ 4.5	+ 9.6	+ 2.4	+ 0.9	+10.7	+ 45.4	+ 18.8	+ 8.7	+ 8.2
September	+ 11.8	+ 4.1	+ 4.7	+10.3	+ 2.2	+ 0.3	+10.3	+ 44.9	+ 18.6	+ 8.7	+ 8.9
October	+ 11.9	+ 4.4	+ 5.4	+10.4	+ 2.0	+ 1.1	+ 9.9	+ 42.9	+ 19.4	+ 8.5	+ 9.0
November	+ 12.3	+ 4.3	+ 5.7	+10.6	+ 1.6	+ 1.5	+ 9.3	+ 41.3	+ 19.8	+ 8.6	+ 9.7
December	+ 11.3	+ 4.0	+ 5.0	+10.1	+ 1.8	+ 1.4	+ 8.5	+ 40.7	+ 20.1	+ 8.4	+ 8.9
2001											
January	+ 9.3	+ 4.2	+ 5.8	+10.1	+ 1.4	- 0.4	+ 7.4	+ 39.9	+ 20.7	+ 7.7	+ 8.5
February	+ 8.5	+ 4.0	+ 6.0	+10.4	+ 0.6	- 0.2	+ 6.6	+ 40.0	+ 22.3	+ 6.7	+ 8.7
March	+ 8.9	+ 4.1	+ 5.8	+10.5	+ 1.4	+ 0.6	+ 6.2	+ 40.3	+ 23.8	+ 7.1	+ 8.9
April	+ 9.8	+ 4.6	+ 6.3	+10.3	+ 1.3	+ 0.0	+ 6.6	+ 37.5	+ 25.0	+ 7.6	+ 9.0
May	+ 9.7	+ 5.0	+ 7.0	+10.8	+ 2.6	+ 1.7	+ 6.9	+ 37.4	+ 25.0	+ 7.7	+ 9.7
June	+ 9.4	+ 5.5	+ 6.8	+10.5	+ 3.1	+ 1.5	+ 6.2	+ 35.7	+ 23.7	+ 8.0	+ 9.5
July	+ 8.5	+ 5.9	+ 6.4	+ 9.4	+ 3.1	+ 1.1	+ 5.2	+ 31.8	+ 22.2	+ 8.0	+ 8.8
August	+ 5.7	+ 5.5	+ 6.1	+ 8.7	+ 3.0	+ 2.3	+ 5.1	+ 32.3	+ 20.9	+ 7.8	+ 8.5
September	+ 4.7	+ 4.7	+ 5.7	+ 8.0	+ 3.7	+ 2.0	+ 4.3	+ 31.2	+ 20.0	+ 7.4	+ 7.9
October	+ 5.2	+ 4.4	+ 8.1	+ 7.6	+ 3.0	+ 2.3	+ 4.0	+ 30.8	+ 18.9	+ 7.1	+ 7.8

Source: WIW; Estonia, Latvia, Lithuania: IMF, national sources from October 2001.

