

European Union: Eastward Expansion Accelerates Convergence

The economic integration of the associated countries of eastern and central Europe with the European Union (EU) gives rise to a number of questions for both sides, questions that have been examined by the DIW at the behest of the Federal Ministry of the Economy.¹ Reports on the fiscal costs and the migration effects of eastern expansion have already appeared in the *Economic Bulletin*.² This issue reports on the impact of eastern expansion on the associated countries of central and eastern Europe.

The five CEFTA countries³ and the other five candidates for accession⁴ hope that integration with the EU will enable them quickly to close the gap on the income levels prevailing in the existing Member States. And, indeed, in highly integrated economic areas with comparable institutional and macroeconomic conditions per capita incomes tend to converge. According to a model calculation based on this experience, the central and eastern European candidates for accession could, given stable political and macroeconomic conditions, expect above-average growth of per capita GDP in the coming years of between 4% and 8% p.a.; annual growth would increase by approximately a further half a percentage point on accession to the Union.

Under the conditions imposed by a centrally planned economy, the countries of eastern and central Europe failed to take full advantage of the scope offered by the international division of labour: comparative advantage, economies of scale and the transfer of technology and know-how. The protection of domestic markets from international competition led to false incentives and the creation of uncompetitive patterns of specialisation. The logical consequence of this was a low income level, a slower pace of technological progress and thus a reduced long-term rate of growth.

Consequently, liberalisation and the integration into the international division of labour can in principle be

expected to raise income levels. In analysing the growth effects of the liberalisation and integration of the eastern and central European countries into the EU, it is best to make a distinction between the short-term effects resulting from shifts in the regional and commodity trade structure and the medium- and long-term effects resulting from the adjustment by the capital stock to the new conditions.

Short-term effects

The countries of eastern and central Europe established the trade and exchange-rate policy conditions for integration into international goods markets right at the start of the economic transition process. The EU began by granting the eastern and central European countries the unilateral preferences under the General System of Preferences set up to regulate trade with the developing countries, and subsequently established a free-trade area for industrial goods with the signing of the so-called "Europe Agreements". Under these agreements, quantitative import restrictions were removed almost completely, while tariffs were reduced in stages and, initially, asymmetrically: i.e. the EU cuts its tariffs faster than the eastern and central European countries did theirs. The average incidence of tariffs on industrial goods was cut by means of the Europe Agreements for the eastern and central European countries by an average of four percentage points to between 0 and 5%. Protection of EU agricultural markets against imports from central and eastern Europe by means of tariffs and non-tariff barriers, on the other hand, has remained significant.⁵ In contrast to the liberalisation of EU goods markets, the barriers to trade between the transition countries, especially trade with the Confederation of Independent States (CIS), are relatively high.⁶

The opening of the eastern and central European countries to and their increasing integration with EU goods markets have led to substantial shifts in the regional and commodity structures of trade within a short space of time.⁷

¹ The results of this research project have been published in full in German, in: *DIW Beiträge zur Strukturforchung*, issue 167, 1997.

² Cf. Reforms Necessary if Eastern Enlargement of the EU is to be Financed, in: *Economic Bulletin*, vol. 33, no. 1, January 1997; European Union: Eastern Enlargement and Labour Migration, in: *Economic Bulletin*, vol. 33, no. 3, March 1997.

³ The countries of the Central European Free Trade Area: Poland, Hungary, the Czech and Slovak Republics and Slovenia.

⁴ Bulgaria, Romania, Estonia, Latvia and Lithuania.

⁵ On this see Stefan Tangermann, Timothy E. Josling, Wolfgang Münch, Pre-Accession Agricultural Policies for Central Europe and the European Commission, study commissioned by DG I of the European Commission, *Final Report*, 1994.

⁶ The CIS encompasses all the successor states to the former Soviet Union with the exception of Estonia, Latvia and Lithuania.

⁷ Cf. Heinrich Machowski and Wolfram Schrettl, The Economic impact of unified Germany on Central and Eastern Europe, East-Central Europe in Transition, Joint Economic Committee, Congress of the United States (ed.), Washington D.C., 1994, pp. 412 – 440.

