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ROMANIA AND THE TRADE AND THE DEVELOPMENT
APPROACHES TO CEE CONVERGENCE WITH THE EU, UNDER
THE COMPETITIVE PRESSURES OF INTEGRATION



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SUMMARY

The aim of this paper is to analyse the inadequate driving forces for Romanian convergence with the EU and provide further explanatory variables for the uneven convergence performance of EU newcomers in general. Convergence cannot be taken for granted. What turns out to provide a real explanatory dimension is analysis of the convergence speed of CEE countries as they advance towards EU integration. This can be done by comparing the trade approach with the development approach, in a context of endogenous and exogenous competitive structures and pressures. The author* believes that the catching-up process is fundamentally determined by growth competitiveness and business-environment competitiveness, as proxies respectively for the development and the trade approaches to convergence. A contrast is drawn between the convergence potential of CEE countries and the rather mechanistic measure of GDP per capita convergence. Some industries and categories of labour have converged rapidly towards the EU development standard, but others have not. On a macroeconomic level, the higher the endogenous competitive pressures derived from the business environment, the higher the speed of CEE countries' GDP per capita convergence. Institutional quality, microeconomic reforms, national business environment, FDI, foreign trade and technology upgrading are all part of the story. Improvement in them is indispensable if post-communist countries are to catch up. The complex interactions between them when determining Romania's convergence speed are unexplored economic frameworks, and the study sets out to reflect on them. The argument for this approach rests on the need to give due weight to the fact that a country's wealth or standard of living is created at microeconomic level, and interactions between growth and trade performance (competitiveness) reveal in transition economies complex patterns that provide in-depth explanations for convergence-speed differences. Macroeconomic, political, legal and social reforms cannot entirely succeed unless such capabilities improve. The paper also makes several comments on the CEE 10 framework for the trade liberalization/economic growth/human development relationship, in the context of EU integration. Finally, the author puts forward a new composite indicator for convergence, to limit the uncertainty of classical convergence approaches and growth projections for CEE countries. This Growth Competitiveness Convergence indicator takes into account the neglected aspects of the convergence process already mentioned, and changes the overall picture of CEE convergence performance.

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INTRODUCTION

The speed and intensity of change in the CEE countries led to a historic challenge in May 2004: integration of eight CEE and two Mediterranean economies into the EU, the world's biggest trade bloc. It happened at a time when the EU faced many difficulties with achieving the Lisbon Agenda of gaining the lead by 2010 in the knowledge-based economy. The EU strongly suggested as part of the Copenhagen criteria for accession that applicants should have a 'functioning market economy', able to withstand the competitive pressures of the European internal market. This reality has to be met by all transition economies aspiring to full EU membership. In addition to these external competitive forces, they face strong domestic competitive pressures from the structural and socio-political changes they are undergoing.

The first aim of the paper is to see why the process of transformation and convergence to the EU has been so uneven in Romania, as compared with other candidate countries. Evaluating the challenges and opportunities for Romania to reach acceptable levels of performance among EU newcomers will help to reveal the forces holding it back. An obviously important policy objection in the acceding countries is to speed up economic growth. This is still a serious problem, as success has been scarce and resources are too limited. Convergence certainly cannot be taken for granted. However, what turns out to provide a real explanatory dimension is to analyse the speed of convergence of CEE countries advancing towards EU integration, obtained by contrasting the development approach with the trade approach, in the context of endogenous and exogenous competitive structures and pressures. Beyond issues of industrial specialization, productivity gaps, labour

market distortions and foreign investments, there are unexplored economic factors to reflect upon. The ones that can secure or impede economic development and the catching-up process include microeconomic reforms, national business environment, quality of public institutions, and technology upgrading. The argument for this approach rests on the important fact that a nation's wealth or standard of living is created at microeconomic level. Interactions between growth and trade performance (competitiveness) reveal complex patterns that further explain higher or lower speeds of CEE convergence to the EU. Unless such capabilities improve, macroeconomic, political, legal and social reforms cannot fully succeed.

This paper also provides insights into the CEE framework of the relationship of trade liberalization, economic growth and human development, in the context of the EU integration process. It will examine (i) the economic and institutional mechanisms of trade/growth/human development links in transition economies, (ii) whether trade liberalization has benefited growth and human development in these, (iii) whether liberalization improved income distribution, and (iv) whether the massive learning effects of trade have helped to close the development gap with the EU over the last decade, or whether the CEE countries remain tied to traditional input-cost comparative advantages.

Finally, this approach is aimed at deeper analysis of the driving forces behind convergence, which lead to designing a new composite indicator of convergence, to limit the uncertainty of classical convergence approaches and growth projections for CEE countries. This Growth Competitiveness Convergence index reflects the author's belief that both growth theory and past experience of previous enlargements offer many lessons, but they cannot guide in any economically robust manner assessment of the likely economic consequences of CEE

integration into the EU. There are many differences deriving from the transition process from a planned economy to a market-based one. These concern the CEE countries, which are undergoing difficult economic reforms irrespective of their efforts to join the EU. Furthermore, the catching-up process is determined by growth competitiveness and business environment competitiveness as proxies for development, rather than by the alternative trade approach to convergence. There are some inherent tensions between the convergence potential of CEE countries and the trade context. The higher the endogenous competitive pressures derived from the business environment, the higher the rate of the CEE countries' GDP per capita convergence to the EU. Institutional quality, FDI, foreign trade and technology are all part of this, and indispensable to the catching-up process, as they drive economic and social growth in the current stage of competitive development, which involves struggling to upgrade efficiency.

Chapter 1 reviews the international literature on convergence methodologies and puts forward the main findings and limitations on driving forces for growth in the CEE 10 (the eight new EU members plus Romania and Bulgaria). It also explains the theoretical arguments for linking the trade and development approaches on convergence and the role of specialization. *Chapter 2* sets out the empirical findings for the analytical scheme, with special attention to Romania's economic performance and convergence in a comparative framework, with CEE countries and with European laggards and other emerging countries (used for benchmarking). *Chapter 3* explains how the Growth Competitiveness Convergence index is built up and compares the results with existing views. It also builds scenarios for CEE catching up, estimating the years needed to reach the EU average level.

LITERATURE OVERVIEW

Current convergence approaches

In evaluating the speed and timing of CEE convergence to the EU, the extensive international literature operates with real GDP per capita levels adjusted for purchasing power as a proxy for living standards. Empirically, two different techniques have been employed to measure convergence: *β -convergence* (the result of higher rates of growth in poorer countries than in rich countries) and *s -convergence* (decrease in the degree of dispersion in income levels). Most empirical studies on growth and convergence in transition economies use a neoclassical growth-accounting framework. (This is either unconditional – in considering two countries with the same fundamental parameters, the country with a higher level of GDP per capita must have a lower productivity of capital and therefore grow at a lower rate than the country with a lower level of GDP per capita – or conditional – countries allowed to differ in such parameters can still converge after controlling for these.) The weaknesses of this are addressed in alternative approaches, stressing the importance of technological change and congruence, and of social capability, in explaining economic growth and the catching-up process (Abramovitz 1993). The former constraint derives from the fact that any technology is defined by differences in the use of natural resources and other factors of production, by differing degrees of economies of scale, and by requirements of differing technological abilities. (Thus countries behind the technological frontier find it difficult to catch

up with the leader unless they have characteristics that conform to the prevailing technology.) The latter refers to education, financial institutions, infrastructures, the political and social environment, and all elements that can favour or limit the ability of countries to exploit their growth potential.

To these key economic issues have been added other approaches for evaluating the major economic implications of EU enlargement on the catching up of the accession economies: (i) reform policies, shaped by the competitive forces of EU enlargement agreements and EU *acquis communautaire* (Young and Wallace 2000; Funck 2002; Backe 2002); (ii) the public sector, including fiscal transfers to new members as a direct consequence of EU membership (Breuss 2001; Kopits and Székely 2002; Funck 2002; Backe 2002; Richter 2003); labour markets and social policies (Barro 1991; Stehrer *et al.* 1999; Sinn *et al.* 2001; Boeri *et al.* 2002; Ingham *et al.* 2002; Sinn and Ochel 2003; Landesmann and Stehrer 2004); (iii) FDI (Buch 1999; Resmini 2000; Alessandrini 2000; Altomonte and Resmini 2001; Breuss 2001; Hunya 2002; Backe 2002; Carkovic and Levine 2002; Sinn 2003; Landesmann and Stehrer 2004); (iv) effects of schooling (Mankiw *et al.* 1992; Bassanini and Scarpeta 2001; Landesmann 2003); (v) productivity and structural changes (Bernard and Jones 1996; Stehrer *et al.* 1999; Midelfart-Knarvik *et al.* 2000; Kopits and Székely 2003; Ingham and Ingham 2002; Funck 2002; Römisch 2003; Landesmann 2003; Lukas and Pöschl 2003; Havlik 2003); (vi) common currency-area growth effects (Persson 2001; Rose 2000 and 2001; Micco *et al.* 2003). (*Table 1*)

The main findings are generally supported:

1. On the whole, the accession countries have been growing faster than most EU 15 countries, so that convergence has appeared and should continue after enlargement in the context of full integration (Baldwin *et al.* 1997; Fischer *et al.* 1998a; Breuss 2001;

Fidrmuc *et al.* 2002; Tondl and Vukšić 2003; Kaitila 2004; Wagner and Hlouskova 2004). Almost all acceding CEE countries have recorded wider cyclical fluctuations than the EU, reflecting high investment ratios, so that a catching-up process of incomes is likely to persist. This leads to the view of an EU-25 being more heterogeneous with respect to economic growth.

2. Significant differences appear in reaping the gains from closer integration with the EU. GDP disparities are persistent despite integration through foreign trade, FDI, migration and massive transfers of pre-accession funds to poorer regions. This has applied at EU regional level since the structural funds reform in 1989. A core-periphery pattern is therefore relevant to describing the spatial distribution of activities in the EU (Lopez-Bazo *et al.* 1999; Le Gallo and Ertur 2003; Dall'erba 2003) and at CEE level (Herz and Vogel 2003). Regional spillover effects were also detected (Rey and Montouri 1999; Fingleton 2001b; Niebuhr 2001; Kosfeld *et al.* 2002).
3. GDP per capita is higher in more liberalized countries, in regions close to the EU border and in those with high levels of education (Fidrmuc 2000; Campos and Kinoshita 2002; Tondl and Vuksic 2003). So investments, participation rates, technology transfer and innovation activity were found to be the main economic explanatory variables for the CEE countries' per capita incomes and productivity-growth gaps. This issue is returned to when the determinants for inducing a positive spiral of growth are explained. (*Table 2*)

Table 1
Main convergence estimation methodologies used for measuring the economic gap between candidate countries and the EU average

	Indicators as proxy	Economic bases of the convergence methodology	Observations
Solow (1956)	GDP/head	Estimates of GDP/head that converge on the country <i>steady-state value</i> , based on three driving forces: technical progress and the accumulation of two factors of production: labour and capital	This is the standard neoclassical growth model, with very strong, mechanistic assumptions that do not predict absolute convergence.
Mankiw <i>et al.</i> (1992)	GDP/head at steady-state value	<i>Unconditional convergence</i> : based on the hypothesis that countries share the same steady state if they have identical economic structures and differ only in their initial conditions. This is the hypothesis of absolute <i>temporal convergence</i> . <i>Conditional convergence</i> : based on the hypothesis of similar growth rates of output and capital, if the countries have the same technology and same population growth rates, but different propensities to save and initial capital-labour ratios.	This over-simplifies the economic growth reality, being heavily criticized on theoretical and methodological grounds, such as heterogeneity, endogeneity and measurement problems. To sum up, there is not just one steady state, to which all economies converge. There may be multiple, locally stable, steady-state equilibria.
Barro and Sala-i-Martin (1992, 1995)	GDP/head	They define <i>B-convergence</i> as the negative correlation between the initial GDP/head level and annual growth rates, and <i>s-convergence</i> as the spatial distribution of GDP/head.	This provides reliable ex-post evaluations for economies in the same geographical area, but these methodologies do not offer solutions for economically robust projections.
Ben-David and Rahman (1996) Pelkman (2002)	GDP growth	Trade induced-growth simulation: convergence occurs because of factor-price competition according to the Heckscher-Ohlin theory of international trade and because of trade-related convergence in technologies. Countries that trade extensively tend to converge more.	Sectoral approaches based on strong or relaxed assumptions (static effects; dynamic effects). The models face similar problems to the Solow and Mankiw Neoclassical: too focused on capital and labour, technology being exogenous; endogeneity not addressed; demand side ignored (helping to explain FDI, 'imitation' <i>etc.</i>). Neither helps explain the convergence process in the modern world.
Tondl and Vuksic (2003)	GDP/head	They use a growth-accounting framework and focus especially on the role of economic geography. The main driving forces that may explain the different catching-up speeds are identified as FDI, geographical location near EU border, and higher education.	Regional growth clusters are identified from simple models of economic growth, using spatial econometric tools.
Herz and Vogel (2003)	GDP/head and gross-value added per capita and per employee	They also use a growth-accounting framework and suggest that structural factors, <i>e.g.</i> rate of labour participation, share of agriculture and manufacturing in total employment, and level of education, are relevant for regional growth performance in the first years of transition, but these explanatory variables weaken in later years.	Results from a cross-section of regions are compared with results from time-series analysis (two sub-periods: 1991–1996, 1996–2002) and with panel estimates. They do not provide strong variables to explain the variation in income or productivity growth in the period 1996–2002.
Le Gallo and Dall'erba (2003)	GDP/head	They build a general framework for testing simultaneously for temporal instability, spatial heterogeneity and spatial auto-correlation in <i>B-convergence</i> models.	They find temporal and spatial interdependence in the convergence process, but the problem of projections is unsolved.

	Indicators as proxy	Economic bases of the convergence methodology	Observations
Wagner and Hlouskova (2004)	GDP/head	They prove that the Neoclassical growth determinants are not relevant for growth convergence in the transition economies, and beside government consumption share and investment share in GDP, they introduce more explanatory variables: primary school education and the average ratio of exports and imports to GDP. They indirectly approach the structural changes and effects of upcoming EU membership.	They address the problem of uncertainty in the growth projections, building several scenarios for the growth rate and convergence time distributions. The problem of linearity in the convergence approximation remains unsolved. (This points in the end to richer CEE countries than the EU.)
Landesmann and Stehrer (2004)		They develop a multi-country, multi-sector Schumpeterian model of international specialization and catching up, following up the impact of rent-seeking FDI, speed of technology transfer, productivity growth and the migration flows.	They overcome some theoretical limitations of traditional literature on dynamic economic effects of increasing integration (<i>e.g.</i> specialization, demand-side catching-up patterns, FDI endogenization), but provide no empirical tests.
European Commission (regular enlargement reports)	Usually GDP/head and labour costs	They have a set of individual indicators, but they are not aggregated.	These do not quantify the structural convergence, but enlarge on the essential structural challenges.
Deutsche Bank (annual reports 2000–2004)	Deutsche Bank Research Convergence Indicator	Four main criteria: status of accession negotiations/political economy: private sector/GDP (per cent); legal system (EBRD); governance (EBRD); banking sector (EBRD); trade and foreign-exchange market liberalization (EBRD); structural convergence (real economic convergence: economic, legal and institutional developments): GDP/head (euro and euro PPP); GDP nominal (euro); GDP growth (per cent p.a.); investment/GDP (per cent); productivity growth (per cent); unemployment (per cent); agriculture/GDP (per cent); industry/GDP (per cent); external sector: current account balance/GDP (per cent); FDI/GDP (per cent); trade integration, per cent of exports EMU convergence (<i>monetary and fiscal convergence</i>): average consumer prices (per cent p.a.); gross monthly wages (euro); government expenditure/GDP (per cent); fiscal balance/GDP (per cent); general government debt/GDP (per cent);	This represents the first attempt to assess structural convergence of the accession countries. The results reflect an over-simplification of the adjustments undertaken in the field of economic, legal, regulatory and other institutional aspects. Though it is highly informative, it does not highlight clearly countries' economic strengths and weaknesses in terms of competitiveness, according to the Copenhagen accession criteria. Nor is the potential for prosperity and catching up derived from business-sector quality and competitiveness.

Table 2
Empirical evidence on the speed of convergence of the accession countries and the EU

	Convergence refers to:	Convergence speed	Observations
Barro and Sala-i-Martin (1995)	GDP/head	2 per cent	Ex-post and ex-ante analysis regarding the average annual convergence speed in EU.
Breuss (2001)	GDP growth over 10 years	< 1 per cent	Simulation based on world macroeconomic model.
Doyle <i>et al.</i> (2001) European Commission (2001)	GDP/head	1-2 per cent	Simulation using growth-accounting methodology.
Pelkman (2002)	Trade-induced GDP growth	1½–8 per cent of GDP	Simulation for short to medium term, for CEE as a group after enlargement.
Wagner and Hlouskova (2002)	GDP/head	3–4 decades for catching up	Estimate of EU historical convergence applied to newcomer countries.
Sinn and Ochel (2003)	GDP/head	1.1 per cent	Period: 1963–2000, for EU.
European Commission (2003)	GDP growth	0.4–1.2 per cent	Increase induced by EU structural funds' payments to CEE countries.
Kaitila (2004)	GDP/head	2.6 per cent 3.4 per cent	Period: 1960–2001, for EU. Period: 1995–2001 for CEE 7.
Wagner and Hlouskova (2004)	GDP/head	1.74 per cent, 3.05–3.52 per cent	Period: 1990–2001, for EU 14 (ex Luxembourg). These are individual mean growth rate projections for CEE 10 based on scenarios and applying EU historical convergence rate, including the effect of EU enlargement related to structural funds payments.

Further changes in growth and welfare in the eight CEE entrants will be triggered by *de jure* integration into the EU, although these changes have partly taken place before accession. Full EU membership will contribute to improving economic growth through (i) traditional trade effects of economic integration (trade creation and trade diversion), dependent partly on the ability of current member countries to react quickly to changes in relative goods and factor prices that come with trade liberalization, and (ii) movements of factors of production and other dynamic effects (*e.g.* capital export/import, technology transfer, increased competition, economies of scale).

There appear to be some differences in the evaluations of magnitude and speed of convergence in the last decade, explainable by differences in data availability, data accuracy, or methodology used in estimations associ-

ated with more or less mechanistic assumptions. Wagner and Hlouskova (2004) point out in their growth projection that the heterogeneous levels of development in the CEE 10 are essentially unrelated economically: they reflect the assumption of systemic convergence on the EU as being towards a 'statistical mean country' of the sample taken into consideration (EU 15).

Finding the magic solution to understanding the growth mechanisms of catch-up economies has proved very difficult. Questions such as the causes of differing growth performance in CEE countries have been addressed by many researchers. Some investigate the main growth determinants using large worldwide country sets (Sachs and Warner 1995; Sala-i-Martin 1997; Gallup *et al.* 1998; Barro and Sala-i-Martin 1998; Rodrick 2002; Doppelhofer *et al.* 2004; Blanke *et al.* 2004) or EU regional country sets (Fagerberg and Verspagen 1996,

Vanhoudt *et al.* 2000; Paci and Pigliaru 2001; Badinger and Tondl 2003). As regards CEE countries, the studies investigating multiple growth factors at country level can be divided into those derived from initial conditions, which particularly explain the factors of increased economic growth during the transition and recovery period, and those related to the factors relevant to post-transition dynamic growth.

1. Analysis of initial conditions in transition economies, derived from the nature of the communist institutional system, remains the aim of a huge international literature. The common features are intensified by different systemic pressures at national level, in terms of degree of extensive controls exerted by the communist state, associated with an overgrown communist welfare state and with the provision of public goods. These differences may provide valuable explanations for different development paths and economic performance, but do not alone explain different speeds of convergence on the EU.

Few people today disagree with this, although it merely shifts the question to what the central determinants of a success story are. Hernández-Cáta (1997), Fisher *et al.* (1998a), Piazzolo (1999) and Falchetti *et al.* (2002) focus on institutional reform and market liberalization as major explanatory variables. Berg and Sahay (1999) consider that differences in structural reforms explain these differences and that the role of initial conditions in explaining cross-sectional variation in growth is surprisingly minor. Havrylyshyn and van Rooden (2000) and Barlow and Radulescu (2002) identify progress in achieving macroeconomic stabilization and implementing broad-based economic reforms the main driving forces of growth. In addition, suggests that the more and the faster the reforms, the better their outcomes are. Balcerowicz (2003) stresses that differing performances of transition economies are due

less to initial conditions than to differences in quality of general policies (horizontal: privatization, prudent regulation and supervision, protection of creditors' and minority shareholders' rights, restructuring of bad debts) and sectoral policies (privatization, soft/hard budget constraints on enterprises).

However, the negative effects of unfavourable initial conditions decline over time (DeMelo *et al.* 1997; Berg *et al.* 1999) and cannot serve as an excuse for inaction or lagging behind. Such effects can be offset by modestly faster progress on reforms.

The main negative outcome of initial conditions is to lower political will and capacity for reform, which obviously translates into lower economic growth and competitiveness in terms of governance and business development. A comprehensive empirical model built by Sachs and McArthur (2001) summarizes the set of institutions, policies and structures that drive the growth process, in three interconnected pillars: macroeconomic environment, public institutions and the level of technological sophistication. With transition economies, public institutions and organizational efficiency play a more crucial role in the development process than they do in highly developed countries.

To sum up, all the explanations of economic growth are largely 'institutionalist', although exogenous to the models that estimate the convergence process specified above. They themselves need further explanation and endogenization.

2. A number of studies address the central post-transition growth determinants, such as capital accumulation, productivity growth, FDI, labour force participation, educational attainment, technology transfer and innovation or geography location in the EU border area (Fidrmuc 2000; Boeri and Brücker 2000; Altomonte and Resmini 2001; Dobrinski 2001; Campos and Kinoshita 2002; Tondl and Vuksic 2003; Herz and Vogel 2003;

Landesmann and Stehrer 2004). The main empirical findings reveal the high importance of FDI, followed by geographical location and higher levels of education (as main drivers for further technology diffusion), in leading the stronger performance of some countries after 1995. A variable like FDI is not exclusively exogenous in explaining higher economic growth, but partly endogenous. Its determinants, such as market size or wealth, cheap labour or highly educated work force, have to be considered. Increased capital accumulation is far less important than it was with the developed countries or less advanced economies that joined the EU in the 1980s. This suggests that applying their speed of convergence as criteria for convergence among the new members is inappropriate. Analysis of the catching-up process must rely on the specific features of the transition economies and be addressed in a different way for the two periods and the two sets of countries.

These views are in line with the findings of two recent papers (Herz and Vogel 2003; Wagner and Hlouskova 2004). The former accounts for regional economic growth convergence during transition by investigating the dynamics of regional disparities in gross value added per capita and per employee. Comparing results from the cross-section of regions for two sub-periods, 1991–6 and 1996–2002, they conclude that the pronounced reduction in regional disparities is largely attributable to income convergence. This trend applies in the first years of transition, but thereafter, the regional pattern of disparities remained stable. Their empirical findings reject unconditional convergence for the three CEE countries analysed here (the Czech Republic, Hungary and Poland – accounting for two-thirds of CEE GDP and more than 50 per cent of the population), but they find evidence for conditional convergence – poorer regions conditionally grow faster than richer. Their results further suggest that structural factors

such as the rate of labour participation, the share of agriculture and manufacturing in total employment, and the level of education, are relevant to regional growth performance. Splitting the sample into the two sub-periods mentioned suggested that conditional convergence is a phenomenon typical of the first half of the 1990s but not the second. The variables used to explain the variation in income or productivity growth substantially weaken in the period 1996–2002. Also found is a strong influence from country characteristics. Regional disparities between countries have diminished, whereas on average, they have remained stable within countries (Herz and Vogel 2003).

The ‘new growth’ set of factors does not provide an adequate explanation of the growth patterns in the CEE 10, but they become increasingly important as the economy passes beyond the transition period. In 1991–5, a negative correlation between initial real per capita GDP and subsequent growth (β -convergence) prevails. The correlation between investment share and output growth is negative (though insignificant) and that between government expenditures and output growth is positive. But β -convergence and both the above-mentioned correlations disappear when the Baltic states of Latvia, Lithuania and Estonia are excluded from CEE 10. The following years, 1995–2001, show a similar picture, but it is associated with a positive correlation between investment share and output growth. Thus the transition behaviours are not consistent with the long-term implications of neoclassical growth models (Wagner and Hlouskova 2004).

In Romania’s case and Bulgaria’s, displaying these two sets of factors suggests that a growth-convergence projection would have to weight them differently. For example, a negative correlation between FDI flows and changes in GDP persists in Romania in 1995–2001 (Voinea 2002a). Further systemic change

and other transitional transformations should continue up to 2007, when Romania is expected to join the EU. Thereafter, the convergence trend will be shaped by effects of EU accession and the gains for the national business environment from integration into the single market. This ‘calibration approach’ geared to phasing of structural change is a key question to be addressed.

Linking trade and development in the process of competing for economic growth

In macroeconomics, trade theory and growth theory have mainly developed as separate disciplines. The primary aim of the first is to explain the direction and magnitude of trade flows between nations, while growth theory tries to explain the rate of growth in the wealth of nations and the magnitude of convergence or divergence of GDP growth rates over time. When economists seek to explain the growth performance of a firm, a crucial explanatory factor is the way it competes in the markets for its products. Obviously, there is a direct relation between market (trade) performance and growth. In the modern world of increasingly important international relations, however, the markets for firms are no longer exclusively domestic. Since the growth performance of a country is determined by the performance of its firms, it is clear that theories of international trade and international growth cannot be viewed as separate entities.

Since there is a relationship between trade and growth, there are a number of factors well known from trade theory that enter into analysis of economic growth: competitiveness, the exchange rate, terms of trade, and elasticity of demand with regard to income and price. These factors and their role in the growth process have been dis-

cussed at length by Krugman, Obstfeld, de Grauw, Krueger, Bhagwati, Hoekman and many others, and transformed into the so-called import-substitution industrialization strategy of development (ISI) implemented by many countries in the 1950s–1970s; or the export promotion strategy later known also as the outward-oriented strategy (OES). This gained popularity first among academics, and then quickly among policy-makers in developing countries, from the 1980s onwards. Political economists such as Wade argue there is no simple choice between ISI and OES. The most successful Asian developers have used both, at various times. In any case, many economists notice that despite centuries-old ideas of trade as an engine of growth, recent decades have still been characterized by protectionist theories and practice. Despite the globalization process, national or regional economies organize themselves in various ways and have diverse expectations of their governments and market players. The struggle to impose the rules of the free foreign trade game on the new global economy, especially in the EU integration process, is drawn from the concept of ‘fair trade’. The behaviour of national markets in the global competition battle proves to be to erect technical barriers to restrict unfair trade. These sometimes become protectionist trade instruments, detrimental to the original intentions. The domestic constraints imposed by regionalization and globalization lead to compensation through these trade instruments, sometimes overwhelming the competitive advantage of others, and implicitly, the potential for economic growth and wellbeing.

Export-led growth or growth-led exports? The focus of debate nowadays has switched from how biased export-led growth strategy is to the causal relationship between exports and growth. Clearly, ‘Trade has been a friend of economic development and growth, not an enemy, as many policymakers and

economists feared in the immediate post-war period'. It is far less clear whether a rise in exports was the main determinant of growth or just one of its facilitators. The OECD examines in some detail this relationship between exports and growth, supporting the view that the strategies pursued in East Asian countries built up national internal competitiveness, resulting in dynamic growth and then in increased supply of exports. In this sense, it is correct to talk of growth-led exports, not export-led growth. This interpretation draws on recent developments in growth theories, focused on the roles in generating dynamic economic growth of increasing economies of scale, technology strategies, knowledge-absorption processes, and investment. This growth then induces rapid growth in exports of manufactures.

Trade policy as an input to transition, specialization and convergence. A common ingredient of all transition programmes is early trade liberalization. The key role of trade liberalization in potential domestic economic impact may be found in price reform and competition policy, which push domestic producers towards maximum potential efficiency. From an external perspective, trade liberalization is expected to upgrade the technological level of the economy, hopefully bringing higher exports that build up demand for domestic goods and decrease per capita income gaps. For transition countries, one of the main findings is that protection costs do not automatically transfer into liberalization benefits (Venables 1999; Barry 2001). These are larger when (i) there is movement from high tariffs or other barriers to low ones, (ii) scale efficiency and technology improve in the presence of pro-competitive effects, and (iii) there are opportunities to import new technologies/expertise that foster economic growth (import-led growth).

The main effects of trade liberalization can be expected in these areas: consumers, producers, fiscal revenue (World

Bank 1996), the labour market (Feenstra and Hanson 2001; Ghose 2003), the balance of payments (OECD reports), and international competitiveness through changes in composition of technological activities (Meliciani 2001; Landesmann and Stehrer 2004). The last, crucial to the specialization pattern of a catching-up country, is addressed differently in three leading theories of trade and growth.

In traditional Neoclassical growth theory, neither the opening of trade nor different patterns of specialization can affect countries' rates of growth. This assumes a production function with constant returns to scale and decreasing marginal product for any single factor of production. Consequently technical change is an exogenous process and there are no inter-country differences in production functions. So it is asserted that countries with a higher capital/labour ratio must have lower productivity of capital and lower growth rates compared with countries with lower capital/labour ratios. Neoclassical trade theories, in their simplest form, assume identical tastes and perfect competition, along with identical production functions, to prove that relative specialization occurs in the relatively abundant factor endowments (the Heckscher–Ohlin theorem). At the macroeconomic level, the Neoclassical theory of international trade stresses the role of adjustments in relative prices in restoring the balance-of-payments equilibrium. As Eastern Europe is capital-poor but labour-rich, trade will induce a reduction of relative prices of labour-intensive goods along with real wages in the EU and labour to move out of these product groups into more capital-intensive ones. In the steady state, when output and capital grow at the same rate, the increase in per capita income is explained only by exogenous technological progress. In this framework, trade liberalization is beneficial to all countries and leads to specialization according to comparative advantage, not

to effects of economies of scale or learning opportunities. Thus no importance is given to what goods are produced (the effect of constant returns to scale and exogenous technological progress).

Endogeny and/or appropriation of technical change (through imitation) may better assess the proper relationship between trade and growth (Meliciani 2001). Three major theoretical approaches that shed useful light on the impact of specialization on growth and international competitiveness can be distinguished. (i) New growth and trade theory (Arrow, Krugman, Helpman, Sala-i-Martin, Grossman, Romer, Young, Matsuyama, *etc.*) is a development of the Neoclassical approach that overcomes some of its main drawbacks (long-term growth dependency on unexplained technological change and the forecast of convergence in growth and per capita incomes). The effects of trade on growth are explained through economies of scale and more efficient resource allocation. The theory introduces monopolistic competition, product differentiation and increasing returns as explanations when trade that is not based on comparative advantage occurs. This approach has the power to explain intra-industry trade, trade within rather similar instead of different economies, the two-way trade in goods of similar factor intensity, and the foreign direct investments. However it is not completely satisfactory for assessing the role of specialization and technical change and omits the role of demand in affecting growth. (ii) Post-Keynesian models of growth (Harrod, Domar, Kaldor, Hufbauer) emphasize the importance of aggregate demand for growth, by rejecting the assumption that supply creates its own demand (Say's Law). In other words, producing new goods in a monetary economy may improve purchasing parity, but may not result in higher expenditures. In the static framework, investments are the source of demand increase that determines the level of output. The dynamic framework accounts

also for the feedback effect of output on investment (the accelerator mechanism), so that investment becomes an endogenous variable. The role of trade in affecting the rate of growth has been emphasized in export-led accounts of growth (Beckerman, Lamfalussy, Balassa, Thirlwall). The higher the income elasticities for exports and the lower those for imports, the higher the rates of growth consistent with balance-of-payments equilibrium (the main constraint on demand). The role of specialization patterns intervenes only in their influence on the income elasticities of exports and imports, and technological differences across countries do not play an explicit role in explaining the gaps in economic performance. The presence of increasing returns also explains why convergence in per capita income and factor prices forecast by Neoclassical theory does not appear in reality. In this framework, the proper division of international trade is not so much the traditional one between capital-intensive and labour-intensive trade, but between low-wage and technology-led trade. So a multi-sectoral approach, taking into account sector-specific elements of technical progress and demand, is a better approach to economic growth. Structural changes then play an important role in explaining the growth phenomenon. (iii) Schumpeterian-evolutionary models (Schumpeter, Nelson, Winter, Dosi, Arthur, Silverberg, Freeman, Perez, Fagerberg, Verspagen, Vernon) address technical change endogenously as the main factor driving economic growth, but seeing it as unevenly distributed through time and across firms, industries and countries. Technical change is tacit, firm specific and difficult to transfer. In this approach, the distribution of countries' technological activities may affect national economic performance. The waves of development are linked to specific emerging industries with very high rates of growth, exploiting clusters of related innovations. The other industries receive impulses generated by the most innova-

tive ones, allowing them to expand production through inter-sectoral links. The main advantages of this approach come from emphasizing the roles of history and irreversibility of economic environments, of continuous change, of strong uncertainty derived from technological progress involving discovery and creation, of diversity at micro level, and of the attempt to link macroeconomic phenomena with non-optimizing microeconomic behaviours as elements of economic growth. At the same time it deals with creative destruction and rejects the concept of the production function in any simple way, and along with that the tools of equilibrium analysis, replacing the notion of equilibrium with a stable path of evolution, similar to the stability of system theory. In evolutionary models, even if the system is indeterminate and permanently out of equilibrium, order is generated by self-organization, through varying combinations of learning, selection mechanisms and institutional structures.

2) ROMANIA'S CONVERGENCE ON THE EU IN A COMPARATIVE PERSPECTIVE

The development approach to Romania's convergence: starting point and current standing

Why is it important to look again at the development path taken by Romania and compare it with other countries? With the CEE 10, one cannot speak of a convergence club – a group of economies whose initial conditions are near enough to converge on the same long-term equilibrium. Regional economies are often marked by strong geographical patterns, such as core-periphery (Le Gallo and Dall'erba 2003). The latter is representative of spatial heterogeneity – instability

of macroeconomic behaviour in space. It should be added that firms' behaviour varies as well, as they act differently according to knowledge base, accumulated experience, and entrepreneurial spirit. This leads to microeconomic heterogeneity that induces higher or lower economic growth, according to changes in the competitiveness of the business environment. It correlates highly with organizational and social change, as it depends also on the reaction of the ambient institutional framework.

The growth process of the transition economies started with a transformational recession causing drastic falls in output, high unemployment and often hyper-inflation (Kornai 1994; Traistaru and Wolff 2002; Wagner and Hlouskova 2002; Campos and Coricelli 2002). Here any growth convergence analysis must consider the driving forces of (i) the country's place in the picture of the complex transition process (usually involving institutionalist approaches identified earlier) and (ii) the determinants of growth (usually identified by the new Neoclassical growth theory in the long run.)

Macroeconomic environment

The initial conditions and ensuing outcomes in terms of economic structures, economic performance, infrastructure and human development are presented synthetically, underlining the main gaps between Romania (coloured red), the EU (coloured black) and other candidate countries (coloured blue). Also used for benchmarking are Asian or Latin American emerging economies, less advanced European economies, and other CIS transition economies (coloured green).

The development paths of the ex-communist countries have differed considerably in various respects. Romania's increased speed of industrialization in the 1960s and 1970s, associated with massive technology imports from the West, did not achieve its efficiency targets. In

terms of industrial over total employment (*Figure A.1.1*) and value added in industry as a proportion of GDP in 1989 (*Figure A.1.2*), Romania's degree of industrialization compared with that of former Czechoslovakia and Bulgaria, but exceeded that of other transition economies and even of other comparable emerging economies or of the Euro zone. Hungary outperformed all other CEE countries in 1992–2001 in terms of catching up in industrial productivity (*Figure A.1.3*). These two figures indicate a positive β -coefficient of productivity convergence, in accordance with the well-known Gerschenkron hypothesis of 'advantage of backwardness' at industrial level. (The technologically lagging country experiences higher rates of productivity growth in industries that start with a higher initial productivity gap, relative to the leader.) Romania's performance is similar in relative terms to Estonia's and the Czech Republic's.

The extensive industrialization process was still associated with a large agricultural sector. Romania in 1989 had the largest agricultural sector in terms of employment share (*Figure A.1.4*) and followed Lithuania in terms of value added in agriculture as a percentage of GDP (*Figure A.1.5*). This proportion was comparable with China's, but much larger than Chile's or Mexico's. These figures indicate that agricultural productivity (value added/employment in agriculture) relative to overall productivity (total employment/GDP) was significantly higher in Romania (0.85) than in transition economies (Slovakia 0.69; Bulgaria 0.57; Poland 0.52; Czech Republic 0.50) other than Baltic States (Estonia 1; Lithuania and Latvia more than 1), and even in the Euro zone (0.5) or other benchmarked emerging countries (Korea 0.5; Chile 0.47; China 0.43; Mexico 0.34; Thailand 0.22).

One outcome of the communist industrialization policies of the 1960s and 1970s was steadily increasing foreign debt. After the second worldwide oil

shock, Romania's was the only communist regime to make extensive efforts to repay its whole foreign debt, at the cost of lagging behind in the infant process of economic liberalization. So the norm in 1980s Romania was an annual foreign-trade surplus between USD 1 and 3 billion, leading to very low foreign debt as a proportion of GDP in the pre-transition years (*Figure A.1.6*) and relatively low trade dependence on COMECON markets (*Figure A.1.7*).

The main effects were severe compression of domestic absorption, technology obsolescence, virtually no major investment in modern infrastructures, and real isolation from developments in the outside world (*Figure A.1.8*). These explain the lower general government expenditure relative to GDP (*Figure A.1.9*), particularly public expenditure on social security and welfare relative to GDP (*Figure A.1.10*), compared with 1989 figures for Slovakia, the Czech Republic, Bulgaria, Hungary and Poland. Public expenditure on social security and welfare comprises compensation for loss of income to the sick and temporarily disabled; payments to the elderly, the permanently disabled, and the unemployed; family, maternity, and child allowances; and the cost of welfare services, such as care of the aged, the disabled, and children. This category approximates social transfers but excludes transfers in education and health. Nevertheless, government expenditure shares are tricky indicators. Some Neoclassical economists would see them as 'crowding out' private expenditures and therefore assume strongly negative effects from these indicators. A similar ambiguity is suggested by the substantial country variation between the models of fiscal transition in the following decade. They range from the Irish model – Hungary, Estonia and Latvia, increasing the share of government expenditure in GDP – to the collapse-of-the-state model – Slovakia, the Czech Republic, Bulgaria, Romania and Lithuania – by decreasing this share. In

2001, the share of public expenditure on social security and welfare in GDP in Romania was similar to that in Hungary and Estonia and much smaller than that in Poland, the Czech Republic, Bulgaria or Latvia.