Trade Balance

	Bulgaria	Czech Republic	Estonia	Hungary	Latvia	Lithuania	Poland	Romania	Russia	Slovak Republic	Slovenia
USD million											
1990	x	x	x	348.0	x	x	x	-3,427.0	x	x	x
1991	x	x	x	189.0	x	x	x	-1,106.0	x	x	x
1992	x	x	x	- 48.0	- 40.3	x	x	-1,420.0	x	x	791.1
1993	x	- 525.0	- 144.8	-3,247.0	18.6	- 153.1	- 2,293.0	-1,128.0	x	- 932.0	- 154.2
1994	x	-1,381.0	- 356.9	-3,635.0	- 301.1	- 201.6	- 836.0	- 411.0	17,374.0	58.5	- 337.5
1995	x	-3,678.0	- 666.1	-2,442.0	- 580.7	- 943.5	- 1,827.0	-1,577.0	20,310.0	- 227.5	- 954.3
1996	187.6	-5,877.0	-1,019.4	-2,645.0	- 799.1	-1,203.8	- 8,154.0	-2,470.0	22,471.0	-2,292.6	- 881.7
1997	380.3	-4,540.0	-1,125.0	-1,734.0	-1,051.3	-1,784.0	-11,320.0	-1,980.0	17,025.0	-2,057.9	- 771.6
1998	- 457.3	-2,554.0	-1,115.2	-2,080.0	-1,377.4	-2,083.0	-13,667.0	-2,625.0	16,869.0	-2,353.1	- 774.9
1999	-1,081.0	-1,902.6	- 877.1	-2,054.0	-1,223.2	-1,830.8	-14,500.0	-1,092.0	36,155.0	-1,092.4	-1,245.2
2000	-1,173.2	-3,285.4	- 788.5	-2,122.0	-1,061.0	-1,194.1	-13,165.0	-1,684.0	60,703.0	- 898.0	-1,081.2
2000											
July	- 98.5	- 373.4	- 64.7	- 182.3	- 119.7	x	- 1,040.0	- 821.3	5,014.0	- 24.1	- 95.4
August	- 49.8	- 380.2	- 66.2	- 43.4	- 119.1	x	- 1,326.0	- 69.0	5,356.0	- 95.6	- 126.1
September	- 87.7	- 67.2	- 59.2	- 279.1	- 111.2	- 226.8	- 974.0	- 78.0	5,233.0	- 23.8	- 41.2
October	- 163.9	- 402.8	- 100.9	- 251.4	- 119.5	x	- 1,058.0	- 159.0	4,912.0	- 115.0	- 78.9
November	- 89.0	- 262.3	- 128.1	- 61.7	- 147.3	x	- 861.0	- 194.0	5,834.0	- 166.5	- 90.5
December	- 149.6	- 541.1	- 102.5	- 384.9	- 141.8	- 384.9	- 1,038.0	- 587.0	5,341.0	- 209.5	- 107.6
2001											
January	- 79.8	- 203.4	- 92.7	- 317.1	- 80.9	x	- 1,516.0	- 157.0	5,169.0	- 102.7	- 34.5
February	- 46.4	- 198.6	- 44.9	- 99.5	- 91.1	x	- 724.0	- 249.0	4,647.0	- 115.8	- 47.3
March	- 99.7	- 298.5	- 96.1	- 112.8	- 119.1	- 192.0	- 908.0	- 130.0	4,699.0	- 179.5	- 37.1
April	- 118.5	- 299.7	- 109.6	- 6.2	- 113.0	x	- 710.0	- 352.0	4,163.0	- 137.8	- 81.3
May	- 163.6	- 220.7	- 51.5	- 202.5	- 116.1	x	- 1,166.0	- 371.0	4,214.0	- 157.2	- 92.4
June	- 169.7	- 115.0	- 74.0	- 246.1	- 105.3	- 194.9	- 902.0	- 193.0	4,604.0	- 164.9	- 32.8
July	- 204.3	- 475.0	- 89.7	- 127.8	- 138.5	x	- 826.0	- 170.0	3,843.0	- 169.4	- 28.3
August	- 114.0	- 357.8	- 66.4	- 82.2	- 131.4	x	..	- 108.0	4,570.0	- 165.9	- 42.9
September	..	40.7	- 111.8	- 107.9	..	..	..	..	4,232.0	- 147.1	- 10.9

Source: National central banks.

