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**Gaining Credibility and Enhancing Economic Growth
through Regional Integration**

The Case for EU Membership of Eastern Europe

by

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October 1997



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Gaining Credibility and Enhancing Economic Growth through Regional Integration: The Case for EU Membership of Eastern Europe

Abstract

Trade between Eastern and Western Europe has increased considerably in the last years. Given this market-induced development, why should it be necessary to advance institutional integration? This paper argues that Central and Eastern European countries (CEECs) can potentially enhance the credibility of their governments' policies through institutional integration with the EU. The paper discusses the credibility problems faced by the CEECs and shows how EU membership will enhance the institutional setting and the governments' credibility. Based on regression results between an indicator of institutional change and key macroeconomic variables, an estimate of the potential impact of the CEECs' accession to the EU institutional framework on growth in the CEECs is derived.

JEL Classification: F15, P47.

Key Words: Institutional change, institutional integration, transition, credibility, EU enlargement.

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1. The Issue

Economic interaction between the Central and Eastern European countries (CEECs) and Western Europe has increased greatly in the last seven years as documented by the data about trade (figures 1 to 3) and foreign direct investment in Eastern Europe (figure 4).¹ Based on various concepts of "natural trading blocs", it can be shown that Hungary, Poland, the Czech Republic and the Slovak Republic have already become part of the economic region of Western Europe (cf. Piazzolo, 1997). This market-induced adjustment raises the question of what additional benefit may be gained through further institutional integration between Eastern and Western Europe.

Eastern European desire for EU membership might be motivated partly by the expected transfers from the EU budget. The current transfers of the EU to its present poor members amount to 5.5 percent of GDP in the case of Ireland, 5.3 percent for Greece, 4.1 percent for Portugal and 2.5 percent for Spain in the year 1995 (table 1). The application of present EU transfer rules to the CEECs would create even higher net transfers in terms of the CEECs' GDP. However, the accession of numerous new members at a low level of economic development necessitates a reform of EU expenditures in order to avoid a collapse of the EU budget. Furthermore, the wealthier member states are obliged to reduce their fiscal deficits to qualify for the European Monetary Union (EMU), and German net contributions to the EU budget are coming under increasing public criticism. It is therefore highly unlikely that the EU

¹ This paper was written for the project "Perspectives for the Division of Labour between Germany and Eastern Europe". Financial support from the Volkswagen Foundation is gratefully acknowledged. I thank Rolf J. Langhammer and Matthias Lücke for many helpful suggestions and insightful comments on earlier drafts. Thanks are also due to Angela Husfeld and Michaela Rank for careful research assistance and to Markus Diehl and Christian Scholz for fruitful discussions.

The European Commission in its Agenda 2000 recommended in July 1997 to start negotiations on EU accession with the Czech Republic, Hungary, Poland, Slovenia and Estonia (and Cyprus) at the beginning of 1998 (cf. Commission, 1997). The Commission also examined the state of systemic transition in Bulgaria, Romania, Slovak Republic, Latvia and Lithuania and proposed to postpone the beginning of accession negotiations while emphasising the prospect of a likely eventual EU-membership. The "avis" of the European Commission specifies the areas requiring particular effort to overcome existing shortcomings for each potential EU-member. The fulfilment of these requirements will determine when and how many new countries will join the EU. In this paper, the term "Central and Eastern European countries" (CEECs) refers - if not stated otherwise - to the countries most likely to be in the first wave of the Eastern enlargement of the EU, i.e. Czech Republic, Hungary, Poland, Slovenia and Estonia.

Table 1 – EU Gross Payments¹ (1995) to:

	EU payments (in million of ECU)	EU payments (percentage share)	EU payments per capita (in ECU)	EU payments as percentage share of GDP ³
Austria	858	1.4	101	0.5
Belgium	2369	3.8	235	1.2
Denmark	1601	2.5	306	1.2
Finland	723	1.1	141	0.8
France	10150	16.1	175	0.9
Germany	7893	12.5	97	0.4
Greece	4474	7.1	428	5.3
Ireland	2552	4.0	713	5.5
Italy	5780	9.2	101	0.7
Luxembourg	123	0.2	306	0.9
Netherlands	2345	3.7	152	0.8
Portugal	3246	5.1	328	4.1
Spain	10863	17.2	277	2.5
Sweden	721	1.1	82	0.4
UK	4531	7.2	78	0.5
Others	4793	7.6		
Total/ Average	63041	100.0	157 ²	1.0 ⁴

¹Consisting of all operational programs (including the Common Agricultural Program, Structural Funds Allocation, the Research and Technological Development Program and the Cooperation Program) accounting for 94.2 percent of the EU expenditures. The remaining 5.8 percent of the expenditures are spent for the administration of the EU institutions.

²Average of EU payments per capita.

³Population data for Belgium and Luxembourg for 1994.

⁴Weighted average.

Sources: Europäischer Rechnungshof (1996); various National Accounts (1996); IMF (1997); own calculations.

budget will grow substantially. At the same time, the present four poor EU countries will resist any cuts in their transfers from the EU budget. Consequently, while the Eastern European countries can expect to receive significant net transfers, these will be substantially below the levels associated with present budget rules (cf. also Baldwin, 1995 and Baldwin et al., 1997).

Another possible reason for the CEECs to seek EU membership is connected to the improvement of conditions for trade with the EU through the reduction of remaining EU tariffs, the elimination of non-tariff barriers in the agricultural sector and membership in the single market. However, since tariffs on EU imports from the CEECs as well as EU non-tariff barriers are already low and will be reduced further under the Europe agreements, it is more likely to be the guaranteed access to the large EU market that motivates the CEECs to seek EU accession: Full EU membership will protect the Eastern European from any protectionist vogue that might raise EU trade barriers again, e.g. through anti-dumping policies.²

This paper argues that besides transfers, further reductions in trade barriers and guaranteed market access EU membership may enhance the credibility of economic reforms in the Eastern European countries through the establishment of institutions common to the EU members. EU membership requires the transition countries to bring their legal, political and economic system into conformity with EU standards and to implement effectively the so-called *acquis communautaire*, which includes many institutional components that are crucial for the functioning of a market economy (cf. Bofinger, 1995). Deviations from the agreed pattern of institutional reform could entail various sanctions, like formal demands by the European Commission to comply with European Union law or charges before the European Court of Justice. Greater credibility of economic reforms would enhance the speed and the effectiveness of the reforms as economic agents are more likely to believe in policy announcements and to adjust accordingly. EU membership will help to stabilise the democratic political system and promote the development of market-orientated economic institutions - not dissimilar to the experiences of Greece (as far as the political system is concerned), Portugal and Spain, when these countries acceded to the EC in 1981 and 1986 respectively.

In the following I set out in section 2 a simple growth model that accounts for institutional reform, describe in section 3 the concept of credibility, discuss how credibility problems can

² Guaranteed market access has been identified as a motivating force behind many recent regional integration schemes ("new regionalism"; see Ethier, 1996 and Lawrence, 1997).

arise and review in section 4 the credibility problems of the Eastern European countries. In section 5 I examine the effects of institutions on growth and other key macroeconomic variables with the help of the simple econometric model and provide a rough indication of the potential impact of EU integration on economic growth in the CEECs. Section 6 concludes on the results.