- The volume of trade with the EU has increased extremely sharply from a low level. Between 1989 and 1995 exports to the EU by Poland, the Czech and Slovak Republics, Hungary, Bulgaria and Romania trebled and their imports from the EU quadrupled; between 1993 and 1995 exports to the EU by the Baltic states and Slovenia grew by two-thirds and imports by almost 90% (cf. table 1).
- Most of the eastern and central European associated countries have already achieved a similar degree of trade integration with the EU as the existing EU Member States with one another. In 1995 a high proportion of the foreign trade of the eastern and central European countries was with the EU including all the ten associated countries (cf. tables 2 and 3); the figure varied from more than two-fifths (Bulgaria) to around four-fifths (Slovenia).
- The increase in trade by the eastern and central European countries with the EU has been matched by a decline in trade with each other and with the successor states to the Soviet Union. In most of the eastern and central European countries imports from and exports to the former Soviet Union have halved as a share of the respective totals; only in the Baltic states and Bulgaria do they remain at a high level (cf. tables 2 and 3).
- The opening up of domestic markets and price adjustment have led to a change in the commodity structure of trade. The end of supplies of subsidised energy and other primary goods from the former Soviet Union has led to a marked decline in the export surplus of resource-intensive goods in trade with the EU and the OECD, whereas the export surplus in labour-intensive goods has increased.⁸

Until 1995 trade between the eastern and central European countries and the EU increased rapidly, with annual growth rates of between 20% and 35%; in 1996, however, growth rates weakened markedly, particularly on the export side. According to estimates conducted on the basis of gravitation models, the eastern and central European countries have already exhausted their trade potential if the current per capita income at current exchange rates is used as a bench mark. If, on the other hand, per capita GDP at purchasing power parities is used as a basis, trade with the EU could potentially double once more. A further growth of trade can be expected due to the fact that GDP growth in the eastern and central European countries is likely to be above the EU average.

⁸ The above does not cover the Baltic states and Slovenia; time series data are not available for these countries due to their having formed part of the Soviet Union and Yugoslavia respectively.

In view of the prevailing conditions, accession to the EU will lead to only a marginal further decline in tariff barriers for the ten eastern and central European associated countries; an exception here is the agricultural sector. The prime effect would be to reduce non-tariff trade barriers by harmonising legal norms and administrative regulations, taxation systems, public sector procurement and infrastructure. A detailed basis for the adjustment of the institutional framework and infrastructure to EU norms has been developed in the EU White Paper on the integration of the associated countries. The prospect of accession provides the necessary incentives for the adjustment measures that have to be undertaken by the eastern and central European countries. As the southern extension of the EU has shown, the removal of these non-tariff trade barriers can lead to a significant increase in trade. Overall, according to estimates made on the basis of gravitation models, accession to the EU would raise the potential for exports by a further 30 to 45% and the import potential by an additional 15 to 45%.

The importance of the EU for the foreign trade of the eastern and central European countries is due not merely to the removal of the distortions in the regional trade structure resulting from the system of central planning and the division of labour within the CMEA. Given the still high – and in some cases rising – trade barriers with other countries in eastern and central Europe, in particular the CIS countries, the increasing integration with the EU partially reflects trade-diverting effects.⁹ Particularly hard hit by the diversion of trade are the three Baltic countries and Bulgaria, given the high degree to which their trade was originally concentrated on the former Soviet Union. For these countries the dissolution of the Soviet Union and the CMEA initially led to a sharp decline in the volume of foreign trade.

In the short term the liberalisation of foreign trade and the reduction of the barriers to trade with the EU have had both positive and negative effects on the volume of domestic output, the relative importance of which has varied between the different countries:

- The orientation of the commodity and regional structure of trade to comparative advantage, the realisation of economies of scale, the transfer of technology and know-how and the increasing competitive pressure have almost certainly brought about a perceptible increase in productivity. Given the increased volume of trade, Poland and the Czech and Slovak Republics have benefited particularly greatly from

⁹ See also Richard Baldwin, *Towards an Integrated Europe*, CEPR, London, 1994.