Current Account

	Bulgaria	Czech Republic	Estonia	Hungary	Latvia	Lithuania	Poland	Romania	Russia	Slovak Republic ¹⁾	Slovenia
USD million											
1991	x	x	x	267.0	x	x	- 1,359.0	-1,012.0	x	x	x
1992	x	x	x	324.0	191.4	x	- 2,329.0	-1,174.0	x	x	926.2
1993	x	455.8	21.1	-3,455.0	428.0	- 83.5	- 2,329.0	-1,174.0	12,792.0	- 601.2	191.9
1994	x	- 786.8	- 165.2	-3,911.0	200.8	- 90.4	- 944.0	- 428.0	8,850.0	664.9	573.0
1995	x	-1,369.1	- 157.9	-2,480.0	- 17.9	- 56.6	5,455.0	-1,774.0	8,025.0	391.4	- 99.4
1996	x	-4,292.2	- 399.4	-1,678.0	-280.0	- 722.6	- 1,352.0	-2,571.0	12,448.0	-2,098.1	31.4
1997	426.5	-3,211.0	- 562.6	- 981.0	-346.2	- 981.3	- 4,312.0	-2,137.0	2,060.0	-1,803.9	11.4
1998	-375.4	-1,336.0	- 480.3	-2,298.0	-707.8	-1,298.0	- 6,810.0	-2,968.0	687.0	-2,124.0	-147.2
1999	-660.2	-1,567.1	- 295.3	-2,076.0	-635.9	-1,053.4	-11,660.0	-1,296.0	24,647.0	- 979.7	-782.6
2000	-696.2	-2,273.0	- 336.4	-1,497.0	-487.7	- 674.9	- 9,946.0	-1,400.0	46,342.0	- 694.0	-594.2
2000											
July	- 27.8	x	x	9.4	x	x	- 690.0	- 91.0	x	5.6	- 67.5
August	115.7	x	x	157.3	x	x	- 956.0	- 48.0	x	- 3.5	- 93.1
September	- 26.8	- 370.3	- 796.7	- 271.2	- 67.2	- 105.2	- 606.0	- 22.0	10,546.0	- 13.3	22.3
October	-133.3	x	x	- 47.0	x	x	- 840.0	- 89.0	x	- 109.7	- 22.9
November	- 65.4	x	x	9.4	x	x	- 445.0	- 69.0	x	- 156.0	- 28.0
December	-135.8	-1,176.4	-2,708.3	- 523.1	-118.4	- 254.2	- 798.0	- 649.0	12,927.0	- 233.2	-137.0
2001											
January	- 4.1	x	x	- 222.4	x	x	- 956.0	- 107.0	x	- 92.8	49.8
February	- 42.3	x	x	- 49.8	x	x	- 463.0	- 256.0	x	- 29.4	5.6
March	- 51.9	- 583.3	-1,672.9	- 43.7	- 45.2	- 145.4	- 751.0	- 92.0	11,773.0	- 169.9	- 9.3
April	- 78.9	x	x	- 1.8	x	x	- 520.0	- 336.0	x	- 50.9	- 25.4
May	- 91.2	x	x	- 117.1	x	x	- 737.0	- 406.0	x	- 214.4	- 52.0
June	- 9.2	- 548.2	- 887.8	- 290.9	- 74.9	- 137.9	- 948.0	- 140.0	9,376.0	- 169.0	- 14.4
July	- 80.3	x	x	164.4	x	x	- 287.0	- 45.0	x	- 61.2	9.1
August	63.3	x	x	245.8	x	x	..	- 5.0	x	- 159.4	19.6
September	..	..	..	67.0	..	..	..	..	7,100.0	..	43.7

Source: National central banks.

¹⁾ From 1997: BOP Manual, 5th edition.