To the survey of main economic structural developments should be added that the transition economies varied widely in their macroeconomic imbalances. Romania registered the lowest annual inflation rate in 1989 (*Figure A.2.1*), which was associated with the highest repressed inflation rate in 1987–1990, estimated as the difference between the increase in real wages and real GDP from 1987 to 1990 (*Figure A.2.2*). In 2002, Romania was a laggard in combating inflation: an inflation rate four times higher than in Bulgaria or other accession countries, ranked it in first place for its Maastricht convergence-criteria gap (*Figure A.2.3*). During the gradual price liberalization, Romanian monetary policy relied constantly until 1997 on the exchange rate as an inflation anchor. Afterwards, for only short periods of time (seasonal or trade-cycle shocks, e.g. imports of energy resources) did the necessity of controlling the trade balance and current-account deficit permit any easing of exchange-rate policy used as a nominal anchor.

The financial sector in the transition economies developed at varying paces. On the one hand, the black-market premium as a proportion of the official exchange rate was much higher in Romania than in the CEE 8, which reflected strong overvaluation of the currency (*Figure A.2.4*). In the meantime, the real appreciation of the annual exchange rate during 1991–2002 was near to 5–6 per cent (*Figure A.2.5*), similar to that registered in Poland and higher than those in Hungary (2.5–4 per cent) or Slovenia (1.5–2 per cent) in the same period. An estimated average of 1.5 per cent undervaluation of the effective real exchange rate from its equilibrium level (1992–2003) should have improved external

competitiveness by stimulating the price competitiveness of exports and diminishing that of imports. This was the case in the last years of transition, but before 1999, the imprudent pay policy associated with low labour productivity induced a worsening of external competitiveness. After 1999, despite appreciation of the real exchange rate, the external competitiveness improved, as the increase in productivity was higher relative to earnings. So the improvement in competitiveness was mainly in labour-intensive industries.

On the other hand, the private sector in most of these countries is heavily financed by domestic credit and the financial sector is bank-dominated. A stock-market capitalization of 2.9 per cent and a low 7.8 per cent ratio of domestic credit to the private sector in GDP meant Romania was lagging far behind in the CEE 10 in 2001 (*Figure A.2.6*). The performance of the financial sector correlates highly with the enterprise sector, where Romania's performance expresses hard budget constraints on enterprises and a slower process of privatization and restructuring of bad debt, coupled with a low share of foreign investment in a capital-poor economy.

In the 13 years after the collapse of communism, CEE countries experienced very diverse outcomes in terms of FDI attractiveness and economic growth. Romania was a constant laggard in cumulative per capita FDI inflows in 1989–2002 relative to the CEE 10 and the emerging countries (*Figure A.3.1*). Though Neoclassical models would predict FDI moving to capital-poor countries like Romania, the opposite occurred. Romania's capacity to attract FDI per capita is less than an eighth of that of the Czech Republic and less than half that of Poland – the least FDI competitive country among the new EU members. Romania still ranked in fifth in the CEE 10 in terms of cumulative FDI inflows in the same period, reaching less than a

quarter of Poland's (*Figure A.3.2*). This aspect is addressed later in more detail, in the discussion of national business environment.

The average real growth rates over the same period were positive, except in Latvia, Lithuania, Bulgaria, Romania and Estonia. This is equivalent to saying that the initial output losses in these five countries were so great that despite their sound recent growth performance, they have not recovered to 1989 income levels (*Figure A.4.1*). Romania's average growth rate of real GDP per capita in 1992–2001 was 0.3 per cent, leading to a relative GDP per capita to the Euro zone of almost 30 per cent in 2001, which was much lower than the CEE 10 average. According to the optimistic scenario estimates of Wagner and Hlouskova (2004), Romania will need 94 years to reach the EU 24 GDP per capita level (Luxembourg excluded). But 2000 was the first year in which Romania registered a real GDP increase (2.1 per cent). This increased in ensuing years (5.7 per cent in 2001, 4.9 per cent in 2002 and 4.7 per cent in 2003, according to WIIW figures), leading to an annual average increase in GDP per capita of 3.35 per cent in 2000–2003.

The average real per capita GDP of the CEE 10 compared to the EU rose from about 35 per cent in 1992 to almost 40 per cent in 2001 (*Figure A.4.2*). At the same time, the share of total real GDP declined from 15 per cent to about 13 per cent. This is explained by the different annual rates of population growth: -0.15 per cent for the CEE 10 in comparison with +0.33 per cent for the EU.

These gaps translate into human capital development indicators. Romania had the highest infant mortality rate in 1990–2001 (*Figure A.5.1*), the lowest life expectancy at birth (*Figure A.5.2*) and living standards (*Figure A.5.3*). As regards the income distribution, Romania's Gini coefficient of GDP per capita in 1996–8 relative to 1987–90 increased

more than those of the Czech Republic, Hungary, Latvia and Poland, but less than those of Lithuania, Estonia and Bulgaria (*Figure A.5.3*).

To sum up, a quantification of the soundness of the macroeconomic environment as a determinant factor of GDP per capita growth was made by Blanke, Paua and Sala-i-Martin (2004), on the basis of the first model developed by Sachs and McArthur (2001). They took the macroeconomic environment index in 2003 (ranging from 1 unfavourable to 7 favourable) as a weighted average of three sub-indexes – the macroeconomic stability sub-index (weighted at 1/2), the country credit rating in March 2003, and government waste in 2003 (each weighted at 1/4). These were built on hard data (government surplus/deficits, national saving rates, inflation, real exchange rates relative to USD, lending-borrowing interest rate spread in 2002) and survey questions. Despite improvements in the macroeconomic environment since 2001, Romania lagged far behind other accession countries (*Figure A.7.1*) at 1.07 percentage points below CEE 10 average in 2003 (*Figure A.7.2*).

Figure A.7.1 also brings out a crucial notion, the existence of a correlation at country level between the macroeconomic environment index, public institution index and technology index, which together suggest complex patterns of interaction. In Romania's case, public institution quality proves the biggest lag in terms of growth competitiveness. The gap between Romania and the CEE 10 average is -1.34, greater than the gaps in the macroeconomic stability index (-1.07) or in the technology sophistication index (-0.56).

Table 3
Correlations between the three pillars of growth competitiveness in the CEE 10

Macroeconomic environment index	0.88
The public institution index	0.91
The technology index	0.76

Socio-political and public institutional development

A first assessment of the interaction between economic reforms and politics should consider the ability of the political system to overcome the macroeconomic cost of reform during transition. It has been seen that the closer to a market system an economy comes, the greater the expectable beneficial effects on growth. However, the literature finds that current reform affects growth negatively, while lagged reform affects growth positively and eventually starts to dominate. In the transition context, the content of reform was more or less agreed, but its speed and sequencing were heavily debated, with discussion focusing on a choice between big bang or gradualism. From a theoretical point of view, the importance of reform reversals lies in the existence of reversal costs. This issue was addressed by Merlevede (2003), who analyses the incidence of reform-reversal costs that are crucial to the domination of gradualist strategies over big-bang strategies in the presence of aggregate uncertainty (in terms of distribution of costs and gains). Reform reversal is defined as downgrading in the level of an average reform indicator. He explicitly introduces a reversal parameter into a simultaneous equation system with growth and the level of reform as dependent variables, and concludes that a reversal generates an immediate negative contribution to real output growth. Taking into account the level of reform a country achieved, a reversal is found to be more costly at higher levels of the reform indicator. For a sample of 16 highly studied reforming countries (Romania and other 2 CEE countries included), Tommasi and Velasco (1997) report election outcomes and their impact upon the reform process. In only one out of the 16, were reforms reversed by the new government, where in a small number of countries a change in political circumstances led to a slowdown

in reform, and in several, reforms continued even after the opposition to the initial reforming government took power.

Freedom House places the political systems of transition economies in 1990–99 in four main groups, according to ratings based on average scores for political rights and civil liberties ranging from 1 (free) to 7 (not free). The thresholds for determining the country groups are these:

- * Competitive democracies: political rights ≤ 2.0 and civil liberties ≤ 2.5 .
- * Concentrated political regimes: political rights or civil liberties > 2.5 .
- * War-torn regimes: > 5 political rights or civil liberties > 2.5 .
- * Non-competitive political regimes: political rights or civil liberties > 5 .

Romania is gauged as having a concentrated political regime, higher than Bulgaria's and 1.6 times higher than the CEE 8 average (*Figure A.6.I*).

A second assessment should address governments, with their major role in building efficient public institutions that businesses have to deal with. The property rights and contracts enforcement guaranteed by a legal and judicial system under a strong rule of law are crucial to creating the wealth potential out of a free market economy. Corruption is also a major source of distortion of economic growth and development. In quantifying the soundness of public institutions in 2003, Blanke *et al.* (2004) used a public institutions index (ranging from 1 weak or non-existent to 7 strong): a simple average of two sub-indices – the contracts and law and the corruption sub-index – aggregated on the basis of survey questions. Democratic institutions improved in the past seven years, except in Bulgaria and Romania, but remained weak compared with the advanced economies. Despite improvements in political stability since 2001, Romania lags far behind other accession

countries (*Figure A.7.1*) at 1.34 percentage points below the CEE 10 average in 2003 (*Figure A.7.2*). The high correlation between level of economic development, measured in terms of GDP per capita, and institutional quality underlines the importance of developing better institutions of governance in laggard countries.

Public institutional maturity itself depends also on the expectation of EU membership, so that for the following three years, the author expects a much higher speed of institutional and economic improvement in Bulgaria and Romania, in terms of an optimistic 2007 date for joining the EU.

Upgrading technology

The main lesson of Neoclassical growth theory is that an economy cannot grow in the long term without technological progress (Solow 1956). This may translate into much cheaper products and/or dramatically improved quality, leading to higher market shares and economic growth. With more efficient institutions and stable macroeconomic environments, the importance and effects of technology improvements on economic growth are increasing drastically (Blanke *et al.* 2004). Related to this is the important lesson of a more open and integrated world: improvements in a nation's competitiveness are not a linear process, but one in which countries at different development levels face different challenges and priorities (in Schumpeterian evolutionary models).

These underlying features of technological progress explain Romania's lag in the transition period, and Bulgaria's, as they are still coping with low quality of public institutions and an unsound stable macroeconomic context, relative to the other CEE countries. Instead, technology upgrading seems to be and should be the main driving force in the catching-up process.

Capacity for innovation in the investment-driven stage of the Romanian economy's development is small and concentrated in manufacturing and outsourced service exports. (Financial crises and external sector-specific demand shocks are evident at this stage). The main mechanisms of technology diffusion remain higher FDI inflow, a more complex foreign-trade structure, and imitation or adoption of knowledge developed by leading economies. Improvements in information and communication-technology infrastructure and educational and research capabilities should accelerate transfers further.

One method of measuring the technological sophistication of an economy, designed by Blanke *et al.* (2004), is the technology index. This is a weighted average of three sub-indices: an innovation sub-index (weighted at 1/2 for core-innovator economies and 1/3 for non-core innovators), an information and communication technology sub-index and a technology transfer sub-index (each weighted at 1/4 for core-innovator economies and 1/3 for non-core innovators). Romania's technology transfer index is close to the CEE average, but lags behind in terms of the innovation and information and communication technology endowments, leading to an overall 0.59 percentage-point gap in technology sophistication behind the CEE average in 2003.

Trade approach to CEE countries' convergence

Analysis of revealed economic development and the prospects for future growth depends largely on trade, investment (*e.g.* Tondl and Vuksic 2003), institutional change (*e.g.* Crespo-Cuaresma 2002), and to a lesser extent, migration (Sinn and Ochel 2003). In trade terms, extensive economic integration between current and new EU member-states occurred as part of the pre-accession process (Ben-David and Rahman 1996b;

Brenton and Gros 1997; Forslid *et al.* 1999; Venables 1999 and 2001; Breuss 2001; Manzcocchi and Ottaviano 2001; Brenton and Manzcocchi 2002; Pelkmans 2002; Fidrmuc *et al.* 2002).

Trade growth and economic growth were higher in the transition economies than in the EU (intra-trade included) in 1995–2002 (*Figure B.1.1*). A big role was played by the increase of FDI inflow into the former, associated with a remarkable decrease in the FDI entering Latin America (*Figure B.1.2*), but the distribution of the FDI among the CEE 10 was disproportionate to the countries' potentials. Their trade patterns are heterogeneous in average annual export growth rates, per capita GDP, per capita stock of FDI, and simple average MFN tariff (*Figure B.1.3*). Romania's highest simple average MFN tariff, associated with the lowest per capita stock of FDI and with the lowest GDP per capita (except for Bulgaria), correlates with relatively similar annual average export growth rates in Poland, the Czech Republic and Slovakia in 1995–2002.

The same period brought marked structural changes in exports. The share of manufactures in total goods exports rose in all CEE countries, with higher levels registered in countries that attracted more FDI: Hungary (+19.8 percentage points), Poland (+10.9), Czech Republic (+6.8), Bulgaria (+5) and Romania (+3.7), see (*Figures B.1.4 and B.1.5*). The share of agricultural products in goods exports decreased more in all accession countries than at world or EU level: Hungary (-15.6 percentage points), Bulgaria (-10.3), Poland and the Czech Republic (-4.4 each) and Romania (-3.5).

Romania's trade performance remains relatively weak despite high rates of export and import increase in 1995–2002. Average Romanian trade per capita in 2000–2002 represented less than one third of Czech or Hungarian levels, about half of the Slovak level, almost

equal to that of Poland, and higher than that of Bulgaria (*Table B.1.1*).

Analysed according to three main product groups – clothing, textiles, and automotive products – Romania had much the highest share of clothing in total merchandise exports (an increase of 17.1 percentage points in 2002 over 1990, equivalent to an almost tenfold increase over the period). Meanwhile the share of clothing products increased by only 0.1 percentage points on a world level (equivalent to a twofold increase in 2002 over 1990), and decreased by 0.6 percentage points in the EU. The share of textiles in total merchandise exports decreased on a world level and in the CEE countries and the EU. Only Poland's textile exports maintained their share, but Romania's decreased to the least extent of all accession countries in 1995–2002. Romania did well in clothing exports and to a lesser extent in textiles, where exports doubled against stagnation in world trade in 1995–2002. This specialization pattern is explained by the high ratio of outward processing trade (loan production) in the clothing and textile industries. However, Romania did badly in the automotive industry, where world trade increased twofold in 2002 relative to 1990, and 30 per cent relative to 1995. Romania had the lowest share and the slowest increase in the share of automotive products in total goods exports. Slovakia (+15.5 percentage points) and Hungary (+12.3) were the best performers, in shares and share increases, between 1995 and 2002. The Czech Republic and Poland came next with increases of 9.6 and 8.3 percentage points respectively (*Table B.1.2*).

Since Romania's trade in goods with the EU was largely liberalized during the 1990s, EU membership means moving into a customs union from a pre-existing free-trade area. It should therefore make only a small immediate impact on goods trade with the eight new EU members and give further gains only in the medium and long run,

through increased investment and further production specialization (Landesmann and Stehrer 2002). Nevertheless, there remain areas where trade has yet to be fully liberalized, such as the automobile product group, and there is limited trade in services, including financial services. Trade in agriculture is also not fully liberalized, although agro-food trade increased substantially in the pre-accession period. The increase of total Romanian foreign trade in the last 14 years was boosted by the main free trade agreements concluded, with imports constantly surpassing exports. (The highest trade deficit was in 2003, after the 2002 elimination of tariff barriers on trade in industrial products with the EU, EFTA and CEFTA, see *Figure B.1.6*).

The trade asymmetries between Romania and the EU, in terms of simple average MFN tariffs, were still relevant in 2002 (three times higher as an overall average, see *Figure B.1.6*). Experience in Romania and elsewhere suggests that highly protected domestic markets not only reduce the incentive to export, but also penalize the economy by allowing inefficient domestic producers to extract policy-induced rents from domestic consumers. While there is a plausible theoretical case for supporting infant industries in activities with strong learning effects and positive externalities, experience suggests that such a policy should be limited in time and linked to performance. Theory also suggests that tariff protection is *not* the most efficient means of providing such support, although in practice it has been by far the most common.

Nevertheless, the trade openness/intensity index – an estimator for trade integration of goods (average of imports and exports of goods items in the balance of payments divided by GDP) – ranks Romania in ninth of the CEE 10. Slovakia is an exceptional performer in integrating into the international economy through trade, while Poland is the least integrated (*Figure B.1.8*). Hungary instead

had the highest speed of trade-integration growth in 1995–2002, associated with one of the highest cumulative FDI stock and FDI stock per capita. The share of multinational corporations (MNCs) in exports has become an extremely large 90 per cent in Hungary, followed by 60 per cent in the Czech Republic and Poland, and 30 per cent in Slovakia. GDP per capita convergence and FDI intensity (FDI inflows and outflows relative to GDP) showed a positive correlation in 1991–2002 in the CEE average, being higher in Poland and Lithuania, but lower in Slovakia, Latvia and Estonia. The correlation was negative in Hungary, Czech Republic and Romania.

High FDI inflows in the transition period soaked up the Hungarian economy's absorption capacity, and led, implicitly, to smaller FDI flows, giving it the lowest FDI intensity among the CEE 10 in 2002, but coupled with relatively high trade openness (*Figure B.1.9*). Romania lagged in 2002 in integration into the international economy – in trade and FDI intensity – while Slovakia outperformed in both. A positive correlation (0.56) between trade and FDI intensity remained in the CEE 10 in 2002, but with strong annual variations. The positive correlation for the CEE 10 increased to 0.72, taking into account FDI stock per capita in 1989–2002 and trade openness in 2002.

In Romania, though, a very strong negative correlation (-0.90) between FDI and trade intensity in 1997–2002 resulted from a fairly constant level of FDI absorption, high GDP growth and even higher trade growth, except in 1997–9, when record FDI flows coincided with sharp GDP decline, which again explains the high negative correlation (*Table B.1.10*). Thus trade seems to have been a much more important driving force for convergence in Romania than foreign investment in the last seven years, which conflicts with the empirical findings on the CEE average.

The high Romanian economic growth rates in the last three years largely derived from domestic demand. This conflicts with the neoclassical approach (the lack of any role for demand in affecting the rate of growth, still present in the new growth theory), and with the economic-growth pattern elsewhere in the CEE countries. It raises questions about the role of demand in the composition of national activities and the process of structural change in affecting Romania's performance, on the one hand, and about the long-term sustainability of economic growth on the other. Even if the new growth and trade models underestimate the role of demand, they recognize the crucial role of technical change and its endogeneity. But the impact of technological specialization on Romania's international competitiveness and economic growth is discussed later, after a look at the main challenges for the national business environment.

Microeconomic reform

Macro reforms usually end in problems in the short and medium term by raising interest rates and prices while cutting public expenditures, but micro reforms can produce tangible, visible benefits for citizens, ease inefficiencies, increase technology specialization, improve product quality and end anti-competitive practices (Porter 2004). Nonetheless, no reforms, macro or micro, come without pain. Here political will and public support for real economic changes are related. (See the earlier discussion of socio-political and institutional systems.)

The private sector has become crucial to improving competitiveness and setting economic policy. Microeconomic policies also govern the effects of trade agreements and other measures to open markets – a major consideration in international economic policymaking today. The benefits of these correlate highly with microeconomic progress.

To assess the depth of the micro-economic reforms and the effects of the trade liberalization agreements on the adjustments to the Romanian business environment, the following methodology is proposed:

$$\begin{aligned} \text{LEXPORT} = & c(1)*\text{LEXPORT}(-1) + c(2)*\text{LIMPORT} \\ & + c(3)*\text{LCURS}_(-1) + c(4)*\text{DUMMY1993} + \\ & c(5)*\text{DUMMY1995} + c(6)*\text{DUMMY1998} + \\ & c(7)*\text{DUMMY2002} + c(8) \end{aligned}$$

The role and impact of the relevant determinant factors of export dynamics identified are exchange rate and imports (not including GDP, as it is a function of microeconomic reforms as well). By introducing into the regression equation exports as the dependent variable, the following are the changes in logarithmic monthly time series (as the annual time series are too short), according to the statistical data available for 1991–2003:

- * Exports FOB in million USD, current prices (LEXPORT).
- * ROL/USD nominal exchange rate (LROL_USD(-1)) – monthly exchange-rate changes are considered to have relevant influence on export dynamics in the following month.
- * Imports CIF in million USD, current prices (LIMPORT).

The role and incidence of the main Romanian liberalization agreements are identified so as to depict the component of export dynamics not explained by the decrease or elimination of trade barriers, nor by relevant macroeconomic factors. Estimating the effect on Romanian trade growth of the main steps in the trade liberalization process – by introducing dummy variables in the regression equation for the advent of these steps (and completed removal of trade barriers on industrial products with the EU) – helps to proxy the degree to which national business capacity can adjust to the new export opportunities. Much of this derives from microeconomic reforms that facilitate efforts by the private sector to

increase market shares. The main trade liberalization steps were:

- * May 1993: EU/EFTA Interim Association Agreement.
- * February 1995: EU Association Agreement; 1995 was also the year Romania joined the WTO.
- * July 1998: CEFTA membership.
- * January 2002: elimination of trade barriers for industrial products with the EU, EFTA and CEFTA (except for sensitive products).

Dummy variables have the value 0 before each of these liberalization steps and 1 afterwards, as the long-run effect of these liberalization stages are considered. So are those of the Romanian agreements with EU: DUMMY1993 = 0 between 1991:2 and 1993:4, 1 between 1993:5 and 1995:2, and 0 between 1995:3 and 2003:12, as the EU Interim Association Agreement is replaced by the EU Association Agreement.

DUMMY1995 = 0 between 1991:2 and 1995:1, 1 between 1995:2 and 2001:12, and 0 between 2002:1 and 2003:12, as December 2001 was the deadline for completing the transition period related to tariff-barrier reductions between Romania and EU, on an asymmetric basis. DUMMY1998 = 0 between 1991:6 and 1998:6, 1 between 1998:7 and 2001:12, and 0 between 2002:1 and 2003:12, as December 2001 was the deadline for completing the transition period for tariff-barrier reduc-

tions between Romania and CEFTA, on a symmetric basis. DUMMY2002 = 0 between 1991:6 and 2001:12, 1 between 2002:1 and 2003:12, taking into consideration the long-run effect of tariff-barrier elimination on industrial products and of cuts in other trade barriers on agricultural products, starting in January 2002.

The results are:

$$\begin{aligned} \text{LEXPORT} = & 0.18*\text{LEXPORT}(-1) + 0.41*\text{LIMPORT} \\ & + 0.05*\text{LCURS_USD}(-1) + \\ & 0.07*\text{DUMMY1993} + 0.11*\text{DUMMY1995} - \\ & 0.004*\text{DUMMY1998} + 0.27*\text{DUMMY2002} \\ & + 1.97 \end{aligned}$$

Dependent Variable: LEXPORT
Method: Least Squares
Sample (adjusted): 1991:02 2003:12
Included observations: 155 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LEXPORT(-1)	0.187018	0.062628	2.986192	0.0033
LIMPORT	0.413267	0.046482	8.890941	0.0000
LCURS_USD(-1)	0.052174	0.016118	3.236918	0.0015
DUMMY 1993	0.075619	0.041425	1.825433	0.0700
DUMMY 1995	0.110504	0.054878	2.013611	0.0459
DUMMY 1998	-0.004164	0.030990	-0.134370	0.8933
DUMMY 2002	0.270279	0.076361	3.539507	0.0005
C	1.979077	0.332398	5.953937	0.0000
R-squared	0.950894	Mean dependent variable		6.506157
Adjusted R-squared	0.948555	S.D. dependent variable		0.434065
S. E. of regression	0.098452	Akaike info criterion		-1.748261
Sum squared residual	1.424842	Schwarz criterion		-1.591181
Log likelihood	143.4902	F-statistic		406.6435
Durbin-Watson statistic	1.649377	Prob (F-statistic)		0.000000

The statistically significant results of the estimation suggest:

- * The exchange rate has a positive effect on export dynamics, in accordance with economic theory, but to a small extent: with 1 per cent depreciation, exports increase by 0.05 per cent.
- * There is high dependence of exports on imports: with a 1 per cent increase in imports, exports increase by 0,41 per cent. This is explained by the high

dependence of Romanian exports on imported raw materials and energy, with deep fragmentation of the production system. (A significant proportion of imports is re-exported, the loan-production system being relevant for low-skilled manufacturing industry, especially textiles and clothing, which have the highest share of Romania's exports to the EU.)

- * Three of the four liberalization stages in Romania had positive effects on export growth; one had negative. The biggest came in 2002, when trade liberalization led to the most dynamic annual export increase (a coefficient of 0.27), reinforced by high economic growth, deepening macroeconomic stabilization, and learning effects in the business environment, accelerating total growth of exports. The 1995 and 1993 measures also had positive effects, but to a smaller extent: only 0.11 and 0.7 percentage points respectively of the 6.5 mean of export dynamics. This reflects persistence of systemic distortions in the domestic economy, as a relevant impediment to export promotion. The free-trade agreement with CEFTA did not have expected positive effects (a negative coefficient of 0.004, but the high Prob. suggests the event had no effect on export dynamics). Romania turned out to be a less competitive trading partner relative to the CEFTA countries. The entry into force of this agreement proved quite unfavourable, as the increase in the trade deficit with the CEFTA countries was even higher than the one registered with the EU. Of a mean of 6.5 for annual export dynamics, only 0.18 is explained by the EU free-trade agreement and another 0.27 by the end of the transition period in trade-barrier reductions. This betrays relatively low capacity by Romanian business to reap the advantages of the extra access to foreign markets (only 0.51 was due to free-trade agreements), notably of CEFTA

membership (0.08). Romanian exports were less competitive in CEFTA than in EU markets. The biggest effect came in 2002 (explaining 0.20 of the 6.45 mean of export dynamics), when trade-barrier elimination for industrial products, reinforced by high economic growth, deepening macroeconomic stabilization and learning effects in the business environment accelerating the total growth of exports.

The relatively high constant reveals that 1.97 of the mean of the dependent variable of 6.5 is explained by factors not considered in this equation, such as other changes in Romanian trade policy, trade-barrier effects and external market factors (foreign demand, foreign prices *etc.* ignored in the regression for lack of data).

The general conclusion from these estimates is that the impacts on export dynamics of free-trade agreements concluded with the EU were higher than those that emerged from CEFTA. But these positive trade performances were below the CEE average and highly driven by labour-intensive industries (especially clothing, leather and footwear, dominated by outward processing trade). The microeconomic reforms and national business environment in general were less able to help exporters reap the opportunities of the new market-access benefits relative to other CEE countries (see again *Table B.1.D*). If local companies do not improve productivity and sophistication, market opening will boost imports. (Relevant here is the year 2003; see also *Figure B.1.G*.) Growth in exports and attraction of FDI will be painfully slow. Moreover, Romania's improvements in the microeconomic business environment began after market-opening measures were completed, not before, as economic rationality would dictate. All this proves that the domestic barriers (macro and micro reforms, institutional reforms *etc.*) were more painful, and added to the foreign non-tariff barriers, impeded the

optimal export growth to be expected from the trade liberalization agreements.

National business environment

Romania is a low-wage, labour-intensive economy. But though wages in Romania are low by international standards, they are not relative to near neighbours such as Ukraine, Moldova, Bulgaria and the CIS countries. Furthermore, cost competitiveness is determined by productivity, and allowing for differences in labour and capital productivity suggests that on average Romania may not be a lower-cost location than its neighbours. Stabilization programmes have been implemented to speed up privatization and restructuring of state-owned enterprises. It is widely acknowledged that slow growth in private investment, particularly in large-scale manufacturing, has been an important constraint on Romania's economic growth. Part of the explanation lies in the uncertain legislative environment, but more narrowly economic and institutional aspects have also had negative impacts on investment decisions. It is a common complaint from the private sector that Romania still has a heavily regulated business environment. A particular cause for concern is the lengthy delays with customs clearance, which make it very difficult for businesses to keep optimal levels of inventories and rule out any idea of 'just in time'. However, there is awareness of these problems, in particular of the need to streamline the tax administration. Some measures have been taken to improve the business environment.

Despite legal and regulatory changes, FDI inflows remain below expectations. The greatest FDI inflows took place during the period of declining GDP (in 1998 – more than USD 2 billion). Modest flows remained after 1999 and the government's introduction of major financial reforms in early 2000, to reduce public spending, accelerate privatization and reform the fiscal system. The

annual average in 1999–2002 was about USD 1.1 billion (some 15 per cent of annual gross fixed-capital formation, compared with an average of 2.7 per cent in 1985–95). Further incentives for FDI introduced in 2000–2002 kept the absorption steady. In 2002, FDI in Romania represented 3.8 per cent of the total flow into CEE countries, 4.6 per cent of the FDI stock in CEE countries, and 0.16 per cent of world FDI inflows, despite Romania's relatively greater economic size. However, FDI stock did increase tenfold in 1991–5 and twentyfold in 1991–2002. The ratio of FDI stock in GDP reached 20 per cent in 2002 (cf. Czech Republic 55 per cent, Hungary 38 per cent, and a world average of 22.3 per cent). These trends were associated with a 135 per cent rise in the number of MNC affiliates in Romania in 1991–2002. However, the inward FDI potential relative to performance increased from 0.3 per cent in 1993–5 to an average of 0.6 per cent in 1999–2002.

The lag in attracting FDI has lessened potential spillover effects from newer or more sophisticated technologies in wholly owned firms, or higher requirements of domestic suppliers by joint ventures. Even when FDI occurs, such effects are not always felt.

Several further observations on the competitiveness of Romania's business environment point to favourable and unfavourable features for reaping exports from the free-trade agreements (Croitoru and Tarhoaca 2002; Scutaru and Florescu 2003; Vass 2004):

* The main export-oriented industries (23 industries with shares higher than 1 per cent of total manufacturing exports) were the source of 80 per cent of Romania's total exports: textiles and clothing (16.5 per cent), leather products and footwear (7.5 per cent), metals and articles thereof other than basic metals (5.6 per cent), agriculture (5.5 per cent), *etc.* These absorbed only 3.24 per cent of the

funds offered by the financial, banking and insurance sector in 1999.

- * The decreasing share of money transfers through bank export-payment instruments (payment orders, letters of credit) in total exports leads to the conclusion that exporters sacrifice payment safety or security (at higher cost) in favour of the rapidity of less safe payment instruments (warrants, direct bank transfers, *etc.*). The high bank charges and delays in handling secure systems may explain a fall in the proportion of exports paid with letters of credit from 97.8 per cent in 1993 to 12.1 per cent in 2002. Meanwhile those paid with payment orders rose from 21 per cent to 4.4 per cent.
- * The major comparative advantage of Romanian exports comes from low labour costs, yet the 23 main export industries accounted for only 24.5 per cent of aggregate pay and only 30 per cent of total gross value added in the Romanian economy, in 1999.
- * Manufacturing industries with unfavourable social costs or negative value added contributed 40 per cent of total manufacturing exports in 1998, which suggests that Romania was still at a stage of exporting under duress. Exports were highly concentrated in the state sector, which operates at low efficiency, and assisted by exchange-rate depreciation. But the share of the private sector in total exports increased from 48.7 per cent in 1998 to 69.2 per cent in 2003.
- * Looking at the share of gross value added in aggregate pay in the industries concerned, the most competitive seem to be air transport industry and machines, and the office equipment industry, but production matters more than productivity when estimating export performances.
- * The 23 export-oriented industries consume only 20 per cent of total Romanian R and D expenditure.
- * These industries do not receive production subsidies, except for vegetable products, which obtain almost a quarter of the total subsidies offered in the Romanian economy.
- * The only export-oriented industry with a significant share in total income-tax receipts is petroleum, with 13.6 per cent of the VAT and other product taxes. This, of course, is a support industry for all the others, so that there are significant spillover effects.
- * New laws in the transition economies were designed to reduce state intervention in the private sector. Such initiatives in Romania evolved *de facto* in quite different ways. It is important to look at the government 'reforms', which created new 24 special funds that imposed further financial and administrative obstacles at the micro-economic level: difficult certificateion procedures, authorizations, inspection or other compulsory operational tasks. Many of these derived from implementing the *acquis communautaire*. But one did not, and is directly affecting exporters: the imposition of a 0.5 per cent tax on exports, for the Special Fund for Custom Development and Modernization. No levy of this kind is made in other transition economies.
- * There are also initiatives to promote what is called the 'single-window shop', inter-institutional collaboration that tries to eliminate subjective stages of public administration in licensing, approval or notice procedures, through a specialized electronic trade net. The implementation process of automatic document approvals in accordance with EU standards for export-import operations is still quite slow. This is compounded by inefficient systems applied in foreign trade

(e.g. drawbacks) and by corruption and abuses in the customs service.

The private sector is not only a consumer of the business environment. It can also play an important role in shaping and improving it through educational programmes, attracting suppliers, defining standards, quality certification programmes, manufacturing assistance centres, and collective industry bodies (Porter 2004). Collective bodies such as trade associations, chambers of commerce, entrepreneurs' networks, standard setting agencies, quality centres and technology networks are also important in improving infrastructure, providing training and developing overlooked export markets. All these have been called institutions for collaboration (IFCs), as developed. They were largely ignored in economic development thinking, but have an essential role in connecting and in fostering efficient collective activities.

Porter (1998b) also estimated the Microeconomic Competitiveness Index, which turned in 2004 into the Business Competitiveness Index (ranking 80 countries). Though a far from perfect estimation of the array of national circumstances that support a high and sustainable level of productivity, it represents an advance in understanding the framework of competitive strengths and weaknesses for a country and the firms operating in it. An economy cannot be competitive unless companies operating there are competitive. True competitiveness comes from high production levels associated with high productivity, allowing countries to support high wages, a strong currency and attractive returns to capital, and implicitly, a high standard of living. Productivity growth is the main goal, not exports *per se*.

The Business Competitiveness Index also accounts for 83 per cent of the variations across countries in the level of GDP per capita. According to this composite index (incorporating the company operations and strategy index and qual-

ity of national business environment index), Estonia in 2003 ranked first among the CEE countries. Next came Latvia, Slovenia, the Czech Republic, Hungary and Lithuania (all in the first half of the 80-country sample, as were all EU countries). Slovakia and Poland were ranked in the next 10 countries in the second half of the sample, while Romania and Bulgaria lagged at 67th and 68th respectively (*Table B.2.1*).

These findings highlight the pressing need for Romania and Bulgaria to better incorporate a microeconomic competitiveness agenda into their efforts to stimulate economic growth. Otherwise their failures (disappointing or low increase in returns on investments, stagnant real wages, non-materialization of competitive exports or jobs) may diminish or even cancel out their macroeconomic and social programmes.

Romania's trade pattern with the EU

Trade is a force for Romanian convergence on the EU. When estimating its role, special attention has to be paid to the various patterns and learning effects occurring in EU trade, the extent of transformation of trade structures and development, the degree of specialization, the increase in technology-intensive products, the fields dominated by foreign capital and domestic capital, *etc.* All these also derive from transformation of the microeconomic environment and catch-up performance. Deepening ties with the EU have led to *de facto* integration of the CEE countries into the EU for trade flows – about two-thirds of CEE foreign trade is done with the EU. It is also the largest investor in the CEE economies and becoming the largest donor, through various pre-accession and post-accession programmes it finances. However, results would suggest that Romania's foreign trade-driven convergence with the EU is not as spectacular as for other accession countries, although it is

more relevant than investment-driven convergence. The amount of trade has grown considerably and Romania's export concentration is quite high, but natural resource-intensive and low-skilled labour-intensive products may face severe competitive pressures. Moreover, the fact that Romania is one of the largest net labour exporters in the region (Langewiesche and Lubyova 2000) indicates that wage differentials are large enough to stimulate temporary and/or permanent emigration, meaning that income convergence still lies far ahead. In the early years of transition, Romanian outperformed other accession countries in foreign-trade growth, but the trend reversed later. There has been little convergence towards similar structures of production. Of course, these situations may end with positive results in the short or medium term, as the differences in production structures encourage specialization and some wages earned abroad returns as remittances (3.3 per cent of Romania's GDP according to Daianu, Voinea and Tolici, 2001). These positive implications may then create further incentives for resource allocation outside the economic-convergence paradigm.

Foreign trade growth. Romania's trade performance shows quite different speeds of increase relative to other CEE countries in the periods 1990–95 and 1995–2002 (Tables B.3.1). In the first period, Romania had the highest export and import growth rates (218 and 232 per cent respectively) in the CEE 5, except Bulgaria. In the second period, Romania's export growth (294 per cent) was lower than that of Hungary (445 per cent), the Czech Republic, Slovakia, Lithuania, Latvia and Estonia (322 per cent), and higher than that of Poland (244 per cent), Bulgaria or Slovenia (150 per cent). Romania's import growth (273 per cent) was lower than that of Lithuania (347 per cent), Slovakia, Latvia and Hungary (309 per cent), and higher than that of the Czech Republic (264 per

cent), Bulgaria, Poland, Estonia and Slovenia (154 per cent).

In the first six years of transition, imports grew faster than exports in the CEE 5, except for Bulgaria and the Czech Republic. In 1995–2002, the trend was reversed: exports grew faster than imports in the CEE 10, except Poland and Slovenia.

Territorial concentration index. There is a positive but not significant correlation between the CEE countries' export growth rate to the EU in 1995–2002 and the concentration index of exports to the EU in 2002 (*Figure B.3.1*). Countries near to the EU 15 border showed higher concentration indices of exports to EU markets, but not always higher export growth rates in 1995–2002. Romania is less dependent on small numbers of export markets than the Czech Republic, Hungary, Poland, Slovenia or Slovakia. There is also a high correlation between the export and import concentration indexes, as might be expected, but Slovenia, Poland and Estonia are remarkable for having an export concentration on the EU about a quarter higher than the import concentration.

Romania's high total export concentration index is explained by an increase in the EU share of total exports from 37 per cent in 1991 to almost 68 per cent in 2003. This coincided with decreases in the shares of European transition economies from 34 per cent to 9 per cent and of the Russian Federation from almost 23 per cent to 0.3 per cent in the same period. Romania differs from other accession countries in the CEFTA share of its total exports, which increased slightly from 5.6 per cent to 7.3 per cent in the same period (*Table B.3.2*). This was associated with the lowest coverage ratio in trade between this group of countries. Romania is also the one country to record a lower coverage ratio with CEFTA than with the EU after the free-trade agreement of 1997 (Voinea 2002b).