Table 1

Foreign Trade of the Eastern and Central European Countries Associated with the EU

in Mill. US-\$

	1989	1990	1991	1992	1993	1994	1995
Exports							
Poland	5 202	7 752	8 826	10 217	10 017	12 236	16 085
Czechoslovakia	3 577	4 226	5 886	8 320	—	—	—
Czech Republic	—	—	—	—	6 552	8 367	11 845
Slovak Republic	—	—	—	—	1 647	2 602	3 921
Hungary	3 697	4 571	5 525	6 102	5 741	7 213	10 129
Bulgaria	658	814	997	1 242	1 207	1 617	2 415
Romania	2 889	2 058	1 918	1 931	2 090	3 382	4 501
Slovenia	—	—	—	—	3 726	4 554	5 667
Estonia	—	—	—	—	354	747	1 244
Latvia	—	—	—	—	899	1 263	1 364
Lithuania	—	—	—	—	857	985	1 412
OME (10)	—	—	—	—	33 091	42 966	58 584
Imports							
Poland	5 042	6 343	10 944	11 769	12 966	14 462	19 685
Czechoslovakia	3 182	4 273	5 672	9 582	—	—	—
Czech Republic	—	—	—	—	8 237	10 356	15 110
Slovak Republic	—	—	—	—	1 866	2 543	4 045
Hungary	4 150	4 767	5 779	6 888	7 547	9 568	10 749
Bulgaria	1 889	1 287	1 359	1 602	1 735	2 131	2 738
Romania	820	1 667	1 756	2 466	2 958	3 368	4 819
Slovenia	—	—	—	—	4 234	5 144	6 688
Estonia	—	—	—	—	575	1 243	1 826
Latvia	—	—	—	—	484	829	1 185
Lithuania	—	—	—	—	637	978	1 354
OME (10)	—	—	—	—	41 238	50 623	68 201

Columns may not sum due to rounding.

Sources: OECD, Foreign trade data, 1995; IMF, Direction of Trade Statistics, August 1996.

these changes, with Slovenia and Hungary also taking advantage.

- The sharp changes in relative prices have served to reduce the value of specific real and human capital assets accumulated under the conditions of a centrally planned economy. The extent of devaluation has been greatest for plants in which the R&D and human-capital intensity was highest. Due to the particularly pronounced changes in the regional and commodity structure of trade, the three Baltic states and Romania have been hardest hit by the devaluation of specific capital assets.
- The ending of supplies of subsidised energy and primary goods from the former Soviet Union has led to a deterioration in the terms of trade for most of the ten associated eastern and central European countries, whereas they have improved for the net primary-good exporters of the CIS. The deterioration in the terms of trade has been most pronounced for the three Baltic states.¹⁰

Initially liberalisation and integration resulted in a sharp deterioration in national trade balances and current accounts. In 1990, for instance, Poland, Hungary, the Czech and Slovak Republics, Romania and Bulgaria earned a trade surplus of US-\$ 1.1 billion with the EU; by 1995 this had been converted into a deficit of US-\$ 8.3

billion. Yet the balance of trade deficits are the result not merely of the liberalisation and integration of the eastern and central European countries with the goods and capital markets of the EU and the structural weaknesses this has revealed, but also from the exchange rate and trade policies pursued. In particular, the real appreciation of the currencies of the eastern and central European countries has contributed to the deficits on the trade balance and the current account. Yet trade balance and current account deficits were also observed in Spain and Portugal when they joined the EU – although they were not as pronounced. In macroeconomic terms such deficits are not necessarily to be viewed as negative. If they serve to facilitate the accumulation of capital they may make a contribution to accelerating the growth of the eastern and central European countries.

¹⁰ Measured in world market prices these countries posted balance of trade deficits of between just under US-\$ 2.8 billion (Estonia) and US-\$ 5.7 billion (Lithuania), deficits which were financed by Russia and other primary goods suppliers. Cf. Yuri Dikhanov, Measuring the Terms of Trade in the Countries of the Former Soviet Union, Misha V. Belkindas, Olga V. Ivanova, *Foreign Trade Statistics in the USSR and Successor States*, Washington, D.C., 1995, pp. 55 – 65.

Table 2

Regional Structure of the Foreign Trade of the Associated Eastern and Central European Countries, 1989

	EU (15)	ECE (6)	ECE (15) + OME (6)	Former USSR	Other coun- tries	Total
% share of exports						
Poland	41.5	10.9	52.4	20.1	27.5	100
Czechoslovakia	31.2	16.6	47.8	30.5	21.7	100
Hungary	39.1	10.4	49.5	25.1	25.3	100
Bulgaria	11.5	11.6	23.1	65.2	11.7	100
Romania	32.9	10.5	43.4	22.6	34.0	100
% share of imports						
Poland	41.3	10.6	51.9	18.9	29.2	100
Czechoslovakia	32.7	17.3	50.0	29.7	20.3	100
Hungary	45.7	10.9	56.6	22.1	21.3	100
Bulgaria	18.2	12.9	31.1	52.9	16.0	100
Romania	13.8	14.4	28.2	31.5	40.3	100

EU (15): Austria, Belgium, Denmark, Finland, France, Germany, Greece, Great Britain, Ireland, Italy, Luxembourg, Netherlands, Portugal, Sweden, Spain. — OME (6): Bulgaria, Hungary, Poland, Romania, Slovak Republic and Czech Republic (rsp. CSSR).