Total Reserves Minus Gold

	Bulgaria	Czech Republic	Estonia	Hungary	Latvia	Lithuania	Poland	Romania	Russia	Slovak Republic	Slovenia
End of period (USD million)											
1991	310.6	x	x	3,934.3	x	x	3,632.6	694.9	x	x	112.1
1992	902.2		170.2	4,424.7	x	45.3	4,099.1	825.9	x	x	715.5
1993	655.2	3,789.4	386.1	6,700.0	431.5	350.3	4,092.0	995.5	5,835.0	415.6	787.8
1994	1,001.8	6,144.5	443.4	6,735.5	545.2	525.5	5,841.8	2,086.2	3,980.4	1,691.2	1,499.0
1995	1,236.5	13,842.9	579.9	11,974.3	505.7	757.0	14,774.1	1,579.0	14,382.8	3,363.9	1,820.8
1996	483.6	12,351.8	636.8	9,720.2	654.1	772.2	17,844.0	2,102.8	11,276.4	3,418.9	2,297.4
1997	2,248.5	9,733.7	757.7	8,407.9	704.0	1,010.0	20,407.2	3,803.3	12,894.7	3,230.3	3,314.7
1998	2,830.8	12,542.1	810.6	9,318.7	728.2	1,409.1	27,325.2	2,867.4	7,801.4	2,868.8	3,638.5
1999	3,083.4	12,806.1	853.5	10,954.0	840.2	1,195.0	26,354.7	2,687.0	8,457.2	3,370.7	3,168.0
2000	3,342.3	13,019.2	920.6	11,189.6	850.9	1,311.6	26,562.0	3,922.2	24,264.3	4,022.3	3,196.0
2000											
July	2,747.8	12,948.2	774.1	10,231.0	888.4	1,371.0	25,027.2	3,523.6	19,955.2	3,899.3	3,096.4
August	2,695.9	12,234.7	763.4	10,351.3	852.6	1,341.0	24,705.9	3,614.1	20,288.9	4,331.0	2,981.0
September	2,870.3	12,387.5	770.1	10,561.0	816.6	1,301.6	24,613.7	3,790.2	21,473.9	4,166.2	2,972.3
October	2,976.1	11,925.9	765.9	10,088.6	864.6	1,303.8	24,508.0	3,908.4	22,289.9	3,939.1	2,943.3
November	3,142.1	12,279.7	774.1	10,760.1	861.1	1,226.5	25,208.5	3,841.4	24,035.2	4,007.2	2,950.7
December	3,342.3	13,019.2	920.6	11,189.6	850.9	1,311.6	25,656.9	3,922.2	24,264.3	4,022.3	3,196.0
2001											
January	3,112.0	12,956.7	921.4	10,752.5	812.7	1,286.1	27,231.9	3,998.1	25,888.5	3,918.4	3,112.9
February	3,037.2	13,079.8	765.0	11,114.0	848.7	1,430.9	27,898.5	4,075.4	24,590.7	3,916.6	3,187.0
March	2,980.3	12,781.5	737.5	10,694.9	852.7	1,239.7	27,145.8	4,204.2	25,942.2	3,808.5	3,105.9
April	3,036.0	12,981.1	797.1	11,267.9	869.9	1,280.9	26,872.0	4,350.0	27,868.3	4,034.9	3,632.8
May	2,895.3	12,521.3	740.0	10,969.2	843.2	1,303.8	26,163.9	4,300.3	29,748.6	3,725.5	3,550.8
June	2,980.4	12,697.5	749.4	11,485.1	867.4	1,407.6	26,219.2	4,834.0	31,251.2	3,668.3	3,552.5
July	2,938.2	12,854.7	680.8	11,816.5	916.1	1,507.2	26,965.4	4,951.7	32,694.6	..	3,737.5
August	2,973.9	13,257.5	729.7	12,003.1	912.5	1,491.5	27,128.1	5,227.4	33,685.8	..	3,634.7
September	2,953.4	13,415.4	766.3	11,982.3	914.1	1,551.3	27,332.5	..	34,044.0	..	..

Source: IMF.

Central Government Surplus / Deficit

	Bulgaria	Czech Republic	Estonia ¹⁾	Hungary	Latvia	Lithuania	Poland ²⁾	Romania	Russia ³⁾	Slovak Republic	Slovenia ⁴⁾
% of GDP											
1991	x	-2.0	x	-4.6	x	x	-3.8	-1.9	x	-3.4	
1992	- 5.8	-0.2	x	-6.7	-3.0	x	-6.0	-4.4	- 3.4	-2.8	+1.2
1993	-11.0	+0.1	-0.4	-5.6	-0.2	x	-2.8	-1.7	- 4.6	-6.2	+0.9
1994	- 6.5	+0.9	-0.6	-8.1	-1.9	-1.9	-2.7	-4.2	-10.3	-4.9	+0.0
1995	- 6.6	+0.5	+0.3	-5.5	-3.8	-1.8	-2.4	-4.1	- 3.2	-1.5	+0.0
1996	-10.9	-0.1	-1.6	-1.9	-0.8	-2.5	-2.4	-4.9	- 4.4	-4.2	+0.3
1997	- 3.9	-0.9	+2.2	-4.0	+1.2	-1.0	-1.3	-3.6	- 5.2	-5.7	-1.2
1998	+ 1.5	-1.6	-0.3	-5.5	+0.2	-1.3	-2.4	-2.8	- 5.7	-2.6	-0.8
1999	+ 1.8	-1.6	-4.7	-3.0	-3.0	-0.3	-2.0	-2.5	- 1.0	-1.8	-0.6
2000	- 0.9	-2.4	-0.4	-2.9	-2.8	-1.7	-2.2	-3.6	+ 2.9	-3.1	-1.4
1999											
1 st quarter	+ 1.8	+0.5	-8.4	-9.0	+0.3	-0.8	-6.5	-2.0	- 4.6	+0.6	-2.4
2 nd quarter	+ 3.7	-1.7	-4.8	-2.5	-5.2	-3.5	-1.8	-5.6	- 2.3	-3.9	-2.8
3 rd quarter	- 5.5	-0.5	-1.2	-1.5	-2.8	+1.8	+0.0	-2.5	- 0.2	-2.5	+1.4
4 th quarter	- 5.7	-4.3	-4.6	+0.2	-3.9	+1.1	-0.7	-1.5	+ 0.2	-1.1	+1.4
2000											
1 st quarter	- 0.1	+1.9	-0.9	-4.3	-0.9	-2.6	-4.5	-6.7	+ 2.7	-0.4	-4.1
2 nd quarter	+ 7.7	-2.7	-2.3	-1.1	-4.8	-2.0	-2.2	-5.9	+ 4.0	+0.1	-2.4
3 rd quarter	- 5.7	-2.4	+2.0	-0.4	-2.0	-0.6	-2.0	-1.9	+ 2.8	-3.1	-3.0
4 th quarter	- 2.8	-5.5	-1.5	-5.5	-3.2	-1.6	-0.7	-2.3	+ 0.1	-8.7	+5.2
2001											
1 st quarter	- 3.7	+0.6	+0.2	-1.1	-1.7	+0.3	-9.1	-4.4	+ 4.4	-2.6	-5.0
2 nd quarter	+ 0.6	-6.0	+1.0	-1.3	-0.8	-5.1	-2.1	-5.4	+ 3.7	-3.2	-5.5
3 rd quarter	- 5.3	+1.3	+3.1	-2.3	-0.9	..	-1.6	-2.3	+ 2.8	-3.8	+1.7

