Accession of the CEE-States to the EU

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Contents

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STATISTICS: ANNE STETTER

Abstract

The expansion of the market economy sphere is the core phenomenon of globalization. The pattern of integration of emerging and former state-planned economies into the world economy is quite different. This paper focuses on the Central and Eastern European (CEE) economies acceding to the EU15 and investigates two aspects. Up to the end of the decade, these countries will be fully integrated in the biggest and one of the most developed economic areas. The structural adjustment is the major challenge to be met by an adequate economic policy. The first aspect focuses on the Balassa-Samuelson effect, which the literature describes as one of the obstacles to the transition process after the introduction of the Euro in the CEE countries, because higher inflation rates can no longer be outweighed by a currency adjustment. The empirical investigation discloses that the traditional Balassa-Samuelson assumptions do not hold and that the inflation induced by productivity gains in the tradable goods sector is no longer an obstacle for participation in the monetary union. The second aspect focuses on the integration of the CEE countries into the world economy, which cannot be based on low-wage competition, because they will be full members of the EU. The structure of foreign trade of the CEE countries and the EU are compared. The latter is used as a benchmark and differences make visible the necessity of a structural change. In recent years, the competitive pressure for CEE countries has grown strongly. Exchange rate variations have become a major challenge, in particular the depreciation of the renminbi, the currency of the People's Republic of China. In combination with an indigenous deflationary tendency, low-wage production of commodities in CEE countries, which was an important activity before the Iron Curtain broke down, has come under pressure by growing imports from the People's Republic of China. This development incorporates the threat to distort the fragile transition process, and the intensity of the problem is linked to the Chinese foreign exchange regime. It is suggested that China give up the peg to the US dollar and link the renminbi to a basket of globally important currencies to take into account its multilateral trade relations.

Introduction

The expansion of the market economy sphere has been a driving factor for a decade. During the 1980s, it was driven above all by the newly industrializing countries, which tapped into the global market. In particular the Asian NICs followed Japan's suit. Their success incited global investors to further fund the industrialization and contributed to the high momentum growth of these countries. This development was accompanied by the cautious opening up of the economy of the People's Republic of China (PR China). At the end of the 1980s, the breakdown of the COMECON resulted in another expansion of the global market economy sphere.

During the 1990s the global economy was driven by intensifying interdependencies in goods and financial markets. The NICs' success has continued; even the Asian financial crises only dampened the dynamic development for a limited period. The integration of the People's Republic of China (PR China) into the world economy has markedly accelerated since its accession to the WTO. Immediately after the breakdown of the Iron Curtain, the integration of the Central and Eastern European (CEE) countries into the Western world has taken place. It has been pushed by the perspective to access the EU.

The CEE countries will access the EU and participate in the Single Market with its free movement of goods, services, capital and labor. Ten countries will join the EU on 1 May 2004; among them the bigger economies are the Czech Republic, Hungary, Poland, and the Slovak Republic. Further on, it is obligatory that these economies join the European Monetary Union (EMU). This means that many of the structural differences between the acceding countries and the current EU Member States have to be leveled out within a couple of years, otherwise there is an enormous risk of default.

This paper focuses on the process of transition of the former state-planned economies to market economies and their catching up to the level of current Member States. The short remaining period of convergence is a challenge to the governments of the acceding CEE states as well as the mature EU economies. The empirical analysis discloses the changes in the CEE economies since the mid-1990s—after the period of distortions of the economies induced by the breakdown of the COMECON. The conceptual approach is based on the Balassa-Samuelson Model that provides an explanation for the real appreciation of emerging countries' against mature countries' currencies in course of this process of convergence. The investigation in the pace of transition and its driving factors during the latter half of the 1990s provides insight into the development and serves for an assessment of the

future development. The CEE countries are not granted an opt-out clause from the European Monetary Union. The requirements of the Exchange Rate Mechanism (ERM) will be discussed in this respect. In particular, inflationary pressure, as a result of the Balassa-Samuelson effect, endangers the ongoing process of convergence after the accession to the EMU.