2. A Simple Model of Institutional Reform and Economic Growth

The following analysis is motivated by the question of how EU membership would affect GDP growth in the CEECs. A simple version of a standard growth model with an endogenous saving rate is employed to illustrate the effects of an improvement in economic institutions. To keep the (graphical) representation of the model manageable, the closed economy is depicted first. Later, a modification is introduced to account for the open economy. The economy consists of a representative firm and a representative household (the meaning of the used variables is given in the appendix):

The firm maximises profit according to

$$(1) \quad \text{Max } \pi = F(A, K, L, P) - rK - wL$$

with the production function

$$(2) \quad Y = AP^\beta K^\alpha L^{1-\alpha}$$

A represents the level of technology, P the institutions, K capital and L the labour force.³

The production function exhibits constant returns to scale for the inputs, L and K. To simplify the model further, the labour force is set equal to 1, yielding the production function:

$$(3) \quad Y = AP^\beta K^\alpha$$

The representative household maximises utility according to:

$$(4) \quad \text{Max } U = \int_0^{\infty} e^{-\rho t} U(C) dt$$

³ The employed production function $Y = AP^\beta K^\alpha L^{1-\alpha}$ may be regarded as a modified version of the form $Y = AK^\alpha L^{1-\alpha} G^{1-\alpha}$ used by Barro (1990). Barro shows that various activities of a government, described by the variable G, can be viewed as having an effect on the growth rate. The government activities considered by Barro include the provision of infrastructure services, the protection of property rights and the taxation of the economic activity. Cf. also Barro and Sala-i-Martin (1995), p. 153.

subject to the condition

$$(5) \quad \dot{K} = (r - \delta)K + w - C$$

K and r stand for domestic capital and the interest rate received. \dot{K} denotes the derivative of K with respect to time. The household's utility at time 0 is a weighted sum of all future flows of utility. A positive value of the time preference ρ indicates that utility is valued less the later it is derived.

Incorporating the Euler equation ($Y = rK + w$, since $L=1$) into (5) yields:

$$\dot{K} = Y - \delta K - C, \text{ including (3), one gets}$$

$$\dot{K} = AP^\beta K^\alpha - \delta K - C, \text{ and finally}$$

$$(6) \quad AP^\beta K^\alpha = \dot{K} + \delta K + C$$

with the left hand side representing the production in the economy and the right hand side the expenditures of the economy.

I assume a utility function with constant intertemporal elasticity of substitution of the form

$$U(C) = \frac{C^{(1-\theta)} - 1}{(1-\theta)}, \text{ where } \theta > 0$$

and $1/\theta$ is the intertemporal elasticity of substitution. The higher θ , the less willing households are to accept deviations from a uniform pattern of C over time.

An improvement in economic institutions (for example in terms of lower transaction costs due to more predictability through EU membership of transition economies) entails an increase in P (equation 3). A phase diagram can represent the response of the economic system to changes in the exogenous variable and can illustrate the transitional dynamics from an initial steady state factor ratio, K^* , to the new steady-state ratio, K^* (cf. Barro and Sala-i-Martin (1995), pp.74 and Brücker and Schreftl (1996)). The two following equations determine the phase diagram of this Ramsey Model (figure 5).

$\dot{K} = F(K) - C - \delta K$, i.e. the intertemporal resource constraint: the change in the capital stock equals output less consumption and depreciation.

$$\frac{\dot{C}}{C} = \frac{1}{\theta} [F'(K) - \delta - \rho], \text{ i.e. the optimality condition for choosing consumption over time:}$$

Depending on the willingness to substitute consumption intertemporally as expressed through θ , the difference between $(F'(K) - \delta)$ and ρ determines whether the households chooses a pattern of consumption that rises over time, stays constant or falls. A high value of θ denotes

a low willingness to substitute intertemporally and therefore a small responsiveness to the discrepancy between $(F'(K) - \delta)$ and ρ .

The semi-circular line in the phase diagram delineates the combinations of K and C that satisfy $\dot{K} = 0$ at the first equation. For values of C above the curve, so much of output is consumed that the depreciated capital stock is not fully replaced and K falls. Similarly, values of C below the curve lead to a rising K .

The vertical line at K^* corresponds to the condition $\dot{C} = 0$ at the second equation. For values of K smaller than K^* , C rises. Conversely, C falls for values of K larger than K^* .

For $\dot{K} = 0$ and $\dot{C} = 0$ the point a at the diagram symbolises the initial steady-state, i.e. the situation in which the quantities K , C and Y grow only at the constant steady-state rate depending on technological change (and population growth). Like in all neo-classical growth models, the steady-state growth rate is not influenced by the parameters describing the production function or by the preference parameters θ and ρ representing the household's attitude about saving and consumption. A reduction in the parameters θ and ρ indicates an increased willingness to save and would be portrayed in a phase diagram through a shift to the right of the $\dot{C} = 0$ schedule, but would leave the $\dot{K} = 0$ curve unvaried.

A change in the production technology, in the institutions or in the depreciation rate will alter both the $\dot{C} = 0$ and $\dot{K} = 0$ schedules. The lines representing $\dot{K} = 0$ and $\dot{C} = 0$ in the diagram show the new production possibilities when the production function has moved upwards, e.g. through transition from a plan economy to a market economy. The changes lead to the new steady-state values K^* , C^* and Y^* , i.e. to point d in figure 5. The lines with the arrows (the "stable arms") indicate how the steady-state point is reached depending on the parameter of the model.

As set out in the following chapters in greater detail, the establishment of market-orientated institutions can improve the functioning of the economy, e.g. by guaranteeing property rights or reducing the transaction costs. The improvement of institutions can increase the output for a given combination of inputs. The transition countries can be considered to have been on point "a" after their capital, technology and institutions that were of no employable worth under market conditions were depreciated. When the market institutions are established, capital productivity will increase and the transition economies will eventually reach the steady-state point d . As institutions-building takes time, of course one would not expect a sudden shift of

the $\dot{K} = 0$ and $\dot{C} = 0$ schedules to their final position. Rather, the curves will wander upwards and to the right in parallel to the establishment of the market institutions.

The phase diagram reveals a range of possible transition paths from the initial steady-state to the new steady-state, depending on the intertemporal elasticity of substitution. If the typical household is willing to defer consumption from the present to the future (low value of θ), the investment ratio will be high and the new steady-state will be reached quickly. Under these circumstances, the income gap between Eastern and Western Europe would be narrowed rapidly. In the phase diagram, this scenario would correspond to a sliding down from point a along $\dot{C} = 0$ line to the low θ curve and a quick movement along this curve towards point d.

If the typical household, however, is characterized by a low willingness to substitute intertemporally (high value of θ), consumption will be shifted from the future to the present. The investment rate will be low and it will take a long time until the new steady state is reached. Hence catching-up will proceed only slowly. In the phase diagram this development would be portrayed through a movement up the $\dot{C} = 0$ line starting at point a to the high θ curve and a very slow wandering along the high θ curve towards the new steady state. As discussed in the following, low willingness to substitute intertemporally could be an explanation for the observed consumption hike in Portugal, Spain and especially Greece when these countries joined the European Community. Furthermore, a low willingness to substitute intertemporally might also help to explain the sluggish investment behaviour in the CEECs.⁴

A discrimination among the various scenarios and an analysis of the influence of the institutions for the outward shift of the production function is attempted at the end of the paper. Before the effects are quantified, the interplay between credibility, reforms and growth is examined.

⁴ The other elements of the production function also influence the duration of the transition. However, it is the elasticity of intertemporal substitution in consumption that explains the time paths of investment and consumption.

3. Economic Policy Reforms and Government Credibility

The transition from a socialist to a market economy involves major changes in the political, economic and social system in a short period of time. Major reforms often encounter credibility problems, since the effectiveness of far-reaching changes depends on the willingness of the economic agents to alter their behaviour. The agents will only adjust if they expect the new incentive structures established by the reforms to stay, i.e. the announced reforms have to be credible.

While changes in transition countries are unique in terms of their coverage, the insights from market economies, particularly from developing countries, that have undergone major policy changes and had to overcome credibility problems may be helpful in the analysis of the role of credibility in economic transition. This section analyses the dependence of policy reforms on credibility and discuss the strategies and experiences of overcoming credibility problems.