Sources: National foreign trade statistics.

Medium- and long-term effects

Although in the short term the liberalisation of foreign trade – depending on the adjustment costs incurred and the extent of the deterioration of the terms of trade – has not had a positive net effect on output and incomes in all countries, positive overall growth effects are to be expected in the medium and longer term due to the adjustment of the capital stock to the enlarged production opportunities. Integration with the goods markets of the EU is likely to reinforce the growth effects of liberalisation, depending on the magnitude of trade-creating and trade-diverting effects.

The view taken of the prospects for growth in the eastern and central European countries depends on the analytical framework on which the evaluation is based. In the following growth scenario it is assumed that, subject to the proviso of comparable institutional, macroeconomic and structural conditions, the income level of economies whose capital endowment is initially low will steadily draw closer to that in economies with a higher capital endowment (conditional convergence).

The hypothesis of conditional convergence can be derived from conventional growth models in which the various factors of production are subject to declining marginal returns.¹¹ In endogenous growth models with several sectors¹² or declining – but consistently positive – marginal returns to the various factors of production,¹³ too, per capita income is subject to conditional

convergence. There is also empirical evidence of a convergence of per capita income for economic areas with a high degree of integration and comparable political-institutional and macroeconomic conditions (e.g. the USA, Japan and the members of the OECD).¹⁴ And convergence of per capita income has also been shown to have occurred in the various regions of the EU.¹⁵ However, the rate of convergence is, at around 2% of the income differential per annum, decidedly slow: it means that the income differential between two regions halves every 35 years. In economies with high trade barriers and a low level of economic integration on the other hand, a slight divergence has been observed.

It is by no means certain that the process of convergence of the per capita income of the eastern and central European countries to the prevailing EU level will actually occur. It depends on the harmonisation of conditions and on structural change. Yet although the institutional-political and macroeconomic conditions in indi-

¹¹ Cf. Robert J. Barro, Xavier Sala-i-Martin, *Convergence Across States and Regions*, *Brookings Papers on Economic Activity*, no. 1/1991, pp. 107-182; N. Gregory Mankiw, David Romer and David N. Weil, *A Contribution to the Empirics of Economic Growth*, *Quarterly Journal of Economics*, Vol. 107, no. 2/1992, pp. 407 – 437.

¹² Cf., among others, Paul M. Romer, *Endogenous Technological Change*, *Journal of Political Economy*, vol. 98, no. 5/1990, Part II, pp. S71-S102; Grossman, Gene M., Elhanan Helpman, *Innovation and Growth in the Global Economy*, Cambridge Mass., 1991.

¹³ Larry E. Jones, Rodolfo E. Manuelli, *A Convex Model of Equilibrium Growth: Theory and Policy Implications*, *Journal of Political Economy*, vol. 98, no. 5/1990, pp. 1008 – 1038.

¹⁴ Cf. Barro/Sala-i-Martin, op. cit.; William J. Baumol, *Productivity Growth, Convergence and Welfare: What the Long-Run Data Show*, *American Economic Review*, vol. 76, no. 5/1986, pp. 1072-1085; Steve Dowrick, Duc-Tho Nguyen, *OECD Comparative Economic Growth 1950-1985: Catch-Up and Convergence*, *American Economic Review*, vol. 79, no. 5/1989, pp. 1010-1030; Xavier Sala-i-Martin, *The Classical Approach to Convergence Analysis*, *Economic Journal*, vol. 106, 1996, pp. 1019 – 1036.

¹⁵ Sala-i-Martin, *Convergence Analysis*, op. cit.