Source: WIW; Russia: IMF; Latvia, Lithuania: national sources; Estonia: national sources from 1996; Russia: Tacis from 1996. Quarterly data: national sources.

¹⁾ Including social budget in 1993 and 1994.

²⁾ Since 1998: privatization receipts treated as financing items.

³⁾ Quarterly data are cumulative.

⁴⁾ General government deficit; revised methodology since 1999.

Gross External Debt

	Bulgaria ¹⁾	Czech Republic	Estonia	Hungary	Latvia	Lithuania	Poland	Romania ²⁾	Russia	Slovak Republic ³⁾	Slovenia
	USD million										
1991	12,247.1	x	x	22,812.0	x	x	48,412.0	2,131.0	70,100.0	x	1,866.0
1992	13,805.7	7,762.3	x	21,644.0	x	x	47,044.0	3,240.0	80,200.0	2,981.0	1,741.0
1993	13,836.4	9,604.9	228.0	24,566.0	x	x	47,246.0	4,249.0	112,784.0	3,626.0	1,873.0
1994	11,338.4	12,209.7	381.0	28,526.0	x	529.0	42,174.0	5,563.0	121,600.0	4,310.0	2,258.0
1995	10,148.0	17,190.3	626.0	31,660.0	1,538.0	1,374.0	43,957.0	6,482.1	120,500.0	5,827.0	2,970.0
1996	9,601.6	21,180.5	1,534.0	28,043.0	2,091.0	2,081.0	47,541.0	8,344.9	125,000.0	7,810.0	3,981.0
1997	9,760.2	21,616.5	2,562.0	24,395.0	2,756.0	3,146.0	49,648.0	9,502.7	130,800.0	10,700.0	4,123.0
1998	10,274.3	24,348.4	2,924.0	27,280.0	3,098.0	3,577.0	59,163.0	9,898.6	145,000.0	11,900.0	4,915.0
1999	10,204.3	22,860.6	2,879.0	29,336.0	3,821.0	4,528.0	65,444.0	9,127.8	158,800.0	10,518.0	5,400.0
2000	10,364.3	21,526.5	3,092.0	30,757.0	4,711.0	4,857.0	68,758.0	10,302.0	144,500.0	10,500.0	6,217.0

Source: WIW; Estonia, Latvia, Lithuania: EBRD (European Bank for Reconstruction and Development).

¹⁾ Gross external debt in convertible currencies.

²⁾ Medium- and long-term gross debt.

³⁾ The official level of foreign debt in 1997 was USD 9.9 billion; however, this figure was distorted by an accounting operation.