The credibility of an institutional arrangement or a policy can be defined as the public's subjective probabilistic belief that an arrangement or policy will in fact apply for the relevant time period (Schmieding, 1992). The greater the difference between the announced government policy and the expected policy, the greater is the credibility problem. The relevant time period is that for which *ex ante* decisions have to be taken. Policy reforms, for example, trade or price liberalization in developing countries, are initiated in order to achieve welfare gains through increased consumer surplus and through efficient allocation of resources. An efficient allocation following a reform requires the shifting of resources from one sector to another according to the new price signals. Due to sector-specific knowledge and machinery, the transfer from labor and capital between industries induces substantial adjustment costs. The economic agents will be only prepared to shift their resources if they judge to be able to recoup their costs i.e. if the reform is believed to be durable.⁵

⁵ A more extended analysis concerning the effects of credibility problems can be found in Rodrik (1989, 1991), Funke (1991, 1993) and Buch et al. (1994). Lack of credibility may explain, for example, why so many trade liberalization programs have been aborted. Ibarra (1995), building on Calvo (1987), argues that the expectation by the public that an announced trade policy reform will only be short-lived can be self-fulfilling. The expectation that the trade liberalization will be brief leads to an import hike of durable goods due to the assumed low intertemporal price level. The resulting current account deficit might use up the limited international reserves - especially fast in the case of constraints on external borrowing. If the government shuns the political consequences of painful devaluation, it has to establish trade barriers again.

The main sources for credibility problems can be summarised into four categories (cf. Rodrik, 1989): the government's policies are inconsistent; the government motives are unclear; the anticipated political costs due to redistribution effects of the policies are high; the macro-economic environment is unstable. A credible political and economic framework of a society needs clear, enforceable rules that are administered impartially.⁶ Especially the failure to ensure the predictability of its actions often leads to credibility problems of a government.

Three different strategies leading to increased credibility are discussed in the literature: 1) Signalling commitment (Bond et al., 1995) 2) Altering governmental incentives (Bofinger, 1995) and 3) Reducing the scope of governmental manoeuvring (Rodrik, 1989). Various policies are feasible to follow these strategies: For example, Bond et al. (1995) suggest that the government might even subsidise investment in order to signal commitment and to attract foreign direct investment. However, this policy is also easily reversible and might not convince the investors to commit their long-term funds. Though joining international organisations like the World Trade Organisation, a government can also signal its commitment to liberalize its foreign trade. Ensuring convertibility for capital account transactions alters the government's incentives since the economic agents can react more quickly in the case of bad economic policies. Embarking on a reform formally agreed with the International Monetary Fund or the World Bank reduces the governmental flexibility in changing the policies arbitrarily.

By pursuing regional integration with a more advanced partner, a reform country government may use all three strategies simultaneously to increase its credibility. Regional integration involves, first, that the government signals its determination to fulfil its own goals and the commitments arising from the institutional integration. Second, the obligations through the institutional setting reduce the possibility of arbitrary changes of policies. Third, the obligations and potential sanctions change the incentive structure of the government.⁷ The second strategy - making arbitrary policy shifts less likely - has been stressed recently on

⁶ Borner et al. (1995) see the causes of credibility problems in the border area between economics and political economy of governments and institutions. They argue that political credibility problems arise from the fundamental philosophical dilemma of the state: the monopoly of power and its control.

⁷ More general speaking, the concept of institutional integration rests on the perceived importance of functioning institutions. That supporting institutions are essential for all economic activities has recently become part of the main body of economic thinking (cf. World Bank Development Report, 1997). In particular, it has been shown that a *sine qua non* for economic development is a set of institutions that can enforce property rights (North, 1991).

political economy grounds with particular reference to the accession of less advanced economies to the EU (cf. Bofinger, 1995). The "hands-tying" of national governments by the various regulations of the European Union forces the member countries to follow sound economic policies (like keeping their markets completely open vis-à-vis other members). The influence of different national interest groups is consequently reduced, resulting in an increase in predictability of government policies.

Otherwise, the enhancement of credibility through institutional integration between rich and poor countries has been analysed only by few authors.⁸ Some important insights can be derived from the experience of institutional integration between rich and poor nations in the case of former enlargements of the then European Community and from the North American Free Trade Area. In the case of the European Community, trade liberalization in preparation for accession resulted in substantial structural change in the new member states in line with their comparative advantage. Reportedly, factors of production were shifted to labour-intensive activities in Greece and Portugal, whereas Spain and Ireland with their higher wage levels specialised in relatively more sophisticated capital-intensive goods (Ibarra, 1992). At the same time, Fratzscher (1994) emphasises that successful integration and income convergence depended critically on sound macroeconomic policies and a decisive strong government. In the case of Greece, regional integration alone could not compensate for major domestic policy deficits and reform unwillingness (cf. Nunnenkamp, 1997). However, in Spain and Portugal, integration into the European Community acted as catalyst for modernisation and market opening.

These experiences suggest that the production frontiers of the southern European countries shifted outwards because of the improvement in economic institutions (cf. phase diagram - figure 5). As I have shown in the previous section, two basic scenarios for the development of the key macroeconomic variables are feasible under these circumstances. When households are willing to defer consumption to future periods (a low value of θ in the utility function with constant intertemporal substitution) investment will be high and the transition to the new steady state will happen quickly. When households instead choose to smooth consumption (a high value of θ) the investment rate will be low and the economy will need a long time to reach the new steady state.

⁸ Cf. Georgakopoulos et al. (1994).

For the cases of Portugal and Spain one can detect a moderate rise of the growth rate of investment between the years 1984 and 1987, while EC accession occurred in 1986 (figure 6). Similarly, the savings rate increased from 17 percent of GDP in 1984 to 22 percent of GDP in 1987 for Portugal and fluctuated around 22 percent of GDP for Spain (World Bank Data CD-ROM). The GDP growth rate during the second half of the 1980s was also higher than during the first half. Baldwin (1993) regards the experiences of Portugal and Spain at the time of joining the EC therefore as an example of "investment-led" growth. However, figure 6 shows that the increase in the annual growth rates of investment was only temporary. In this respect, the development in Portugal and Spain does not indicate a very high willingness of the households to defer consumption from the present to the future. Consequently, one would expect only a gradual convergence of incomes with the more advanced EU member countries.

The Greek case is a striking example of an extreme "consumption hike". Greece experienced a continuing fall in investment for all but one year in the period between 1980 and 1987, while EC accession took place in 1981 (figure 6). The investment rate in Greece followed the deep fall of the saving rate - although the reduction was less pronounced due to capital inflows. Capital inflows through foreign direct investment and external transfers may facilitate the adjustment to the new production frontier and finance some investment despite increased domestic consumption. However, judging by the experiences of other countries, capital inflows cannot fully compensate for reduced savings so that even with capital inflows the investment rate can only be marginally higher than the domestic savings rate. In such, the experience of the Southern enlargement demonstrates, on the one hand, that institutional integration leads to extended production possibilities and the consequent welfare gains. On the other hand, however, this does not necessarily imply an investment boom or rapid income convergence.

The trade accord between Mexico and the US and Canada has been analysed by Fernandez-Arias and Spiegel (1996) with respect to its impact on the credibility of the Mexican government. They argue that the primary impact of NAFTA does not lie in the further reduction of already low tariffs between the partners, but in a fundamental change in the attractiveness of Mexico as a location for investment. Fernandez-Arias and Spiegel extend the traditional analysis of customs unions to allow for international capital movements and show how a trade accord may affect the ability of the less developed partner to attract capital. In the model, a Southern nation relies on capital from the North for production in its foreign sector and faces a standard time-inconsistency problem concerning the level of taxation on foreign

investment. Hence, foreign investors fear to be taxed in future due to policy reversals ("cheating"). In a wider sense, taxation may be viewed as representing all policies that affect the profitability of FDI. Under the trade accord, the Southern nation commits to national treatment of foreign investment. Fernandez-Arias and Spiegel show that the trade accord can be an effective mechanism for achieving higher foreign investment if it makes the rules for the treatment of foreign investment more credible. Thus, regional integration between a poor and a rich country serves as a credibility-enhancing mechanism.

The NAFTA case also illustrates that enhanced credibility through regional integration need not to be limited to trade policy reforms, but may also extend further to macro- and microeconomic reforms. It has even been stated that, during the NAFTA talks, the Mexican negotiators were more concerned with making unilateral commitments to their partners than with obtaining improved market access in the US or Canada for themselves, in order to "lock in domestic policy reform through this process" (Whalley, 1996, p. 16). Despite the existence of NAFTA, there was a dramatic downturn in the Mexican domestic demand and a sharp devaluation of the Mexican Peso in December 1994⁹. However, regional integration has helped Mexico substantially to overcome the crisis, since it is questionable whether, in the absence of NAFTA, the US would have mobilised the financial means that permitted the Mexican government to avoid default. In this respect, regional integration provided "insurance" cover to Mexico, reducing planning uncertainties for the economic agents (cf. Fernandez, 1997).