Table 3

Regional Structure of the Foreign Trade of the Associated Eastern and Central European Countries, 1995

	EU (15)	ECE (6)	ECE (10)	EU (15) + ECE (10)	Former USSR	CIS	Other countries	Total
% share of exports								
Poland	70.1	5.9	7.2	77.3	11.4	10.2	12.4	100
Czech Republic	55.2	24.4	26.4	81.6	6.0	5.4	13.0	100
Slovak Republic	37.4	44.9	46.2	83.6	7.1	6.9	9.5	100
Hungary	62.7	9.0	11.5	74.2	11.0	10.5	15.3	100
Bulgaria	38.3	3.2	4.7	43.0	15.2	14.9	42.1	100
Romania ¹	53.2	4.0	4.3	57.5	5.7	5.6	36.9	100
Slovenia ¹	86.6	3.0	3.1	89.7	4.6	4.5	5.8	100
Estonia	54.7	1.8	14.0	68.7	38.0	25.8	5.5	100
Latvia	44.0	3.6	12.3	56.3	46.9	38.3	5.4	100
Lithuania	37.4	7.7	13.6	51.0	43.2	37.6	11.5	100
% share of imports								
Poland	64.5	5.8	6.5	71.0	9.6	9.3	19.7	100
Czech Republic	56.4	17.3	18.0	74.4	10.4	10.3	15.3	100
Slovak Republic	34.7	32.7	33.5	68.2	19.5	19.3	12.5	100
Hungary	61.5	7.3	8.0	69.5	14.8	14.7	15.8	100
Bulgaria	38.1	4.2	4.6	42.7	32.7	32.5	24.8	100
Romania ¹	49.6	5.2	5.5	55.1	16.2	16.1	28.9	100
Slovenia ¹	69.2	3.4	3.4	72.6	2.3	2.3	25.1	100
Estonia	67.0	1.0	4.7	71.7	22.3	18.7	9.6	100
Latvia	49.9	3.7	14.3	64.2	38.8	28.2	7.6	100
Lithuania	40.9	5.4	14.7	55.6	51.7	42.4	2.0	100

1) 1994. — EU (15): Austria, Belgium, Denmark, Finland, France, Germany, Greece, Great Britain, Ireland, Italy, Luxembourg, Netherlands, Portugal, Sweden, Spain. — OME (6): Bulgaria, Czech Republic, Hungary, Poland, Romania, Slovak Republic. — OME (10): OME (6) and Estonia, Latvia, Lithuania, Slovenia.
Sources: National foreign trade statistics; DIW calculations.

vidual transition countries currently still differ substantially from conditions in the EU, an increasing degree of stabilisation and – as the recommendations contained in the White Paper are implemented – a steady approximation to conditions in the EU.

The economic structure of the eastern and central European countries still differs substantially from that in the EU. The eastern and central European countries are posting considerable trade surpluses in labour and resource intensive commodity groups and considerable trade deficits on goods characterised by a high R&D intensity and product differentiation.¹⁶ An increased specialisation by the eastern and central European countries on goods with a high labour intensity and low real and human capital intensity poses the risk of the differences in real and human capital endowments becoming further entrenched, thus endangering income convergence. In the light of conventional trade theory such an outcome is conceivable. In practice, however, it is unlikely, as rising incomes tend to be associated with greater industrial qualification and changing patterns of specialisation. Developments within the EU and other regions suggest that an intensification of trading links and integration leads to a convergence in real and

human capital endowments and an increase in intra-industrial trade, i.e. trade between corresponding industries.¹⁷ Initial signs of this process are already evident in trade between the eastern and central European countries and the EU: from an extremely low level, Poland, Hungary, the Czech and Slovak Republics, Bulgaria and Romania have significantly reduced their comparative disadvantages in branches with high R&D intensity and product differentiation in trade with the EU, and the importance of intra-industrial trade has increased.¹⁸ A steady approximation of structural preconditions – the pace of which varies between the different countries – can therefore be posited.

Foreign trade liberalisation and integration into EU goods markets can also exert an effect on technical progress and thus on the long-term rate of growth of the eastern and central European countries. Under the conditions of a centrally planned economy the rate of technical progress identified was low in spite of an above-average level of investment in research and develop-

¹⁶ Jeffrey D. Sachs, Andrew Warner, Economic Reform and Global Integration, *Brookings Papers on Economic Activity*, no. 1/1995, pp. 1-118.

¹⁷ This may be linked to the rising importance of product differentiation associated with rising economies of scale for trade compared with natural factor endowments. Cf. Paul Krugman, Elhanan Helpman, Market Structure and Foreign Trade. Increasing Returns, Imperfect Competition and the International Economy, Cambridge, Mass., 1985.