Three aspects are important when considering the convergence process in the CEE 10. (i) Trade concentration ratios show low instability over time but with a positive trend. (ii) There is spatial instability in the form of different convergence groupings. (iii) spatial autocorrelation implies higher concentration ratios and positive growth spillovers between the EU and CEE countries close to the EU border. All these results depend, of course, on the period studied and need reassessing over a longer period.

Learning vs. demonstration effects. Analysing the main indicators for foreign trade with EU in 1993–2003 (*Table B.3.3*), a massive learning effect in the last decade can be discerned. This appears in a significantly improved coverage ratio: from 68.5 per cent in 1993 to 86.1 per cent in 2003, with a high of 89.6 per cent in 2000 and an almost comparable level in 2002. It also appears in demonstration effects (including those to other potential exporters) revealed by higher volume (reaching 67.7 per cent for the EU share in Romania's goods exports and 57.7 per cent for its imports in 2003).

Shift to complexity? Has the mounting trade shifted towards more complex products helpful in closing the development gap with the EU?

1. Romania's trade deficit with EU in 2003 had more than doubled since 1993 (*Table B.3.3*). But this was associated with trade intensity increasing by more than 50 per cent, from 1.88 in 1993 to 2.92 in 2003 (*Figure B.3.2*). The share of industrial products in the deficit increased by almost 20 per cent in the same period, while that of agricultural products decreased by the same amount, of course.

2. The degree of trade specialization with the EU (applying the Hirschman concentration index to product groups) increased in both exports (from 15.2 per cent in 1993 to 17.6 per cent in 2002) and imports (from 13.5 to 13.9 per

cent). However, it rose significantly higher than the overall Romanian trade specialization (12 per cent in imports and 13 per cent in exports, in 2002). Romania's current level of total export concentration is close to Hungary's (14.36 per cent in 2000), but much higher than those of other CEE and developed economies (2002): Spain (7.34 per cent), Greece (4.04 per cent), Poland (5.33 per cent), Turkey (5.42 per cent), Slovakia (7.67 per cent), Czech Republic (7.56 per cent in 2000 – OECD 2004, estimates at 2-digit level). After 1999, trade specialization with the EU decreased steadily, to a greater degree in imports than in exports (*Figure B.3.3*). These trends translated into a greater, much faster increase in import variety than in export variety. The latter is explained also by the lengthy, gradual process of increasing the variety of domestic production. Export variety increased by almost 20 per cent (from 782 product types in 1993 to 931 in 2000), using the simple measure, and by 10 per cent in imports (from 1040 to 1153 in the same period), but to a lesser extent than in other CEE countries. The relationship between product variety and economic growth was addressed by Jones (1998) in a simple, semi-endogenous growth model. He concluded that economies become more productive as their available product spectrum widens. Starting from this model, Funcke and Ruhwedel (2003a) proved that export variety is beneficial for growth in transition economies. Proliferation of variety is highest in economic front-runners such as Czech Republic, Hungary and Poland, and much lower in Romania, which was close to Bulgaria and Slovakia in this respect up to 2000. Export variety does matter for GDP per capita increase in transition economies, but not in all industries. A breakdown into 'investment goods' and 'consumption goods' suggests that the production and export of capital goods, which tend to have a higher skill intensiveness, contribute significantly to growth and determine the path of eco-

conomic development. The role of higher trade variety in explaining increases in productivity has been quantified in several other empirical works on samples of countries (Funcke and Ruhwedel 2003b for the OECD, East Asian countries, CIS and East European countries; Feenstra and Hiau Looi Kee 2004 for developing countries). The main finding is that catching up in export variety is associated with narrowing of the productivity gap. But crucial questions remain unanswered. Is the heterogeneity in the export variety of transition countries inherent in the way competitive markets operate and evolve over time? Or does it also depend on policy and institutional settings in product and labour markets, which might be reformed in the context of a growth-oriented strategy?

3. Romanian convergence on the EU is revealed by changes in the similarity of trade structures, estimated with the Finger similarity index. An index for export-structure similarity of 0.77 in 2002 relative to 1993, and one of 0.81 for imports, suggests the pace of structural change was much slower than in other CEE countries, which translated into changes of export structure of almost a quarter and of one fifth as regards imports. Up to now, trade structure has been seen to change to some extent along with an increase in trade concentration/specialization and trade variety. These would increase the gains from trade when consumers have heterogeneous preferences (as trade increases the number of product varieties available), but the underlying premise is that increasing economies of scale in technology have the potential of delivering larger welfare gains.

Analysis of convergence to EU structures requires in-depth reflection on the complexity of trade structure in relation to technology complexity. There appears to be an improvement in the technological structure of trade. Using the classification into high, medium and low-complexity products devised by Roma-

nia's Ministry of Development and Forecasting, high-complexity export products gained 4.5 percentage points (machines and equipment; vehicles and associated transport equipment; optical, photographic, cinematographic, medical or surgical instruments, clocks and musical instruments; and components and miscellaneous manufactured articles, including furniture), and medium-complexity exports 6.5 percentage points between 1993 and 2002 (*Figure B.3.4*). The trend is similar for medium-complexity import products, but an inverse trend occurs in high-complexity imports (-4.2 percentage points). This means a much greater increase in medium-complexity imports than in high or low-complexity imports. Some of the experts consider that free trade causes poorer countries to specialize in technologically stagnant products. Their point of view is that comparative advantage in tradable goods leads to specialization, and to the extent that countries produce different goods, there is no *a priori* reason to expect technologies to converge. The departure from low and medium-skill, labour-intensive products cannot be easy: clothing, footwear and furniture still account for more than half of Romania's exports to the EU (*Table B.3.4*). However, the share of technology-intensive products in Romania's exports to the EU (23 per cent in 2000–2002) had increased by 10 percentage points since 1993, and decreased in imports (43–5 per cent in 2000–2003) by almost 3 percentage points, according to the Kraus classification (*Figure B.3.5*). But Astrov (2001), applying WIFO taxonomy to 1999 data, finds that only 5 per cent of exports were technology-intensive (compared with a CEE average of 26 per cent). This would indicate that, even within the technology-intensive groups, Romania was actually exporting intermediate, labour-intensive goods.

The more significant, post-1997 increase in the technology-intensive share of Romanian exports to the EU correlates

highly with a surge in FDI. The FDI stock of FDI did not exceed USD 1 billion at the end of 1996, but increased over the next six years to USD 9 billion. The machines and equipment, and vehicles and other transportation equipment product groups are now dominated by foreign capital and productivity has grown considerably. Yet these product groups were still facing negative revealed comparative advantages (RCA) in 2002. The share of the former in exports stagnated in 2000–2002, but decreased in imports (-2.5 percentage points), while the latter increased its share of exports (by 1 percentage point) and to a greater extent its imports (2.3 percentage points). However, the relatively constant annual FDI inflows in 2000–2002 (USD 1 billion) were associated with a stagnant share of technology-intensive exports to the EU. It will also be seen later that this is strongly reflected in a relatively stagnant share of intra-industry trade (adjusted IGL: 66 per cent over 2000–2002), meaning that structural change derived from the trade expansion increased significantly until 1999, but afterwards was relatively stagnant. This is in line with the change in the similarity of trade structures (FSI index) within Romania and the EU, which increased by almost a quarter in exports up to 2000, but stayed unchanged in 2000–2002. With imports, the one-fifth change in the similarity of trade structure between 1993 and 2002 resulted from a relatively constant annual change, which was the result of change in domestic demand as well.

Changes in trade structure. Product groups taking high shares of Romania's exports to the EU in 2002 were textiles, clothing and other textile articles (34.5 per cent), machines and equipment (16), footwear, headgear, umbrellas and similar products (12), base metals and articles thereof (7), mineral products (5.4), and vehicles and associated transport equipment (5). The main structural changes – gains or losses in export

shares to the EU in 1993–2002 – appear in *Table B.3.4*: machines and equipment (relative increase of 10 percentage points); footwear, headgear, umbrellas and similar products (almost 6); textiles and clothing (almost 3.5); vehicles and associated transport equipment (2.5); mineral products (relative decrease of -5 percentage points); chemical products (more than -2); articles of stone, plastics, glass, cement, ceramics (more than -1.5).

Overall exports of agricultural products doubled in 1993–2002, while imports were relatively stagnant; so that the shares reached 2.5 per cent and 4.3 per cent respectively. These trade asymmetries were smaller than the development asymmetries revealed by the much higher share of the agricultural sector in Romania's GDP (11 per cent) than of the EU's (2 per cent). This negative correlation suggests that the agricultural sector has not raised exports significantly in terms of reaping potential gains from the gradual asymmetric trade liberalization.

Trade developments within European networks (production fragmentation) vs. developments in trade in components (trade fragmentation). Romania has to face and take advantage of a globally unprecedented scale of internationalization of production processes, resulting mainly in integration of trade and disintegration of production, with deep implications for the division of labour. Identifying the lines of trade development within networks sheds further light on assembly operations in Romania (vertical intra-industry trade: exchange of similar goods of different quality), while those related to developments in trade in components are essential for identifying Romania's involvement in intra-production specialization (horizontal intra-industry trade: exchange of similar goods that are not differentiated in terms of quality). The main empirical finding was that intra-industry trade is predominant in the trade of the CEE countries with the EU. Within that, the vertical structures are overwhelming (80–90 per cent), with

strong quality advantages for the EU and shrinking quality advantages for CEE countries (Aturupane, Djinakov and Hoekman 1997; Kaminski and Ng 2001; Gabrisch and Segnana 2002).

The broad pattern of Romania's trade competitiveness relative to the EU may be traced using the RCA index and its dynamics (*Table B.3.5*). Although economists accept that international specialization along lines of comparative advantage is a positive-sum game, high changes in specialization will entail transitional adjustment costs. One empirical method of assessing the adjustment implications of trade expansion is to analyse the dynamics of intra-industry trade indices with the Grubel–Lloyd Index. The widely held 'smooth-adjustment hypothesis' states that a high proportion of the IGL value will be associated with relatively low labour-market disruption, for with intra-industry adjustment, workers move within rather than between industries (Egger, Egger and Greenaway 2004). So IGL values are often used to estimate intensity of structural-adjustment pressures from trade expansion (*Table B.3.6*). These pressures increased with the increase of trade with the EU until 2000 (for adjusted IGL two-way flow, a rise from 0.55 in 1993 to 0.66 in 2000, but from 0.81 to 0.94 for unadjusted IGL). Thereafter, no trade expansion-derived structural adjustments occurred, the IGL being relatively stagnant in 2000 (unadjusted 0.66) to 2002 (0.94).

A low value of the unadjusted index usually implies low intra-industry exchange and rather significant inter-industry trade, meaning that the country exports is mainly exporting goods in which it has a real comparative advantage and importing commodities that are too expensive to produce at home (*Table B.3.6; Figure B.3.7*). This means that one-way flow predominates over two-way flow. Such transactions derive, however, from enlargement of the range of commodity supplies in domestic markets. Similarly, if the index shows high values,

the economy has high intra-industry trade, carried out on product diversification based on trade in similar goods. This is associated with prevalence of two-way flow over one-way flow. In the former case, the inter-industry trade is mainly characterized by a high export complementarity of imports, while in the latter, exports are good substitutes for imports. As for Romania's total trade with the EU, intra-industry trade prevailed, increasing from 0.55 to 0.66, using the adjusted two-way trade IGL.

However, the estimates have a high aggregation level (which should be addressed in further research), and the empirical relevance of the statistical methodology for measuring intra-industry trade is an issue. These are the main implications:

- * Most flows between imports and exports consist of both intra and inter-industry trade. (An individual flow cannot be both simultaneously.)
- * Intra-industry trade is balanced in every sector, while inter-industry trade balances only across industries and is the sole cause of overall trade surplus or deficit.

To avoid some of the latter shortcomings when measuring intra-industry trade, an overlap index (OI) was used for individual trade flows. Its high values give a view of the magnitude of the two-way flow trade; when associated with high IGL, it is mainly intra-industry trade; and conversely, the one-way flows associated with low IGL are mainly vertical trade.

Prevalence of two-way flows. This suggests lower relevance for comparative advantages at sectoral level, as an explanation of trade (e.g. clothing and textiles, vegetal products and base metals and articles show relatively low positive comparative advantages and high intra-industry trade indices). In this case, Romania and the EU produce and exchange similar but differentiated goods.

A high degree of similarity in the quality of traded goods (horizontal intra-industry trade and intra-production specialization) implies they are competitors in the markets and may raise concerns over competitive pressures. But the prevalence of vertical flows in Romania's case reduces the degree of similarity implied by weight of two-way flows and hence the competitive concerns, as individual products of different quality are not true competitors. In 2002, this was the case for:

- I. Live animals and animal products (low disadvantage).
- II. Vegetal products (positive, but low RCA).
- XI. Textiles and clothing (positive, but low RCA).
- XIII. Articles of stone, plastics, glass, cement, ceramics (low disadvantage).
- XV. Base metals and articles (positive, but low RCA).
- XVI. Machines and equipment (low disadvantage).
- XVII. Vehicles and associated transport equipment (low disadvantage).

Nonetheless, Romania is positioned at the lower end of the quality spectrum and can be adversely affected by competition from other countries producing low-quality, low-price goods (e.g. clothing and textiles from China).

Prevalence of one-way flows. This implies comparative advantages, with Romania exporting or importing individual products and the EU having a different specialization. There was specialization and high RCA for Romania (relative to the EU) in these sectors in 2002 (accounting for 26.9 per cent of exports to the EU and 4.8 per cent of imports):

- V. Mineral products.
- IX. Wood and wood products, other than furniture.
- XII. Footwear, headgear, umbrellas and similar products.

- XX. Miscellaneous manufactured articles, including furniture.

All these had an RCA higher than +1.5 and an IGL equal to or lower than 0.4.

On the other hand, Romania has significant comparative disadvantages, Europe being highly specialized in trade in these product groups in 2002 (accounting for 6.9 per cent of exports to the EU and 30.5 per cent of imports):

- IV. Food, beverages, tobacco.
- VI. Chemical products.
- VII. Plastics, rubber and articles thereof.
- VIII. Raw hides and skins, leather, furs and articles thereof.
- X. Pulp of wood, paper, paperboard.
- XVIII. Optical, photographic, cinematographic, medical or surgical instruments, clocks and musical instruments and components.
- XXII. Products not elsewhere included.

All these had an RCA lower than -1.1, and an IGL between 0.2 and 0.45.

In total Romanian trade with the EU, intra-industry trade prevailed, with 66 per cent of two-way flow in balanced trade and almost 95 per cent in unbalanced over 2000–2002 (*Table B.3.7*). One-way flows predominated in exports of traditional sectors with major positive comparative advantages. Positive RCA explains 25 per cent of total export flows to the EU, and negative RCA 30 per cent of total imports from the EU (*Table B.3.8*).

Thus Romania trades a large share of the same type of goods, which implies a high level of specialization in assembly operations, based on labour-intensive comparative advantage within the context of international trade. Romania exports high-quality goods in traditional sectors (clothing, footwear, wood products, miscellaneous manufactured articles and furniture, base metals, vegetal products) and relatively low quality goods in others

(e.g. machines and equipment, vehicles and associated transport equipment). Romanian exporters may still be hit by competition from emerging producers able to supply the same low quality at lower cost. A marked increase in specialization in technology-intensive products (machines and equipment, vehicles and associated transportation equipment) appeared over 1993–2002, but again in fairly labour-intensive production phases (Figure B.3.6). This scenario, however, evolves positively over time, as Romania moves towards a higher quality positioning in these sectors. (Table 4)

Table 4
IARC, 1993–2002

		Increase	Decrease
IGL 1993–2002	Increase	II. Vegetal products. X. Pulp of wood, paper, paperboard. XVI. Machines and equipment. XVII. Vehicles and associated transport equipment. XVIII. Optical, photographic, cinematographic, medical or surgical instruments, clocks and musical instruments and components.	IV. Food, beverages, tobacco. XIII. Articles of stone, plastics, glass, cement, ceramics. XV. Base metals and articles. XX. Miscellaneous manufactured articles, incl. furniture.
	Decrease	V. Mineral products IX. Wood and wood products, other than furniture	I. Live animals and animal products III. Animal or vegetal fats and oil VI. Chemical products VII. Plastics, rubber and articles thereof VIII. Raw hides and skins, leather, furs and articles thereof XI. Textiles and textile articles XII. Footwear, headgear, umbrellas and other similar products XXII. Products not elsewhere (furniture included)

Dynamically, the strong and weak sectors are grouped into four main groups according to the increase/decrease of intra-industry trade and RCAs (data computed from Tables B.3.4, B.3.5, and B.3.6 and Figures B.3.6 and B.3.7. The product groups in Table 5 witnessed a double increase in RCA and IGL. They accounted for 23.2 per cent of total exports to the EU and 36.5 per cent of imports in 2002.

The fact that both RCA and IGL show positive evolutions between 1993 and 2002 might be interpreted as production-stage development, revealing a reallocation of production units by foreign suppliers to Romania, facilitating vertical integration. This is especially the case for machines and equipment and vehicles and associated transport equipment. For despite the magnitude of the increase, they still face negative RCA. (However, the relevance of RCA in explaining the trade in these two sectors is very low.) But this is not the case for optical, photographic, cinematographic, medical or surgical instruments, clocks and musical instruments and components, where even if driven by a 14 per cent outward processing-trade production index in 1999 (Turlea and Mereuta 2004), one-way flows (2.3 per cent of total imports from the EU) still prevail over two-way flows (0.5 per cent of total exports to the EU). The decrease of negative RCA however explains the trade in the latter product group, as its share in total exports to the EU increased in 2002 relative to 1993, and decreased in imports. A different pattern is revealed in the pulp, paper and paperboard products group, where the low decrease of negative RCA does not explain the higher increase in its share in imports than in exports. (Table 5)

The product groups showing an increase in RCA and a decrease in IGL account for 8.3 per cent of total exports to the EU and 1.8 per cent of imports in 2002 (Table 6).

Table 5

	II. Vegetal products	X. Pulp of wood, paper, paperboard	XVI. Machines and equipment	XVII. Vehicles and associated transport equipment	XVIII. Optical, photographic, cinematographic, medical or surgical instruments, clocks and musical instruments and components
RCA change 1993–2002	2.17 - +	0.12 - -	1.04 - -	0.50 - -	0.69 - -
IGL change 1993–2002	0.58	0.09	0.47	0.32	0.19
Change in share in total exports to EU, 1993–2002	-0.8	0.3	9.6	2.5	0.2
Change in share in total imports from EU, 1993–2002	-8.8	1.0	-3.4	1.2	-0.8
Share in exports in 2002	1	0.6	16.1	5	0.5
Share in imports in 2002	0.6	2.6	23.8	7.2	2.3

Table 6

	V. Mineral products	IX. Wood and wood products, other than furniture
RCA change 2002 vs. 1993	0.62 + +	0.34 + +
IGL change 2002 vs. 1993	-0.36	-0.22
Change in share in total exports to EU, 1993–2002	-5.3	0.8
Change in share in total imports from EU, 1993–2002	-3.3	0.0
Share in exports in 2002	5.4	2.9
Share in imports in 2002	1.2	0.6

These may be interpreted as a decrease in intra-industry trade, *i.e.* trade in similar products, with the EU; one-way flows prevailed and increased in these two sectors. The high positive comparative advantages explain 4 times higher shares of these products in Romania's exports than in imports from the EU.

The product groups that showed a decrease in RCA and increase in IGL account for 15.6 per cent of total exports to the EU and 10.8 per cent of imports in 2002 (*Table 7*).

The increase in IGL and decrease in RCA (the high share of this product group's RCA being basically positive) might be explained by the use of transfer pricing in intra-firm trade, especially with articles of stone, plastics, glass, cement and ceramics. Boscaiu *et al.* (2000) find that 46 per cent of export-oriented foreign firms operating in Romania made losses from export operations. The cement industry too is a perfect candidate for transfer pricing. All firms are foreign-owned. The local market is split between the same three foreign-owned firms that share the other market in the region. This contributes much to the low share of XIII product group in Romanian foreign trade with the EU. A special case is the mainly domestically oriented foodstuff sector, which faces higher shares in imports from the EU than in exports to it and high negative RCAs. These are explained by an increase in demand and market-oriented FDI; Romanian agriculture is a good supplier to the food industry. However, in miscellaneous manufactured articles and furniture, the high positive RCA eased over the decade, although this remains the most competitive product group relative to the EU (highest positive RCA in 2002 and exports prevalent over imports).

The product groups that showed a double decrease in RCA and IGL accounted for 52.9 per cent of total exports to the EU and 50.7 per cent of imports in 2002 (*Table 8*).

More than half Romania's trade with the EU (exports and imports) faced decreasing comparative advantages and arises in intra-industry trade. Not surprisingly, most of the low-skilled, labour-intensive sectors are found here. However, the pattern of the latter was heterogeneous. Textiles and clothing and footwear still had positive RCAs and increased their share in total exports to the EU. But the positive RCA was significant and explained only the increase in the footwear products group, dominated by one-way flow trade, where the increase in export share was much higher than in imports. With textile and clothing products, an important vehicle for trade integration was outward processing (the OPT production index in 1999 was 86.3 per cent), which led to one of the highest shares of intra-industry trade. On the other hand, the increasingly negative RCA in the chemical, plastics, rubber, leather and articles thereof product group explained the prevalence and increase of one-way trade flows: imports over exports in 2002. These were the main uncompetitive sectors in Romanian foreign trade. The two remaining sectors – live animals and animal products and products not included elsewhere – lost their initially positive RCA. But RCA is irrelevant in the former case. Two-way flows dominated over one-way flows. (The share in imports was higher than in exports in 2002.) But the increase in the negative RCA explains the prevalence of one-way flow and the higher increase in its share in imports than in exports.

So positive RCAs in trade with the EU in 2002 were still located in labour-intensive industries (*Figure B.3.6*) – miscellaneous manufactured articles (furniture included), footwear, headgear, umbrellas and other similar products, wood and wood products, textiles and clothing, vegetal products – and in natural resource-intensive industries: mineral products and base metal and articles. These accounted for 70.5 per cent of total exports to the EU and 35.4 per cent of imports in that year.

Table 7

	<i>IV. Food, beverages, tobacco</i>	<i>XIII. Articles of stone, plastics, glass, cement, ceramics</i>	<i>XV. Base metals and articles</i>	<i>XX. Miscellaneous manufactured articles, incl. furniture</i>
RCA change 1993–2002	-0.09 - -	-1.02 + -	-0.74 + +	-0.31 + +
IGL change 1993–2002	0.06	0.14	0.16	0.01
Change in share of sector in total exports to EU, 1993–2002	-0.9	-1.5	-3.2	-7.8
Change in share of sector in total imports from EU, 1993–2002	-2.9	0.3	2.1	-1.2
Share in exports in 2002	0.5	1.4	7.2	6.5
Share in imports in 2002	1.7	1.5	6.9	0.7

Table 8

	<i>I. Live animals and animal products</i>	<i>III. Animal or vegetal fats and oil</i>	<i>VI. Chemical products</i>	<i>VII. Plastics, rubber and articles thereof</i>	<i>VIII. Raw hides and skins, leather, furs and articles thereof</i>	<i>XI. Textiles and textile articles</i>	<i>XII. Footwear, headgear, umbrellas and other similar products</i>	<i>XXII. Products not elsewhere</i>
RCA change, 1993–2002	-1.09 + -	-5.55 + -	-1.04 - -	-0.42 - -	-0.49 - -	-0.19 + +	-0.15 + +	-2.70 + -
IGL change 1993–2002	-0.24	-0.95	-0.21	-0.06	-0.08	-0.03	-0.04	-0.21
Change in share of sector in total exports to EU, 1993–2002	-0.6	-0.7	-2.4	0.4	0.3	3.4	5.7	0.1
Change in share of sector in total imports from EU, 1993–2002	0.7	0.0	0.3	2.9	2.9	5.9	1.3	1.4
Share in exports in 2002	1	0.0	1.3	2.2	1.6	34.4	12.1	0.3
Share in imports in 2002	1.6	0.4	9.8	6.4	5.6	23.1	2.3	1.5

These conclusions are consistent with the international specialization approach, according to the Balassa revealed comparative advantage (BRCA) index, developed at a higher level of disaggregation. The latter compares the share of a given sector in national exports with the share of this sector in world exports. According to International Trade Center (2004) evaluations, Romania was specialized in 2002 in leather products (ranking in 8th in world export share, BRCA = 6.51), clothing (22nd, BRCA = 6.77), and basic manufactures (26th, BRCA = 1.73).

Romania is a weak competitor in technology-intensive industries, which generate more than half the trade deficit (*Figure B.3.7*). The highest sectoral trade deficit with the EU, in 2002, was still accounted for by the machines and equipment products group (almost USD 1 million), followed by chemical products (USD 0.9 million). The international specialization index ranks Romania 35th in world export share in IT and consumer electronics (BRCA = 0.35); 36th in non-electronic machinery (BRCA = 0.59); 37th in electronic components (BRCA = 0.65); 39th in transport equipment (BRCA 0.45); 40th in miscellaneous manufacturing (BRCA = 0.77) (International Trade Center 2004).

In dynamic terms, Romania's production seems to be shifting towards higher quality. Romania's labour-intensive export gains in European market shares partly result from reallocation of labour to technology-intensive industries in other CEE countries. In the medium run, labour-intensive export industries will lose competitiveness, as labour costs gradually increase with deeper integration with the EU. Intra-industry flows account for two-thirds of Romania's exports to the EU. Meanwhile, comparative advantages explained a quarter of Romanian exports to the EU in 2002. The RCA relevance will also diminish after Romania's entry into the EU, bringing free movement of production factors. Indeed, the margins

of comparative advantage have shrunk already in a globalization context.

It is no longer clear that comparative advantages can be identified at broad sectoral level. Adjustments within sectors may be of greater importance than those between sectors, as international specialization becomes tighter. Furthermore, significant comparative advantages may be found at the more disaggregated product, rather than product-group level. This is one of the big shortcomings in Romanian trade specialization with the EU, to be addressed soon in greater depth as data becomes available.

This analysis, however, has revealed the main competitiveness features of the Romanian business environment: the labour force and natural resources. Finding the incidence of development of trade performances and dynamics needs complementing with the inverse approach. The next section considers how liberalization and trade expansion have affected development.

The trade approach versus the development approach to convergence

A few remarks are worth making here about the complex relationship between liberalization, especially trade liberalization, and human development. Understanding the interaction between them calls for appreciation of the complexity of trade policy and human development as part of broader development policy. Though the relationship between trade and development is the subject of contentious debate, there is little doubt that trade can be a powerful source of economic growth (Rodrick 2002). But broadly based economic growth is a necessary, but not the sole requirement for human development. Human development also requires enlargement of people's choices and opportunities, especially those of the poor. International trade can expand markets, facilitate competition and disseminate knowledge, creating opportunities for growth and human develop-

ment. Trade can also raise productivity and increase exposure to new technologies, which can again spur growth. Indeed, over the past 20 years, the fastest-growing regions have also had the highest export growth (World Bank 2002). But liberalizing trade does not ensure human development, and expanding trade does not always have a positive or neutral effect on human development. Trade expansion neither guarantees immediate economic growth or longer-run economic or human development (WTO 2003). Internal and external institutional and social pre-conditions largely determine whether and to what extent a country or population group benefit from trade. Trade in any case should be seen as a means to development rather than an end. Although there is a two-way relationship between trade and human development, trade theories do not offer unequivocal conclusions about the directions or dynamics of the relationship. Moreover, trade liberalization policies should not be viewed as a reliable mechanism for generating self-sustaining growth and reducing poverty, let alone achieving other positive human development outcomes (Dollar and Kraay 2000).

Significant real annual growth in GDP coincided with two cycles of liberalization measures in Romania (foreign trade included). The first was performed in the early years of transition (mainly structural and institutional reforms) and followed by a drastic fall of the EBRD index in 1995–7. The second was undertaken in late 1996 to 1998 (macroeconomic adjustment reforms being predominant) and followed by a steady increase in the EBRD index and in GDP/head (PPC) as well (*Figures C.1 and C.2*). The high GDP growth rate since 2000 has been associated with a still higher export increase rate and a steady rise in GDP per capita – measured in Euros and in PPC (see *Figure C.2*).

The greater the scope of reforms – including liberalization of the economy and a greater private-sector share of

GDP – the better the economy will perform and the higher the real GDP levels it will attain. Romania is an underperformer in terms of economic liberalization, but it had faster real GDP growth in 1991–2001 than Lithuania, Latvia or Bulgaria (*Figure C.3*). This is in line with the conclusion of Funcke and Ruhwedel (2003) that economic policy as reflected in the aggregate EBRD transition indicator has significantly contributed to productivity recovery in Eastern Europe, and this is reflected in higher GDP growth. In other words, government policies in a wide range of areas are important in explaining both the time and cross-sectional dimensions of output paths during the transition.

Poland has been the best performer of the CEE 10 in terms of real GDP growth (1989=100), although Hungary and the Czech Republic were more liberalized economies in the same period. Hungary has been the best performer in terms of lower income inequality. The faster liberalization process was associated with a smaller increase in earnings inequality, measured by the Gini Coefficient of income per capita. Romania has a relatively close average value of EBRD liberalization to Bulgaria, but the latter experienced a far higher increase in income inequality (*Figure C.4*).

In explaining differences in CEE outcomes in terms of growth rates, the main explanatory factors have proved to be initial conditions, trade performance, external developments (access to markets, EU integration, *etc.*), geographical location (proximity to EU border), and extent and nature of market reforms, at macroeconomic and microeconomic levels. The degree of political competitiveness of CEE countries is also reflected strongly in the degree of economic liberalization. Relatively democratic countries, like the new CEE 8 members of the EU, liberalized their economies faster and more thoroughly. Romania's centralized political regime left the transition to a market economy at a lower average level on the

liberalization index in 1991–2001 than the CEE 10 group analysed here (*Figure C.5*). Hungary, Czech Republic and Poland are the best performers among the CEE 10, but the others are close behind them, except for Bulgaria and Romania.

Finally, the rule of law and corruption are two phenomena that distort economic growth and income distribution. The transition economies can be divided into four main groups in terms of current level of taxation and corruption (*Figure C.6*). The moderate GDP percentages of Romanian government outlays, the lowest of any of the CEE 10, are associated with the weakest rule of law index and the highest corruption perception index among the accession countries. So a stronger rule of law is crucial to longer-term economic growth. This is proved by the experience of three out-performers: Slovenia, Hungary and Estonia – countries with strong to very strong rule of law and moderate corruption perception scores.

3) THE GROWTH COMPETITIVENESS CONVERGENCE INDEX

The range of explanatory variables for economic growth and development cause uncertainty about growth projections in estimates of CEE convergence to the EU (GDP per capita or hard macroeconomic data such as the Deutsche Bank methodology) and the estimated number of years needed to catch up with the EU average. The ambiguity is exacerbated in Romania's case by uncertainty about how much the country can reasonably be expected to converge. This statistical approach may lead to implausible conclusions, as convergence is a complex process involving the macroeconomic environment, public institutions, and national technology upgrading. The economic robustness of convergence analysis may be improved by quantifying all these eco-

nomically important explanatory variables in a composite growth competitiveness convergence index. To do so, indices estimated in Blanke, Paua and Sala-i-Martin 2004 have been used.

An immediate overview of the 2003 results for the index for 2003 reveals significant differences between Romania and the EU, and between Romania and other CEE countries (*Table D.1*). Romania had the lowest growth competitiveness convergence to the EU and the CEE 10 index in 2003 (66.0 and 77.5 per cent respectively). Relative to the EU, Romania lags especially in country credit rating (40.3 per cent), government waste (44.5 per cent), contracts and law (55.5 per cent), innovation (57.8 per cent) and corruption (58.8 per cent). These analyses show the areas for Romania to address, if it is to approximate to the average EU development level. Higher convergence is registered in terms of technology transfer (97.3 per cent, better than Bulgaria or Lithuania) and macroeconomic stability (80.0 per cent).

A closer look at the EU and CEE 10 averages shows slightly higher standard deviation and far higher dispersion (s-convergence) in the latter. This reflects that the CEE 10 are more heterogeneous than the EU (*Table D.2*). Estonia, Slovenia and Hungary are the out-performers for growth competitiveness convergence to the EU and Romania and Bulgaria the laggards. The high dispersion within the CEE 10 is caused by scores for government waste reduction (21.0 per cent dispersion), contracts and law enforcement (17.1 per cent), country credit improvements (16.2 per cent) and innovation (14.2 per cent). In the EU 15, the dispersion comes mainly from innovation performance (20.4 per cent dispersion) and government waste reduction (19.2 per cent).

According to the indicator of growth competitiveness convergence to the EU and to the Deutsche Bank convergence indicators, Romania ranks last

among the CEE 10 (*Table D.3*), but 9th for business environment and GDP per capita convergence indicator. The ratings of other CEE countries show some differences from their ratings for GDP per capita. Estonia comes first, followed by Slovenia, Hungary and Latvia (*Table D.3*). However, comparing the four methodologies used for CEE convergence to the EU (*Table D.3*) – the growth competitiveness convergence indicator (IGC), business environment convergence indicator (BCI), Deutsche Bank convergence indicator (DB) and GDP per capita – reveals strong positive correlations between the rankings:

Indicators	Correlation
IGC _ BCI	0.93
DB _ GDP per capita	0.85
IGC _ DB	0.70
DB _ BCI	0.70
IGC _ GDP per capita	0.65

Scenarios for the CEE 10 to catch up with the EU

Finally, let us compare the results of two scenarios, looking at the number of years the CEE 10 would need to reach the EU average for GDP per capita and growth competitiveness. Let us take a 2.5 per cent annual reduction of the gap between the CEE countries and the EU as an optimistic scenario and a 2 per cent reduction for the pessimistic scenario (*Table D.4*). These convergence speeds are close to the historical estimates of EU and CEEC convergence speeds made by Barro and Sala-i-Martin (1995), Kaitila (1994) and Wagner and Hlouskova (2004) (see section 2 regarding the main empirical evidence). For the latter, we suggest a lower speed of annual reduction as it involves a holistic improvement of the economic environment, which is 2 per cent for the optimistic scenario, and 1.5 per cent for the pessimistic scenario (*Table D.5*). There are no empirical find-

ings on the speed of convergence in GCI, as there are no long-term data.

Predictions suggest that the catch-up with the EU average in GDP per capita will take over three decades at the very least, according to the optimistic scenario, and six decades according to the pessimistic scenario. Slovenia will arrive first, followed by the Czech Republic and Hungary. But Romania will need 60 years according to the optimistic scenario and 110 years under the pessimistic scenario. If the pessimistic scenario is taken to be more likely, Romania will reach only 60 per cent of the EU average for GDP per capita over the next 30 years.

In terms of growth competitiveness, the predictions suggest much less time needed for CEE catch-up, except for Romania, which lags behind. The optimistic scenario yields four years and the pessimistic two decades. Estonia arrives first in this case, followed by Slovenia and Hungary. (The Czech Republic is expected to come fifth for GCI, as opposed to second for GDP per capita.) Romania will need 75 years according to the optimistic scenario or 135 according to the pessimistic.

These linear projections are theoretical and mechanistic, but if a constant, unique and ‘uncalibrated’ convergence pattern is assumed for all CEE countries, they provide a general idea of the long-term process of convergence required. They also give indications for economic policy-makers about the speed of reform and growth they need to induce in order to catch up earlier.

CONCLUSIONS

This paper has covered a wide terrain, with the main aim of providing in-depth estimations of the magnitude of CEE convergence on the EU.

Theoretical implications. The quantitative approach to revealing the gaps between the CEE countries and the EU with the qualitative aspect in the heterogeneous pattern of the CEEC convergence process to the EU by estimating the *growth competitiveness convergence index*. We focused on the impact of initial conditions on growth and convergence and on the pressures of the market opening and integration processes, but we mainly pointed to the role of nationally specific differences in growth and business environment performances. In order to have a digestible form of these differences we found it useful and relevant to oppose the development approach and the trade approach in explaining the differences in convergence speed, as proxies for the outcomes of macroeconomic or microeconomic reforms. Explaining the interactions between the two as well, we overcame the limitations of the traditional approaches, focused on shrinking gaps in GDP/per capita or core macroeconomic data in estimating the convergence level of CEE countries to the EU (Deutsche Bank methodology).

The literature reviewed in the first section demonstrates that trade matters to growth. Either divergence or convergence is a possible outcome of the economic development process. But the stress on the vast typology of differences between Romania and other CEE countries is highly pertinent to understanding the interactions that lead Romania to different patterns of specialization and a lower convergence speed to the EU. Different waves of development have been dominated by different industries. High technology has been exploited unevenly by the CEE 10 countries during the transition, again according to their specialization patterns. Romania is highly specialized in labour-intensive and natural resource-intensive industries, in the first stage of competitive development: the factor-driven economy. The shift towards the second, investment-driven stage based

on efficiency has improved in the last three years, but remains rather modest.

Recent research into the relation between trade and growth suggests that openness alone is an insufficient determinant of high levels of growth, though a country's trade performance may be a good indicator of economic performance – good performers tend to record higher rates of GDP growth. Many other factors can be identified as important forces leading to lag. These, gathered in the two main groups of macroeconomic and microeconomic growth competitiveness, improve convergence-methodology estimations. There is still room for improvement, however, as the qualitative approach, developed as a complement to the quantitative approach in offering a general profile of degree of convergence, can be criticized for its small number of variables.

Policy implications. Convergence can certainly not be taken for granted. The transition of the CEE countries to a new stage of development – as economies driven by the innovation on which the EU focuses – is very hard, calling for complex transformation of many interdependent aspects of competition. Policymakers generally focus on aspects of macroeconomic quality, but they also need to address microeconomic reforms as qualitative indicators to gauge the competitiveness of nations. They should not underestimate the way the wealth or standard of living of a nation is created at the microeconomic level, in the national business environment. If capabilities there fail to improve, macroeconomic, political, legal and social reforms cannot succeed either. The challenges are still hard to meet, as the CEE countries must compete with the EU 15, despite having economies at different levels of development. At the same time, they are poised to join the EU's strong institutional and legal systems. Romania lags behind less in macroeconomic stability than in terms of national business environment and public institutional development: contracts

and law enforcement, corruption perception, and government waste. These are the main points that need addressing. The proposed convergence-methodology estimation will help to monitor on-going implementation of these policies.