4. Enhancing Government Credibility in Central and Eastern Europe through EU Membership

Even if one accepts that regional integration may enhance the credibility of policy reforms in the transition countries of CEE, the rapid progress made especially by the candidates for EU membership in recent years raises the question of whether these countries still face any major credibility problems. It is noteworthy, however, that progress was greatest in the areas of macroeconomic stabilisation and microeconomic adjustment and less pronounced in institutional reforms. Furthermore, the initial successful reforms were based on three essentially temporary factors that enhanced the ability of the governments to organise credible reforms. First, the neighbouring developed market economies could be used as examples for the design

⁹ Langhammer and Schweickert (1995) discuss the various reasons of the Mexican Peso crisis.

of economic policies. In that respect, the motives of the government were clear. However, policy decisions have become more and more technically complicated, and straight forward examples have become rare (e.g. in the case of financial sector reforms). Second, there was a wide-spread consensus among the population about the direction of the political and economic transition and only few well-organised interest groups fighting economic reforms. This reduced the expected political cost of the income redistribution associated with economic transition and increased thereby the government's credibility. By now, various interest groups have gained strength and resist reforms that endanger their privileges and incomes. Third, the CEECs were dominated by a state-orientated understanding of society. Consequently, the governments could push through their transition policies without a long-winded process of public consensus-finding. As a result of the transition progress, democracy is now taking hold and a civil society is emerging, which will delay the decision-finding process (cf. Wiesenthal, 1995).

Because of these increasing difficulties, the commitment to further reforms has considerably weakened in all transition countries, particularly in the area of institutional reforms. Even the Czech Republic - once praised as a prime example of reform-led transition - stalled in the process of privatisation and has postponed price-liberalization in important areas. In Poland, privatisation has been completed for less than 20 percent of former state-owned enterprises, while for more than 50 percent the privatisation process had not started by the beginning of 1996. Furthermore, in most transition countries inappropriate legal rules and their insufficient and often arbitrary application delay the economic recovery. For example, bankruptcy law is not applied consistently for state-owned firms and, as a result, obsolete industries continue to receive subsidies while the necessary restructuring of the economy is postponed (cf. Buch and Heinrich, 1997). The CEECs have in common that reforms in the financial sector still have a long way to go, that public procurement has to be reformed and that financial constraints will necessitate a major overhaul in the areas of health care and social security. Additionally, corruption has increased dramatically in the last years in CEE, leading to distorted price signals and undermining credibility (cf. World Development Report, 1997).

In the process of economic transition, institutional reforms, structural adjustment and macroeconomic stabilisation are strongly interdependent. Widespread failure to fully implement institutional reforms therefore creates serious doubts about the governments' willingness and ability to bring economic transition to a successful conclusion. In this situation, institutional integration with the European Union provides guidance with respect to the

contents of further reforms and also enhances the credibility of transition country governments. The Europe agreements between the EU and the CEECs and the prospect of EU membership have already helped to stabilise expectations about the direction of future policies and the structure of the economic and legal systems in the CEECs. EU accession will further decrease uncertainty about the long-term development of the CEECs through the EU's far-reaching coverage and institutional framework.

Institutional integration is presently based on the Europe Agreements (concluded between the EU and Bulgaria, the Czech Republic, Hungary, Poland, Romania, the Slovak Republic, Slovenia and the three Baltic Republics.) The Agreements grant the Eastern European countries the position of an associated country in terms of political and economic affairs. Politically, the Europe Agreements are the legal basis of the CEECs' relationship with the EU and provide a framework for dialogue and for support of the gradual integration into the Union. The institutional arrangements of the Agreements provide mechanisms to implement, control and manage all areas of economic and political interactions. Concerning economic issues, the Agreements set a timetable for the establishment of bilateral free trade in non-agricultural goods and include various provisions that have effectively led to the application of EU regulations for the domestic policies of the CEECs in some areas. For example, the Europe Agreements require the CEECs to adopt legislation within three years that mirrors the competition provisions (anti-trust and state aid) of the Treaty of Rome. Disputes concerning subsidised goods traded between the CEECs and the EU have to be dealt with on the basis of EU competition policy law (cf. Fernandez, 1997). Smith et al (1996) have pointed out, that the Agreements were asymmetrical in the sense that the CEECs had to complete their side of the bargain before the EU committed itself to the complete elimination of commercial defence instruments such as anti-dumping provisions. The authors continue to state that the CEECs have gained substantially from the application of the procedures of the Agreements by ensuring transparency and predictability of their economic policies. The Europe Agreements have a strong binding character for the CEECs, since the failure of fulfilling the conditions might not only lead to the loss of the benefits arising from the Agreements like trade barrier reductions, but also to the denial or at least postponement of EU membership in the near future (as in the case of the Slovak Republic).

Institutional integration will be advanced through full EU membership which requires the implementation and the maintenance of the *acquis communautaire* and will effectively bind the

domestic economic policies of the CEECs.¹⁰ The "key-components" of the *acquis communautaire* which are most relevant for joining members have been outlined by the European Commission in the 1995 "White Paper" (Commission, 1995) and can be regarded to represent best practice of institutional setting in the EU. The EU demands from every candidate country to "commit itself permanently to the economic obligations of membership" and irreversible adoption of the *acquis communautaire* "to provide the certainty that every part of the enlarged EU market will continue to operate by common rules" (Commission, 1997). The adaptation of CEECs' laws to the *acquis communautaire* can proceed either through the revision of existing laws or through new national legislation on the basis of EU law. The greatest reforms in domestic legislation will be connected to the fields in which the members of the EU carry out common policies like in customs issues or agricultural sector regulations. The Commission emphasises that it is important to incorporate the *acquis communautaire* into national legislation effectively, but even more important to implement it properly via the appropriate administrative and judicial structures set up in the Member States.

Questionable practices will have to be judged by the European Commission and the European partners with reference to EU law. The Commission has the duty to ensure that all economic agents within the EU are able to operate under the same conditions. These include the obligations covering freedom of establishment, national treatment and free trade, the rules on competition, harmonisation of the rules on company law and accountancy, harmonisation of the rules on intellectual property, the opening-up of public works, supply and services, tax measures, protection of personal data, implementation of proceedings and the recognition of judgements. Failure to conform to the *acquis communautaire* could entail substantial costs for the deviating government. This is especially the case due to the strong political component of the EU opening up multiple channels to sanction violations of EU regulations. Since the costs of exit are high, the maintenance of domestic policies in accordance to the EU rules is credible. Consequently, EU membership will be able to serve as a mechanism for the CEECs to commit themselves credibly to sound domestic policies.

¹⁰ The *acquis communautaire* is the entirety of the EU primary legislation (the Treaties installing the three Communities with all revisions and alterations, including the Single European Act, the Treaty on the European Union and the treaties on the accession of new members), secondary legislation (Decisions of the Court of Justice, Directives and Regulations) and of all other acts that warrant the legal order of the EU.