¹⁸ The Grubel-Lloyd index, an indicator of the importance of intra-industrial trade in overall trade is risen significantly, particularly in the CEFTA-countries.

ment and in real and human capital.¹⁹ One of the factors behind the slow pace of technical progress was the restricted nature of technological and know-how transfer. Foreign trade liberalisation should improve the conditions for an increase in the long-term rate of growth by virtue of growing technological transfer and diffusion and by reducing redundant R&D activities. On the other hand the opening up of the economies of eastern and central Europe has revealed the lack of competitiveness of their R&D and human capital intensive sectors and thus reduced the incentives for the accumulation of technical knowledge and human capital. The structural shift in favour of sectors with a low R&D and human capital intensity could hold the rate of technical progress at a low level over the longer term. Thus the long-term prospects for growth depend on whether the eastern and central European countries prove able to develop comparative advantages in sectors with a higher human capital and research intensity.

Quantitative implications

In view of the considerable uncertainty surrounding institutional-political, macroeconomic and structural conditions, it is extremely difficult to quantify future growth rates in the transition countries and the impact of trade liberalisation and integration with EU goods markets. Moreover, it is problematic to compare the prospects for growth in the eastern and central European countries with the experiences in other regions given the drastic contraction of output and the devaluation of the capital stock associated with the transition process.

In spite of these caveats, in the following scenario the DIW has attempted to derive a frame of reference for quantitative growth in eastern Europe. It is assumed that over the longer term income levels in the eastern and central European countries converge on those of their trading partners, the pace depending on their degree of trade liberalisation. A long-term rate of economic growth of 2% p.a. was assumed for the trading partners. A convergence rate of 2% p.a. – the rate identified empirically in integrated economic areas – was posited for countries with complete trade liberalisation: on this basis the income differential between two regions

would narrow by 2% p.a. Yet the trade and exchange rate policy conditions prevailing in the eastern and central European countries are not in accordance with those in completely open economies. For this reason, following classification of the foreign trade conditions in the various eastern and central European countries²⁰ correspondingly reduced rates of convergence were assumed.

An additional assumption is that – as in the post-war period – growth rates will be higher due to the devaluation of real capital assets in the transition countries. Given declining marginal returns, a more than proportional devaluation of fixed capital assets compared with human capital assets leads to above-average growth rates. This "recovery effect" makes itself felt irrespective of trade liberalisation and integration. The extent of this catching-up effect is difficult to estimate given the lack of comparable historical precedents. In the light of this, two scenarios were calculated in which the convergence rate that would have been achieved without transition is set at 3% and 5% p.a. The recovery effect initially leads to an acceleration of growth as shown in the model. However, as soon as the income level that would have been achieved under the centrally planned economy has been reached, the recovery effect falls to zero.

Under these assumptions, transition and trade liberalisation in the eastern and central European countries initially leads to rapid growth compared to the developed EU economies. These growth rates vary between the different countries largely due to differences in the income differential to the EU and the extent to which specific capital assets were devalued in the transition process. The sharper the contraction of output resulting from transition, the greater the impact of the recovery effect, because the marginal return on new capital assets is the higher the smaller the initial capital stock. Under the prevailing trade policy framework GDP growth rates in the first year of between 3.4% and 6.4% are calculated in Scenario I (minor recovery effect) and of 3.2% to 8.2% in Scenario II (stronger recovery effect). As the economies recover and incomes draw closer to those in the EU, these growth rates weaken: after 20 years annual growth rates in Scenario I are between 2.7% and 4.7% and in Scenario II between 2.7% and 4.9%. Even by then, the income differential would remain substantial, with per capita incomes of between 25% and 70% of the EU average depending on country and scenario (cf. table 4).

Accession to the EU would accelerate the convergence process in two ways (Scenario III). Firstly, the

¹⁹ Cf. William Easterly, Stanley Fischer, *The Soviet Economic Decline, World Bank Policy Research Working Paper 1284*, Washington D.C., 1996; Martin L. Weitzman, *Soviet Postwar Economic Growth and Capital-Labour Substitution*, *American Economic Review*, vol. 60, no. 5/1970, pp. 676-692; Abram Bergson, *Comparative Productivity: The USSR, Eastern Europe and the West*, *American Economic Review*, vol. 77, no. 3/1987, pp. 342-357.

²⁰ This classification was based on that by the European Bank for Reconstruction and Development (EBRD), *Transition Report 1995*, London 1995.