The transition of the CEE countries and their accession to the EU is different from the industrialization of the Asian economies. These countries will not only be integrated in a free-trade area but also free movement of goods, services, capital and labor will stimulate a convergence of the standard of living. Moreover, this development is an explicit political objective and has an impact on the position of the CEE countries in the global economy, because they will not be able to be competitive as a location for low-wage production against most of the emerging countries. This challenge is analyzed by an investigation of foreign trade. The trade of CEE countries and the EU-15 with the PR China is taken as an example. Differences in the structure of trade are used to identify the backwardness of CEE economies and the necessity to shift production towards high value added goods.

CEE Accession and the Balassa-Samuelson Effect

Traditional Balassa-Samuelson Model

The basic ideas of the economic relationship of emerging and mature countries are rooted in scientific papers of the 1940s. In the beginning, the subject was linked to the question of a justified exchange rate that was of major importance during a period of fixed currencies. In a groundbreaking paper, Balassa carried out a reappraisal of the purchasing power parity doctrine.[1] In a comparison of the US and European countries he found systematic differences, which lead to an overvaluation of the currency of the more advanced US economy as prices in non-traded goods and services are compared. The stylized facts of this investigation show overall higher labor productivity in the more advanced countries in all sectors. Discrimination of the economies into two sectors that supply tradable or non-tradable goods and services discloses a strong lead in labor productivity for the manufacture of tradable goods. But in the sector of non-tradable goods and services the lead of the more advanced country is much less pronounced. With respect to this fact, the currency of the country with the higher productivity will (tend to) be overvalued in terms of purchasing-power parity, given that prices for tradable goods in global markets, calculated in nominal exchange rates, are equal.

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1. Bela Balassa, The Purchasing-Power Parity Doctrine: A Reappraisal, *Journal of Political Economy*, 1964/72, pp 584 – 596.

The explanation for the discrepancy in productivity between the two sectors emerges from the fact that the production of most tradable goods is suited for process innovation whereas technical and organizational progress is limited for non-tradable goods, in particular for services. As a result, labor productivity and gains in labor productivity are lower in the non-tradable goods sector.

The Balassa-Samuelson model for emerging countries catching up with the lead of mature countries has been based on the assumption that there exists a global price for tradable goods. The integration of emerging countries into the world economy has been characterized by the introduction of advanced production processes in the tradable goods sector, and consequently strongly rising labor productivity induces wage increases. A functioning labor market transmits these wage rises to employees of the non-tradable goods sector, which possesses fewer opportunities to increase labor productivity. Therefore, prices are growing at a higher rate in the non-tradable goods sector. This means that the inflation rate is a systematically higher in emerging economies, which—in the long-run—induces a real appreciation as measured by the consumer price index, an indicator of inflation in the non-tradable goods sector.[2]

Adjustment of the Balassa-Samuelson Model

The reasoning for the Balassa-Samuelson effect is linked to the assumption that the non-tradable goods sector is characterized by production processes which cannot, or cannot easily, be automated. In particular, services, which are labor-intensive, are not open to automation, and productivity gains are well below the tradable goods sector. This reasoning is questionable in the world of the so-called New Economy where information and communication technologies (ICT) incorporate the potential to also increase efficiency in service sectors. Additionally, new structures in industrial organizations can be applied in the supply of services, for trade and logistics. They contribute to higher labor productivity.

Growth in labor productivity is no longer limited to the introduction of new production processes for the manufacture of physical goods, but companies can also increase labor productivity in other functions, such as administration or marketing, by the introduction of advanced ICT. Beyond technologies, management techniques are relevant factors for the explanation of progress in labor productivity. This means that an emerging country's progress is dependent not only on investment in machinery and equipment but also on the transfer of up-to-date know-how, and it suggests that the traditional patterns for the evolution of emerging countries need not be relevant today. It is assumed

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2. Balázs Égert, Does the Balassa-Samuelson Effect Matter for Central Europe's Transition Economies During the Run-Up to EMU?, Paris, June 2001.

that distinction between one sector of tradable and another of non-tradable goods does not suit the current framework conditions for emerging countries, because high productivity gains in the production of tradable goods and moderate price increases, on the one hand, and meager productivity gains and prices for non-tradable goods growing at a higher momentum, on the other hand, will no longer be the necessary patterns of emerging countries catching up to mature industrialized economies.[3]

In this paper, the working hypothesis is pursued that tangible and intangible investments are more important for the explanation of productivity gains in a sector than are discrepancies in production technology. For countries catching up with the lead of mature economies in productivity, this means that investment in new production technology and ICT, as well as the transfer of know-how and management techniques, are decisive. Companies in emerging countries can procure these driving factors on their own, but in the contemporary global economy the process of catching up has gained momentum and is above all propelled by foreign direct investment (FDI). Taking into account that by the application of advanced ICT even service industries can enjoy high productivity gains, it is proposed to modify the Balassa-Samuelson model.