The following analysis in this paper concentrates on the impact of EU institutions for the CEECs and on transitional growth. The establishment and enforcement of EU type rules and regulations would represent a major advancement for the transition countries with their heritage of the socialist system and a yet underdeveloped institutional setting.¹¹

5. An Attempt to Quantify the Effects of EU Institutions for the CEECs

In this section, I derive an estimate of the possible impact of improved economic institutions through EU membership on economic growth in the CEE transition countries. The growth model discussed in section 2 forms the basis of the estimation. The empirical application of the growth model raises the question of how to quantify the quality of economic institutions in the model ("P" in the equation 2). The ranking of institutions according to their ability to encourage and maintain economic activities has to leave behind - by its nature - "hard" figures and has to use "soft" indicators. While the use of such indicators might be questioned on methodical ground, their usefulness has been documented by several studies broadly similar to the present one. Fischer et al. (1997), for instance, work with an Economic Liberalization Index based on De Melo and Gelb (1996) to analyse how far the CEECs are away from Brussels in terms of adopting a market-based system. They find that economic distance from Brussels increases with geographical distance from Brussels. Furthermore, based on regressions following Barro type as well as Levine and Renelt type growth analysis, they conclude that it will take the CEECs about 30 years on average to catch up with the income levels of low-income EU countries. Knack and Keefer (1995) use an index based on Business Environmental Risk Intelligence (BERI) data about institutional maturity measured with reference to infrastructural quality, contract enforceability, bureaucratic delays and nationalisation risks to derive the influence of the institutional setting on GDP changes. They adapt standard (Barro type) growth regressions by regressing GDP growth rate on initial income, investment in human capital, government consumption, the development of relative

¹¹ While it is evident that EU style institutions will mean better institutions for the CEECs, it could be also argued that the EU does not represent the optimal institutional setting. Sachs and Warner (1996) suggest that the CEECs should try to imitate the policies of a selective group of very-fast-growing middle income countries like low rates of marginal taxation, low share of government expenditure in GDP, high government investment and pension policies based on individual savings accounts rather than the pay-as-you-go transfers typical in the EU. While such reforms might be desirable, it is highly unlikely that they will be implemented.

prices for investment goods and the BERI index. They find a significant positive growth elasticity of the BERI index. However, the BERI data do not exist for most transition countries.

The following analysis uses an indicator developed by the European Bank for Reconstruction and Development (EBRD) that covers institutional change in 25 transition countries.¹² In the 1996 Transition Report, the progress in transition towards a market economy is assessed in nine different areas covering enterprise privatisation and restructuring, price and trade liberalisation, financial and legal reforms. The achievements are ranked on a scale ranging from 1 (i.e. no or little progress) up to 5 (i.e. standards and performance comparable to advanced industrial countries) (table 2). To obtain a general indicator of institutional change (IIC), the values for the nine areas are added. One could argue that differing weights should be given to certain sub-areas of the IIC; e.g. Sachs and Warner (1995) suggest that trade and foreign exchange reform is the most critical area for growth, whereas Fischer et al. (1997) argue that privatisation is decisive. Furthermore, it could be claimed that price liberalisation should be emphasised more since prices reflecting the relative scarcity of the goods are essential for the efficient allocation of resources and for long-term growth. Every weighting will be arbitrary and this paper will follow Sachs (1996) in working with a simple sum of the nine indexes to test for correlation between institutional progress and macroeconomic key indicators. The IIC ranges from 10 for Turkmenistan up to 33 for the Czech Republic and Hungary, with a possible maximum of 45.

The production function of the model presented in Section 2

$$(3) \quad Y = AP^{\beta}K^{\alpha}$$

may be written in relative changes of the variables:

$$(7) \quad \begin{aligned} \hat{Y} &= \beta \hat{P} + \alpha \hat{K} + \hat{A} \\ \hat{Y} &= \beta \hat{P} + \alpha \hat{K} + \gamma \end{aligned} \quad \text{with } \hat{A} = \gamma = \text{technical progress.}$$

¹² While the indicator of institutional change (IIC) based on EBRD data and the Economic Liberalization Index from De Melo and Gelb are similar, the IIC is better suitable for the following analysis because it covers a wider range of institutional changes, e.g. includes legal reform progress.

Table 2 – Progress in Institutional Change in 25 Transition Countries for the Year 1996

Countries	Enterprises			Markets and trade			Financial institutions		Legal reform	Indicator of Institutional Change
	Large-scale privatisation	Small-scale privatisation	Enterprise restructuring	Price liberalisation	Trade & foreign exchange system	Competition policy	Banking reform & interest rate liberalisation	Securities markets & non-bank financial institutions	Extensiveness of legal rules on investment	
Albania	2	4	2	3	4	2	2	2	3	24
Armenia	3	3	2	3	4	1	2	1	3	22
Azerbaijan	1	2	2	3	2	1	2	1	2	16
Belarus	1	2	2	3	2	2	1	2	1	16
Bulgaria	2	3	2	2	4	2	2	2	4	23
Croatia	3	5	3	3	4	2	3	2	4	29
Czech Republic	4	5	3	3	5	3	3	3	4	33
Estonia	4	5	3	3	4	3	3	2	4	31
FYR Macedonia	3	4	2	3	4	1	3	1	3	24
Georgia	3	4	2	3	3	2	2	1	2	22
Hungary	4	5	3	3	5	3	3	3	4	33
Kazakhstan	3	3	2	3	4	2	2	2	2	23
Kyrgyzstan	3	4	2	3	4	2	2	2	2	24
Latvia	3	4	3	3	4	2	3	2	4	28
Lithuania	3	4	3	3	4	2	3	2	2	26
Moldova	3	3	2	3	4	2	2	2	3	24
Poland	3	5	3	3	5	3	3	3	4	32
Romania	3	3	2	3	3	1	3	2	3	23
Russian Federation	3	4	2	3	4	2	2	3	3	26
Slovak Republic	3	5	3	3	5	3	3	3	3	31
Slovenia	3	5	3	3	5	2	3	3	3	30
Tajikistan	2	2	1	3	2	1	1	1	2	15
Turkmenistan	1	1	1	2	1	1	1	1	1	10
Ukraine	2	3	2	3	3	2	2	2	3	22
Uzbekistan	3	3	2	3	2	2	2	2	3	22
Average	2.7	3.6	2.3	2.9	3.6	2.0	2.3	2.0	2.9	24.4

Notes: Progress in institutional change is estimated for nine areas and valued on a scale from 1 (little progress) to 5 (standards and performance comparable to advanced industrial countries). The figures in the table represent the achieved level.

Sources: EBRD (1996), Sachs (1996), own calculations.

The "hat ^" denotes the relative changes of the variables. The net change in the capital stock, \hat{K} , can be calculated by subtracting depreciation from gross investment.¹³

$$(8) \quad \hat{K} = \frac{I}{Y} \frac{Y}{K} - \frac{Depr}{Y} \frac{Y}{K}$$

Combining (7) and (8), the following regression equation can be derived:

$$(9) \quad \hat{Y} = \beta \hat{P} + \alpha \left[\frac{I}{Y} \frac{Y}{K} - \frac{Depr}{Y} \frac{Y}{K} \right] + \gamma + \text{error term}$$

Equation (9) will be estimated from a cross-section dataset containing information about investment behaviour and economic growth in 25 transition countries. It is assumed that the investment ratio, $\frac{I}{Y}$, is the distinguishing characteristic for the various transition countries,

whereas the capital coefficient, $\frac{K}{Y}$, and the depreciation rate are within a limited common range. Consequently, I use the same hypothetical values for the capital coefficient and the depreciation rate in the subsequent regression analysis.¹⁴ This implies that old capital is depreciated once and for all when transition starts. For the investment ratio, the average of the available data for the years 1989 to 1994 is used. The calculated value of $\left[\frac{I}{Y} \frac{Y}{K} - \frac{Depr}{Y} \frac{Y}{K} \right]$ for each transition country in per capita terms is called I' in the following.

The indicator of institutional change (IIC) from the European Bank for Reconstruction and Development (EBRD) provides a proxy for P . The present values of the IIC differ considerably for the transition countries with 10 for Turkmenistan as the lowest and 33 for the Czech Republic and Hungary as the highest values. Under the assumption that all transition countries have started with a low IIC at the beginning of their transition, the indicator $\hat{I}C$ represents the average annual relative change in P in the equation (9).¹⁵

¹³ This is done by combining data for the capital coefficient, $\frac{K}{Y}$, the gross investment ratio, $\frac{I}{Y}$, and the depreciation rate, $\delta = \frac{Depr}{Y} \frac{Y}{K}$, with δ representing the depreciation rate relative to capital and "Depr" the value of depreciation.

¹⁴ Since the capital coefficient and the depreciation rate are assumed to be equal across countries, the choice of value does not influence the regression results. However, to interpret the coefficient of the investment measure, the employed values are given: capital coefficient = 3; $Depr/Y = 0.1$.