Table 4
Growth Scenarios

	Poland	Slovak Republic	Czech Republic	Hungary	Slovenia	Bulgaria	Romania	Estonia	Latvia	Lithuania
Scenario I: status quo with weak recovery effect										
1993: per capita PPP-GDP ¹⁾										
in US-\$	5 000	6 290	7 550	6 050	10 585	4 100	2 800	6 320	5 010	3 110
as % of EU (15)	25	32	38	31	53	21	14	32	25	16
2013: per capita PPP-GDP ¹⁾										
in US-\$	10 518	11 817	14 022	12 240	18 637	8 537	7 239	13 241	11 911	9 047
as % of EU (15) ²⁾	36	41	49	42	65	30	25	46	41	31
Initial annual rate of growth per capita	4.2	3.5	3.4	4.0	3.5	4.2	5.5	4.2	5.1	6.4
Annual rate of growth per capita after 20 years	3.4	2.9	2.9	3.3	2.7	3.4	4.3	3.4	3.9	4.7
Average annual rate of growth per capita over 20 years	3.8	3.2	3.1	3.6	2.9	3.7	4.9	3.8	4.4	5.5
Scenario II: status quo with strong recovery effect										
1993: per capita PPP-GDP ¹⁾										
in US-\$	5 000	6 290	7 550	6 050	10 585	4 100	2 800	6 320	5 010	3 110
as % of EU (15)	25	32	38	31	53	21	14	32	25	16
2013: per capita PPP-GDP ¹⁾										
in US-\$	10 895	12 400	14 605	12 678	19 325	9 027	7 703	14 281	13 395	10 627
as % of EU (15) ²⁾	38	43	51	44	67	31	27	50	46	37
Initial annual rate of growth per capita	4.6	4.1	3.9	4.4	3.5	4.8	6.2	5.1	6.4	8.2
Annual rate of growth per capita after 20 years	3.5	3.0	2.9	3.3	2.7	3.4	4.4	3.5	4.0	4.9
Average annual rate of growth per capita over 20 years	4.0	3.5	3.4	3.8	3.1	4.0	5.2	4.2	5.0	6.3
Scenario III: integration with EU with strong recovery effect										
1993: per capita PPP-GDP ¹⁾										
in US-\$	5 000	6 290	7 550	6 050	10 585	4 100	2 800	6 320	5 010	3 110
as % of EU (15)	25	32	38	31	53	21	14	32	25	16
2013: per capita PPP-GDP ¹⁾										
in US-\$	11 827	13 148	15 550	13 692	20 421	9 812	8 594	15 511	14 566	11 767
as % of EU (15) ²⁾	41	46	54	47	71	34	30	54	51	41
Initial annual rate of growth per capita	5.1	4.4	4.3	4.8	3.8	5.3	6.9	5.6	6.9	8.9
Annual rate of growth per capita after 20 years	3.8	3.2	3.2	3.6	3.0	3.8	4.8	3.8	4.4	5.4
Average annual rate of growth per capita over 20 years	4.4	3.8	3.7	4.2	3.3	4.5	5.8	4.6	5.5	6.9

1) Per capita gross domestic product at purchasing power parities vis-à-vis the US-\$. — 2) It was assumed that per capita incomes in the EU (15) grow by 2% per annum.
Quelle: DIW calculations. Methodological explanations are given in the text.

remaining tariff and, in particular, non-tariff barriers to trade with the EU would be removed. A convergence rate of 2% p.a. would then apply as in other integrated economic areas. Secondly, the removal of trade barriers with the EU would lead to a change in the regional structure of trade, i.e. the structure of trading partners would shift in favour of EU countries with their higher per capita income (or to the detriment of non-EU countries with a lower per capita income). Overall, complete integration within the EU and the associated increase in the average income of the trading partners would lead to an increase in initial growth rates in the scenario with the stronger recovery effect of between 0.3 and 0.7 percentage points per capita per annum, whereby those countries that are already very largely integrated into EU goods markets – Poland, Hungary, the Czech and Slovak Republics and Slovenia – that would be at the lower end of this spectrum. These differences may at

first sight appear negligible. Yet full-scale integration into the EU would lead to an increase in per capita incomes ranging between countries from just under 6% to 12% compared to the scenario without integration (cf. Scenario III in table 4).

This scenario must not be considered as a prognosis. It merely sketches out on the basis of plausible assumptions a path for the long-term growth of productive potential that can be considered probable. It must be taken into account that the institutional-political and macroeconomic conditions in the various countries may lead to sharp fluctuations in the utilisation of productive capacity. This means that given under-utilised capacities the recovery effect may be stronger than assumed in the scenario as demand picks up, while, equally, macroeconomic disequilibria and institutional friction may lead to substantially lower growth rates.