Some industries enjoy strong foreign involvement. In conjunction with FDI, companies gain access to financial resources and know-how. By this they obtain the ability to raise productivity. In contrast, industries that are not in the focus of foreign investors lack capital and know-how and are not able to keep up with the pace of progress in other industries. Therefore, it is suggested to distinguish two industry sectors according to the level of foreign involvement as measured by FDI. In the sector with high FDI inflow, productivity growth is the driving force of the catching-up process of emerging countries and wages and salaries follow suit. Via the labor market, the development of wages is transferred to the second sector, which does not enjoy the influx of liquidity and know-how. This sector cannot compensate for growing labor costs by sufficient productivity gains. As a consequence, output prices increase more than in the other sector.

To summarize the adjustment of the Balassa-Samuelson model, there are two variations suggested. First, there is no longer a clear difference between sectors of tradable and non-tradable goods in the development of productivity and prices. A more suitable criterion for the discrimination among sectors with different development trends for both of these indicators is foreign involvement. Second, the potential for productivity gains is no longer incorporated in industrial production processes.

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3. Balázs Égert, Imed Drine, Kirsten Lommatzsch, Christophe Rault, The Balassa-Samuelson Effect in Central

Under recognition of the productivity potential incorporated in ICT, all industries can exploit noteworthy productivity gains, the ability to utilize them is strongly dependent on the resources, above all resources provided by foreign investors.

As a consequence of this variation of the Balassa-Samuelson model, the higher inflation rate observed in emerging countries that are catching up is not necessarily induced by higher price increases in the non-tradable sector or in particular in the area of private consumption. The higher inflation rate is, above all, driven by FDI that neither simultaneously nor with comparable intensity affects all industries.

Empirical Results on the Transition Process of the CEE Countries
Investigation of the development of CEE economies by sector confronted two problems—the need to exclude the distortions during the early 1990s and the poor statistical data. The Czech and Hungarian national statistical bureaus provided the most comprehensive disaggregated statistics. Therefore, it was decided to stick with these two economies, which are among the more advanced of the CEE economies but nevertheless show noteworthy discrepancies. Hungary has long-standing experience as a market driven economy and close linkages to Western Europe, which started during the early nineteen eighties, long before the breakdown of the Iron Curtain. One peculiarity of the Hungarian economy is the importance of the agricultural sector, and it has become a net-exporter of agricultural products to the EU. Production of primary products and heavy industry do not have a major stake in the Hungarian economy. The structural peculiarities of the Czech Republic are quite the opposite. The country suffers from severe over-capacity in the basic manufacturing industries.[4]

Moreover, Hungary was early to take off in market liberalization, whereas the Czech Republic is a late-comer to liberalization. The Czech Republic was particularly late in liberalizing labor markets and corporate governance, which affected foreign involvement in the economy to a certain extent, although the amount of inward foreign investment does not appear significantly less than in other countries in the region. One obstacle was privatization by vouchers and national pension funds, which often gained a majority stake in companies within a short period. Their policy was less directed towards profitability but to maintaining the level of employment. In line with a loss of competitiveness, the Czech Republic suffered a recession during the late 1990s but recovered soon, after the regulatory system was

and Eastern Europe: Myth or Reality? The William Davidson Institute, Working Paper Number 483, July 2002.

4. The Vienna Institute for International Economic Studies (ed.) (2003), *Countries in Transition 2003*, wiiw Handbook of Statistics, Vienna, 2003

improved, and some of the problems that made foreign companies refrain from investment have been rectified. Moreover, since that time the Czech Republic has provided noteworthy subsidies to foreign investors, similar to other governments in the region.