¹⁵ $\hat{I}C = \left(\frac{IIC_t - IIC_{t-n}}{IIC_{t-n}} \right) / n$.

For the regression with change in GDP per capita (cf. table 3) as the dependent variable the regression estimates (with t statistics in the parantheses) are:

$$\begin{array}{lcl} \text{Average Percentage Change in GDP} = & -14.77 + 33.89 \hat{I}C + 0.37 I' & R^2 = 0.36 \\ 1989 - 1996 & (5.03) \quad (3.54) & (1.23) \end{array}$$

The coefficient attached to the indicator of institutional change is positive and significant as expected. However, the investment variable is not significant, which suggests that my estimate of the net change in the capital stock in equation (9) bears little relation to the capital stock actually utilised. This may be due to the fact that the capital stock left over from the socialist period has been taken out of use only gradually, so that the assumption of a uniform depreciation rate is misleading. The constant is technically an estimate of the rate of technical progress ($\hat{A} = \gamma$) in equation (9), which is assumed equal for all countries. However, the negative and significant constant reflects the extent of the output collapse during the first few years of the transition.¹⁶ Since the investment variable may be of doubtful quality equation (9) is re-estimated without this variable using the change in GDP per capita as dependent variable (t statistics in the parantheses):

$$\begin{array}{lcl} \text{Average Percentage Change in GDP} = & -12.16 + 29.58 \hat{I}C & R^2 = 0.32 \\ 1989 - 1996 & (5.94) \quad (3.29) & \end{array}$$

These results indicate that economic growth is positively correlated with the advancement of institutional change in the transition countries. If the IIC increases by 10 percent, GDP goes up by approximate 3 percentage points (figure 7). Incidentally, these estimate show that the insignificant coefficient of the investment variable in the previous regression did not result from multicollinearity, since the coefficient of the $\hat{I}C$ and its significance level stay approximately the same for both equations.¹⁷

¹⁶ The causes of the substantial fall in aggregate output in the transition countries have been discussed extensively in the literature (cf. Langhammer and Lücke, 1997).

¹⁷ The IIC reflects the institutional setting in the transition countries as estimated by the EBRD for the year 1996. The impact of the IIC on growth will be understated, since not all effects of growth-enhancing institutional change could materialise during the period under coverage.

Table 3 – Change in Real GDP

	Percentage change of GDP at constant prices									Average annual percentage change 1989-1996	Average annual percentage change 1989-1996 per capita
	1989	1990	1991	1992	1993	1994	1995	1996 Estimate	1997 Projection		
Albania	9.8	-10.0	-27.7	-7.2	9.6	10.3	9.5	8.5	NA	0.3	0.5
Armenia	14.2	-7.4	-10.8	-52.4	-14.8	5.4	6.9	4.5	7.0	-6.8	-7.9
Azerbaijan	-4.4	-11.7	-0.7	-22.6	-23.1	-21.2	-8.3	1.2	5.0	-11.4	-12.2
Belarus	8.0	-3.0	-1.2	-9.6	-10.6	-12.2	-10.2	2.6	0.0	-4.5	-4.7
Bulgaria	0.5	-9.1	-11.7	-7.3	-2.4	1.8	2.6	-10.0	-4.0	-4.5	-3.8
Croatia	-1.6	-6.9	-20.0	-11.0	-0.8	0.6	1.7	4.5	5.5	-4.2	-4.2
Czech Republic	1.4	-0.4	-14.2	-6.4	-0.9	2.6	4.8	4.1	4.0	-1.1	-1.0
Estonia	-1.1	-8.1	-7.9	-14.2	-8.5	-2.7	2.9	3.3	4.0	-4.5	-3.5
FYR Macedonia	NA	-9.9	-12.1	-21.1	-8.4	-4.0	-1.5	3.0	5.0	-7.7	-8.5
Georgia	-4.8	-12.4	-13.8	-44.8	-25.4	-11.4	2.4	10.5	10.0	-12.5	-12.3
Hungary	0.7	-3.5	-11.9	-3.1	-0.6	2.9	1.5	0.5	2.5	-1.7	-1.4
Kazakhstan	-0.4	-0.4	-13.0	-14.0	-12.0	-25.0	-8.9	1.4	2.8	-9.0	-8.9
Kyrgyzstan	4.0	3.0	-5.0	-19.0	-16.0	-26.5	1.3	5.4	8.0	-6.6	-7.1
Latvia	6.8	2.9	-8.3	-35.0	-16.0	0.6	-1.6	2.3	4.0	-6.0	-4.9
Lithuania	1.5	-5.0	-13.4	-37.7	-24.2	1.0	3.1	3.0	4.0	-9.0	-9.0
Moldova	NA	-2.4	-17.5	-29.0	-1.0	-31.0	-3.0	-8.0	5.0	-13.1	-13.0
Poland	0.2	-11.6	-7.0	2.6	3.8	5.2	7.0	6.0	5.5	0.8	0.5
Romania	-5.8	-5.6	-12.9	-8.8	1.3	3.9	6.9	4.3	-2.5	-2.1	-1.7
Russia	NA	NA	-13.0	-14.5	-8.7	-12.6	-4.0	-6.0	1.5	-9.8	-9.8
Slovak Republic	1.4	-2.5	-14.6	-6.5	-3.7	4.9	6.8	6.9	5.0	-0.9	-1.2
Slovenia	-1.8	-4.7	-8.1	-5.4	2.8	5.3	3.9	3.5	4.0	-0.6	-0.5
Tajikistan	-2.9	-1.6	-7.1	-29.0	-11.0	-21.5	-12.5	-7.0	-3.0	-11.6	-11.4
Turkmenistan	-6.9	2.0	-4.7	-5.3	-10.0	-20.0	-10.0	-4.0	5.0	-7.4	-7.2
Ukraine	4.0	-3.4	-9.0	-10.0	-14.0	-23.0	-11.8	-10.0	-2.0	-9.7	-9.6
Uzbekistan	3.7	1.6	-0.5	-11.1	-2.3	-4.2	-1.2	1.0	1.0	-1.6	-3.6
Average for all 25 transition countries	1.2	-4.6	-10.6	-16.9	-7.9	-6.8	-0.5	1.3	3.2		

Sources: EBRD (1996, 1997), World Bank (1997). - Own calculations.

These regression results can be used to analyse the effects of EU accession on the GDP growth and FDI inflows in the CEECs. The EU requires from potential member states functioning market economies in order to ensure the successful implementation of the *acquis communautaire*. Roughly speaking, a country that successfully implements the *acquis communautaire* would score a value of 4 or 5 in all nine areas of the EBRD scheme of institutional change. EU membership would consequently boost the IIC value of the transition economies close to the potential maximum of 45.

The advanced transition countries with an IIC above 30 (Czech Republic, Estonia, Hungary, Poland and Slovenia) are also the countries most likely to join the EU in the first or second enlargement round.¹⁸ The IIC average of these 5 countries is 32. A country fulfilling the requirements of the *acquis communautaire* would score an IIC above 40, i.e. about 10 IIC points or one third higher. In terms of GDP growth this implies a possible growth bonus of more than 9 percent.¹⁹

The coefficient β in equation (9) on which this estimate of the growth bonus is based indicates the "static" effect of improved institutions with no change in the capital stock. However, in the neo-classical growth model presented in section 2 higher marginal productivity of capital stimulates capital formation and leads to an increase in the steady-state capital stock and, therefore, in steady-state per-capita income. This additional "dynamic" effect is difficult to quantify, but several attempts have been made in the case of the growth effect of the completion of the European Single Market in 1992. Baldwin (1989, 1993) looks at various approaches and concludes that for the completion of the Single Market, the additional growth effect is at least of the same order of magnitude as the "static" effect and could be up to twice its size. Therefore, the entire growth bonus of EU institutions for the CEECs could be in the range between 18 percent and 27 percent of additional GDP.²⁰

¹⁸ The Slovak Republic has an IIC of 31, and the European Commission has acknowledged in its "avis" of July 1997 that this country is as advanced as the Czech Republic or Poland in its economic transition. However, lacking political progress towards a civil and democratic society in the Slovak Republic led the Commission to the recommendation to postpone the start of accession talks.