Exchange Rate

	Bulgaria	Czech Republic	Estonia	Hungary	Latvia	Lithuania	Poland	Romania	Russia	Slovak Republic	Slovenia
	Period average (ATS per 100 units of national currency) ¹⁾										
1991	65.64	x	x	15.62	x	x	1,104.00	15.29	x	x	42.35
1992	47.08	x	x	13.91	1,492.10	619.88	806.49	3.57	x	x	13.52
1993	42,145.65	39.90	87.97	12.65	1,722.52	267.77	642.13	1.53	1,162.41	37.80	10.27
1994	21,112.38	39.68	87.92	10.86	2,040.34	287.14	502.65	0.69	516.66	35.64	8.87
1995	15,002.23	37.99	87.94	8.02	1,910.82	252.04	415.73	0.50	219.13	33.93	8.51
1996	5,950.87	39.00	87.97	6.94	1,922.04	264.67	392.66	0.34	204.87	34.54	7.82
1997	725.62	38.50	87.92	6.53	2,100.91	305.11	372.16	0.17	209.07	36.30	7.64
1998	703.20	38.35	87.95	5.77	2,098.86	309.48	356.19	0.14	127.55	35.13	7.45
1999	58.27	3.10	7.29	0.45	182.84	26.75	26.97	0.0070	4.35	2.59	0.59
2000	43.33	2.38	5.42	0.33	151.69	23.00	21.17	0.0042	3.27	1.98	0.41
2000											
January	51.14	2.78	6.40	0.39	169.25	24.67	24.04	0.0054	3.50	2.37	0.51
February	51.13	2.81	6.40	0.39	171.21	25.43	24.54	0.0054	3.54	2.37	0.50
March	51.12	2.81	6.40	0.39	173.99	25.93	25.35	0.0054	3.64	2.41	0.50
April	51.08	2.76	6.40	0.39	176.95	26.41	24.95	0.0053	3.69	2.42	0.50
May	51.12	2.74	6.40	0.39	180.98	27.60	24.54	0.0054	3.90	2.34	0.49
June	51.13	2.77	6.40	0.39	175.32	26.34	23.95	0.0050	3.73	2.36	0.49
July	51.13	2.81	6.40	0.38	176.23	26.61	24.62	0.0049	3.82	2.36	0.49
August	51.13	2.83	6.40	0.38	181.05	27.66	25.38	0.0049	3.99	2.36	0.48
September	51.05	2.82	6.39	0.38	185.58	28.67	25.54	0.0049	4.13	2.32	0.48
October	51.15	2.84	6.40	0.38	188.37	29.25	25.23	0.0048	4.20	2.30	0.48
November	51.13	2.89	6.39	0.38	187.15	29.20	25.61	0.0047	4.20	2.33	0.48
December	51.13	2.86	6.39	0.38	180.11	27.87	25.85	0.0044	3.99	2.19	0.47
2001											
January	51.13	2.85	6.28	0.38	173.60	26.65	25.92	0.0041	3.76	2.29	0.47
February	51.13	2.89	6.31	0.38	175.58	27.13	26.53	0.0040	3.79	2.29	0.47
March	51.13	2.90	6.27	0.38	176.27	27.50	27.07	0.0040	3.84	2.29	0.47
April	51.16	2.90	6.27	0.38	178.00	28.04	27.91	0.0040	3.89	2.30	0.46
May	51.22	2.91	6.25	0.39	180.76	28.61	28.74	0.0040	3.94	2.32	0.46
June	51.13	2.95	6.44	0.41	183.44	29.31	29.52	0.0040	4.03	2.34	0.46
July	51.13	2.95	6.68	0.40	181.88	29.06	27.76	0.0040	3.98	2.35	0.46
August	51.13	2.93	6.39	0.40	176.88	27.77	26.16	0.0037	3.79	2.31	0.46
September	51.27	2.92	6.39	0.39	176.50	27.45	26.02	0.0036	3.73	2.30	0.46
October ²⁾	51.36	2.98	6.39	0.39	178.06	27.61	26.69	0.0036	3.65	2.29	0.45

Source: IMF.

¹⁾ Up to December 31, 1998, in Austrian schillings; as of January 1, 1999, in euro.

²⁾ Source: OeNB; Russia: OeNB, end of period.