One major problem of Hungary's transition process is high inflation, which endangers the price competitiveness of plants in a phase of relative stable exchange rates. In contrast, price stability is an icon of the Czech economy in comparison with other transition economies. Therefore, it was decided to focus on these two countries as examples of the economic transition process in the region.

In a first step, industries that supply tradable and non-tradable goods were distinguished, as suggested by Balassa-Samuelson. The ratio of each industry's exports to its total production value was used to identify which industries belong to the tradable and which to the non-tradable sector. An export ratio of 30% was the threshold for distinguishing tradable goods industries. It provided a plausible result. Most of the manufacturing industries fit in the tradable goods sector defined in this way. One important exception was the food, beverages and tobacco industry. Other non-tradable industries are agriculture, mining and quarrying.

The Czech Republic and Hungary show similar patterns in the export orientation of industries, as measured by the export ratio. Of outstanding importance for both countries are exports of the metal working industries, in particular machinery and equipment. There is one noteworthy difference between the two countries. While the export ratio for the food, beverages and tobacco industry comes close to 30% in Hungary, it is below 10% for the Czech Republic.

Applying the 30% criterion, the utility industry, in particular electricity, appears to be a tradable goods industry, because its export ratio is somewhat above the threshold. Even so, it was decided to exclude this industry from further analysis, because it is a highly regulated market and because its framework conditions are close to those for non-tradables. According to our definition, in 2001 tradables contributed 28% of total value added in the Czech Republic and 22% in Hungary.

Both countries have eight years' of time-series data on labor input, wages, output, and prices. The Czech data base covers the period 1994 to 2001. The Hungarian data are for 1993 to 2000. This time span is sufficiently long to identify development patterns.

Over the full 8-year period, the tradable and non-tradable sectors in each country exhibit a relative development pattern that is in accordance with the pattern suggested by Balassa-Samuelson (Appendix tables A1 and A2). Labor productivity in the tradables sector grew, whereas it even declined

in the non-tradables sector. Labor costs —as measured by monthly gross wages—grew in both sectors at a similar pace. As a result, prices for non-tradable goods and services shot up. The average annual rate of growth reached around 10% for the Czech Republic and 19% for Hungary (Table 1). The difference was in line with the higher wage trend in Hungary.

TABLE 1: BALASSA-SAMUELSON EFFECT IN THE TRADABLE GOODS AND NON-TRADABLE GOODS SECTORS

	Hungary			Czech Republic		
	1994-2000	1994-96	1997-2000	1995-2001	1995-97	1998-2001
Non-tradable goods						
Monthly gross wages						
Total	15.4	19.7	12.3	11.4	15.5	8.5
Total ex public adm.	16.9	19.7	14.9	11.7	15.6	8.9
Market services	17.2	19.9	15.3	12.4	16.3	9.6
Labour productivity						
Total	-0.1	0.2	-0.3	-1.3	-4.1	0.9
Total ex public adm.	-0.4	-0.5	-0.3	-1.7	-5.9	1.7
Market services	-0.7	0.3	-1.4	-1.6	-6.4	2.2
Prices						
Total	18.8	24.4	14.8	9.4	13.5	6.4
Total ex public adm.	18.7	24.2	14.8	9.5	14.0	6.2
Market services	19.2	25.5	14.8	11.5	18.5	6.5
Tradable Goods						
Monthly gross wages						
Total	18.8	22.6	16.1	11.1	15.5	7.9
Total excl. electricity	19.1	22.8	16.3	11.1	15.5	7.9
Capital goods industries	18.9	23.2	15.7	12.1	17.3	8.3
Labour productivity						
Total	3.8	4.1	3.6	6.1	9.1	3.9
Total excl. electricity	4.1	4.7	3.6	7.4	12.0	4.1
Capital goods industries	12.3	15.0	10.4	10.9	20.0	4.5
Prices						
Total	14.2	17.4	11.9	4.4	5.8	3.4
Total excl. electricity	13.9	17.1	11.5	4.4	5.8	3.4
Capital goods industries	12.3	14.3	10.8	4.4	5.8	3.4

Source: National Statistical Bureaus, Ifo Institute.