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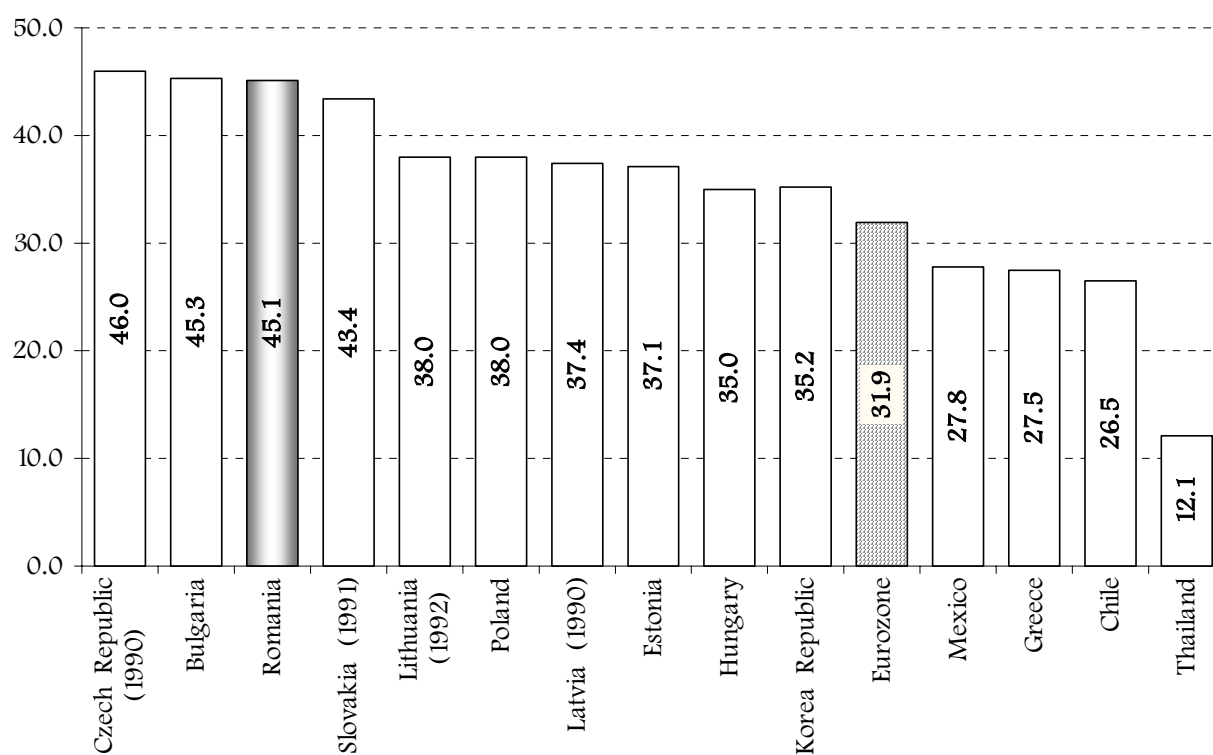
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APPENDICES

A) Development approach on CEEC convergence to EU

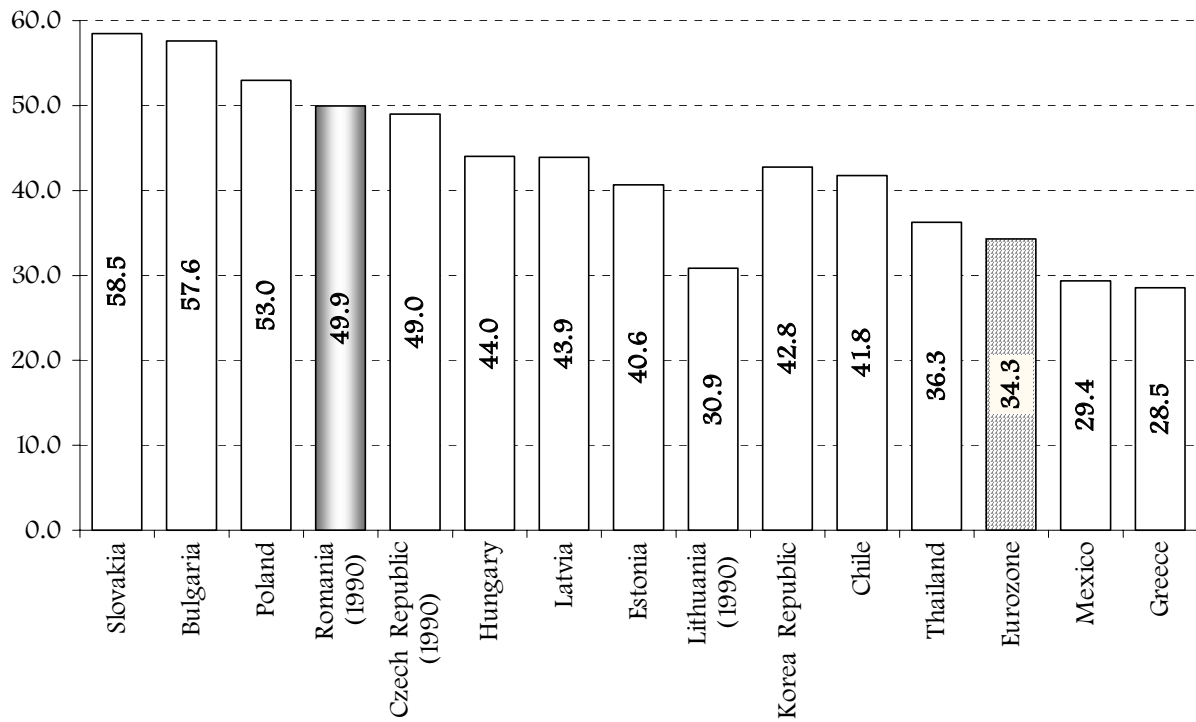
A.1. Economic structures

Figure A.1.1.
Employment in industry (% of total employment):
over-industrialization relative to comparable emerging markets, 1989



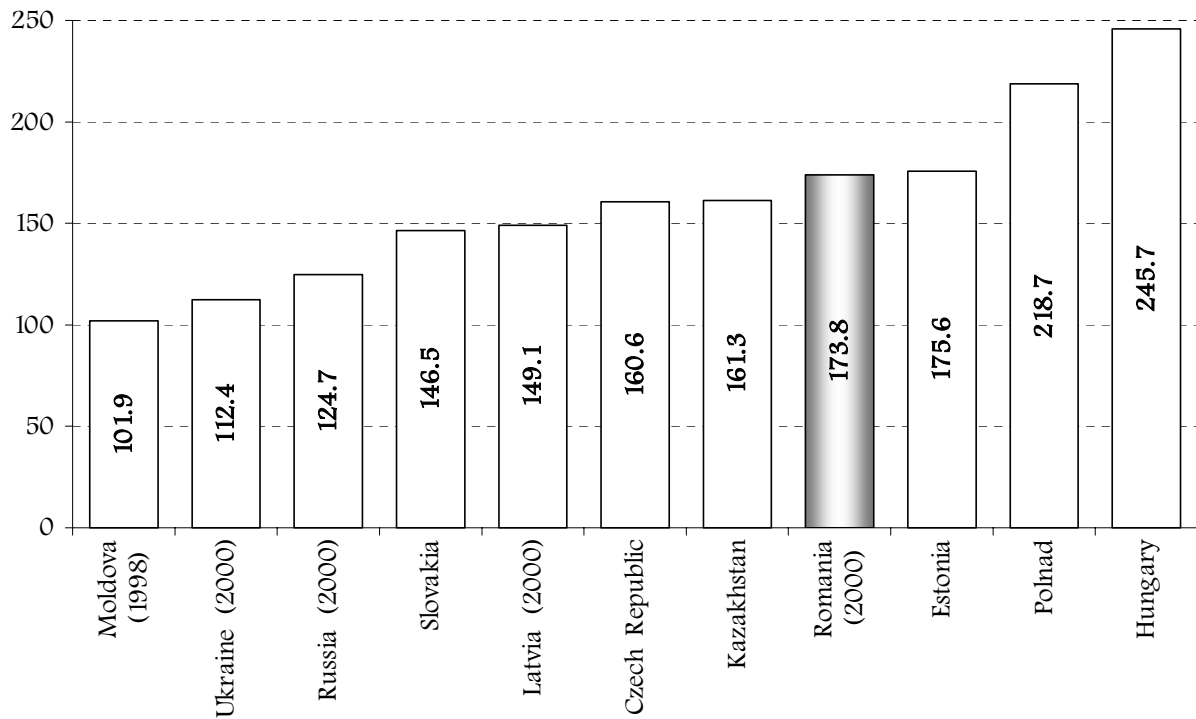
Source: World Bank, World Development Indicators 2004.

Figure A.1.2.
Value added in industry (% of GDP):
over-industrialization relative to comparable emerging markets, 1989



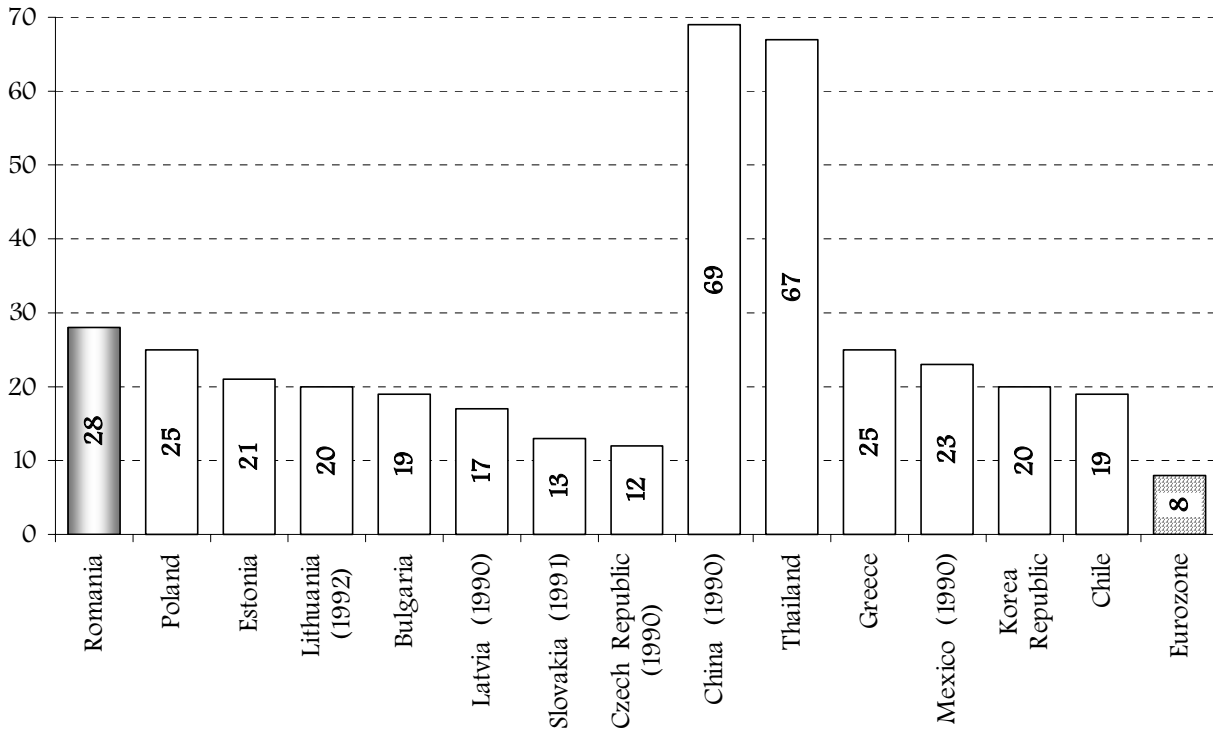
Source: World Bank, World Development Indicators 2004.

Figure A.1.3.
Change in labour productivity in industry, 1992–2001
(1992=100)



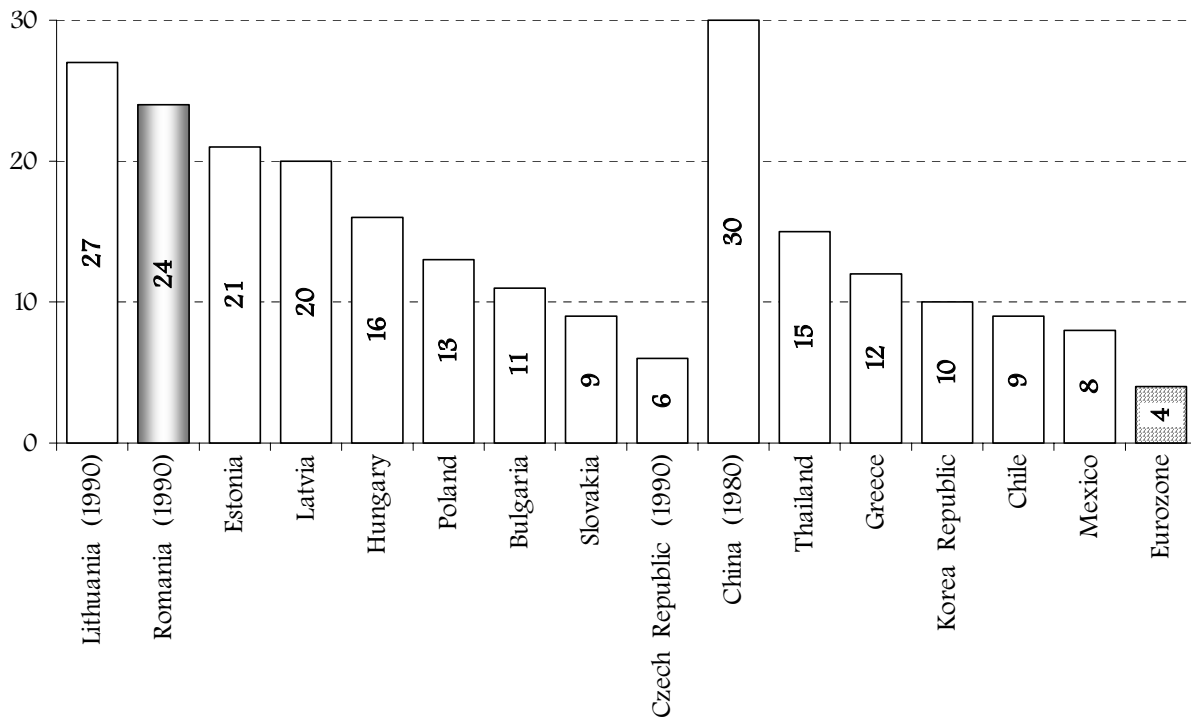
Source: EBRD Transition Report 2002.

Figure A.14.
Employment in agriculture as % of total employment, 1989



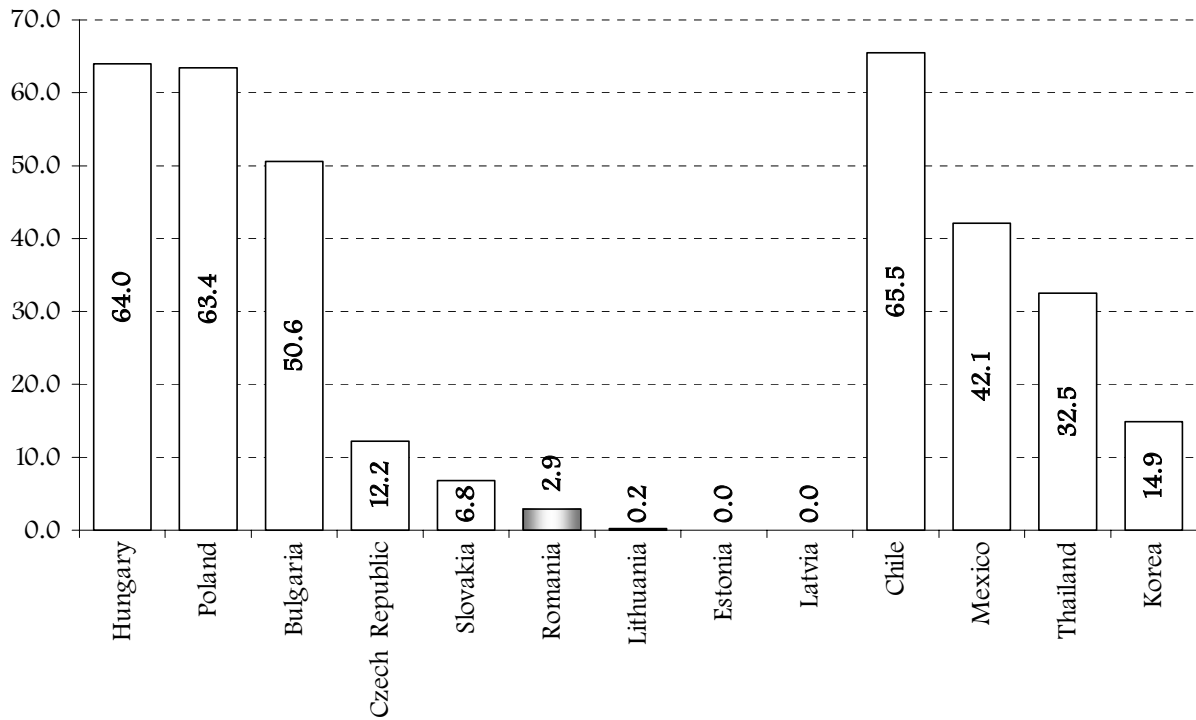
Source: World Bank, World Development Indicators 2004.

Figure A.15.
Value added in agriculture as % of GDP, 1989



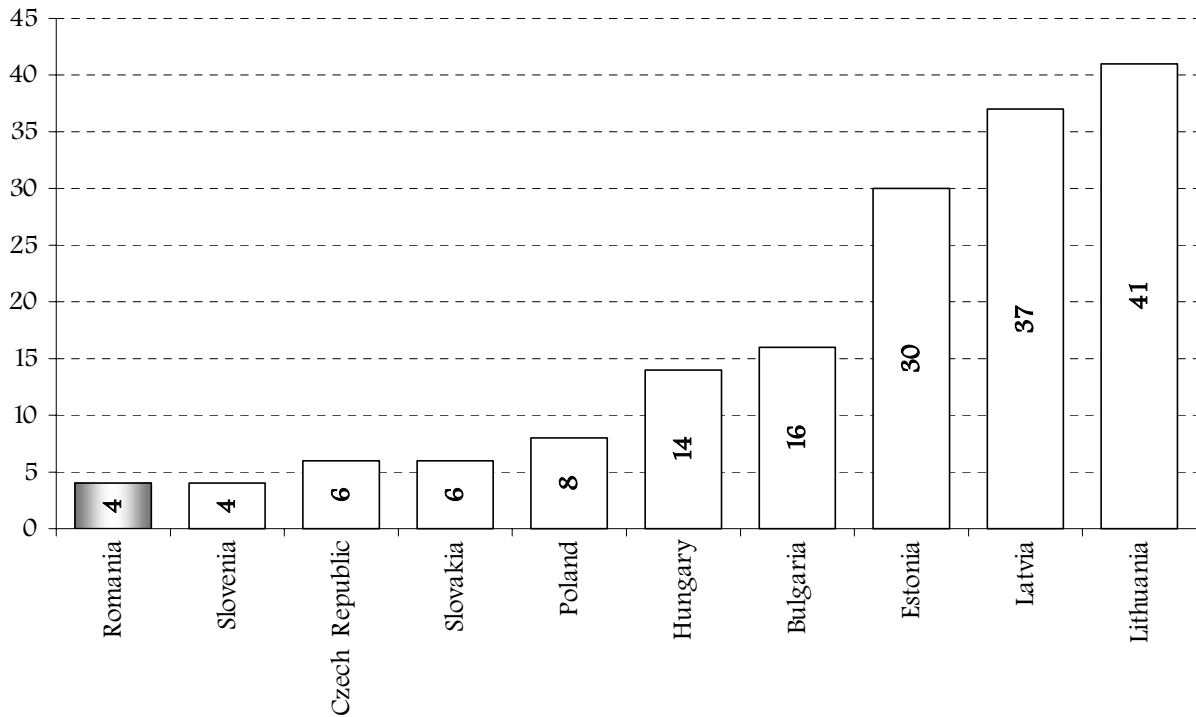
Source: World Bank, World Development Indicators 2004.

Figure A.1.6.
Foreign debt in pre-transition year: 1989–1991,
and for non-transition countries: 1989
(% of GDP)



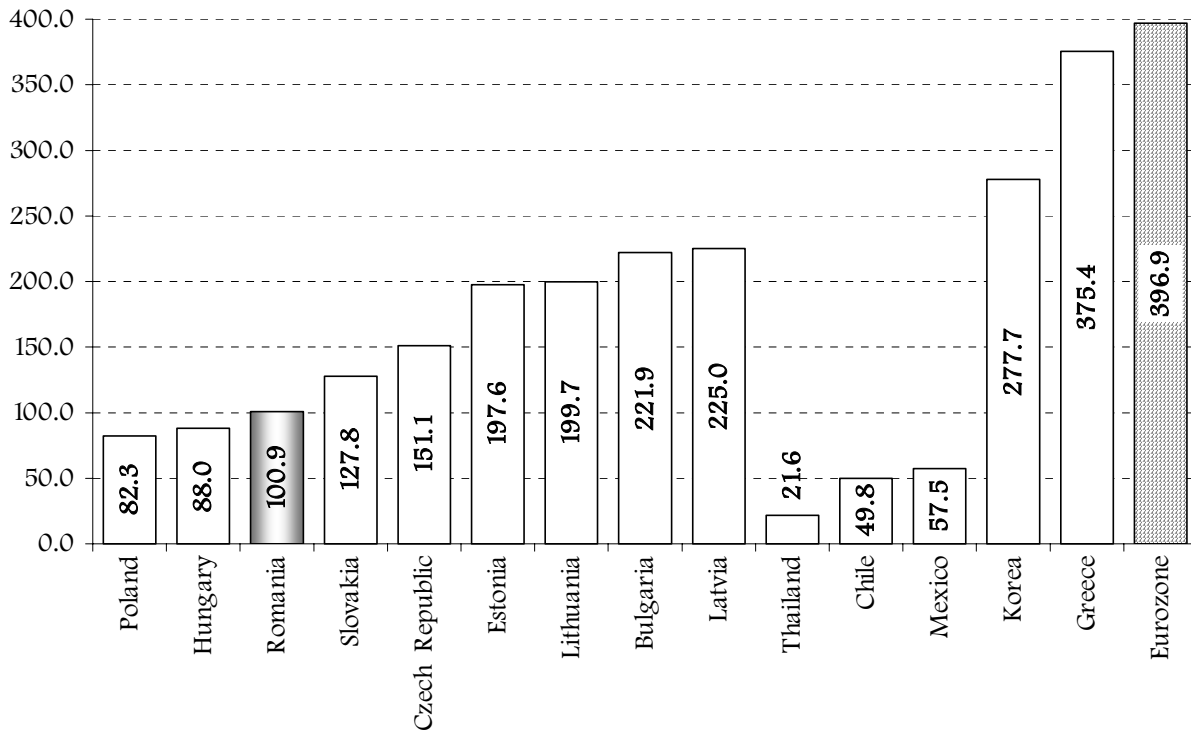
Source: Orłowski L., Transition and growth in post-communist countries, 2001; World Bank, World Development Indicators 2003.

Figure A.1.7.
Scale of trade dependence on COMECON markets, 1990
(% of GDP)



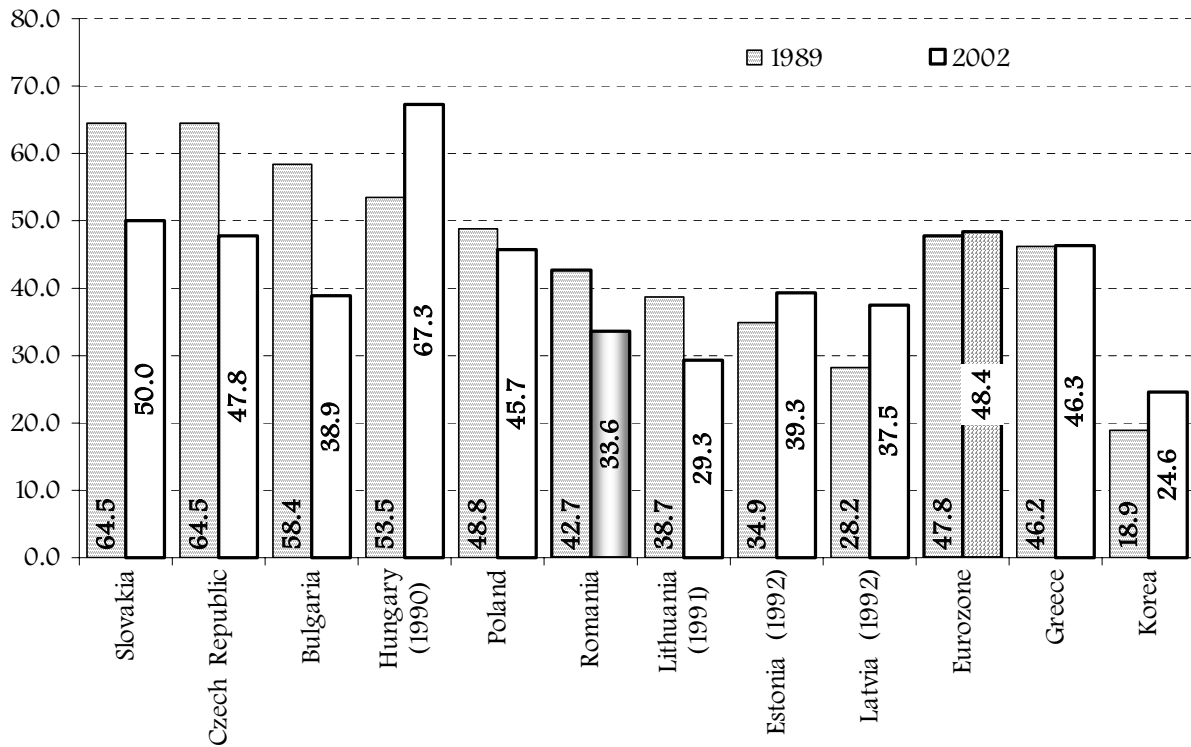
Source: IMF World Economic Outlook, October 2000.

Figure A.1.8.
Degree of infrastructure development: telephone main line subscribers per 1000 population, 1989



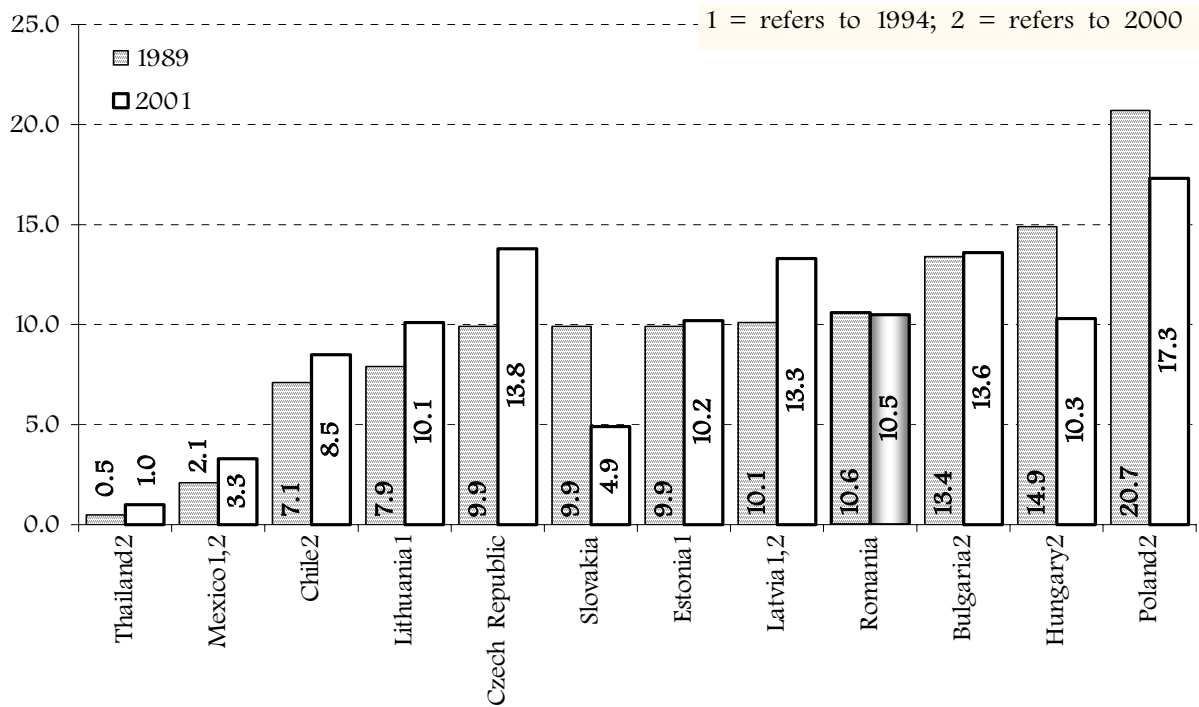
Source: World Bank, World Development Indicators 2004.

Figure A.1.9.
General government expenditure, 1989–2002
(% of GDP)



Source: EBRD Transition Report 2003; OECD Economic Outlook 73.

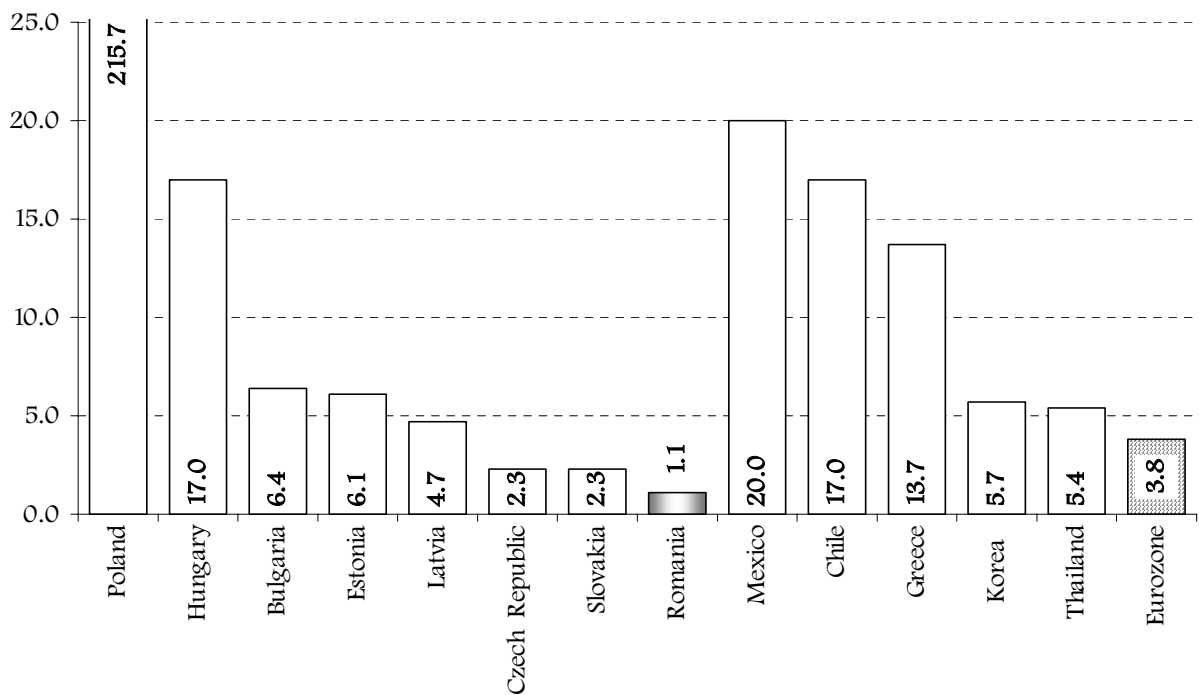
Figure A.1.10.
Public expenditure on social security and welfare, 1989–2001
(% of GDP)



Source: World Bank, World Development Indicators 2004.

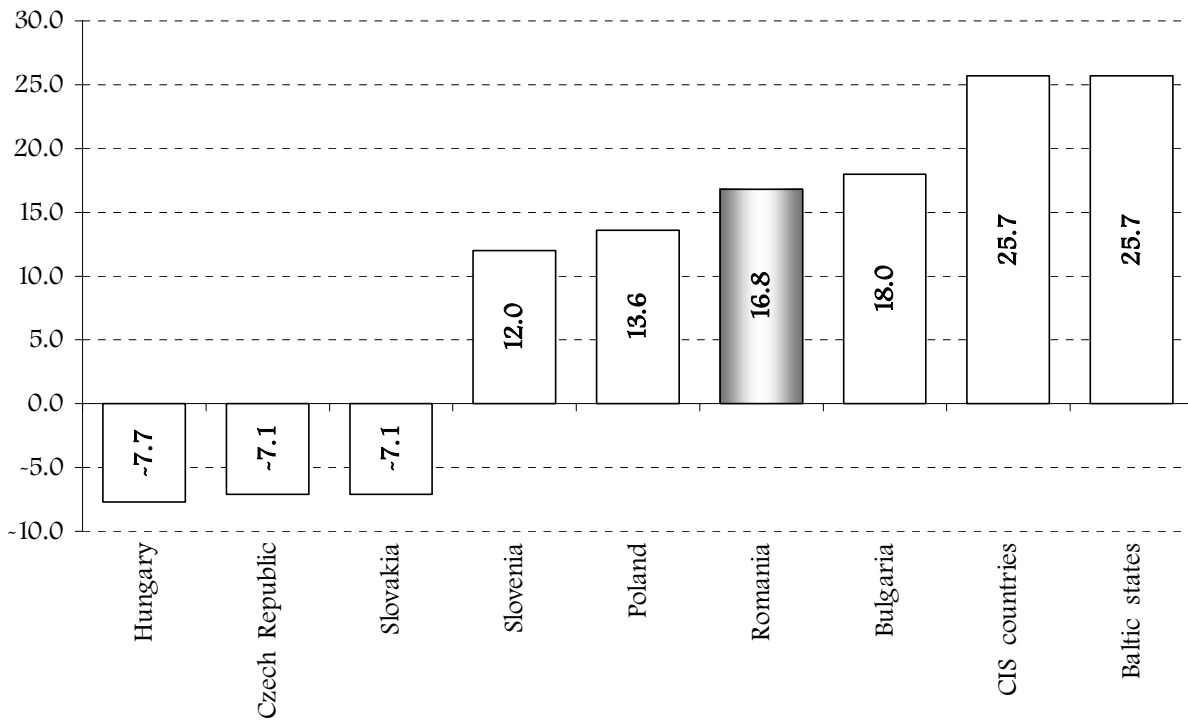
A.2. Macroeconomic imbalances

Figure A.2.1.
Inflation, 1989
(% of annual average)



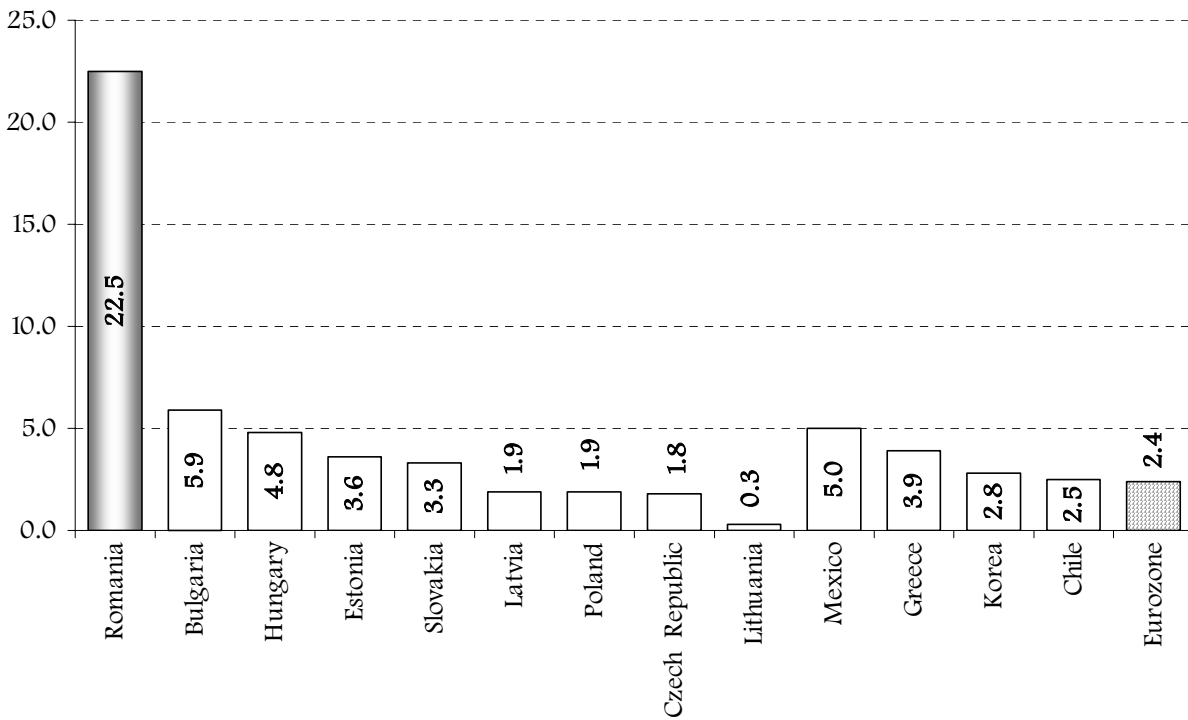
Source: World Bank, World Development Indicators 2004.