¹⁹ $\hat{IIC} = \frac{IIC_t - IIC_{t-1}}{IIC_{t-1}} = \frac{42 - 32}{32} = 0.31$; Consequently, the expected growth bonus can be calculated as $0.31 \cdot 29.6$ equalling 9.18 percent.

²⁰ Incidentally, the above analysis permits no conclusion with respect to the long-run expected level of GDP per capita in the transition economies, since the employed production function does not determine the point when the economies are in their new steady state. However, the question about

These figures for expected growth changes should be seen as a "sound institutional setting" bonus reflecting improved economic institutions.²¹ The importance of EU accession in this context lies in enhancing the credibility of reforms so that the improvements can actually be implemented. Concerning the importance of policies conducive to enhancing the functioning of the market economy, the paper arrives to conclusions similar to the ones of Sachs and Warner (1996) and Barbone and Zalduendo (1997). Whereas these authors have focused on the convergence issue combining the economic fundamentals of the CEECs with econometric estimations derived from "world-wide" cross-country analysis, my paper has established the growth enhancing effects of institutions within the specialised range of the experiences of the transition countries.

criteria to define the expected level of GDP in the CEECs at the end of the transition and thereby the duration of the catching up period could be answered crudely by historical comparisons: In 1935 as well as in 1955 the level of real GDP per capita in Hungary was about the level of real GDP per capita in Greece, but fell to 79 percent in 1970 and to 55 percent in 1992 (Maddison, 1995). Consequently, one could argue, that the catching up period of the CEECs will last at least until they have reached the per-capita income level of the present poor EU members.

²¹ The appendix discusses an extension of the model to account for FDI flows. Employing the same approach as in the main part of the paper, one can derive a significant positive effect of institutions on FDI flows and, consequently, an estimate of the EU effects on capital inflows.

6. Conclusions and Further Research

Even in the more advanced transition economies, economic and institutional reforms have been implemented inconsistently or have been stalled. In this paper it has been argued that the prospect of EU membership will both require and facilitate further reforms and will thereby lead to increased government credibility in the CEECs. An estimate of the potential growth affect resulting from improved economic institutions through EU membership has been derived suggesting the possibility of a "static" growth bonus in GDP of 9 percent (not accounting for induced capital accumulation) and an additional "dynamic" growth bonus of up to 18 percent. This should be regarded as a rule-of-thumb approximation and as a point of departure for further more in depth studies. Such research should analyse other indicators of credibility, like expected returns of investment or credit-ranking of various countries. Furthermore, it would be desirable to include in the model the adjustment costs in the production side of the economy.

Adapting the CEECs' institutions according to the EU *acquis communautaire* will help to establish a functioning market-orientated framework and to lay the foundation for catching-up with the EU income levels. However, the paper also showed that the speed of convergence depends heavily on the willingness to substitute consumption intertemporally, i.e. the willingness to forego present for future consumption. The low saving and investment to GDP ratios in the CEECs imply that income convergence with the incumbent EU members will take a long time, although positive welfare effects through higher consumption will be felt already in the short run.

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8. Appendix

Model Extension to include FDI

The model employed in the paper can be also used to estimate the impact of changes in the institutional setting on FDI inflows and to derive an estimate of the impact of the EU on capital inflows: FDI inflows occur if the return to capital is higher than in the rest of the world. Due to adjustment costs the inflows are not so high as to equilibrate the return to capital in all countries immediately.

FDI occurs if $Y_K > r^w$

Given the production function $Y = P^\beta K^\alpha L^{1-\alpha}$ with $0 < \alpha < 1$ and $0 < \beta < 1$

the marginal product of K can be derived:

$$Y_K = \alpha P^\beta K^{\alpha-1} L^{1-\alpha}$$

Taking the derivative for P, one gets

$$Y_{K,P} = \alpha \beta P^{\beta-1} K^{\alpha-1} L^{1-\alpha},$$

$$Y_{K,P} > 0,$$

i.e. the marginal product of K rises if P goes up for given K and L, or consequently, the FDI inflows are supposed to rise with a higher P - for a given r^w . This hypothesis can be examined empirically. The regression estimates reveal a positive correlation for FDI inflows (cf. table 4):

$$\text{Cumulative FDI-inflows 1989 - 1995} = -427.60 + 22.91 \text{ IIC} \quad R^2 = 0.31$$

$$\text{per capita (in US \$)} \quad (2.40) \quad (3.21)$$

and

$$\text{FDI-inflows in 1995 per capita (in US \$)} = -158.64 + 8.56 \text{ IIC} \quad R^2 = 0.28$$

$$(2.21) \quad (2.98)$$

If everything is kept equal, a one point increase in the IIC would raise on average the FDI-inflows per capita by more than US \$ 8 per year. Similar to the reasoning in the main part of the paper, fulfilment of the requirements of the *acquis communautaire* by the advanced transition countries would equal an increase of the IIC by 10 points leading to a boost in FDI-inflows by more than \$ 80 per capita.

Table 4 – Foreign Direct Investment, Investment and Saving in 25 Transition Countries

	FDI-inflows per capita in 1995	Cumulative FDI-inflows 1989-1995 per capita	Ratio of FDI in 1995 to GDP in 1995 ¹	Ratio of Gross Domestic Investment to GDP in 1994	Ratio of Gross Domestic Savings to GDP in 1994
	(in US dollars)	(in US dollars)	(percent)	(percent)	(percent)
Albania	22	63	3.5	13	-15
Armenia	5	6	1.4	10	-19
Azerbaijan	28	37	11.7	23	4
Belarus	1	8	NA	35	27
Bulgaria	12	36	0.8	21	21
Croatia	14	53	0.4	14	12
Czech Republic	243	532	5.6	20	20
Estonia	132	413	5.8	32	28
FYR Macedonia	7	18	0.3	18	4
Georgia	1	17	NA	NA	NA
Hungary	432	1113	10.2	21	15
Kazakhstan	43	110	3.8	24	20
Kyrgyzstan	20	32	5.5	30	14
Latvia	64	164	3.5	9	25
Lithuania	15	61	0.8	18	11
Moldova	15	22	3.5	8	0
Poland	23	63	0.7	16	17
Romania	16	39	1.0	27	25
Russia	10	21	0.4	27	29
Slovak Republic	34	117	1.1	17	23
Slovenia	75	253	0.8	21	25
Tajikistan	2	5	NA	NA	NA
Turkmenistan	25	54	10.6	NA	NA
Ukraine	2	11	0.4	NA	NA
Uzbekistan	5	13	1.5	23	24
Average	49.8	130.4	3.3	20.3	14.8

¹Nominal GDP-figures for Tajikistan and Turkmenistan in 1995 were set equal in per capita terms to the 1994 observation for Kazakhstan.

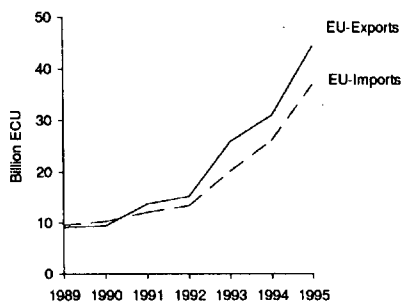
Sources: EBRD (1996); World Bank (1996). - Own calculations.

Used terms and their meaning:

K	=	Capital
L	=	Labour
P	=	Institutions
A	=	Technology
r	=	Interest rate
I	=	Investment
δ	=	Depreciation rate
w	=	Wage
Y	=	Production
U	=	Utility
C	=	Consumption
ρ	=	Discount rate
F	=	Foreign capital
i	=	Interest rate of foreign capital
θ	=	Reluctance to substitute intertemporally
\dot{K}	=	Derivative of K with respect to time: $\dot{K} = \frac{\partial K}{\partial t}$
\hat{K}	=	Relative changes of K: $\hat{K} = \frac{K_{t+1} - K_t}{K_t}$

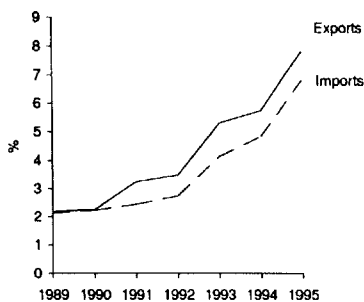
9. Figures

Figure 1 – Trade between the EU15 and Central and Eastern Europe (CEE)



Sources: International Monetary Fund (1996); Eurostat (1997); own calculations.