Capital market integration

As part of the transition of economic system, the ten associated eastern and central European countries have also embarked on a liberalisation of their capital markets. Even so, administrative restrictions, the high degree of uncertainty surrounding the framework of institutional-political and macroeconomic conditions, the lack of transparent market processes and underdeveloped financial and capital markets continue to dampen the propensity to invest. The inflow of foreign capital varies significantly from country to country and in time: overall, foreign investment remains modest. Between 1992 and 1994 net direct foreign investment in all the associated countries of eastern and central Europe together amounted to an annual average of just US-\$ 3 to 4 billion; 1995 did, however, see a sharp rise in this figure to US-\$ 9 billion.²¹ On top of this come net capital inflows resulting from portfolio investment totalling between US-\$ 400 and 600 million. Particularly in Hungary, the Czech Republic, Estonia and Latvia, where the annual inflow of capital accounted for more than 4% of GDP, this will have had a significant impact on the rate of economic growth.

Capital imports can make a significant contribution to capital accumulation and thus to increasing the rate of growth in transition countries. The devaluation of part of the specific capital assets and the expansion of production opportunities ought to lead to a higher real return on capital than in the developed market economies of the EU, provided institutional and macroeconomic conditions are adjusted accordingly. On the basis of the available data, however, it is extremely difficult to estimate the impact of capital imports on the level and growth of output. Assuming declining marginal returns on the factors of production, an increase in real capital investment following a more than proportional devaluation of real capital compared with human capital can induce a strong growth effect. This growth impulse can be expected to be the greater the greater the extent to which the existing plant has been affected by transition-induced devaluation. An expansion of the capital stock by 1% could lead to output growth of 0.3% given the usual elasticities.²² Assuming that real capital assets were devalued by between 40 and 50% – i.e. broadly in line with the decline in output – and thus by around twice as much as human capital, capital imports of 1% of GDP could lead to an increase in total output of between 0.4 and 0.5%. It must be taken into account,

however, that only a proportion of the capital flowing into central and eastern Europe is being utilised in order to expand the capital stock.

As was shown by the accession of Spain and Portugal, accession to the EU can lead to a marked increase in capital flows. In the former case the inflow of direct investment more than doubled following accession to the EU: in Spain foreign direct investment rose as a proportion of GDP from 1% in 1986 to 2.5% in 1990.²³ It is difficult to estimate the likely magnitude of capital imports, however. Whatever their size following accession to the EU, capital imports can be expected to remain unevenly distributed between the transition countries.

Résumé

The medium- and long-term prospects for growth in the associated countries of eastern and central Europe have improved thanks to the liberalisation of foreign trade and the increasing integration with the EU. The orientation of the regional and commodity structure of trade to comparative advantages, the realisation of economies of scale and the transfer of technology and know-how mean that per capita income in the eastern and central European countries will rise somewhat faster than the EU average. Under the assumptions made here, initial annual per capita growth rates varying by country between 3.5% and 8% can be expected; in subsequent years these rates will decline. The rate of growth does, however, depend on the extent to which the eastern and central European transition countries manage to adjust their framework of institutional-political and macroeconomic conditions to those prevailing in the EU and to develop comparative advantages in branches in which human capital and R&D intensity are above average.

If – as is assumed in the model – these countries were immediately to join the EU, the annual rates of per capita income growth would be between 0.3 and 0.7 percentage points higher. Although the above-average rates of economic growth by the eastern and central European countries mean that the income differential vis-à-vis the EU will narrow substantially, even given accession to the EU in 20 years' time, they will have achieved only between 30% and 70% of the average per capita income of the current EU Member States.

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²¹ Cf. Foreign Direct Investment in the transition Countries, *Economic Bulletin*, vol. 33, no. 4, April 1997.

²² These calculations are based on a simple Cobb-Douglas function with elasticities of 0.3 for real capital and 0.45 for human capital.

²³ Jordi Gual, Camela Martin, Trade and Foreign Investment with Central and Eastern Europe: Its Impact on Spain, Riccardo Faini, Richard Portes (eds.), European Union Trade with Eastern Europe – Adjustment and Opportunities, *CEPR*, London, 1995, pp. 167 – 200.