Figure A.2.2.
Repressed inflation, 1987–1990
(% of annual average)



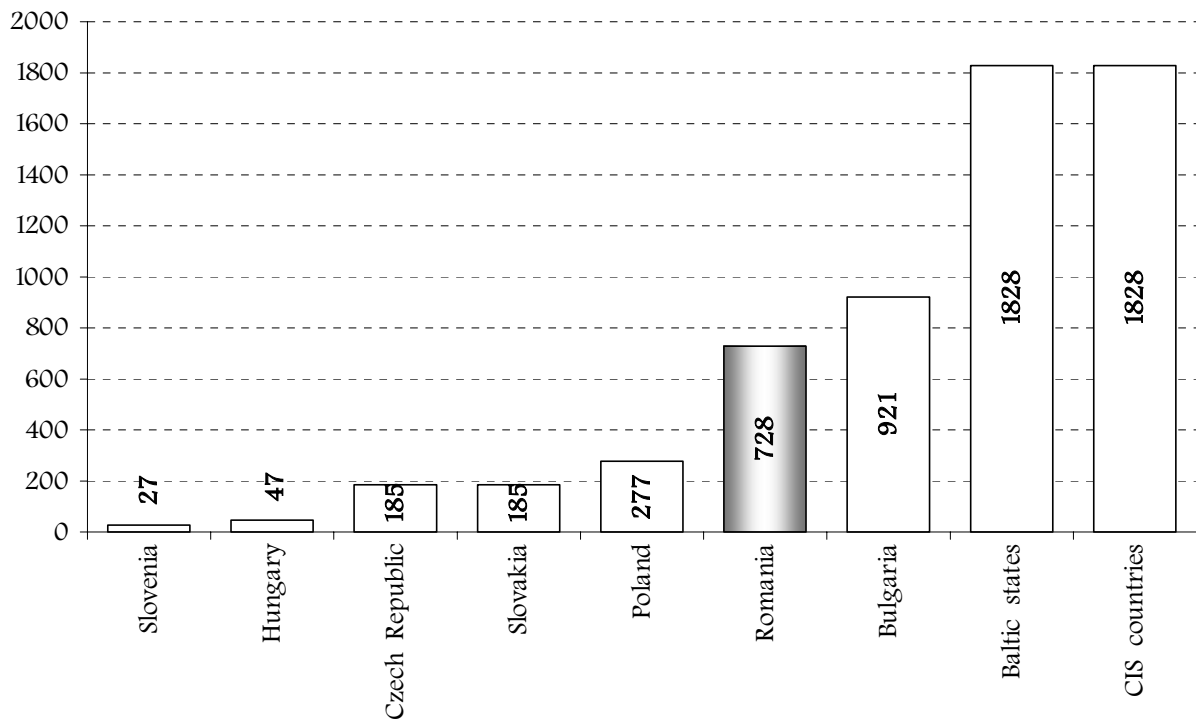
Source: World Bank, World Development Indicators 2004.

Figure A.2.3.
Inflation, 2002
(annual average, %)



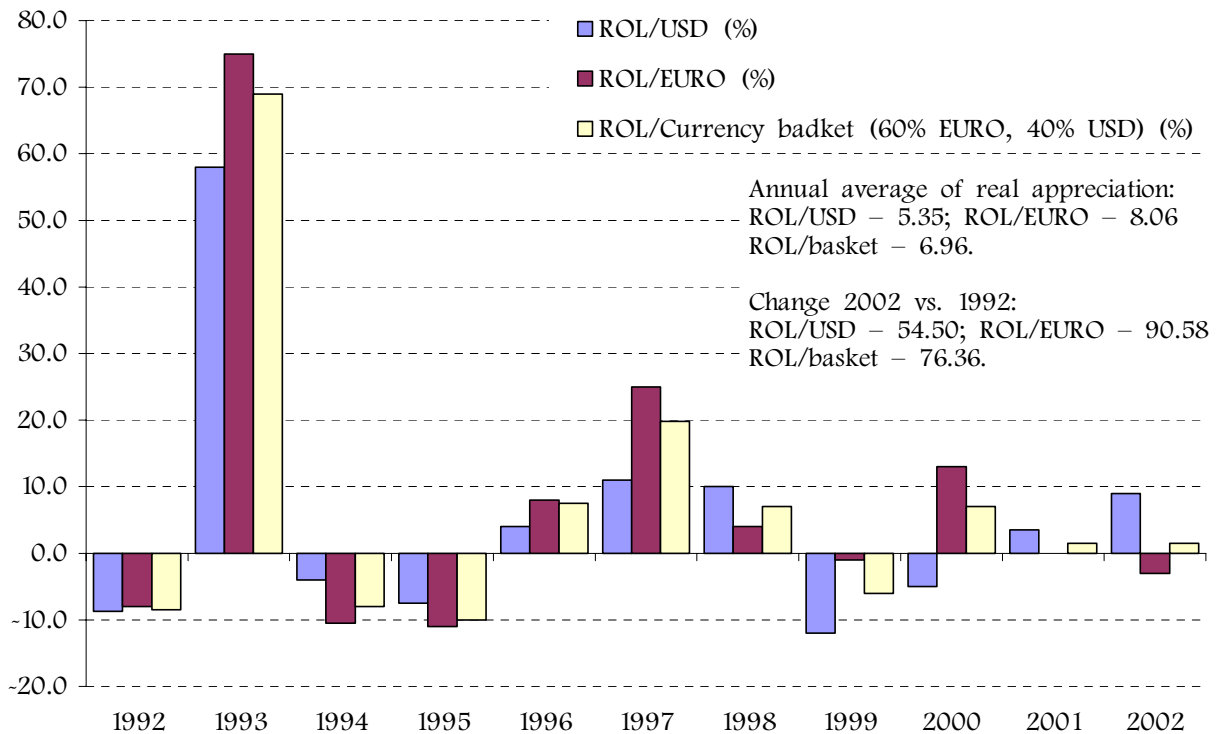
Source: EBRD Transition Report 2002; World Economic Outlook, IMF, April 2003.

Figure A.2.4.
Black market premium (% the official exchange rate), 1989



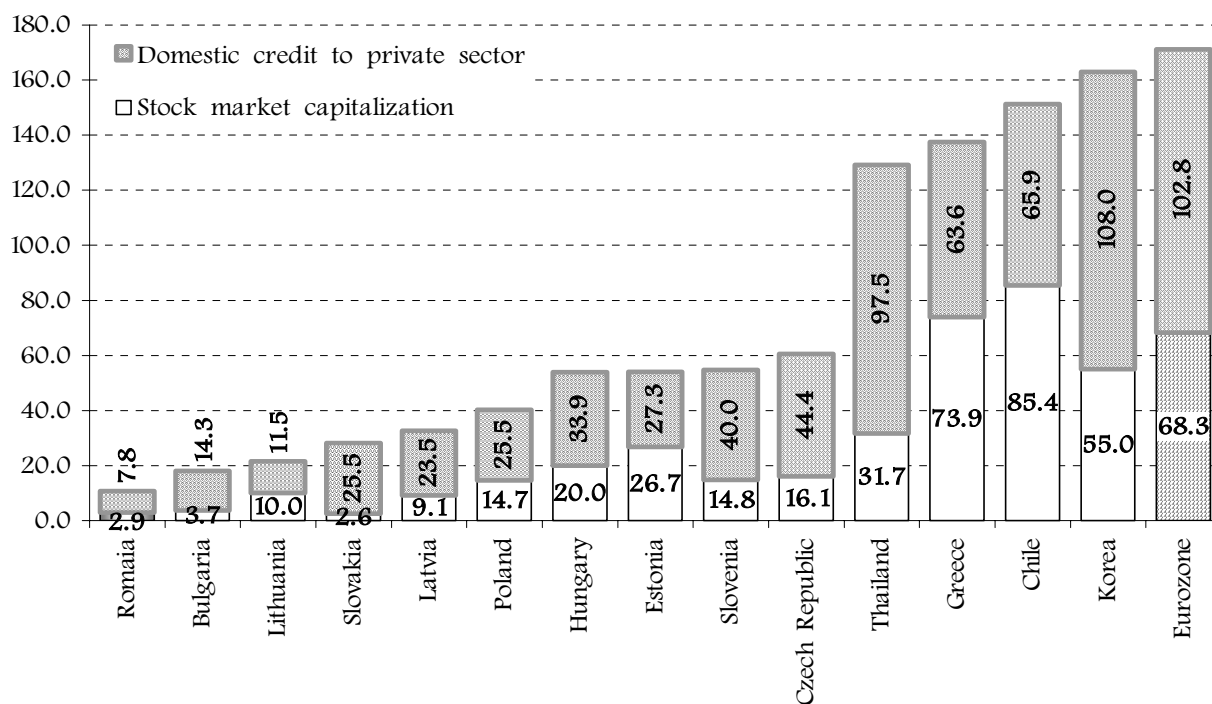
Source: De Melo *et al.*, 1997.

Figure A.2.5.
Annual real exchange-rate appreciation (-) or depreciation (+) in Romania, 1992–2002



Source: National Bank of Romania Statistics, 2004.

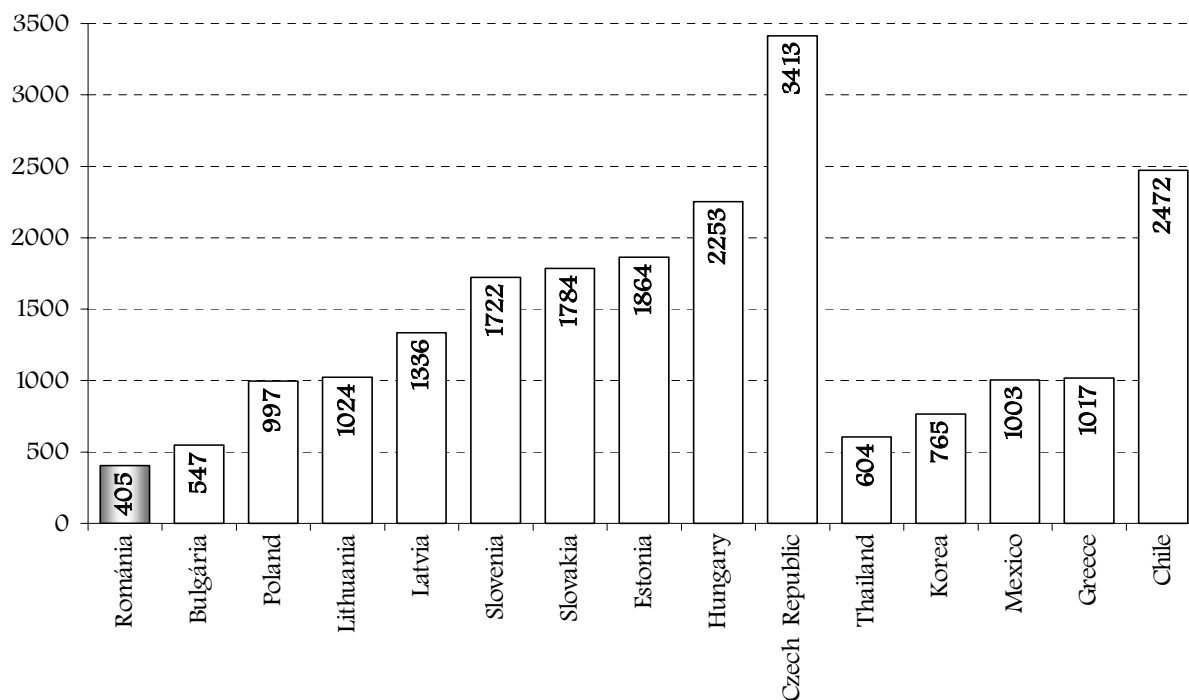
Figure A.2.6.
Bank-dominated financial sectors: domestic credit to private sector,
and market capitalization of listed companies, 2001
(% of GDP)



Source: World Bank, World Development Indicators, 2004.

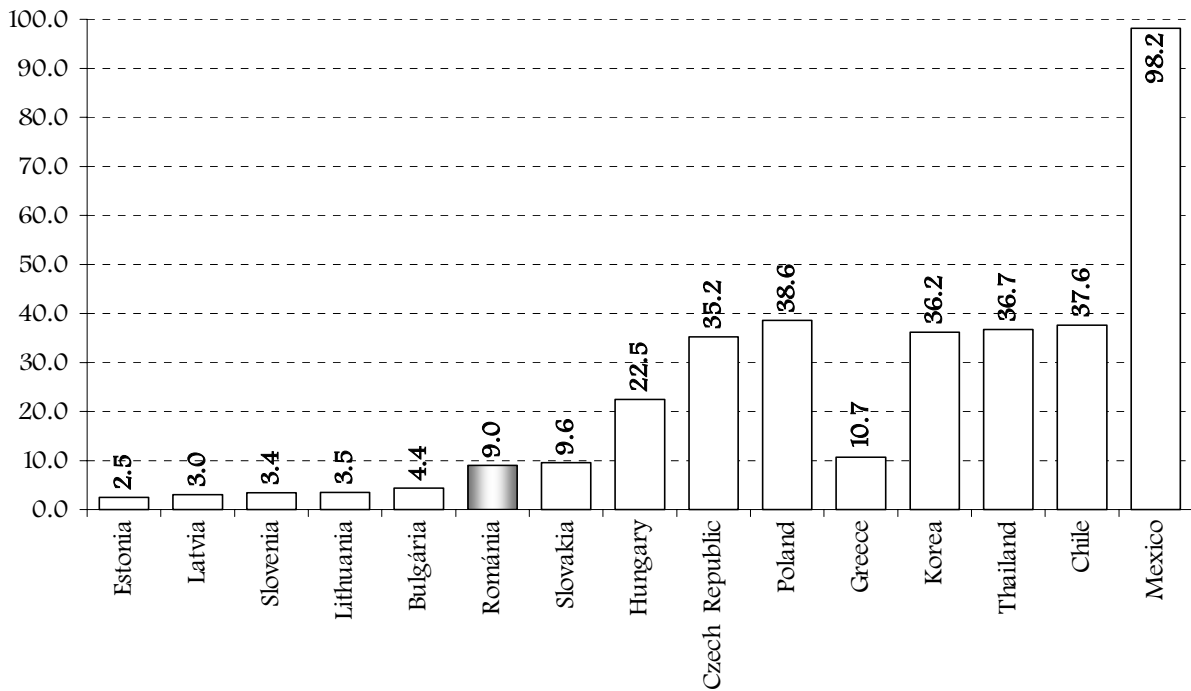
A.3. FDI attractiveness

Figure A.3.1.
Cumulative per-capita FDI inflows, 1989–2002
(USD)



Source: EBRD Transition Report Update, May 2003.

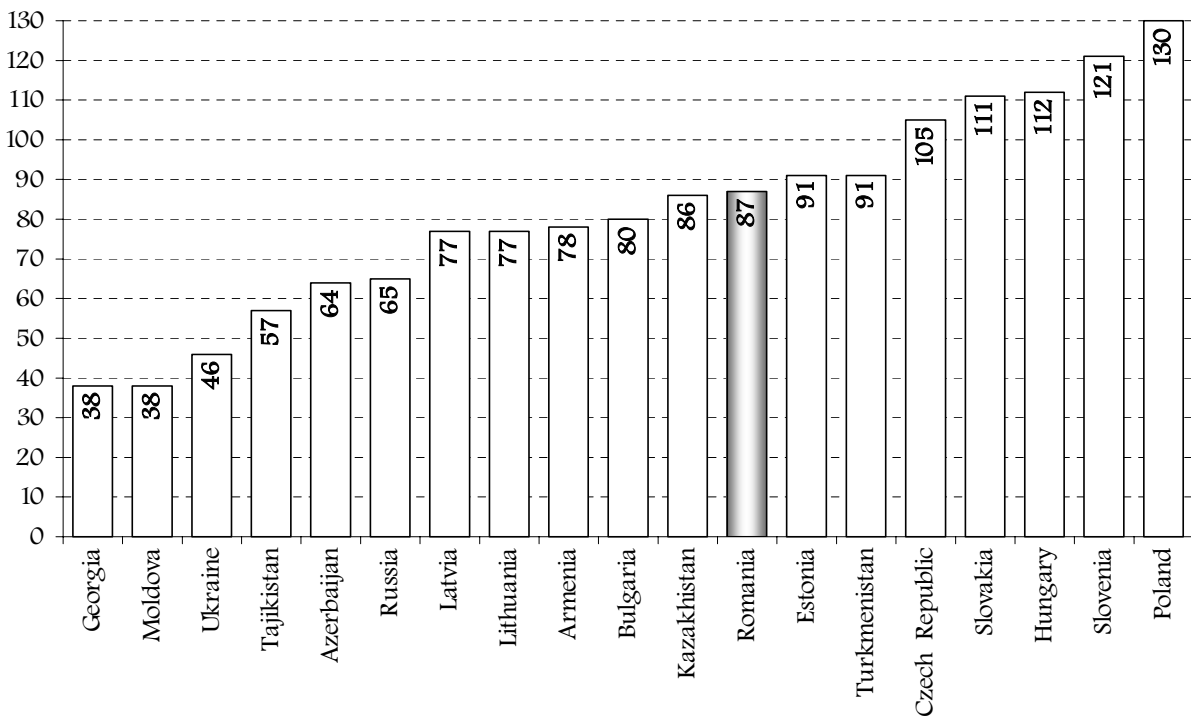
Figure A.3.2.
Cumulative FDI inflows, 1989-2002
(USD billion)



Source: EBRD Transition Report Update, May 2003.

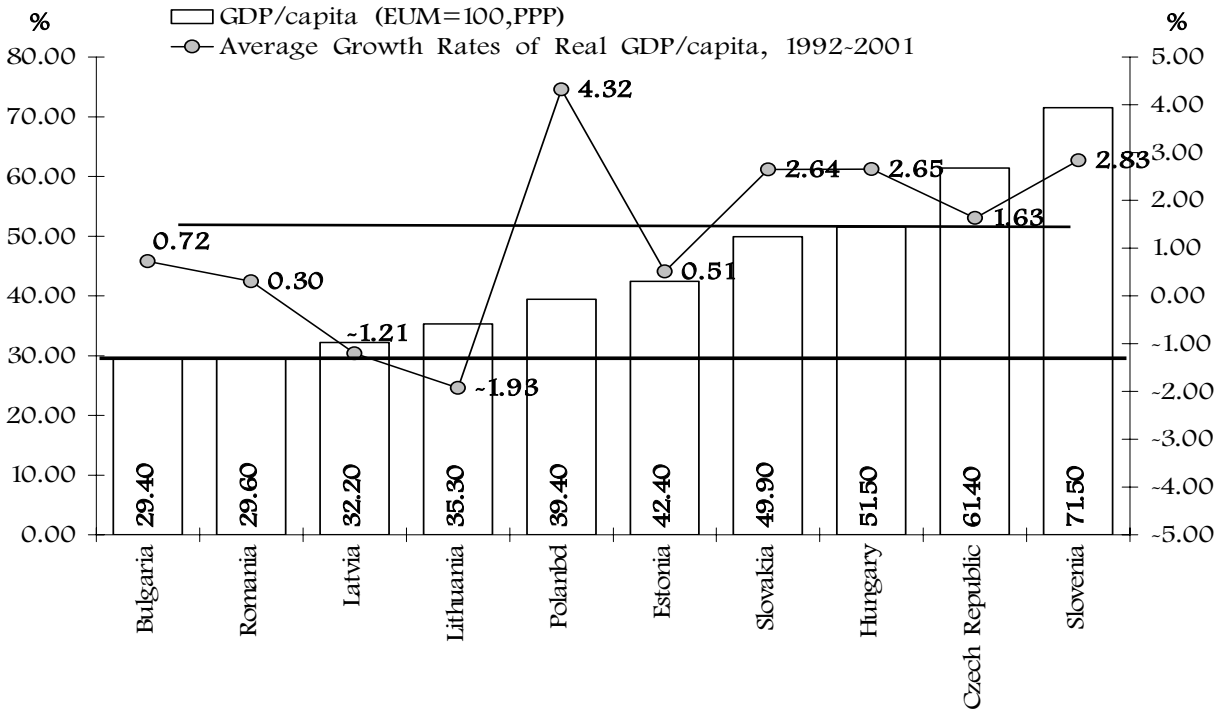
A.4. Economic growth

Figure A.4.1.
Economic growth: real GDP, 2002
(1989 = 100)



Source: EBRD Transition Report Update, May 2003.

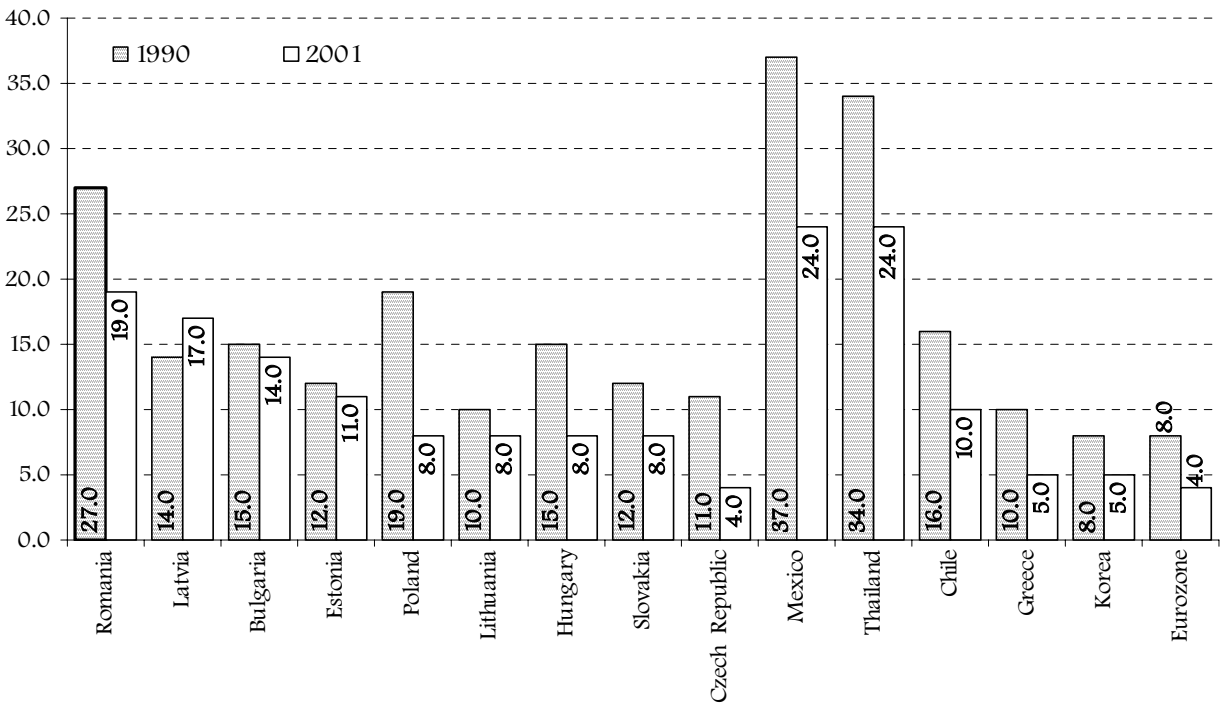
Figure A.4.2.
Convergence of GDP/capita
(2001, UEM = 100)



Source: European Commission EEAG Report 2004; Wagner, M. and J. Hlouskova, 2004.

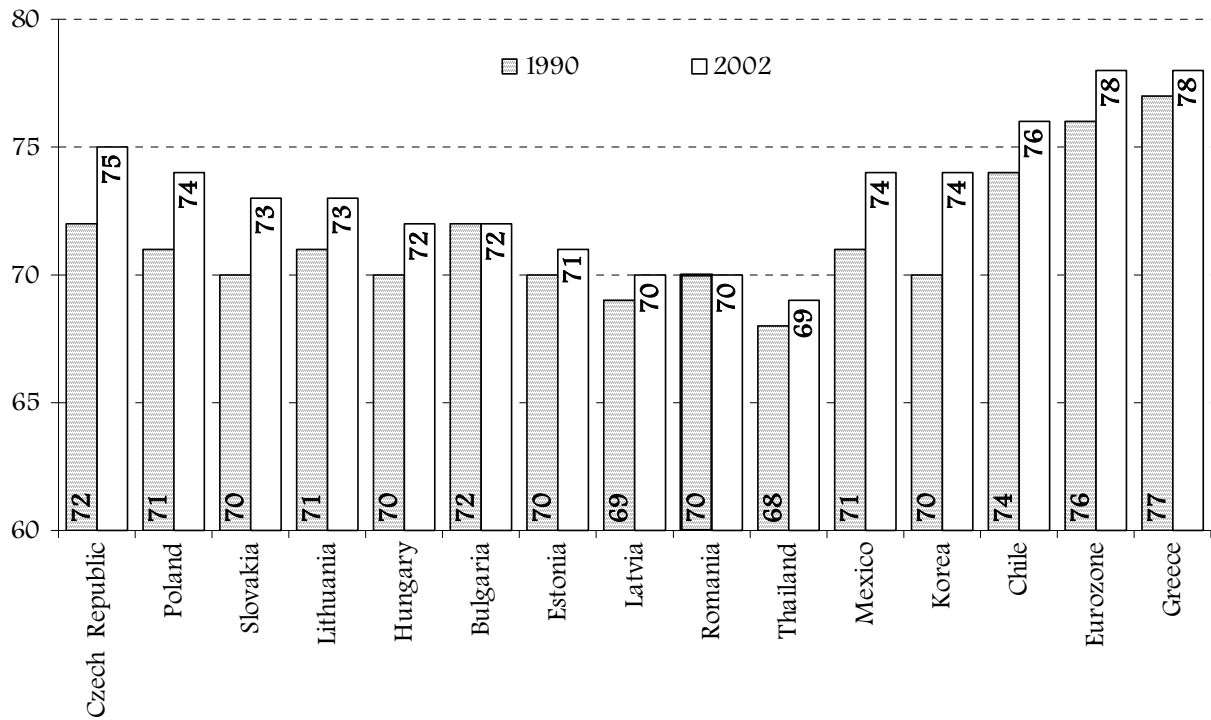
A.5. Human capital

Figure A.5.1.
Infant mortality per 1000 live births, 1990–2001



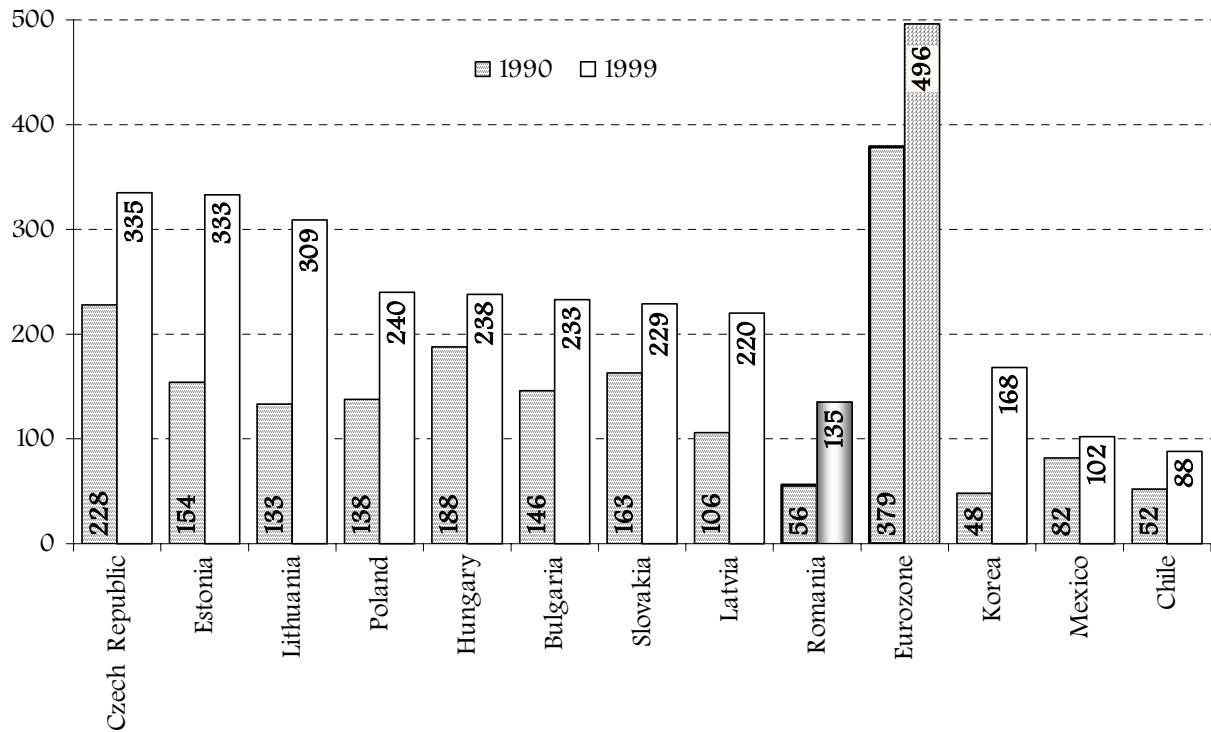
Source: World Bank, World Development Indicators, 2004; EBRD Transition Reports.

Figure A.5.2.
Life expectancy at birth, 1990–2002



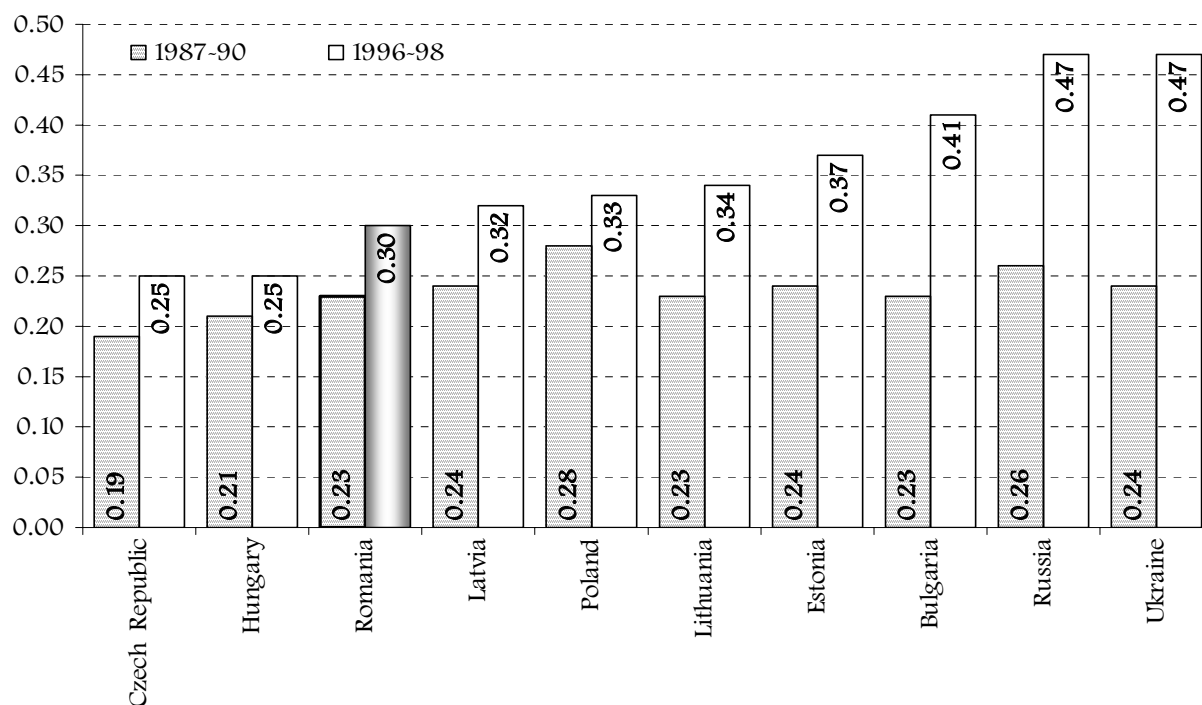
Source: World Bank, World Development Indicators 2004; EBRD Transition Reports.

Figure A.5.3.
Living standards: number of passenger cars per 1000 population, 1990 and 1999



Source: World Bank, World Development Indicators 2004.

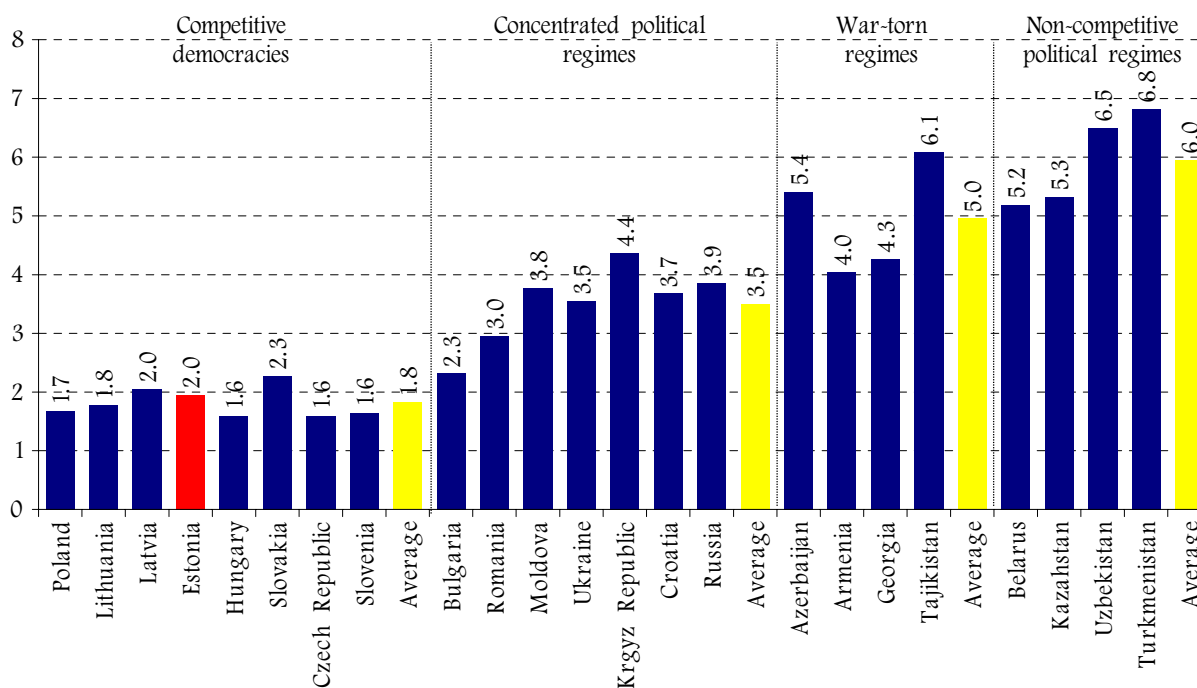
Figure A.5.4.
Income distribution: Gini coefficient of income per capita, 1987–90 and 1996–8



Source: World Bank, *Transition: The First Ten Years*, 2002.

A.6. Socio-political development

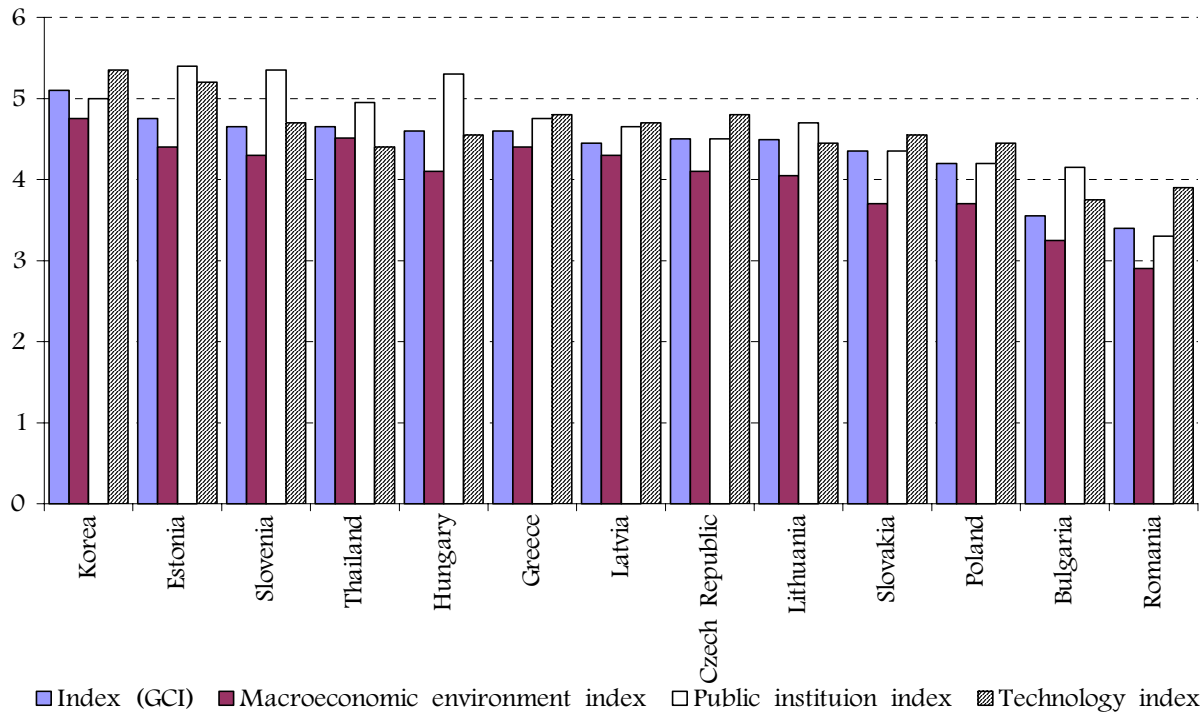
Figure A.6.1.
Political systems in transition economies, 1990–1999



Source: Freedom House, www.freedomhouse.com, 2002

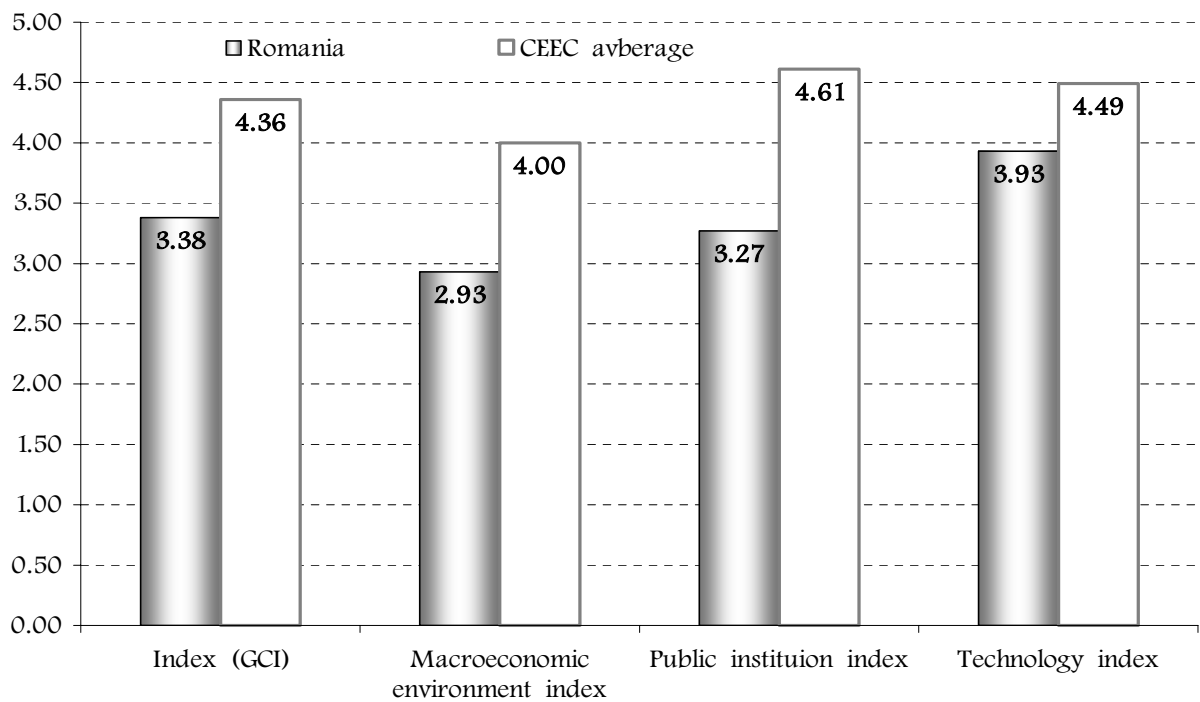
A.7. Growth competitiveness

Figure A.7.1.
Growth Competitiveness Index and its components, 2003



Source: Based on estimations of Blanke, J., F. Pauna and X. Sala-i-Martin, 2004.