Figure 2 – Share of CEE in the Extra-EU Trade



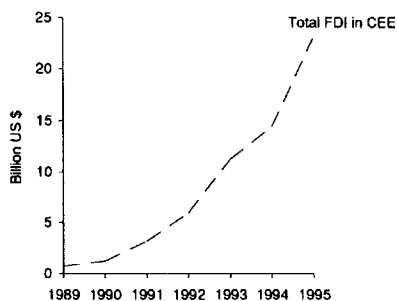
Sources: See figure 1.

Figure 3 – Share of EU in the CEE Trade



Sources: See figure 1.

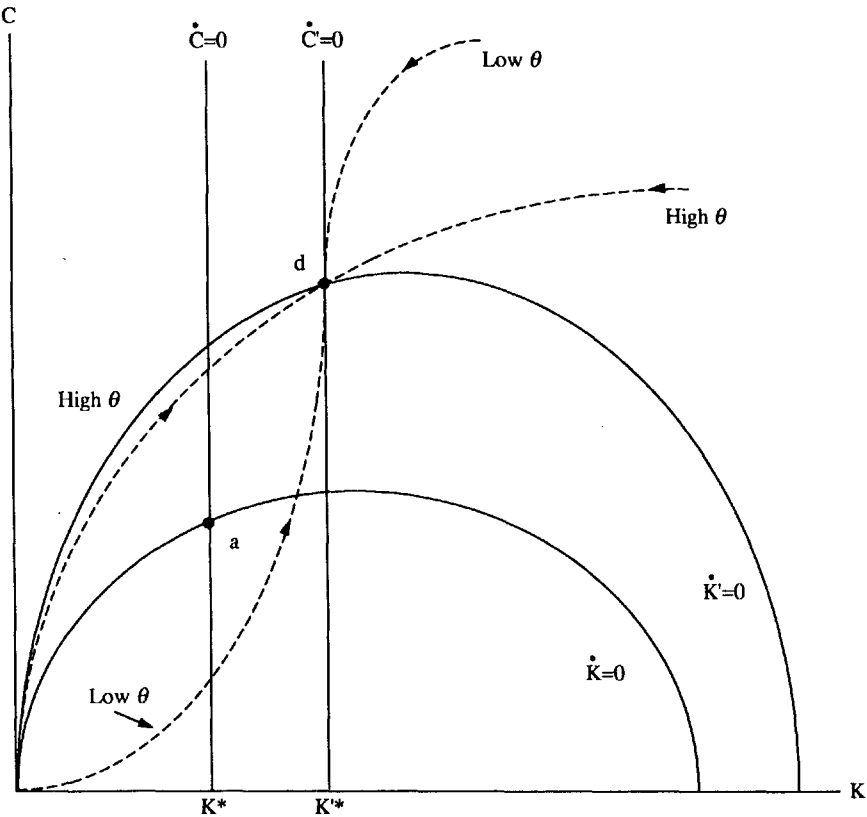
Figure 4 – Stock of FDI in CEE



Sources: EBRD (1996); Plan Econ (1996); own calculations.

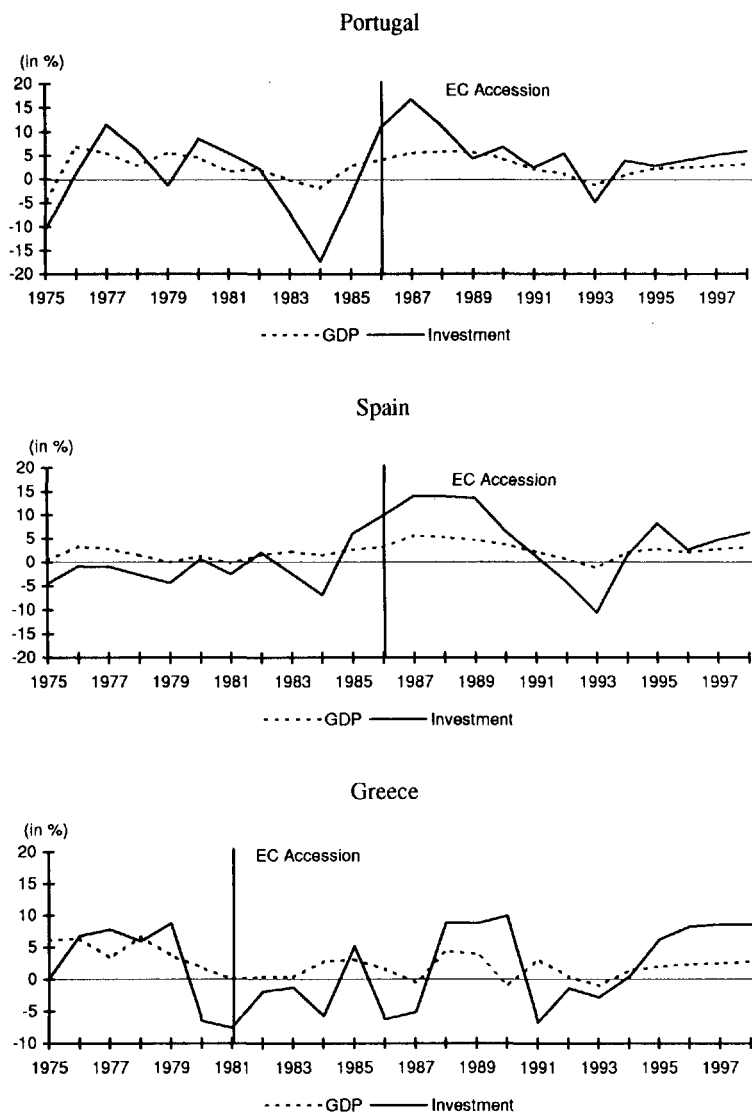
Central and Eastern Europe (CEE): Bulgaria, Czech Republic, Hungary, Poland, Romania, Slovak Republic.

Figure 5 – Increase in Capital Productivity within the Ramsey Model



A high θ corresponds to a low willingness to substitute intertemporally between consumption.

Figure 6 – Investment and GDP: Annual Growth Rates (in percent)

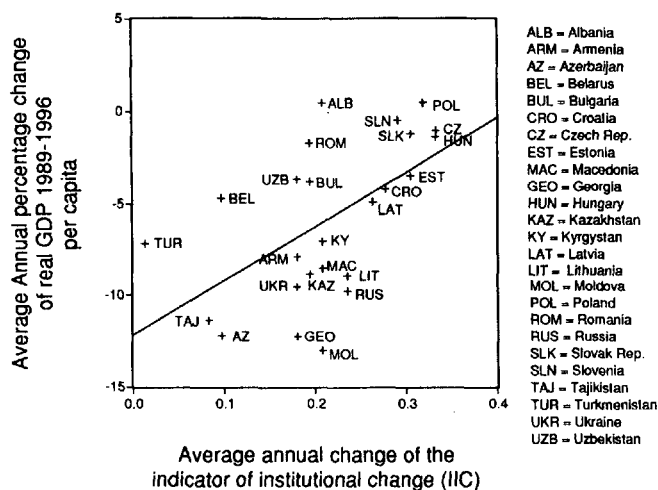


Notes: Constant Prices Changes, Estimates for 1996 and 1997, Projections for 1998.

Source: Europäische Kommission, Europäische Wirtschaft Nr. 60, 1995 and Europäische Kommission, Europäische Wirtschaft, Beiheft A, Nr. 12, December 1996.

Figure 7

Institutional Change and Growth (1989-1996)



Sources: EBRD (1996, 1997), World Bank (1997), own calculations.