Official Lending Rate¹⁾

	Bulgaria	Czech Republic	Estonia	Hungary ²⁾	Latvia	Lithuania	Poland	Romania	Russia ³⁾	Slovak Republic	Slovenia
<i>End of period</i>											
1991	54.0	9.5	x	22.0	x	x	36.0	18.0	5.0	9.5	x
1992	41.0	9.5	x	21.0	120.0	x	32.0	70.0	80.0	9.5	25.0
1993	52.0	8.0	x	22.0	27.0	x	29.0	70.0	210.0	12.0	18.0
1994	72.0	8.5	x	25.0	25.0	x	28.0	58.0	180.0	12.0	16.0
1995	34.0	9.5	x	28.0	24.0	x	25.0	35.0	160.0	9.8	10.0
1996	180.0	10.5	x	23.0	9.5	x	22.0	35.0	48.0	8.8	10.0
1997	6.7	13.0	x	20.5	4.0	13.0	24.5	40.0	28.0	8.8	10.0
1998	5.1	7.5	x	17.0	4.0	13.0	18.3	35.0	60.0	8.8	10.0
1999	4.5	5.0	x	14.5	4.0	13.0	19.0	35.0	55.0	8.8	8.0
2000	4.6	5.0	x	11.0	3.5	9.6	21.5	35.0	25.0	8.8	10.0
2000											
January	3.9	5.0	x	13.0	4.0	8.9	19.0	35.0	45.0	8.8	8.0
February	3.1	5.0	x	13.0	4.0	8.8	20.5	35.0	45.0	8.8	8.0
March	3.6	5.0	x	12.0	3.5	7.9	20.5	35.0	33.0	8.8	8.0
April	3.6	5.0	x	11.0	3.5	7.5	20.5	35.0	33.0	8.8	8.0
May	3.4	5.0	x	11.0	3.5	9.8	20.5	35.0	33.0	8.8	8.0
June	4.1	5.0	x	11.0	3.5	9.3	20.5	35.0	33.0	8.8	9.0
July	3.4	5.0	x	11.0	3.5	10.1	20.0	35.0	28.0	8.8	9.0
August	4.0	5.0	x	11.0	3.5	8.5	21.5	35.0	28.0	8.8	9.0
September	4.0	5.0	x	11.0	3.5	8.2	21.5	35.0	28.0	8.8	9.0
October	4.4	5.0	x	11.0	3.5	8.6	21.5	35.0	28.0	8.8	9.0
November	4.7	5.0	x	11.0	3.5	8.4	21.5	35.0	25.0	8.8	9.0
December	4.6	5.0	x	11.0	3.5	9.6	21.5	35.0	25.0	8.8	10.0
2001											
January	4.3	5.0	x	11.0	3.5	8.0	21.5	35.0	25.0	8.8	10.0
February	4.2	4.0	x	11.0	3.5	8.7	21.5	35.0	25.0	8.8	10.0
March	4.2	4.0	x	11.0	3.5	9.2	19.5	35.0	25.0	8.8	10.0
April	4.4	4.0	x	11.0	3.5	9.6	19.5	35.0	25.0	8.8	11.0
May	4.5	4.0	x	11.0	3.5	9.4	19.5	35.0	25.0	8.8	11.0
June	4.5	4.0	x	11.0	3.5	8.6	18.0	35.0	25.0	8.8	11.0
July	4.6	4.3	x	11.3	3.5	7.0	18.0	35.0	25.0	8.8	11.0
August	4.8	4.3	x	11.3	3.5	7.7	17.0	35.0	25.0	8.8	11.0
September	4.8	4.3	x	11.0	3.5	7.8	17.0	35.0	25.0	8.8	11.0
October	4.8	4.3	x	10.3	..	..	15.5	..	25.0	..	11.0

Source: IMF; Poland, Russia: national sources; Lithuania, Romania: OECD.

¹⁾ Due to currency board arrangements, the Bank of Estonia and the Bank of Lithuania do not lend to the government or to enterprises. Therefore, these two countries do not define or publish discount rates. On October 9, 1997, the Bank of Lithuania introduced an "official lending rate": weighted average rate on domestic currency lending to residents.

²⁾ Base rate.

³⁾ Refinancing rate.