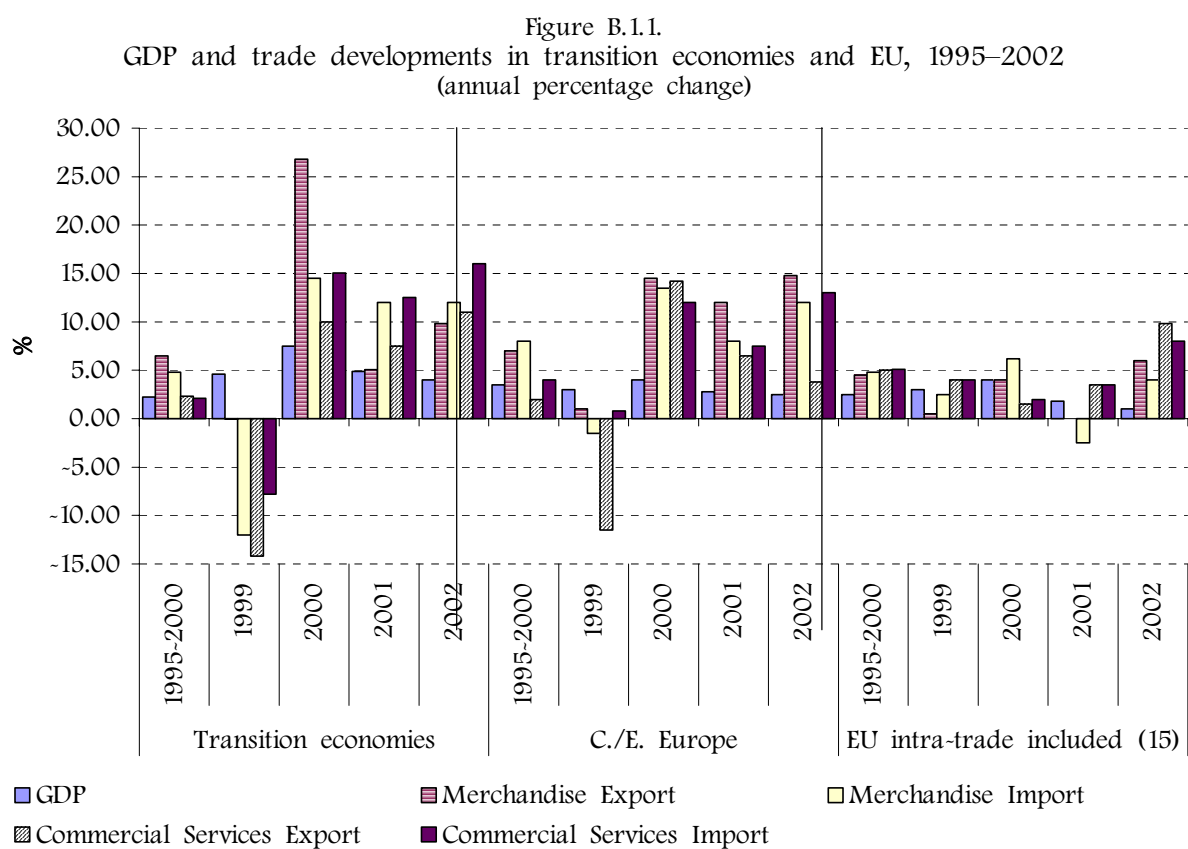
Figure A.7.2.
Growth competitiveness in Romania relative to CEE 10, mean, 2003



Source: Author's computations based on the World Economic Forum estimates, 2004.

B) Trade approach to CEE convergence

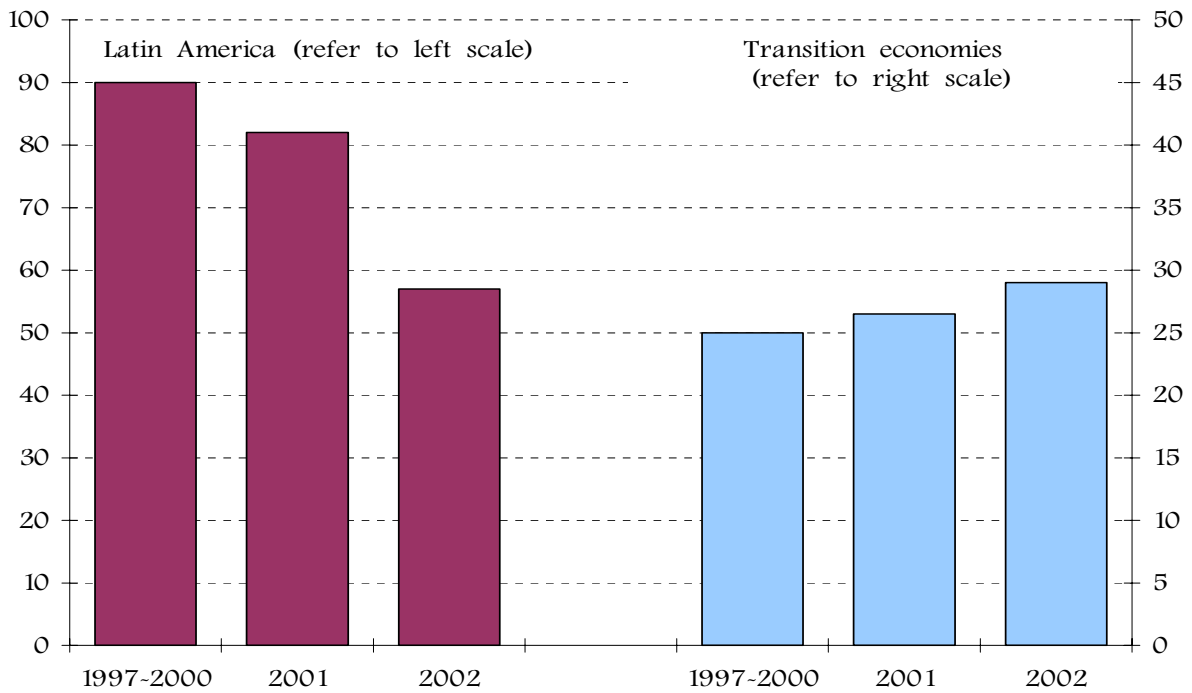
B.1. Specific aspects of trade performance of CEE countries relative to the EU



* Transition economies are grouped by WTO into Central and Eastern Europe (Albania, Bulgaria, Czech Republic, Hungary, Poland, Romania and Slovakia); the Baltic States (Estonia, Latvia and Lithuania); CIS (Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyz Rep., Moldova, Russian Fed., Tajikistan, Ukraine and Uzbekistan).

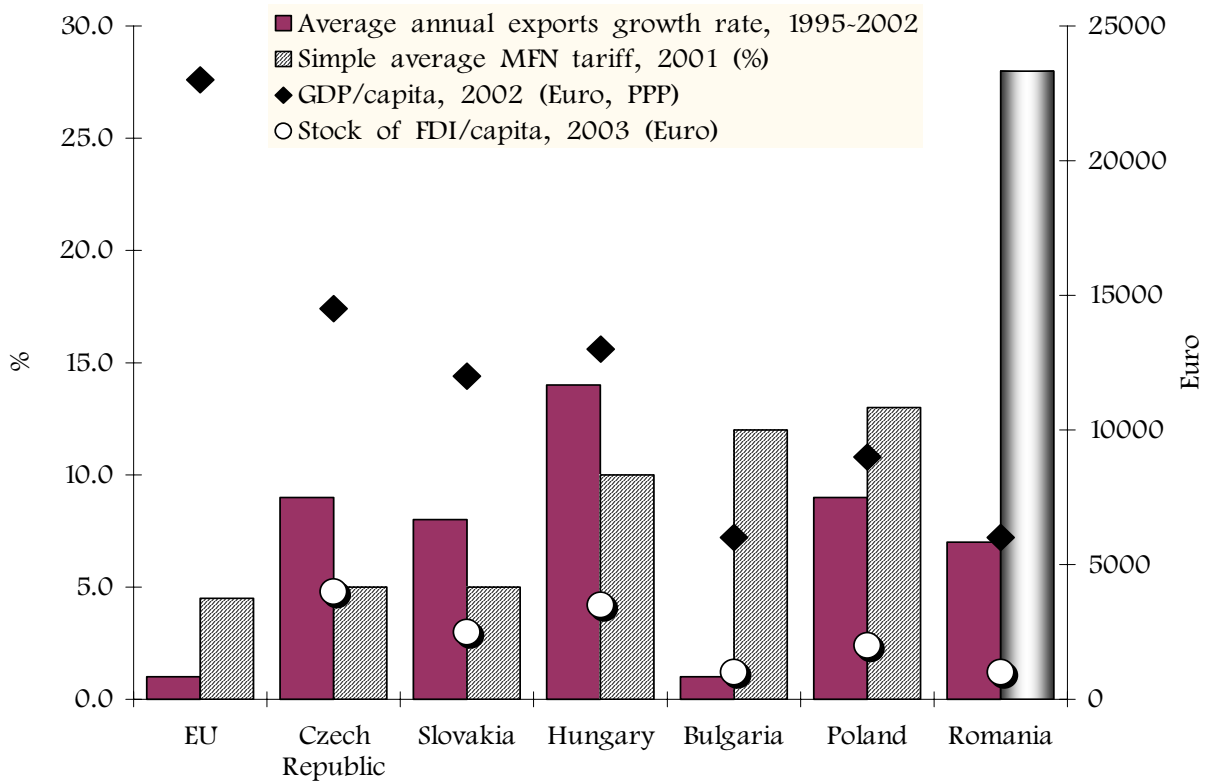
Source: World Trade Organization, 2004.

Figure B.1.2.
FDI inflows into transition economies vs. Latin America, 2000–2002
(USD billion)



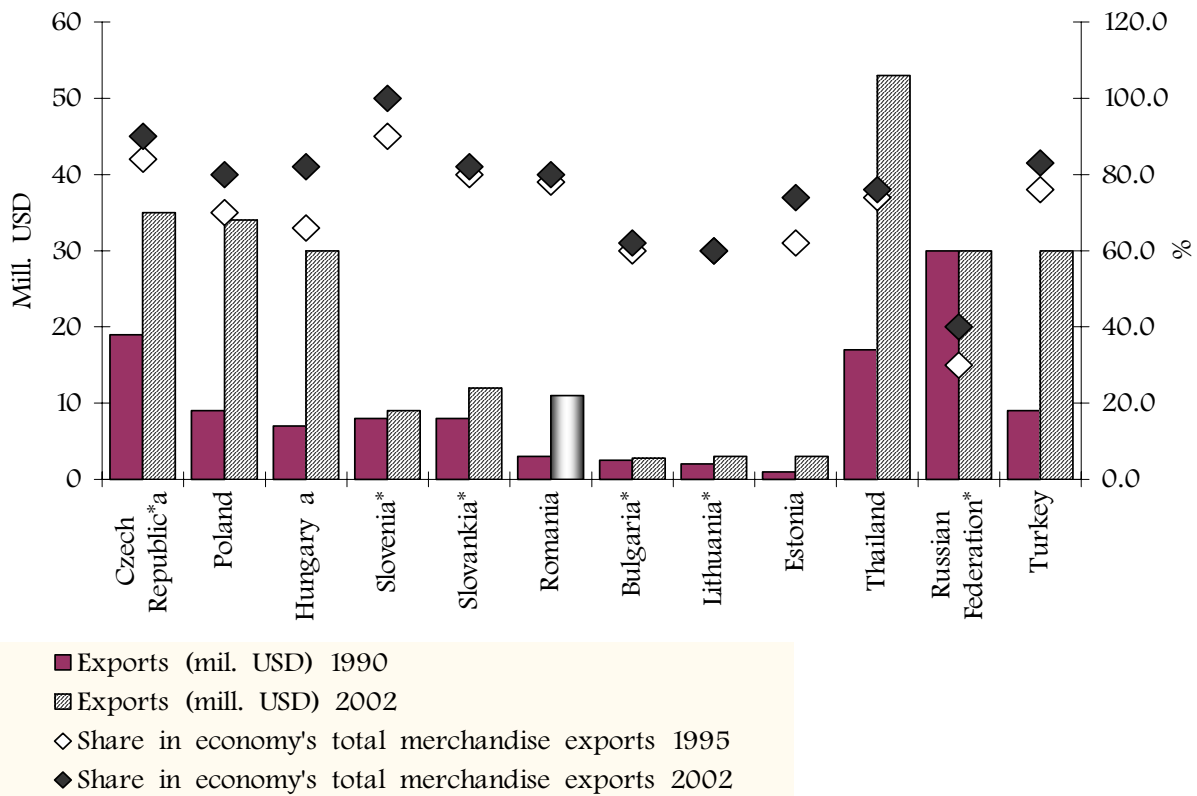
Source: World Investment Reports, 2003.

Figure B.1.3.
Comparisons of average annual export growth rates (1995–2002),
simple average MFN tariff (2001), GDP per capita (2002)
and stock of FDI per capita (2003) in EU and accession countries



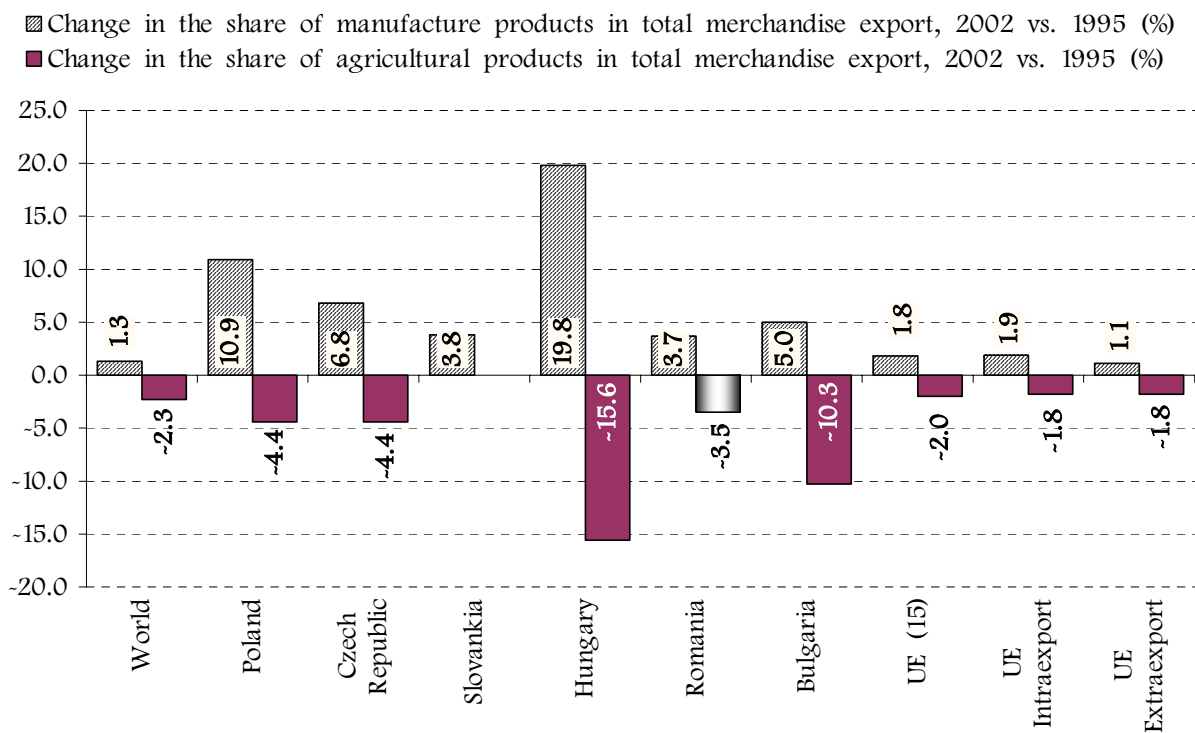
Source: WTO and WIIW databases, 2004.

Figure B.1.4.
Exports of manufactures and share in total merchandise exports of CEE countries, 1990–2002



* Exports in 1995 instead of 1990; ^a Includes significant exports from processing zones.
Source: World Trade Organization statistics, 2004.

Figure B.1.5.
Structural changes in exports of CEE countries, EU and world level, 2002 and 1995



* For Slovakia, the share of agricultural products in total merchandise exports in 1995 is lacking.
Source: World Trade Organization statistics, 2004.

Table B.1.1.
Specific aspects of trade performances in accession countries, 1990–2002

Foreign trade in manufactures and services, 1995–2002						
	USD million	USD	%	%	%	%
	Total trade (exports + imports)	Trade per capita (average, exports + imports)	Export growth rate	Annual average export growth rate	Import growth rate	Annual average import growth rate
	2000 - 2002	2000 - 2002	2002	1995-2002	2002	1995-2002
<i>Transition economies</i>	336,3	869	10	7	11	6
Poland	53,3	1379	14	9	12	7
Czech Republic	41,3	4031	15	9	13.6	6.4
Slovakia	16,0	2972	14	8	12	9
Hungary	39,1	3841	13	15	12	14
Romania	15,7	1357	17	10	12	11
Bulgaria	8,31	1024	12	1	9	5

Exports of manufactures, 1990–2002								
	Value (USD million)					Share of manufacture in total merchandise exports (%)		
	1990	1995	2000	2001	2002	1990	1995	2002
<i>World</i>	2391,00	3702,00	4685,00	4514,00	4708,00	70.4	73.8	75.1
Poland	8,47	16,27	25,32	29,09	33,60	59.1	71.0	81.9
Czech Republic	-	17,73	25,55	29,77	34,51	-	83.1	89.9
Slovakia	-	6,98	9,92	10,58	12,23	-	81.3	85.1
Hungary	6,28	8,70	24,49	26,39	30,02	62.8	67.6	87.4
Romania	3,60	6,12	7,95	9,19	11,24	72.6	77.4	81.1
Bulgaria	...	3,10	2,82	3,15	3,61	...	57.9	62.9
<i>EU (15)</i>	1203,33	1667,64	1901,18	1911,36	2002,74	79.8	80.0	81.8
<i>Intra-export</i>	771,74	1027,52	1154,71	1145,65	1190,28	78.8	77.0	78.9
<i>Extra-export</i>	431,60	640,12	746,47	765,71	812,46	81.6	85.4	86.5

Agricultural products (food and raw materials), 1990–2002								
	Value (Mil. USD)					Share of agricultural exports in total merchandise exports (%)		
	1990	1995	2000	2001	2002	1990	1995	2002
<i>World</i>	414610	583000	552240	554130	582530	12.2	11.6	9.3
Poland	2268	3036	3050	3392	3670	15.8	13.3	8.9
Czech Republic	-	2072	1901	1942	2049	-	9.7	5.3
Slovakia	-	-	-	-	-	-	-	-
Hungary	2558	3054	2445	2747	2774	25.6	23.7	8.1
Romania	184	783	829	840	881	3.7	9.9	6.4
Bulgaria	...	1304	605	605	812	...	24.4	14.1
<i>EU (15)</i>	175847	238990	218592	218091	233732	11.7	11.5	9.5
<i>Intra-export</i>	130571	174405	159790	160038	170270	13.3	13.1	11.3
<i>Extra-exports</i>	45276	64585	58900	58053	63462		8.6	6.8

Source: World Trade Organization, 2004

Table B.1.2.
Specific aspects of trade performance of accession countries on product group:
clothing, textiles and automotive products, 1990–2002

Clothing exports	Value (USD million)					Share in economy's total merchandise exports (%)	
	1990	1995	2000	2001	2002	1990	2002 ^a
<i>World</i>	108100	158300	196780	195030	200850	3.2	3.3
Poland	384	2304	1884	1949	1915	2.7	5.4
Czech Republic	-	515	634	652	645	-	2.0
Slovakia	-	257	516	573	633	-	4.5
Hungary	375	1032	1221	1342	1296	3.8	4.4
Romania	363	1360	2328	2774	3251	7.3	24.4
Bulgaria	...	236	698	793	1066	...	15.5
Lithuania	...	205	482	523	574	7.6*	10.3
Slovenia	...	659	390	377	327	7.9*	3.4
<i>UE (15)</i>	40782	48458	47421	47088	50452	2.7	2.1
<i>Intra-export</i>	29444	33518	32733	31335	23860	3.0	2.2
<i>Extra-export</i>	11338	14940	14688	15753	16592	2.1	1.8

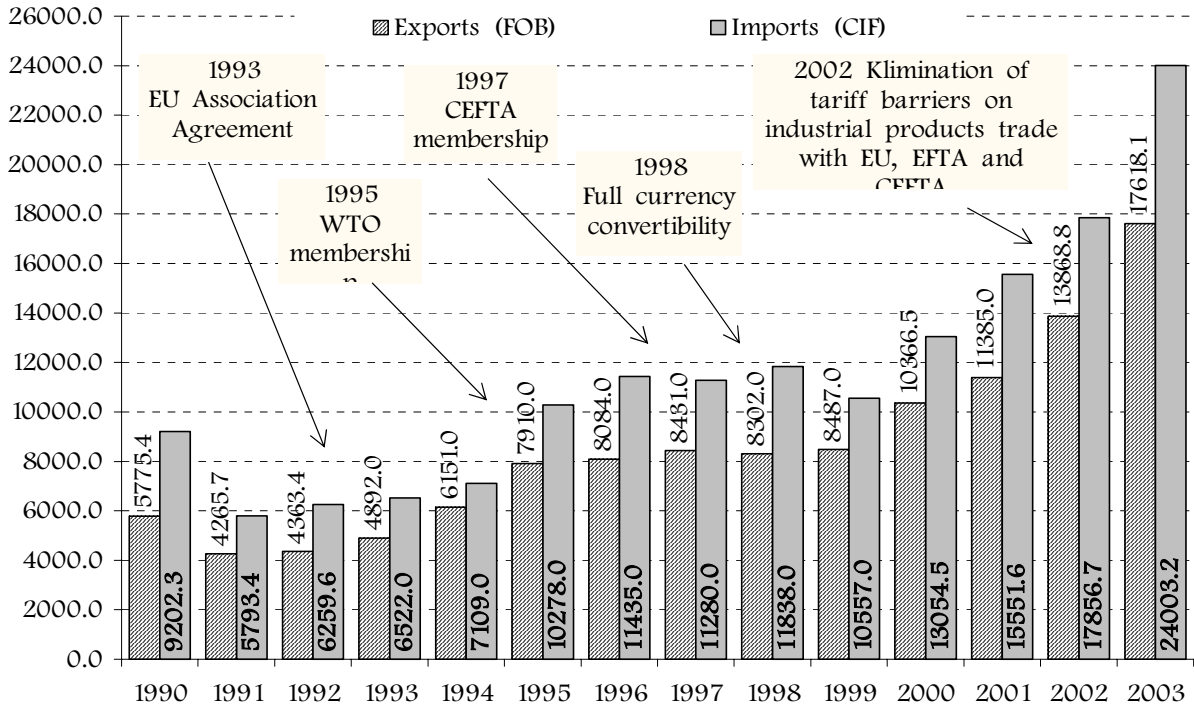
Textiles exports	Value (USD million)					Share in economy's total merchandise exports (%)		
	1990	1995	2000	2001	2002	1990	1995	2002 ^a
<i>World</i>	104330	151580	154740	146980	1521150	3.1	3.0	2.4
Poland	284	512	769	796	908	2.0	2.2	2.2
Czech Republic	-	1323	1218	1325	1368	-	6.2	3.6
Slovakia	-	375	319	341	388	-	4.4	2.7
Hungary	249	286	371	408	456	2.5	2.2	1.3
Romania	125	178	196	241	310	2.5	2.3	2.2
Bulgaria	...	173	121	117	125	...	3.2	2.2
Latvia	...	119	105	118	131	...	9.1	5.7
Lithuania	...	163	212	207	227	...	6.0	4.1
Slovenia	...	322	286	330	355	...	3.9	3.7
<i>UE (15)</i>	50795	62198	52923	51575	52052	3.4	3.0	2.1
<i>Intra-export</i>	35672	40218	31246	29419	28937	3.6	3.0	1.9
<i>Extra-export</i>	15123	21980	21677	22156	23115	2.9	2.9	2.5

Automotive products exports	Value (USD million)					Share in economy's total merchandise exports (%)		
	1990	1995	2000	2001	2002	1990	1995	2002 ^a
<i>World</i>	318960	456420	576750	569480	620920	9.4	9.1	9.9
Poland	374	996	3973	4228	5192	2.6	4.4	12.7
Czech Republic	-	1509	4665	5521	6403	-	7.1	16.7
Slovakia	-	344	2394	2273	2805	-	4.0	19.5
Hungary	648	659	4765	5323	5983	6.5	5.1	17.4
Romania	354	153	195	236	338	7.1	1.9	2.4
Bulgaria	-	-	-	-	-	-	-	-
Lithuania	-	91	126	282	564	-	3.4	10.1
Slovenia	-	970	1075	1083	1312	-	11.7	13.9
<i>UE (15)</i>	171579	235523	270116	275787	303297	11.4	11.3	12.4
<i>Intra-export</i>	125828	166324	186735	188227	201724	12.8	12.5	13.4
<i>Extra-export</i>	45751	69199	83381	87560	101573	8.6	9.2	10.8

* Refers to 1995. a The closest year.

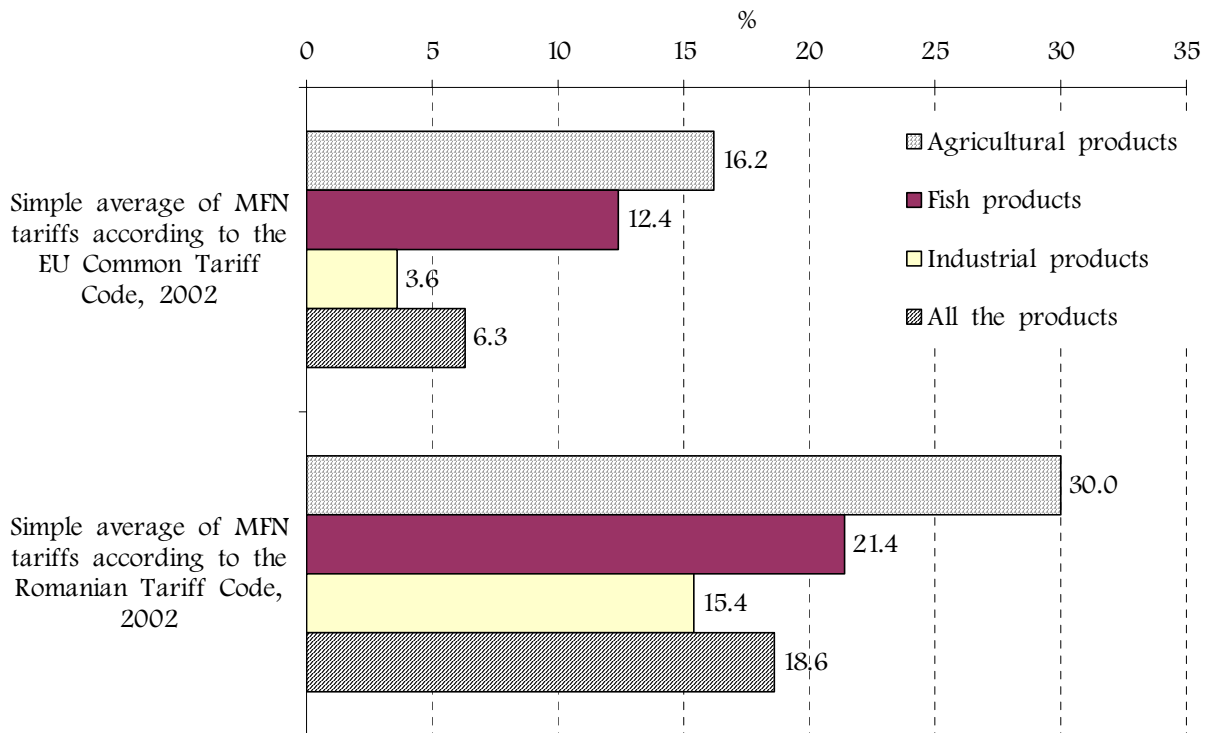
Source: World Trade Organization, 2004.

Figure B.1.6.
Romania's nominal total foreign trade (USD million), 1993–2003



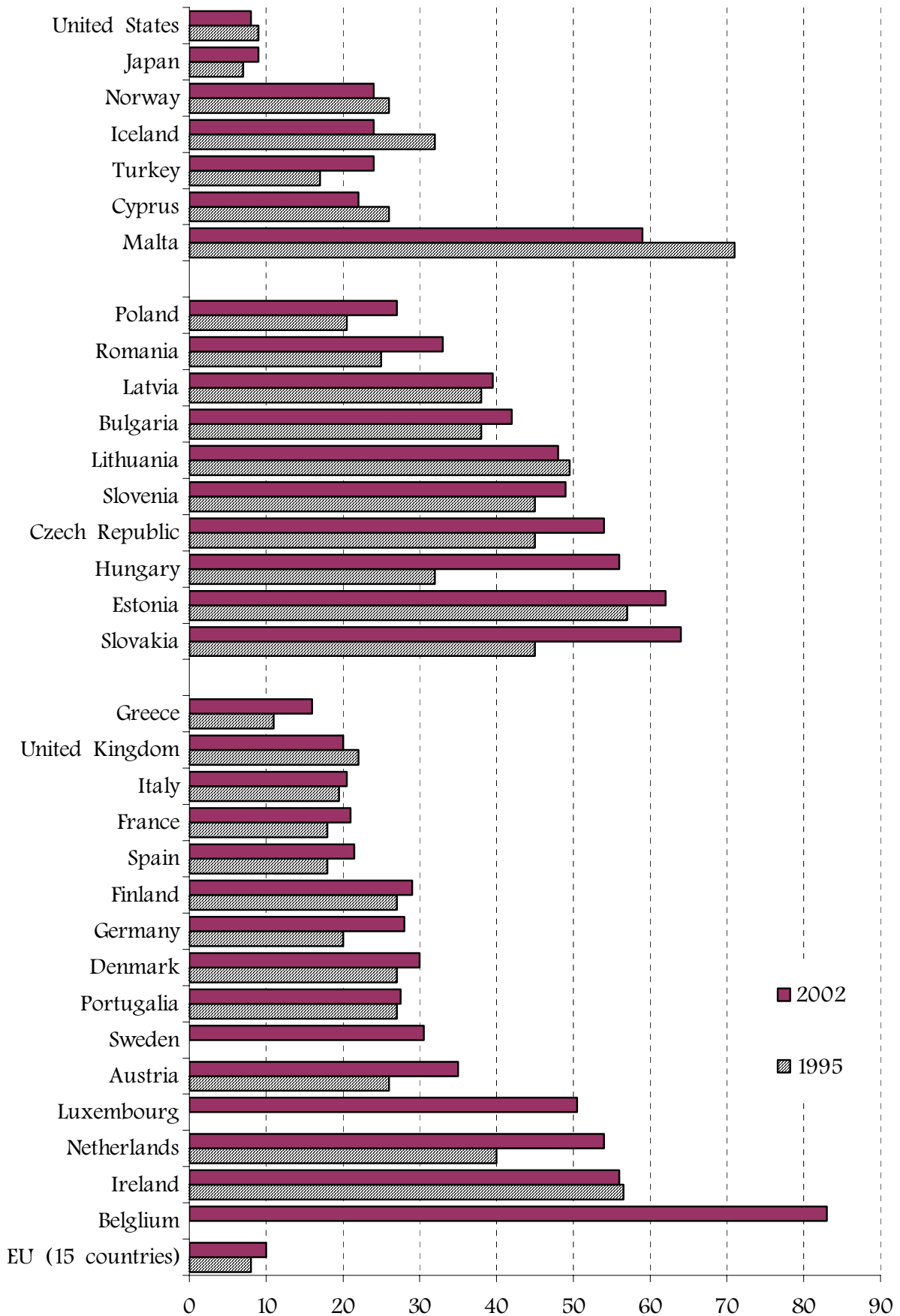
Source: Romanian National Bank statistics, 2003.

Figure B.1.7.
Trade asymmetries between Romania and EU: simple average MFN tariffs, 2002



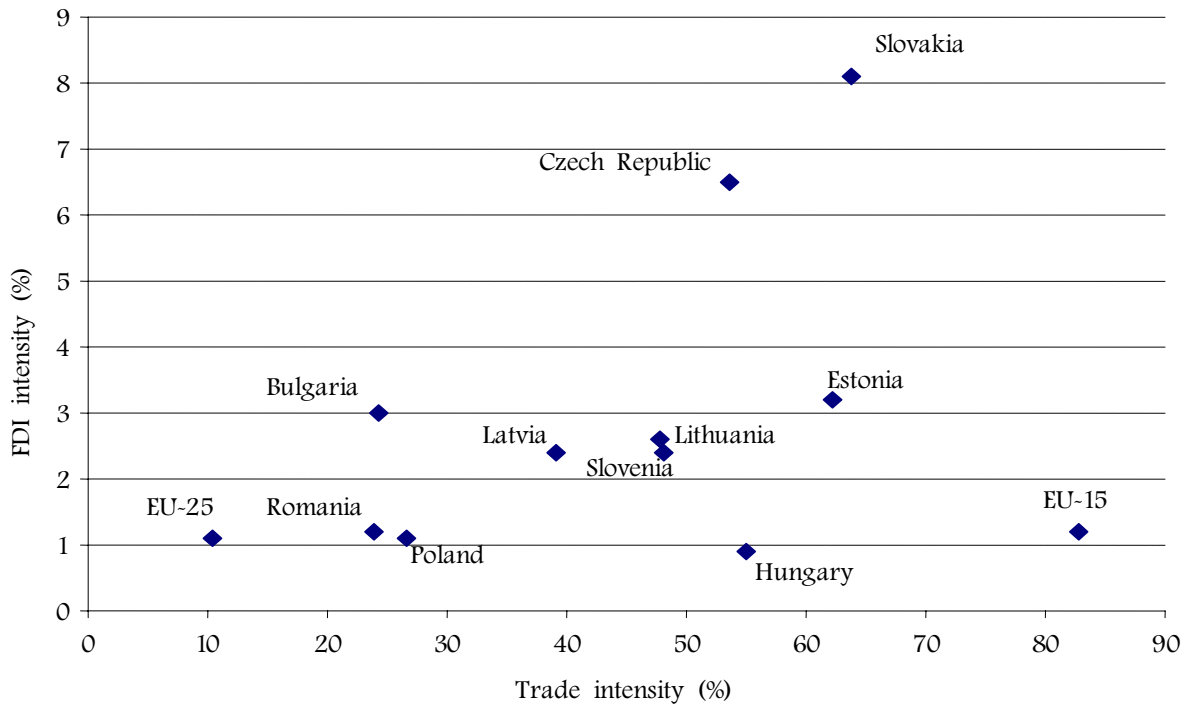
Source: European Commission report on the Romania's progress to EU accession, Brussels, 10.11.2003.

Figure B.1.8.
Trade openness in CEE countries and the EU, 1995 and 2002
($X+M/GDP$, %)



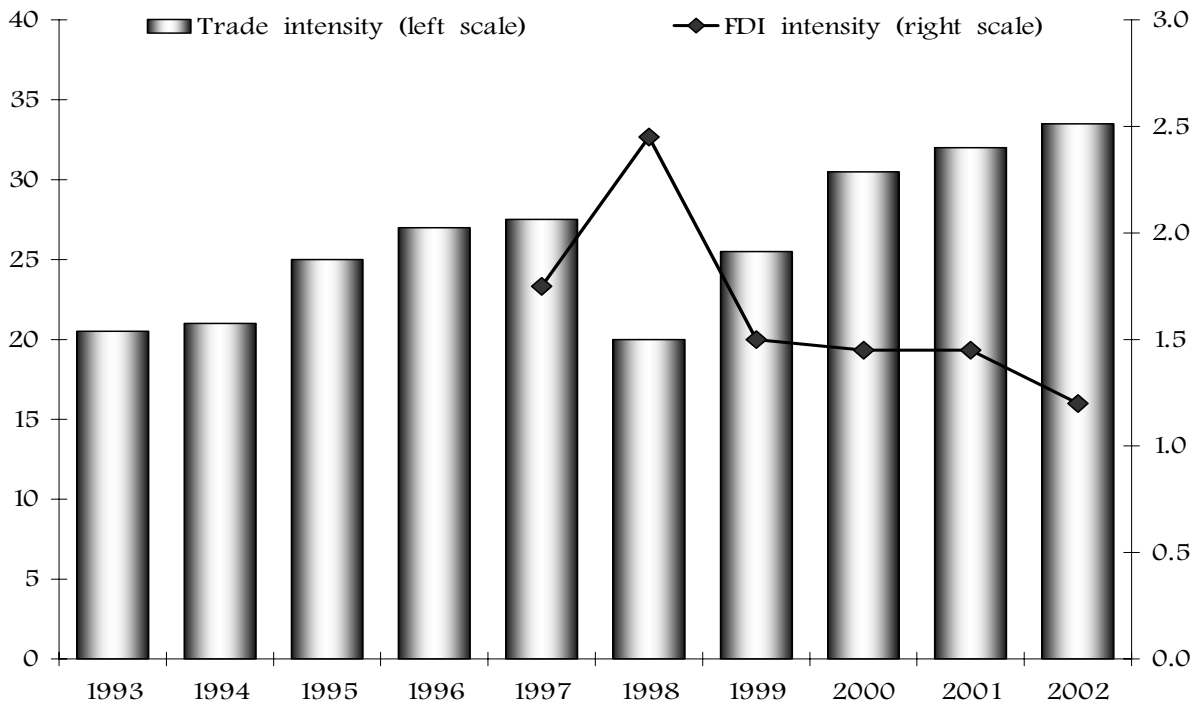
Source: Author's computations based on EUROSTAT statistics, 2004.