Although each sector is heterogeneous and contains quite different industries, a closer look within each sector reveals similarities among individual industries (Appendix tables A1 and A2). Among non-tradables, trade, hotels, restaurants, transport, communication, telecommunication, real estate and other business services were combined to define a more homogeneous sub-sector, called the market services. For tradables, a capital goods industries sub-sector was created by merging machinery and equipment, electrical and optical machinery and instruments, and transport equipment, which are linked by an intense inter and intra-industrial division of labor. Moreover, these industries show the strongest growth in exports over the period under investigation. The patterns of development in wages, productivity, and prices for both more homogeneous sub-sectors are similar to the patterns of the broader sectors. The patterns for the Czech Republic and Hungary over time support Balassa-

Samuelson.

The Czech Republic showed different patterns of development during various sub-periods. During the early years, the non-tradables sector suffered a setback, with real output shrinking during the three years 1995-97, at an annual rate of 1.4% in the sector as a whole and by more than 5% in the market services sub -sector of non -tradables (Table 2). In the later years, on average, these related service industries stabilized. While financial intermediation further declined by around one-tenth, because of growing indebtedness of firms, trade, transport and telecommunication experienced a turnaround. For the four years 1998 to 2001, the average growth rate of real output for other market services exceeded 3% (Table A.3).

TABLE 2: OUTPUT AND EMPLOYMENT GROWTH IN THE TRADABLE GOODS AND NON-TRADABLE GOODS SECTORS

	Hungary			Czech Republic		
	1994-2000	1994-96	1997-2000	1995-2001	1995-97	1998-2001
			Non-tradable goods			
Real production						
Total	1.3	0.2	2.1	-1.0	-1.4	-0.7
Total excl. public adm.	1.7	1.4	2.0	-1.0	-1.5	-0.7
Market services	2.3	1.2	3.2	-2.1	-5.1	0.2
Employment						
Total	2.2	0.0	3.9	-0.3	1.0	-1.3
Total excl. public adm.	1.6	0.8	2.2	0.0	2.4	-1.7
Market services	2.4	0.9	3.5	0.6	2.8	-1.0
			Tradable Goods			
Real production						
Total excl. electricity	14.4	10.6	17.3	6.6	8.1	5.5
Total	12.5	9.0	15.1	5.7	6.7	5.1
Capital goods industries	28.4	23.9	31.9	13.5	19.5	9.3
Employment						
Total ex electricity	4.4	3.6	5.0	-1.8	-2.9	-1.0
Total	3.6	3.2	4.0	-1.8	-2.8	-1.0
Capital goods industries	6.6	4.5	8.1	-0.8	-3.4	1.2

Source: National Statistical Bureaus, Ifo Institute.

The Czech tradable sector developed along a different pattern. Real output grew by 8.1% per annum in the three years 1995 to 1997 and the growth momentum shrank to an average yearly rate of 5.5% in the later years from 1998 to 2001. The capital goods industries enjoyed an even more dynamic development of 19.5% and 93% for the two sub-periods respectively.

With regard to these extreme discrepancies in development between these sectors it must be suspected that much of the difference in the evolution of labor productivity in the tradable and non-table sectors in the Czech Republic contributed to the growth differentials between the two sectors. In fact, labor productivity in the tradable goods sector grew more moderately in the recent years, while

output growth lost some of its momentum. The non-tradables sector made some progress in labor productivity, in particular in those industries which enjoyed growing output. For instance, in trade productivity grew at an average rate of 7.1% for the period 1998-2001 (Tables A.1 and A.3).

In contrast to the results for the Czech Republic, Hungary did evidence a changing pattern of transition in different sub-periods. Between 1994-96 and 1997-2000 output growth of non-tradable goods accelerated somewhat (Table 2), but labor productivity did not increase (Table 1), only the transport and telecommunication sector showed a little progress. (Table A.3)

Summarizing the results so far, the dynamic elements of emerging countries' catching-up to the state of development of mature economies affirm the findings of Balassa-Samuelson. There has been no evidence for the working hypothesis that the availability of new technologies, namely information and communication technology, which contributed to productivity growth of the service industries in mature countries, especially during the latter half of the 1990s, has had any effect so far in the transition process in these two CEE states.