Figure B.1.9.
FDI intensity (FDI flows/GDP) vs. Trade openness in the CEEC and EU (%), 2002



Source: EUROSTAT statistics, 2004.

Figure B.1.10.
Total FDI and trade intensity/openness dynamics in Romania, 1993–2002, %



FDI intensity = average of inward and outward FDI flows divided by gross domestic product. Trade intensity = average of imports and exports of the item goods of the balance of payments divided by GDP.

Source: EUROSTAT statistics, 2004.

B.2. Business environment in CEE countries

Table B.2.1.
Business Competitiveness Index in CEE countries, 1998–2003

Country	BCI ranking in a sample of 80 countries						Company operations and strategy ranking						Quality of the national business environment ranking						GDP per capita ranking	GDP per capita (PPP-adjusted)
	2003	2002	2001	2000	1999	1998	2003	2002	2001	2000	1999	1998	2003	2002	2001	2000	1999	1998		
Estonia	28	30	28	—	—	—	36	36	32	—	—	—	27	28	26	—	—	—	33	11,712
Latvia	29	45	41	—	—	—	29	48	35	—	—	—	31	42	42	—	—	—	42	8,965
Slovenia	30	27	32	—	—	—	27	26	28	—	—	—	34	27	35	—	—	—	27	17,748
Czech Republic	35	34	34	34	41	30	33	34	41	41	55	31	38	34	31	34	36	33	29	15,148
Hungary	38	28	27	32	33	31	45	29	33	34	36	39	37	29	25	31	33	31	30	13,129
Lithuania	40	40	50	—	—	—	41	39	47	—	—	—	41	39	47	—	—	—	38	10,015
Slovakia	42	42	40	36	48	36	44	43	57	31	51	40	42	40	36	36	47	37	31	12,426
Poland	46	46	42	41	37	41	43	46	55	36	38	38	44	45	40	41	38	40	36	10,187
Romania	67	67	61	—	—	—	72	69	63	—	—	—	64	64	60	—	—	—	49	6,909
Bulgaria	68	68	68	55	54	—	73	72	70	54	52	—	67	63	65	54	54	—	53	6,326

* Porter's 2002 GDP rankings and PPP-adjusted values for Bulgaria and Romania have been altered to conform with national, WIIW and European Commission statistics.

Source: Porter, M., 2004.

B.3. Romanian trade pattern with EU

Table B.3.1.
Specific aspects of trade performance of accession countries with EU: export and import growth and geographical concentration index with EU 15, 1990–2002

Exports EU:

	Exports growth: 1995–1990		Exports growth: 2002–1995		Territorial concentration index with EU-15* in 2002	
	(%)	Ranking	(%)	Ranking	(%)	Rank
Hungary	180.39	5.	445.07	1.	25.62	2.
Czech Republic	193.47	4.	392.84	2.	31.08	1.
Slovakia			377.23	3.	24.26	5.
Lithuania			366.13	4.	16.27	9.
Latvia			336.95	5.	17.22	8.
Estonia			322.01	6.	21.77	7.
Romania	217.60	2.	294.36	7.	21.97	6.
Poland	208.83	3.	244.28	8.	25.26	3.
Bulgaria	250.00	1.	220.00	9.	15.82	10.
Slovenia			150.99	10.	24.56	4.

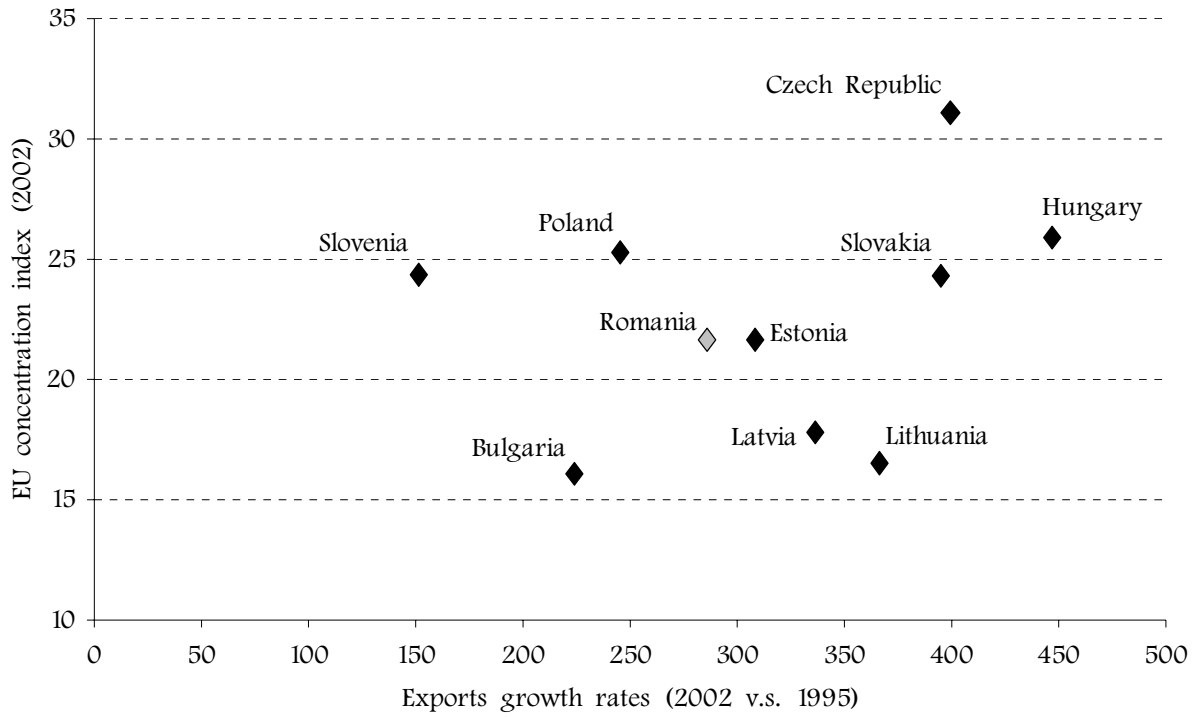
Imports from EU:

	Imports growth: 1995–1990		Imports growth: 2002–1995		Territorial concentration index with EU 15* in 2002	
	(%)	Ranking	(%)	Ranking	(%)	Ranking
Lithuania			347.39	1.	18.78	7.
Slovakia			345.18	2.	24.54	2.
Latvia			328.41	3.	16.43	10.
Hungary	219.17	3.	309.40	4.	23.34	3.
Romania	231.9	2.	273.43	5.	21.31	4.
Czech Republic	197.32	4.	264.27	6.	31.86	1.
Bulgaria	113.87	5.	264.15	7.	16.79	9.
Poland	395.61	1.	251.58	8.	20.19	5.
Estonia			229.23	9.	16.86	8.
Slovenia			154.48	10.	19.12	6.

* The territorial concentration index is relative to the EU 15 as partners, using the Hirschmann concentration ratio: $TCI_{exp} = \sum(x_i/X)^2$ and $TCI_{imp} = \sum(m_i/M)^2$, $i = 1, \dots, 15$ where: x_i = share of exports to the EU country i in the total exports to EU; m_i = share of imports from the EU country i in the total imports from EU.

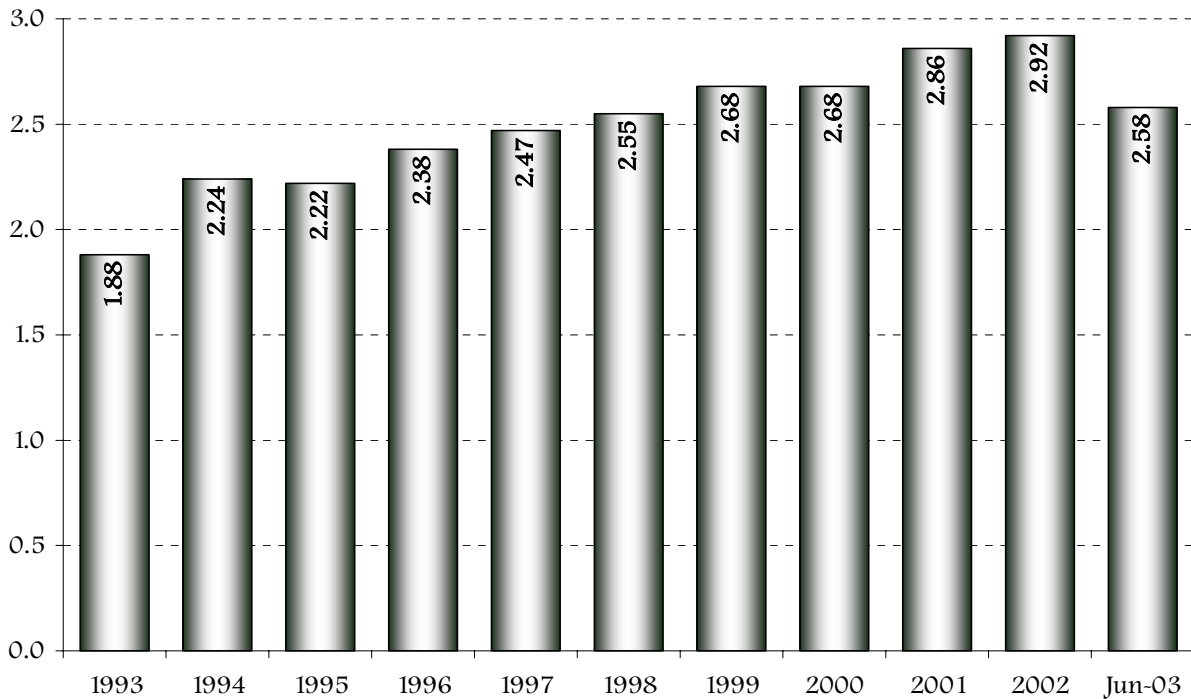
Source: Author's computations based on EUROSTAT statistics: External and intra-European Union trade, 2003 and 2004.

Figure B.3.1.
CEE countries' export growth to EU, 1995–2002,
compared with the EU countries' concentration index, 2002



Source: Author's computations based on Table B.3.1.

Figure B.3.2.
Romania's trade intensity with the EU, 1993–2003



* Trade intensity is estimated as: $TI = (x_{EU}/X_R)/(m_{EU}/M_W)$, i.e. share of Romanian exports to EU share of EU imports in world imports.

Source: Author's computations based on EUROSTAT statistics: External and Intra-European Trade, 2004.

Table B.3.2.
Geographical trade concentration and shares of main country groups in Romania's foreign trade, 1988–2003

	Merchandise exports						Merchandise imports					
	Geographical concentration of exports (HEXP, %)	EU	EFTA	European transition economies	CEFTA	Russian Federation	Geographical concentration of imports (HIMP, %)	EU	EFTA	European transition economies	CEFTA	Russian Federation
1988	-	28.49	-	19.17	-	21.74	-	13.77	-	24.66	-	31.58
1989	-	32.91	-	17.41	-	22.64	-	13.85	-	22.08	-	31.48
1990	-	33.88	-	15.67	-	24.62	-	21.78	-	17.89	-	23.12
1991	30.16	36.94	1.70	33.18	5.66	22.71	22.78	28.72	2.32	28.99	6.36	17.84
1992	25.60	35.17	2.39	24.77	3.68	9.50	27.42	41.28	2.13	26.24	5.07	12.75
1993	30.90	41.36	2.59	14.97	3.12	4.51	28.96	45.31	2.48	21.19	3.99	11.72
1994	34.34	48.20	0.91	13.21	4.20	3.37	31.41	48.21	2.31	22.99	3.92	13.84
1995	39.15	54.15	0.98	10.37	3.17	2.00	32.53	50.45	2.26	21.16	4.69	11.96
1996	40.08	56.51	0.82	11.01	3.64	2.03	34.21	52.35	1.87	21.02	4.73	12.52
1997	38.91	56.55	1.28	12.60	4.07	2.97	34.48	52.51	1.47	21.60	5.69	12.02
1998	46.31	64.53	1.22	10.60	4.44	0.98	39.38	57.69	1.34	21.11	8.79	8.97
1999	46.84	65.54	1.16	11.08	7.03	0.55	41.58	60.67	1.37	18.19	9.21	6.67
2000	44.86	63.84	0.98	13.21	8.18	0.86	37.98	56.60	1.40	20.49	9.21	8.58
2001	49.21	67.81	1.12	11.10	7.09	0.73	38.73	57.35	1.29	20.36	9.88	7.61
2002	48.71	67.06	1.35	9.25	6.36	0.29	39.60	58.37	1.15	19.70	9.92	7.20
2003	-	67.70	-	-	7.30	-	-	57.70	-	-	10.70	-

* Hirschmann concentration ratio: $HEXP = \sum (x_i/X)^2$; $HIMP = \sum (m_i/M)^2$, where i = country groups ($i = 1, \dots, 6$; the 5 presented in the table, the rest of the world being the sixth). $0 < H < 100\%$, the higher the index, the higher the concentration of trade.

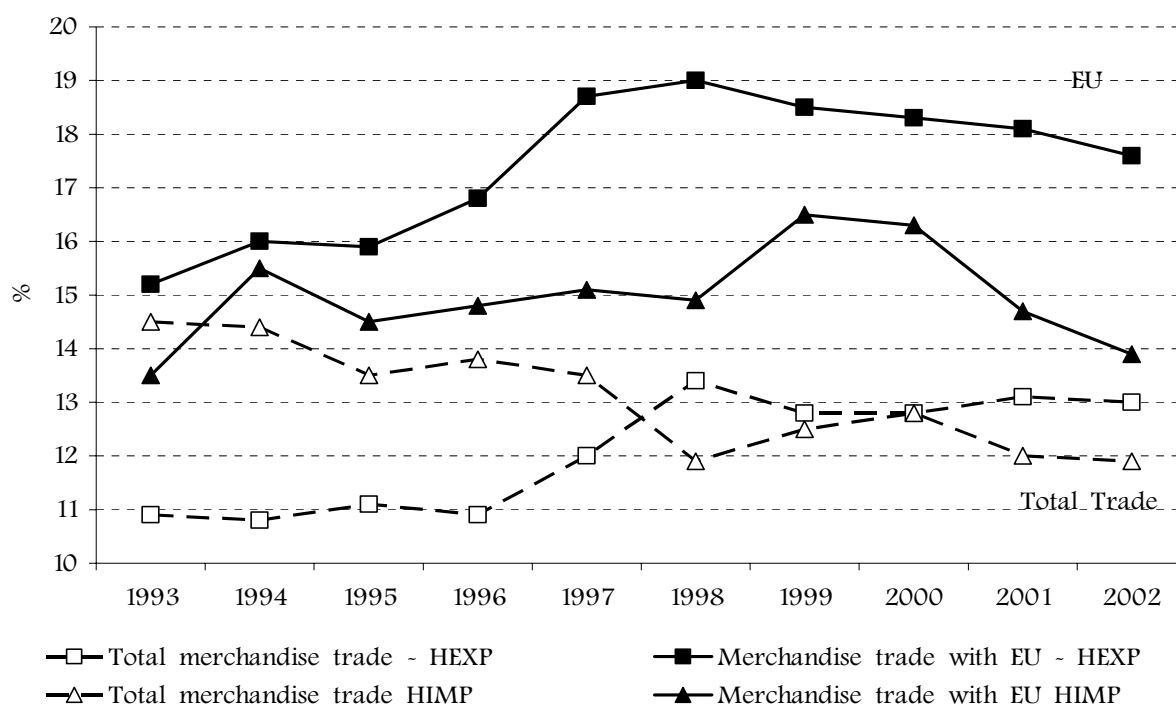
Source: Author's computations based on Romanian National Bank statistics and Ministry of Industry and Foreign Trade database, 2004.

Table B.3.3.
Indicators of Romania's foreign trade with EU, 1993–2003

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
EU share in the merchandise exports (%)	41.4	48.2	54.2	56.5	56.5	64.5	65.5	63.8	67.8	67.1	67.7
EU share in the merchandise imports (%)	45.3	48.2	50.5	52.3	52.5	57.7	60.7	56.6	57.3	58.4	57.7
Coverage ratio (X/M, %)	68.5	86.5	82.6	76.3	80.5	78.5	88.7	89.6	86.6	89.2	86.1
Trade deficit with EU (USD million)	932	462	903	1417	1154	1471	710.5	770	1198.3	1121.5	1922.3
Share of industrial products in the trade deficits (%)	63.1	76.2	80.6	87.4	90.8	85.6	89.2	82.6	87.1	80.2	-
Share of agricultural products in the trade deficits (%)	36.9	23.8	19.4	12.6	9.2	14.4	10.8	17.4	12.9	19.8	-
Trade intensity (share of Romania's exports to EU/share of EU imports in world imports)	1.88	2.24	2.22	2.38	2.47	2.55	2.68	2.68	2.86	2.92	-
Hirschmann specialization index of exports to EU (HEXP= $\sum(x_i/X)^2$)	15.2	16.0	15.9	16.7	18.7	19.0	18.5	18.3	18.2	17.6	-
Hirschmann specialization index of imports from EU (HEXP= $\sum(m_i/M)^2$)	13.5	16.5	14.6	14.8	15.1	14.9	16.5	16.3	14.7	13.9	-

Source: Author's computations based on Romanian National Bank and EUROSTAT statistics, 2003 and 2004.

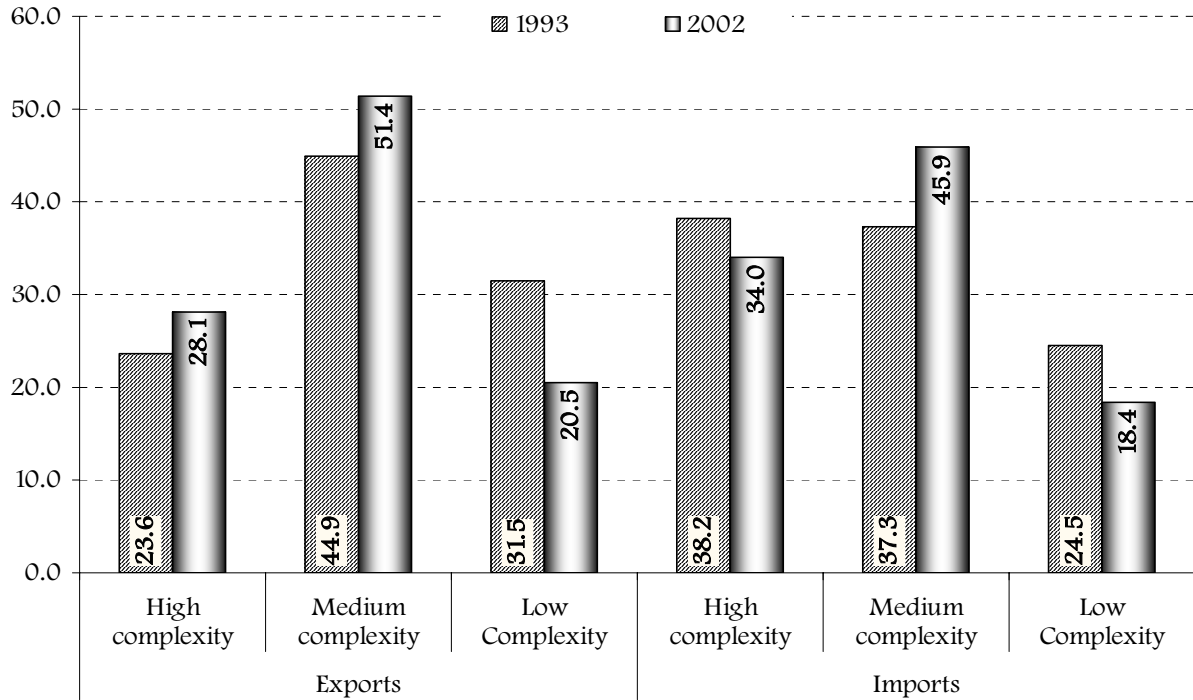
Figure B.3.3.
Romanian trade specialization/concentration with EU, 1993–2002



Hirschmann concentration ratio: $HEXP = \sum(x_i/X)^2$ and $HIMP = \sum(m_i/M)^2$, $i = 1, \dots, XII$, where: x_i = share of group i of products in total exports to EU; m_i = share of group i of products in total imports from EU.

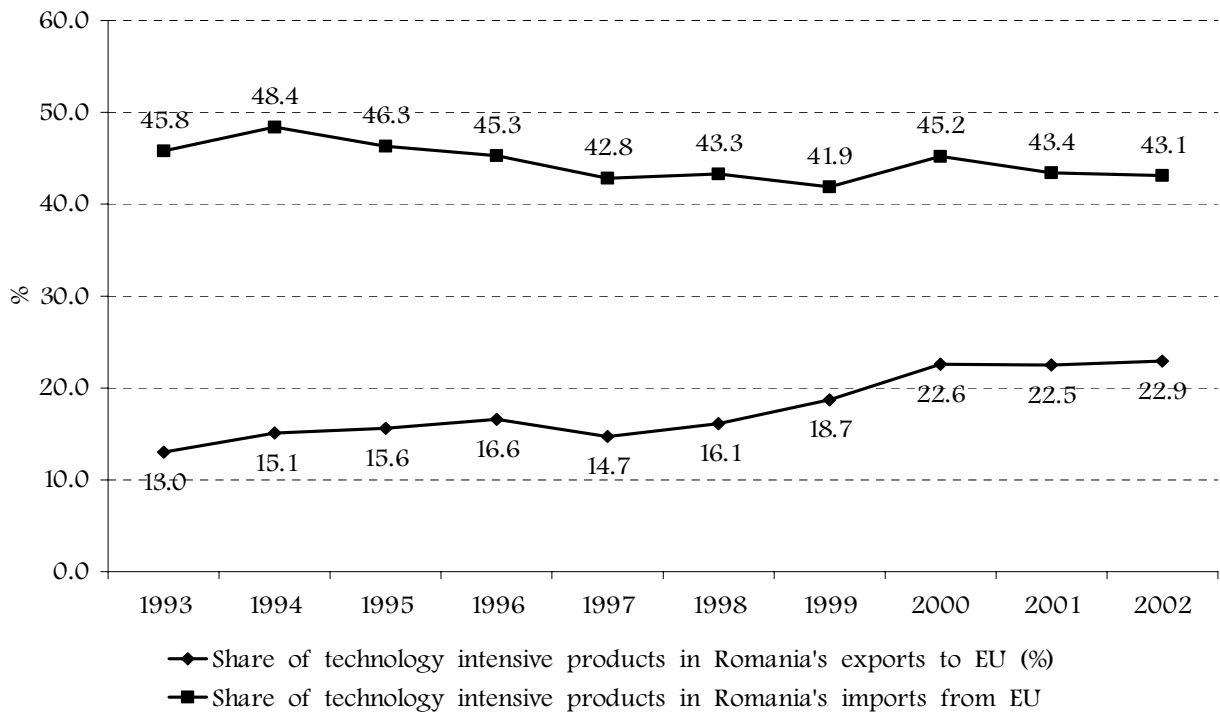
Source: Author's computations based on Romanian National Bank statistics, 2003.

Figure B.3.4.
Technological structural changes in Romania's trade with the EU, 1993–2002



Technology classification in line with National Programme for Romanian Foreign Trade Development in 2003, developed by the Ministry of Development and Forecasting: high complexity: XVI, XVII, XVIII, XX; medium complexity: IV, VI, VII, X, XI, XII, XX; low complexity: I, II, III, V, VIII, IX, XV, XIII.
Source: Author's computations based on Romanian National Bank statistics, 2003.

Figure B.3.5.
Share of technology-intensive products in Romania's trade with the EU, 1993–2002



Technology classification in line with Krauss, who split tradable products into four categories: natural resource-intensive, unskilled labour-intensive, human capital intensive, and technology intensive. The last includes machines and equipment (XVI), means of transportation (XVII), optical, medical instruments (XVIII) and chemical products (VI).

Source: Author's computations based on Romanian National Bank statistics, 2003

Table B.3.4.
Structure of Romanian trade with EU: shares of products groups, 1993–2002

USD million		I. Live animals and animal products	II. Vegetal products	III. Animal or vegetal fats and oil	IV. Food, beverages, tobacco	V. Mineral products	VI. Chemical products	VII. Plastics, rubber and articles thereof	VIII. Raw hides and skins, leather, furskins and articles thereof	IX. Wood and wood products, other than furniture	X. Pulp of wood, paper, paper-board	XI. Textiles and textile articles	XII. Footwear, hradgear, umbrellas and other similar products	XIII. Articles of stone, plastics, glass, cement, ceramics	XV. Base metals and articles	XVI. Machines and equipment	XVII. Vehicles and associated transport equipment	XVIII. Optical, photographic, cinematographic, medical or surgical instruments, clocks and musical instruments and components	XX. Miscellaneous manufactured articles, inc. furniture	XXII. Products not elsewhere		
		Exports FOB																				
1993	2.023.0	1.6	1.8	0.7	1.4	10.7	3.7	1.8	1.3	2.1	0.3	31.0	6.4	2.9	10.4	6.5	2.5	0.3	14.3	0.2		
1994	2.965.0	1.7	1.5	0.1	1.1	6.6	4.7	2.0	1.3	1.9	0.4	33.1	9.5	2.5	11.5	7.6	2.5	0.3	11.5	0.2		
1995	4.283.0	1.3	1.2	0.3	0.9	3.5	4.5	2.7	1.0	1.9	0.7	31.2	9.3	2.4	17.0	7.8	3.0	0.3	10.7	0.3		
1996	4.569.0	1.2	1.1	0.0	1.1	4.2	3.9	2.4	0.9	1.9	0.5	33.4	10.3	2.1	14.8	8.7	3.7	0.3	9.3	0.1		
1997	4.768.0	1.3	1.2	0.0	0.9	2.1	3.1	2.3	1.0	2.2	0.4	36.0	11.0	2.1	16.5	8.6	2.6	0.4	8.3	0.1		
1998	5.358.0	1.0	1.1	0.1	0.6	2.0	2.0	2.1	1.0	2.7	0.3	36.4	11.1	2.0	15.8	10.2	3.5	0.4	7.4	0.3		
1999	5.571.4	1.2	1.9	0.1	0.6	1.0	1.5	1.9	1.0	4.0	0.3	36.1	11.8	1.8	12.1	12.1	4.6	0.5	8.0	0.4		
2000	6.618.4	1.1	0.9	0.0	0.5	0.9	2.0	2.1	1.2	3.4	0.5	34.3	11.6	1.6	12.4	16.2	3.9	0.5	7.5	0.3		
2001	7.720.1	1.2	1.2	0.0	0.7	2.5	1.5	1.9	1.5	2.9	0.7	35.1	12.4	1.5	9.0	16.1	4.4	0.5	6.6	0.4		
2002	9.301.1	1.0	1.0	0.0	0.5	5.4	1.3	2.2	1.6	2.9	0.6	34.4	12.1	1.4	7.2	16.1	5.0	0.5	6.5	0.3		
		Imports CIF																				
1993	2.955.0	0.9	9.4	0.4	4.6	4.5	9.5	3.5	2.7	0.6	1.6	17.2	1.0	1.2	4.8	27.2	6.0	3.1	1.9	0.1		
1994	3.427.0	0.9	1.3	0.4	4.3	2.7	9.4	3.8	3.5	0.5	2.2	20.2	1.5	1.3	5.2	32.0	4.0	3.0	2.6	1.1		
1995	5.186.0	0.9	0.7	0.4	4.5	3.8	10.0	3.9	3.7	0.8	2.6	19.6	1.7	1.5	5.7	28.8	3.7	3.8	2.6	1.3		
1996	5.986.0	0.7	0.9	0.3	3.8	4.3	9.9	4.1	4.0	0.5	2.7	19.3	1.8	1.6	6.5	29.3	3.2	2.9	2.6	1.7		
1997	5.922.0	0.5	0.8	0.4	2.8	3.5	9.5	4.2	4.3	0.6	2.7	22.8	2.2	1.5	5.8	27.6	3.2	2.5	2.6	2.4		
1998	6.829.0	1.1	0.8	0.5	2.9	2.2	9.5	4.3	4.2	0.4	2.6	23.1	2.3	1.4	5.9	27.0	4.3	2.5	2.4	2.5		
1999	6.281.9	0.8	0.9	0.3	2.6	1.5	10.1	4.8	4.6	0.6	2.7	26.6	2.6	1.4	6.1	26.4	2.5	2.9	1.4	1.4		
2000	7.388.4	1.0	0.9	0.3	1.9	1.7	9.3	4.9	4.7	0.5	2.4	24.3	2.5	1.4	5.8	28.2	4.9	2.8	1.4	1.2		
2001	8.918.4	1.5	0.8	0.2	1.9	2.0	8.8	5.5	5.5	0.5	2.4	23.6	2.5	1.5	6.4	25.2	6.8	2.6	1.3	1.1		
2002	10.422.6	1.6	0.6	0.4	1.7	1.2	9.8	6.4	5.6	0.6	2.6	23.1	2.3	1.5	6.9	23.8	7.2	2.3	0.7	1.5		

Source: Author's computations based on Romanian National Bank statistics, 2004.

Table B.3.5.
Revealed comparative advantage in Romania's foreign trade with EU, 1993–2002

	I. Live animals and animal products	II. Vegetal products	III. Animal or vegetal fats and oil	IV. Food, beverages, tobacco	V. Mineral products	VI. Chemical products	VII. Plastics, rubber and articles thereof	VIII. Raw hides and skins, leather, furskins and articles thereof	IX. Wood and wood products, other than furniture	X. Pulp of wood, paper, paperboard	XI. Textiles and textile articles	XII. Footwear, hradgear, umbrellas and other similar products	XIII. Articles of stone, plastics, glass, cement, ceramics	XV. Base metals and articles	XVI. Machines and equipment	XVII. Vehicles and associated transport equipment	XVIII. Optical, photographic, cinematographic, medical or surgical instruments, clocks and musical instruments and components	XX. Miscellaneous manufactured articles, inc. furniture	XXII. Products not elsewhere
	IACRt = RCAt/100																		
1993	0.55	-1.67	0.45	-1.20	0.88	-0.96	-0.66	-0.75	1.17	-1.66	0.59	1.81	0.90	0.78	-1.43	-0.86	-2.19	2.04	1.30
1994	0.57	0.14	-1.87	-1.35	0.90	-0.70	-0.65	-0.95	1.30	-1.61	0.49	1.84	0.63	0.80	-1.44	-0.46	-2.30	1.48	-1.86
1995	0.41	0.59	-0.36	-1.58	-0.07	-0.81	-0.38	-1.34	0.88	-1.26	0.47	1.70	0.44	1.09	-1.30	-0.21	-2.53	1.42	-1.62
1996	0.60	0.23	-2.62	-1.25	-0.03	-0.95	-0.53	-1.52	1.28	-1.77	0.55	1.73	0.31	0.83	-1.21	0.13	-2.17	1.30	-2.95
1997	0.94	0.42	-2.27	-1.16	-0.53	-1.12	-0.60	-1.44	1.33	-1.85	0.46	1.59	0.29	1.04	-1.16	2.07	-1.94	1.16	-2.97
1998	-0.08	0.33	-2.09	-1.65	-0.08	-1.56	-0.71	-1.45	1.82	-2.09	0.45	1.56	0.31	0.98	-0.98	-0.21	-1.72	1.11	-2.11
1999	0.46	0.76	-0.87	-1.56	-0.44	-1.91	-0.92	-1.50	1.93	-2.08	0.31	1.51	0.26	0.69	-0.78	0.60	-1.71	1.76	-1.30
2000	0.11	0.00	-3.32	-1.34	-0.66	-1.52	-0.86	-1.32	1.82	-1.64	0.34	1.54	0.13	0.75	-0.56	-0.22	-1.71	1.79	-1.33
2001	-0.26	0.41	-1.73	-1.02	0.19	-1.80	-1.09	-1.27	1.68	-1.27	0.40	1.62	-0.05	0.34	-0.45	-0.44	-1.64	1.73	-1.10
2002	-0.54	0.50	-5.10	-1.29	1.50	-2.00	-1.08	-1.24	1.51	-1.54	0.40	1.66	-0.12	0.04	-0.39	-0.36	-1.50	1.73	-1.40

$$RCAt = \ln \left[\frac{x_{it} / m_{it}}{X_t / M_t} \right] * 100$$

The revealed comparative advantage index is calculated as $RCAt = \ln \left[\frac{x_{it} / m_{it}}{X_t / M_t} \right] * 100$ where: x_{it} , =, exports of group of products i in the year t ; X_t , =, total exports in the year t ; m_{it} , =, imports of group of products i in the year t ; M_t , =, total imports in the year t ;

Source: Author's computations based on Romanian National Bank statistics, 2004.

Table B.3.6.
Intra/inter-industry trade estimation with Grubel–Lloyd index, in Romania’s foreign trade with EU, 1993–2002

	Total (balanced two-way trade with goods)	Total (unbalanced)	I. Live animals and animal products	II. Vegetal products	III. Animal or vegetal fats and oil	IV. Food, beverages, tobacco	V. Mineral products	VI. Chemical products	VII. Plastics, rubber and articles thereof	VIII. Raw hides and skins, leather, furskins and articles thereof	IX. Wood and wood products, other than furniture	X. Pulp of wood, paper, paperboard	XI. Textiles and textile articles	XII. Footwear, hradgear, umbrellas and other similar products	XIII. Articles of stone, plastics, glass, cement, ceramics	XV. Base metals and articles	XVI. Machines and equipment	XVII. Vehicles and associated transport equipment	XVIII. Optical, photogra- phic, cinematic, medical or surgical instruments, clocks and musical instruments and components	XX. Miscellaneous manufactured articles, incl. furniture	XXII. Products not elsewhere
IGL																					
1993	0.55	0.81	0.92	0.23	0.96	0.34	0.76	0.42	0.52	0.49	0.62	0.23	0.89	0.39	0.74	0.80	0.28	0.45	0.14	0.32	0.57
1994	0.58	0.93	0.79	1.00	0.24	0.37	0.64	0.60	0.62	0.50	0.48	0.30	0.83	0.31	0.76	0.68	0.34	0.70	0.16	0.42	0.24
1995	0.59	0.90	0.89	0.80	0.73	0.29	0.87	0.54	0.72	0.35	0.67	0.38	0.86	0.36	0.88	0.58	0.37	0.80	0.12	0.45	0.28
1996	0.61	0.87	0.84	0.98	0.11	0.36	0.85	0.46	0.62	0.29	0.53	0.23	0.86	0.38	0.98	0.73	0.37	0.93	0.16	0.53	0.08
1997	0.51	0.89	0.65	0.90	0.15	0.40	0.64	0.42	0.61	0.32	0.49	0.22	0.88	0.40	0.96	0.61	0.40	0.27	0.21	0.56	0.08
1998	0.62	0.88	0.84	0.96	0.18	0.26	0.84	0.28	0.56	0.31	0.34	0.18	0.89	0.42	0.97	0.65	0.46	0.78	0.25	0.59	0.17
1999	0.63	0.94	0.83	0.69	0.54	0.31	0.72	0.23	0.52	0.33	0.28	0.20	0.91	0.40	0.93	0.72	0.58	0.76	0.28	0.33	0.39
2000	0.66	0.95	1.00	0.94	0.06	0.38	0.63	0.33	0.55	0.39	0.31	0.30	0.88	0.39	0.99	0.69	0.68	0.84	0.28	0.32	0.38
2001	0.68	0.93	0.80	0.87	0.27	0.48	0.98	0.25	0.45	0.39	0.35	0.39	0.87	0.37	0.90	0.90	0.71	0.72	0.29	0.34	0.45
2002	0.66	0.94	0.68	0.81	0.01	0.40	0.40	0.21	0.46	0.41	0.40	0.32	0.86	0.35	0.88	0.96	0.75	0.77	0.33	0.33	0.36

The unbalanced and balanced two-way trade Grubel-Lloyd indices between Romania and EU are calculated as $IGLit = 1 - \frac{|Xi - Mi|}{Xi + Mi}$ and $IGLit = 1 - \frac{\sum |Xi - Mi|}{\sum (Xi + Mi)}$ where X and M are exports of a country and imports by a partner correspondingly of product i.
Source: Author’s computations based on Romanian National Bank statistics, 2004

Table B.3.7.
Intra-industry trade estimation with Overlap Index, in Romania's foreign trade with EU, 1993–2002

	Totla	I. Live animals and animal products	II. Vegetal products	III. Animal or vegetal fats and oil	IV. Food, beverages, tobacco	V. Mineral products	VI. Chemical products	VII. Plastics, rubber and articles therof	VIII. Raw hides and skins, leather, furskins and articles thereof	IX. Wood and wood products, other than furniture	X. Pulp of wood, paper, paperboard	XI. Textiles and textile articles	XII. Footwear, Iradgear, umbrellas and other similar products	XIII. Articles of stone, plastics, glass, cement, ceramics	XV. Base metals and articles	XVI. Machines and equipment	XVII. Vehicles and associated transport equipment	XVIII. Optical, photogra- phic, cinematographic, medical or surgical instruments, clocks and musical instruments and components	XX. Miscellaneous manufactured articles, incl. furniture	XXII. Products not elsewhere
	OI																			
1993	0.68	0.84	0.13	0.93	0.21	0.61	0.26	0.35	0.33	0.45	0.13	0.81	0.24	0.59	0.67	0.16	0.29	0.08	0.19	0.40
1994	0.87	0.65	1.00	0.13	0.22	0.47	0.43	0.45	0.34	0.32	0.17	0.71	0.18	0.61	0.52	0.20	0.54	0.09	0.26	0.14
1995	0.83	0.81	0.67	0.58	0.17	0.77	0.37	0.56	0.22	0.50	0.23	0.76	0.22	0.78	0.41	0.23	0.67	0.07	0.29	0.16
1996	0.76	0.72	0.96	0.06	0.22	0.74	0.30	0.45	0.17	0.36	0.13	0.76	0.23	0.96	0.57	0.23	0.87	0.09	0.36	0.04
1997	0.81	0.48	0.82	0.08	0.25	0.48	0.26	0.44	0.19	0.33	0.13	0.79	0.25	0.93	0.44	0.25	0.16	0.12	0.39	0.04
1998	0.78	0.73	0.92	0.10	0.15	0.72	0.16	0.39	0.18	0.21	0.10	0.81	0.27	0.93	0.48	0.30	0.64	0.14	0.42	0.10
1999	0.89	0.71	0.53	0.37	0.19	0.57	0.13	0.35	0.20	0.16	0.11	0.83	0.25	0.87	0.57	0.41	0.62	0.16	0.19	0.24
2000	0.90	1.00	0.90	0.03	0.23	0.46	0.20	0.38	0.24	0.18	0.17	0.79	0.24	0.98	0.53	0.51	0.72	0.16	0.19	0.24
2001	0.87	0.67	0.77	0.15	0.31	0.95	0.14	0.29	0.24	0.22	0.24	0.77	0.23	0.82	0.82	0.55	0.56	0.17	0.20	0.29
2002	0.89	0.52	0.68	0.01	0.25	0.25	0.12	0.30	0.26	0.25	0.19	0.75	0.21	0.79	0.93	0.61	0.62	0.20	0.20	0.22

The overlap index is calculated as $OI = \min(Xit; Mit) / \max(Xit; Mit)$.

Source: Author's computations based on Romanian National Bank statistics, 2004.

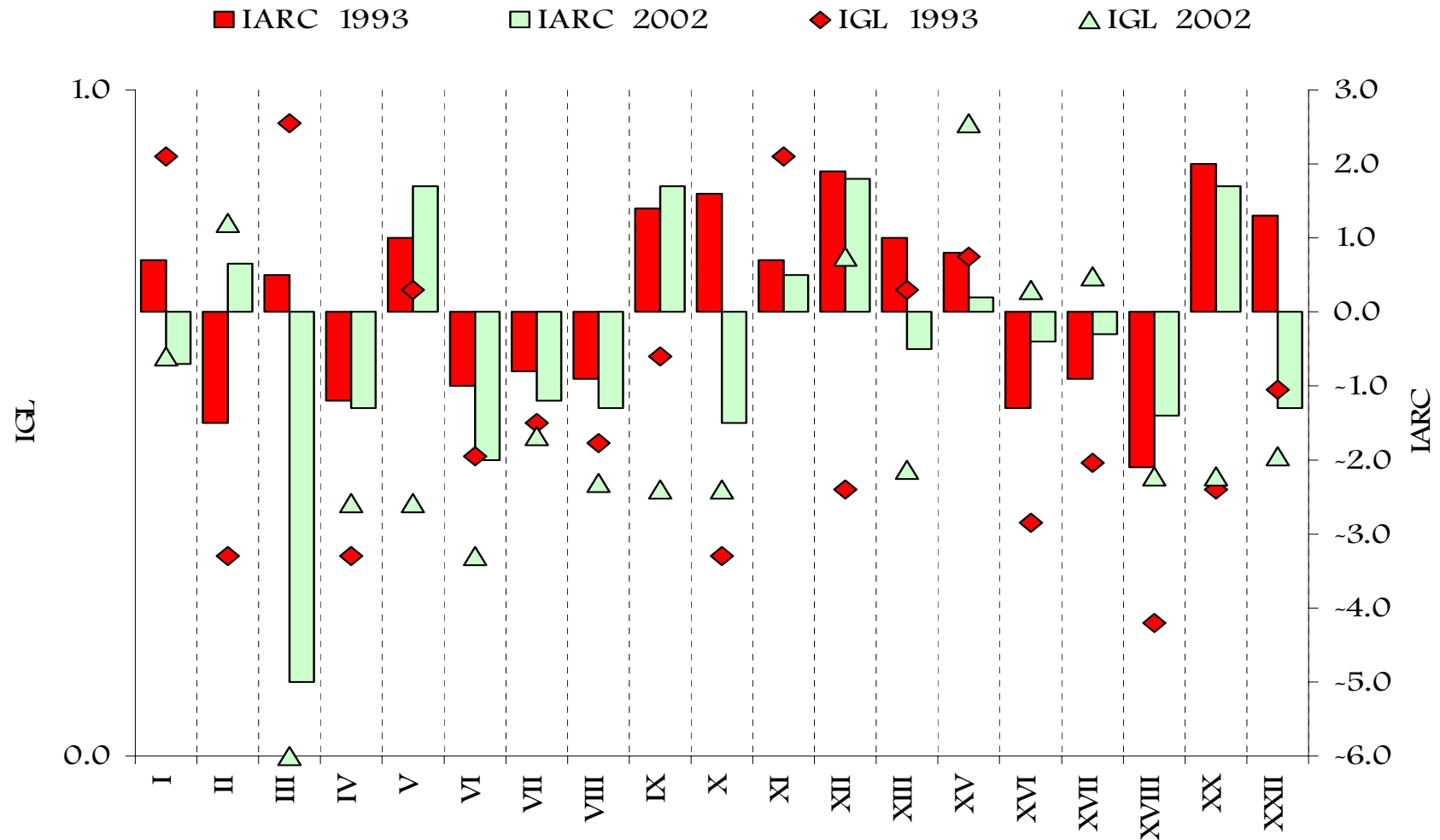
Table B.3.8.
Types of trade flows between Romania and EU, 2002

Prevalence of two-way flows (%)							Prevalence of one-way flows (%)								
Industries	High Overlap Index (OI)	High Grubel-Lloyd Index (IGL)	Low, positive revealed comparative advantage (IARC)	Low, negative revealed comparative advantage (IARC)	Share in total exports to EU	Share in total imports from EU	Industries	Low Overlap Index (OI)	Low Grubel-Lloyd Index (IGL)	High, positive revealed comparative advantage (IARC)	High, negative revealed comparative advantage (IARC)	Share in total exports to EU	Share in total imports from EU		
II.	0.68	0.81	+ 0.50		1.0	0.6	V.	0.25	0.40	+ 1.50		5.4	1.2		
XI.	0.75	0.86	+ 0.40		34.4	23.1	IX.	0.25	0.40	+ 1.51		2.9	0.6		
XV.	0.93	0.96	+ 0.04		7.2	6.9	XII.	0.21	0.35	+ 1.66		12.1	2.3		
<i>Total share of trade with positive RCA</i>					42.6	30.6	XX.	0.20	0.33	+ 1.73		6.5	0.7		
					<i>Total share of trade with a positive RCA</i>							26.9	4.8		
I.	0.52	0.68		- 0.54	1.0	1.6	III.	0.01	0.01		- 5.10	0.0	0.4		
XIII.	0.79	0.88		- 0.12	1.4	1.5	IV.	0.25	0.40		- 1.29	0.5	1.7		
XVI.	0.61	0.75		- 0.39	16.1	23.8	VI.	0.12	0.21		- 2.00	1.3	9.8		
XVII.	0.62	0.77		- 0.36	5.0	7.2	VII.	0.30	0.46		- 1.08	2.2	6.4		
<i>Total share of trade with negative RCA</i>					23.5	34.1	VIII.	0.26	0.41		-1.24	1.6	5.6		
												0.6	2.6		
												0.5	2.3		
												0.3	1.5		
					<i>Total share of trade with a negative RCA</i>							6.9	30.5		
<i>Total share of prevalence two-way flow trade in total trade</i>					66.1	64.7	<i>Total share of prevalence one-way flow trade in total trade</i>							33.9	35.3

I. Live animals and animal products; II. Vegetal products; III. Animal or vegetal fats and oil; IV. Food, beverages, tobacco; V. Mineral products; VI. Chemical products; VII. Plastics, rubber and articles thereof; VIII. Raw hides and skins, leather, fur skins and articles thereof; IX. Wood and wood products, other than furniture; X. Pulp of wood, paper, paperboard; XI. Textiles and textile articles; XII. Footwear, headgear, umbrellas and other similar products; XIII. Articles of stone, plastics, glass, cement, ceramics; XV. Base metals and articles; XVI. Machines and equipment; XVII. Vehicles and associated transport equipment; XVIII. Optical, photographic, cinematographic, medical or surgical instruments, clocks and musical instruments and components; XX. Miscellaneous manufactured articles, inc. furniture; XXII. Products not elsewhere.

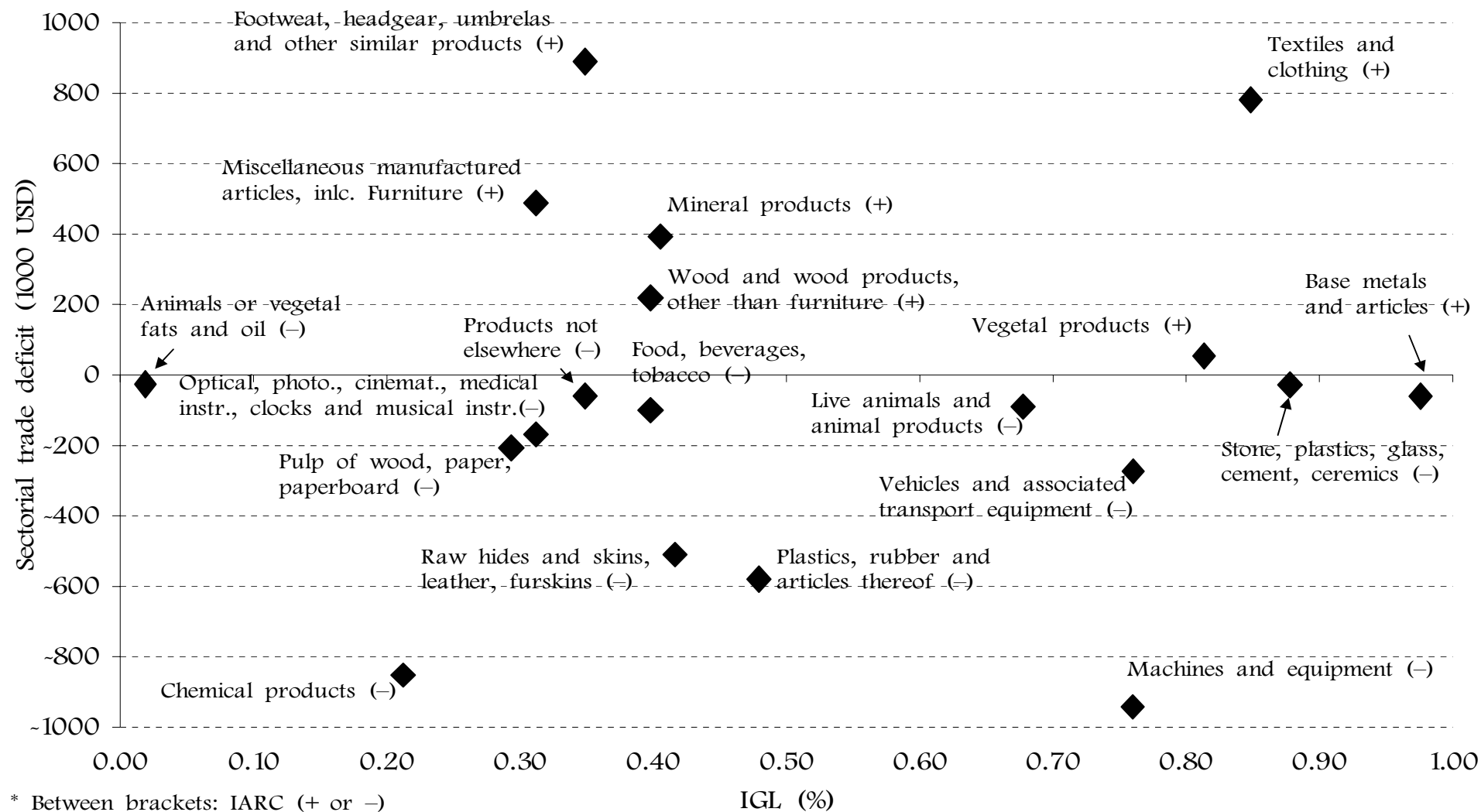
Source: Author's computations based on table B.3.5, B.3.6., B.3.7.

Figure B.3.6.
Romanian trade competitiveness relative to EU: Grubel-Lloyd index (IGL) and Revealed Comparative Advantage Index, 1993–2002



Source: Author's computations based on Romanian National Bank statistics, 2004.

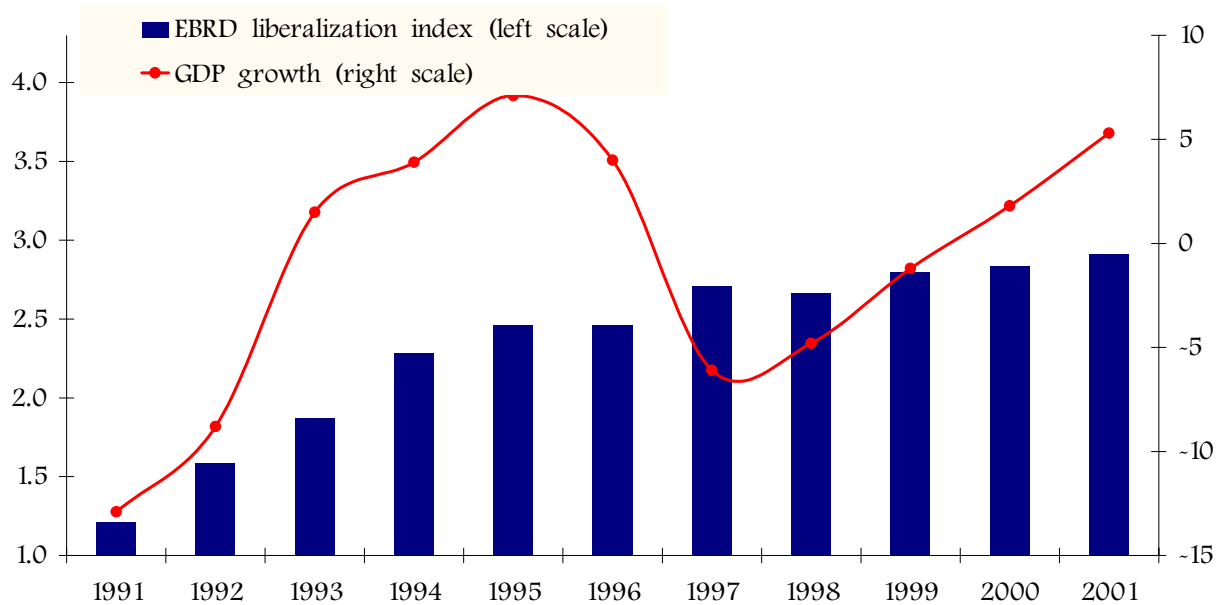
Figure B.3.7.
Romanian intra-industry trade (IGL) relative to sectoral trade surplus/deficit with EU, 2002



Source: Author's computations based on Romanian National Bank statistics, 2004

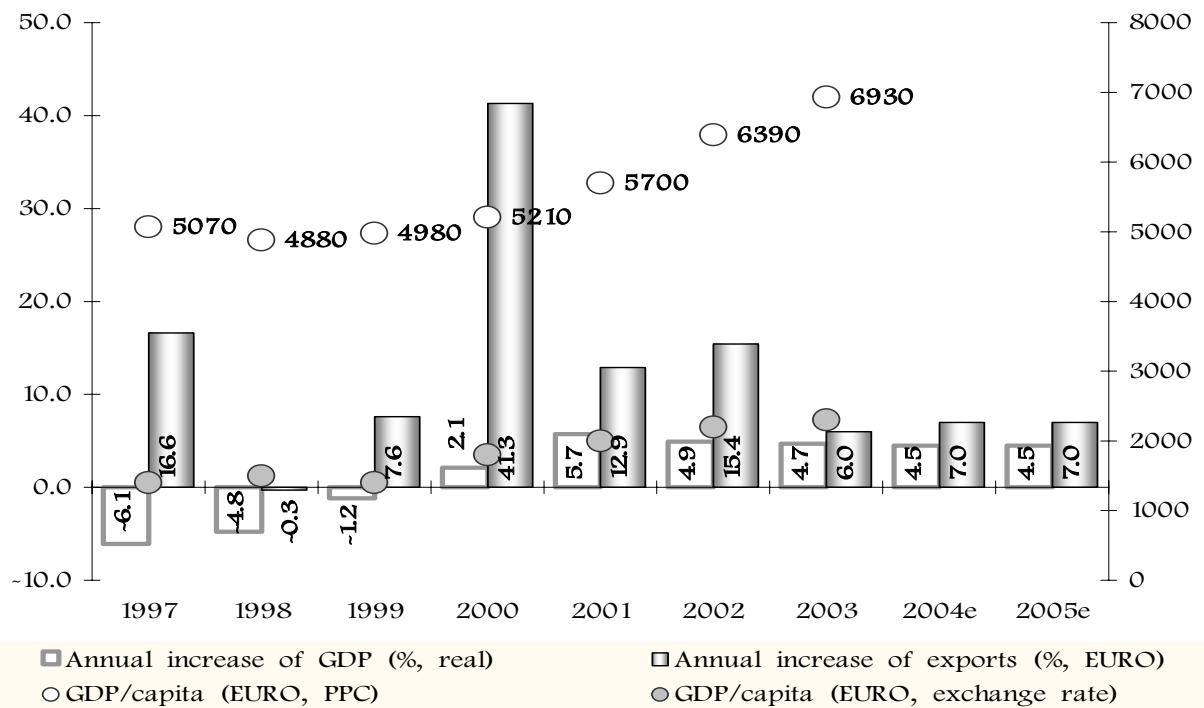
C) Trade approach vs. development approach

Figure C.1.
EBRD liberalization index and GDP real annual growth in Romania (1989 = 100), 1991–2001



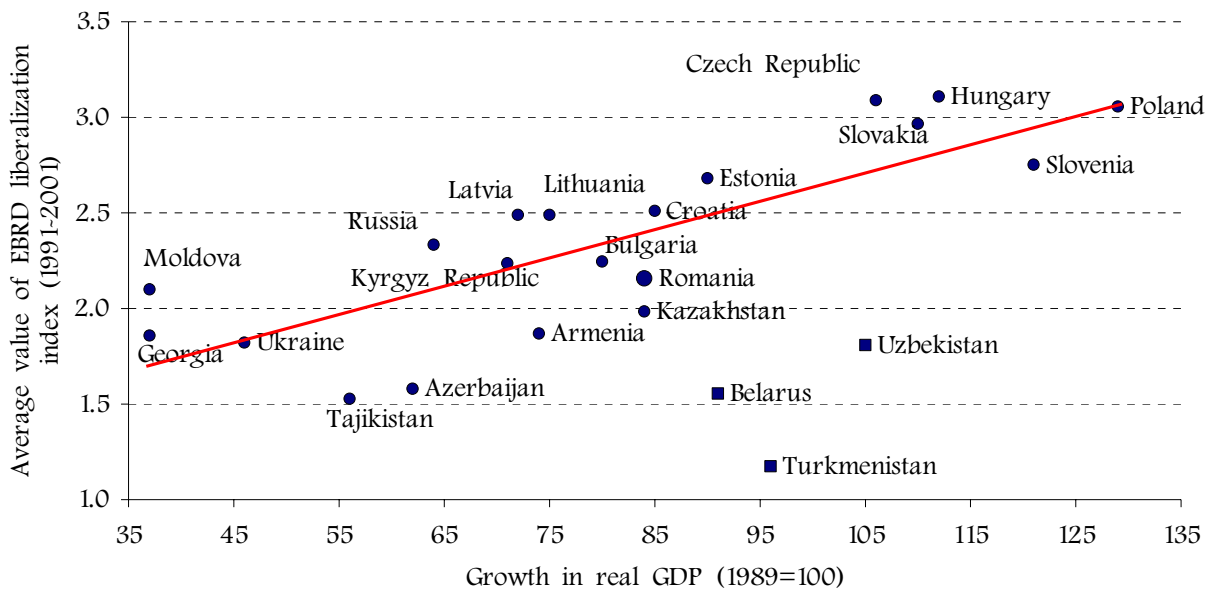
Source: EBRD Transition Reports, 2002.

Figure C.2.
Trade vs. GDP dynamics in Romania, 1997–2005



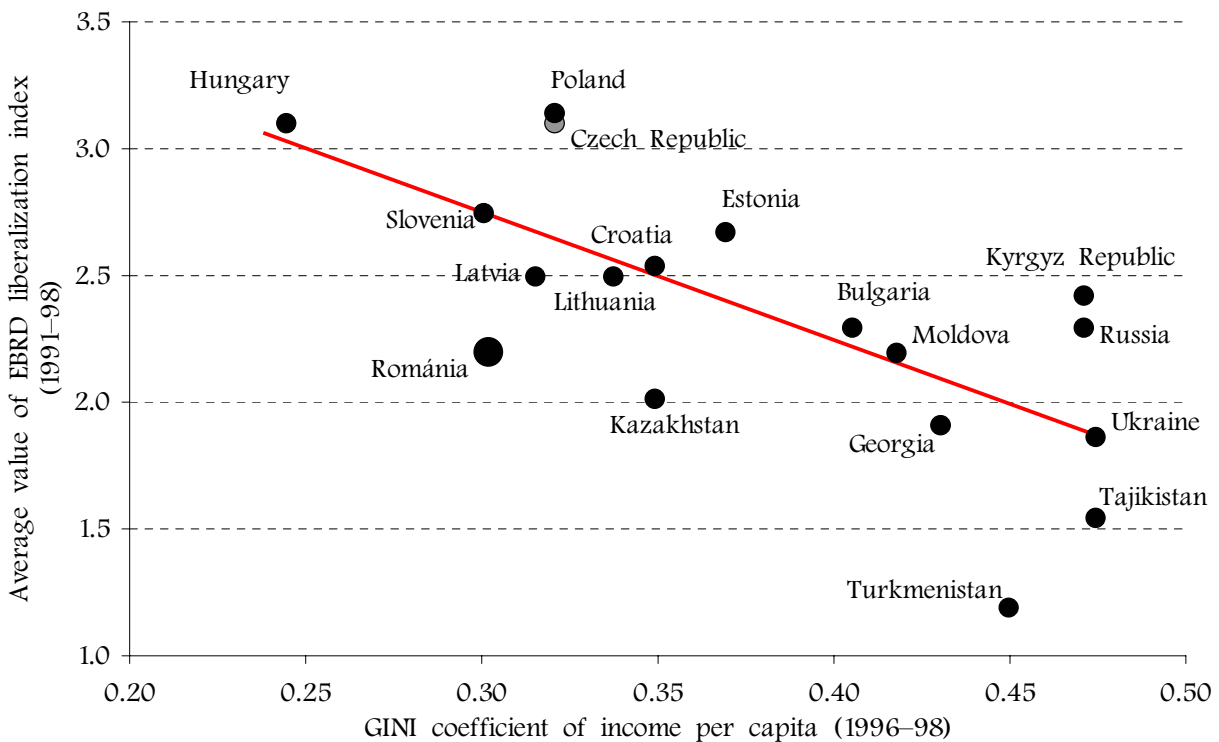
Source: WIIW Statistics, 2004

Figure C.3.
Growth in real GDP (1989 = 100) and average value of EBRD liberalization index (1991–2001)



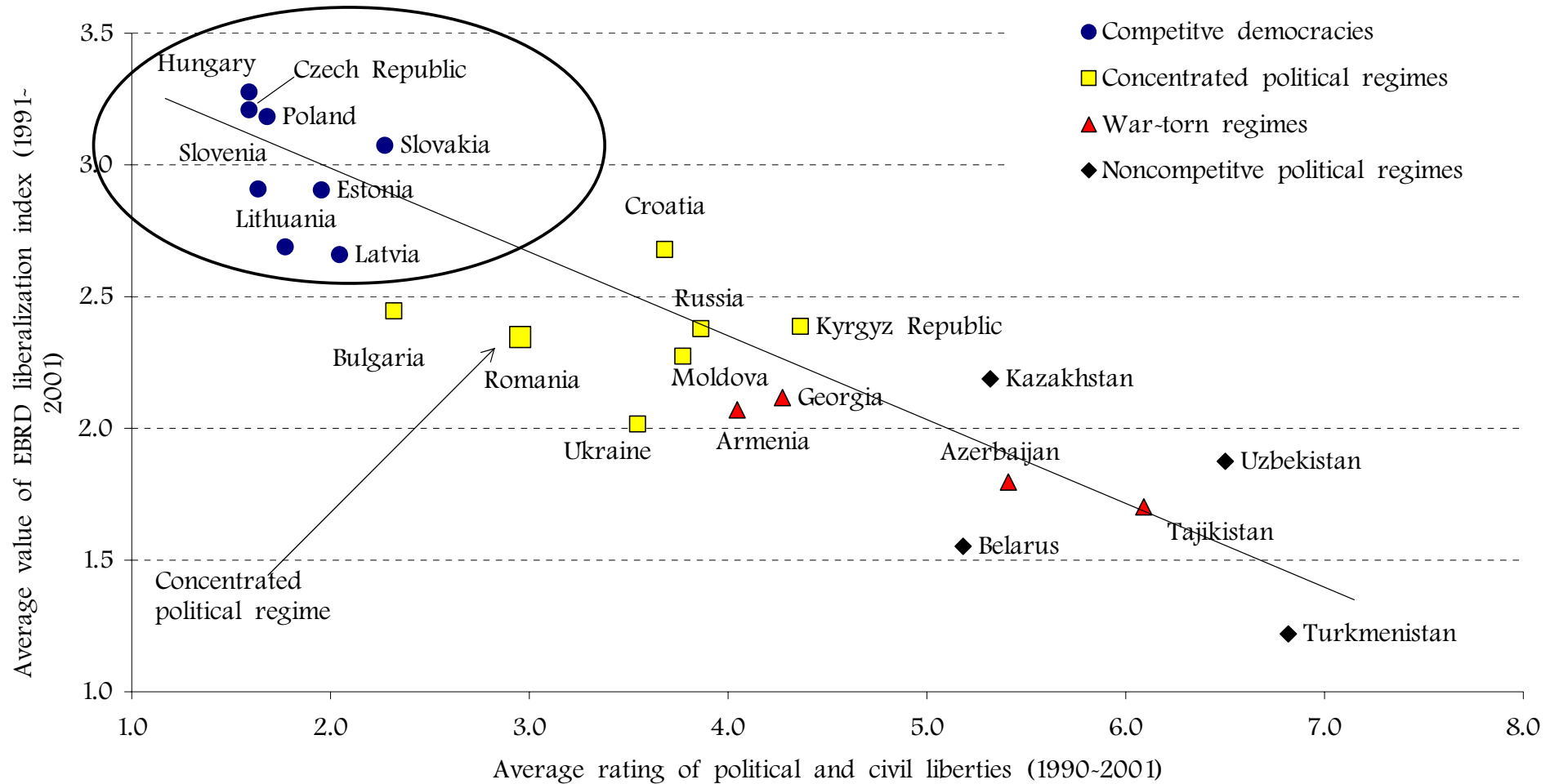
■ Countries excluded from the regression due to the questionable quality of statistical data.
Source: EBRD Transition Report 2002.

Figure C.4.
Gini coefficient (1996–8) and average value of EBRD liberalization index (1991–8)



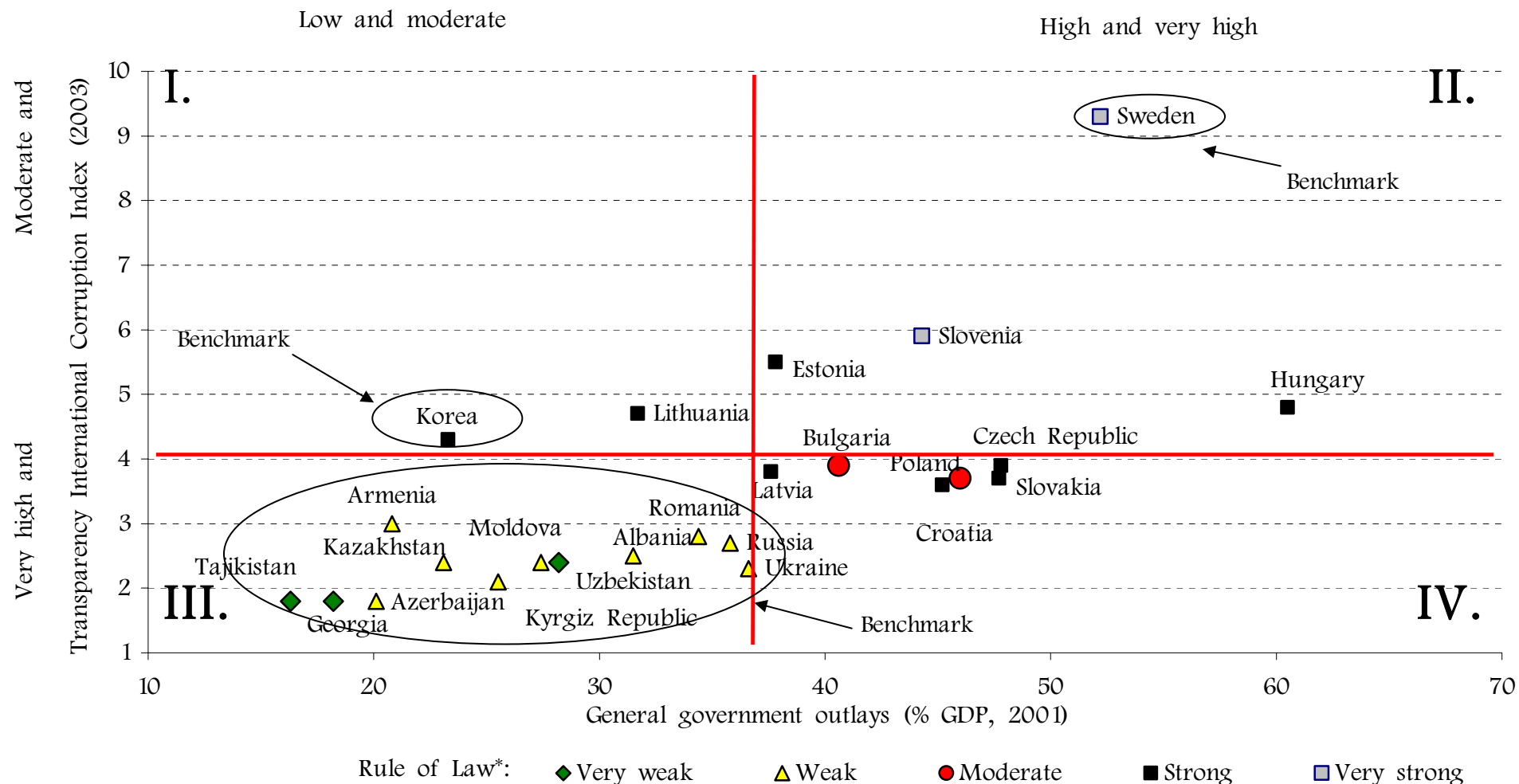
Source: Making Transition Work for Everyone: Poverty and Inequality in Europe and Central Asia, World Bank 2000, EBRD Transition Reports.

Figure C.5.
Average value of the EBRD liberalization index and average rating of political and civil liberties (1991-2001)



Source: Leszek Balcerowicz, Post-communist transition in a comparative perspective, Washington, November, 2003, based on statistical data of Freedom House, EBRD Transition Report, 2002.

Figure C.6.
Government outlays (2001) and corruption perception in the transition economies (2003)



Source: EBRD Transition Report Update 2003; Transparency International; Daniel Kaufmann, Aart Kraay and Massimo Mastruzzi, Governance Matters: Governance Indicators for 1996-2002, World Bank 2003.

D) Growth Competitiveness Convergence Index – a new method for CEE convergence estimation in 2003

Table D.1.
CEE convergence in terms of growth competitiveness with EU, 2003

% of EU average	Index (GCI)	Macroeconomic environment index components				Public institutions index			Technology index			
		Total	Macroeconomic stability subindex	Government waste subindex	Country credit rating	Total	Contracts and law subindex	Corruption index	Total	Innovation subindex	Information and communication technology subindex	Technology transfer subindex
Estonia	93.75	88.82	102.02	89.73	67.66	93.84	90.62	96.17	105.69	84.86	98.97	107.82
Slovenia	91.80	86.79	94.17	84.70	75.61	89.46	82.96	94.85	96.88	88.13	94.15	90.95
Hungary	90.04	83.13	89.01	87.67	74.54	90.69	84.45	87.63	93.61	69.80	83.45	103.70
Latvia	89.45	89.02	106.50	87.90	58.96	82.46	81.65	79.59	99.14	88.38	84.35	104.32
Czech Republic	88.67	87.60	100.67	58.90	72.70	80.71	71.19	85.50	96.47	64.53	89.87	110.08
Lithuania	87.70	82.93	98.88	66.21	58.50	78.96	72.68	90.75	99.14	78.84	81.67	95.68
Slovakia	87.50	82.11	97.53	62.10	56.05	82.46	63.90	85.99	90.74	64.78	85.59	105.56
Poland	84.57	77.64	90.58	61.87	69.34	75.81	67.08	77.95	93.20	80.34	77.75	102.26
Bulgaria	81.05	77.85	82.96	61.87	69.34	73.00	50.63	90.26	90.94	65.03	70.26	77.98
Romania	66.02	59.55	80.04	44.52	40.32	57.25	55.49	58.75	80.50	57.75	66.87	97.33

* The convergence of technology transfer process is relative to the average indices for Spain and Portugal, the only data available.
Source: Author's calculations based on the World Economic Forum Database, 2004.

Table D.2.
Romanian convergence in terms of growth competitiveness with CEE countries and EU, 2003

% of EU average	Index (GCI)	Macroeconomic environment index components				Public institutions index			Technology index			
		Total	Macroeconomic stability subindex	Government waste subindex	Country credit rating	Total	Contracts and law subindex	Corruption index	Total	Innovation subindex	Information and communication technology subindex	Technology transfer subindex
Romanian indices	3.38	2.93	3.57	1.95	2.64	3.27	2.97	3.58	3.93	2.30	3.75	4.73
% of EU average	66.02	59.55	80.04	44.52	40.32	57.25	55.49	58.75	80.50	57.75	66.87	97.33
% of CEEC average	77.54	73.25	84.94	63.11	62.71	70.93	77.00	69.33	87.53	77.78	83.95	97.75
EU 15 average	5.12	4.92	4.46	4.38	6.55	5.71	5.35	6.09	4.88	3.98	5.61	4.86
St'd dv.	0.43	0.35	0.19	0.84	0.34	0.57	0.66	0.56	0.51	0.81	0.46	0.09
– conv.	8.40	7.11	4.26	19.18	5.19	9.98	12.34	9.20	10.45	20.35	8.20	1.85
Minimum	Italy	Greece	Portugal	Italy	Greece	Italy	Italy	Greece	Italy	Luxembourg	Greece	Spain
Maximum	Finland	Finland	Finland	Finland	Luxembourg	Denmark	Finland	Denmark	Finland	Finland	Finland	Portugal
CEE 10 Average	4.36	4.00	4.20	3.09	4.21	4.61	3.86	5.16	4.49	2.96	4.67	4.84
St'd dv.	0.45	0.46	0.36	0.65	0.68	0.59	0.66	0.63	0.40	0.42	0.53	0.44
– conv.	10.32	11.50	8.57	21.04	16.15	12.80	17.10	12.21	8.91	14.19	11.35	9.09
Minimum	Romania	Romania	Romania	Romania	Romania	Romania	Romania	Romania	Bulgaria	Romania	Romania	Bulgaria
Maximum	Estonia	Estonia	Latvia	Estonia	Slovenia	Estonia	Estonia	Estonia	Estonia	Latvia	Estonia	Czech R.

* In the case of the EU, the technology transfer index is weighted with 0, as these are core-innovator economies. The average of Spain and Portugal is used, as the only indices available.

Source: Author's calculations based on the World Economic Forum Database, 2004.

Table D.3.
Comparison between GCI, BCI, DB Research Convergence Indicators
and GDP/capita convergence

	IGC Convergence Indicator 2003		BCI Convergence Indicator 2003	DB Research Convergence Indicator 2003		GDP/capita 2001 (% UEM, PPP)	
	Rank	% of EU 15 mean	Rank	Rank	% of EU 15 mean	Rank	% of EU 15 mean
Estonia	1.	93.75	1.	4.	69.8	5.	42.4
Slovenia	2.	91.80	3.	1.	79.6	1.	71.5
Hungary	3.	90.04	5.	6.	69.0	3.	51.1
Latvia	4.	89.45	2.	5.	69.3	8.	32.2
Czech Republic	5.	88.67	4.	2.	70.6	2.	61.4
Lithuania	6.	87.70	6.	8.	66.3	7.	35.3
Slovakia	7.	87.50	7.	3.	70.3	4.	49.9
Poland	8.	84.57	8.	7.	67.4	6.	39.4
Bulgaria	9.	81.05	10.	9.	65.8	10.	29.4
Romania	10.	66.02	9.	10	63.5	9.	29.6

Source: Author's calculations, 2004.

Table D.4.
Scenarios for the CEE 10 GDP per capita and GCI catch-up with EU

	2001	2010 ²⁾	2020 ²⁾	2030 ²⁾	Years to EU average ¹⁾ —optimistic scenario	Years to EU average ²⁾ —pessimistic scenario	Index GCI 2003 (% of EU average)	Years to EU average ¹⁾ —optimistic scenario	Years to EU average ²⁾ —pessimistic scenario
Slovenia	71.5	76.2	80.6	84.1	32.3	65.8	93.75	3.4	21.3
Czech Republic	61.4	67.8	73.7	78.5	44.3	80.8	91.80	4.2	39.2
Hungary	51.5	59.6	66.9	73.0	53.3	92.1	90.04	13.8	52.1
Slovakia	49.9	58.2	65.9	72.1	54.6	93.7	89.45	16.6	55.9
Estonia	42.4	52.0	60.8	67.9	60.1	100.6	88.67	20.2	60.6
Poland	39.4	49.5	58.7	66.3	62.1	103.2	87.70	24.2	66.0
Lithuania	35.3	46.1	55.9	64.0	64.7	106.4	87.50	25.0	67.1
Latvia	32.2	43.5	53.8	62.3	66.5	108.7	84.57	35.4	81.0
Romania	29.6	41.3	52.0	60.8	68.0	110.6	81.05	45.6	94.6
Bulgaria	29.4	41.2	51.9	60.7	68.1	110.7	66.02	74.5	133.3
UEM	100.0	100.0	100.0	100.0	-	-	-	-	-

¹⁾ Optimistic scenario: a 2.5% annual shrink in the difference between each country and the EU.

²⁾ Pessimistic scenario: a 2% annual shrink in the difference between each country and EU.

Source: Author's calculations.