Impact of FDI on the Transition Process in CEE Countries

Foreign companies play an important role in the transition process of the acceding countries.[5] They provide the means for renewal of the capital stock, know-how on advanced technologies, and management techniques necessary for a high-speed catching up to the mature western European nations. During the 1990s, inward investment soared in a broad range of industries. In particular, foreign direct investment in manufacturing industries took the attention of the broad public, and the relocation of production was high on the agenda in economic and political discussions.

Most inward investment in the Czech and Hungarian economies was targeted not to export industries but to industries that provide goods and services for indigenous demand. Roughly three-quarters of FDI was bound for the non-tradables sector and the rest for the tradable goods sector. This distribution is close to the distribution of total GDP between the two sectors. Moreover, the amount of FDI per employee for the period 1994 to 2001 was similar in both sectors. FDI per employee in the market service sub-sector was even higher than the average for the tradable goods sector (Table 3).

5. Joshua Aizenmann, Nancy Marion, The Merits of Horizontal versus Vertical FDI in the Presence of Uncertainty, Working Paper No. 8631, NBER, December 2001.

TABLE 3: INTENSITY IN INWARD INVESTMENT BY SECTOR

	Czech Republic: FDI per employee per year				Hungary: Total FDI per employee up to 2001	
	1994 - 2001		1994 - 1997	1998 - 2001		
	CZK	Euro	CZK	CZK	HUF	Euro
Non-tradables						
Total	41,522	1,179.7	6,491	80,444	2,128,453	10,980
Total ex public adm.	24,672	701.0	4,554	46,405	1,243,622	6,415
Market services	29,787	846.3	4,959	57,102	1,424,123	7,346
Tradables						
Total	35,707	1,014.5	17,023	63,318	2,826,061	14,578
Total ex electricity	32,139	913.1	14,196	58,116	2,747,985	14,176
Capital goods industries	34,505	980.3	12,226	65,412	5,198,058	26,814

Source: National statistical bureaus, Ifo Institute.

For the Czech Republic, the inflow of foreign capital showed a different pattern over time. In the capital goods industries, FDI per employee per year averaged 12,226 CZK for the years 1994 to 1997 and then it reached 65,412 CZK for the years 1998 up to 2001 (Table 3). In the non-tradable goods sector, the take off of FDI was somewhat delayed. FDI in market services averaged only 4,959 CZK per employee per year during the early years, and it increased more than an order of magnitude to an average of 57,102 CZK during 1998-2001. It can be assumed that for the Czech Republic—which was later than other CEE countries in the transition process, particularly compared to Hungary—the regulatory framework conditions and the privatization of the large utility companies and state-owned banks was more complicated and had a negative impact on the inflow of foreign capital in the early years of the transition (Table 3).

The annual time-series on inward investment for Hungary are not sufficiently long to allow us to look for similar patterns by sub-periods of that country's transition. But Hungary started its transition earlier than the Czech Republic and there is some likelihood that a delay of FDI inflow to the non-tradables sector did not take place during the period under consideration.

The high growth momentum of the transition countries has driven the tradable goods industries above all. It could have been assumed that the comparably high inward investment in both sectors had an effect on growth, but there was a major discrepancy for both countries. While the tradable goods sector enjoyed high growth rates of real output, the non-tradables sector grew only moderately in Hungary and it even shrank in the Czech Republic.

FDI directed towards the tradable goods sector is investment in production capacity for goods that will be sold in international markets, at least to a noteworthy degree. This assumption is underscored not only by increased growth of the tradable goods sector but also by soaring exports since the mid 1990s. By contrast, FDI in the non-tradable sector is dedicated primarily for indigenous

demand. This means that the strategic objectives of foreign compani es that invest in one sector or the other tend to differ. It can be assumed that FDI directed towards the non-tradables sector is primarily dedicated to acquiring market share, whereas the primary objective of investment in the tradables sector lies in exploiting the location's comparative advantages for production.[6]

Foreign investment in the tradable goods sector tends more towards vertical FDI which is aimed at the decomposition of a company's production.[7] Launching new production sites in CEE countries and revamping existing ones are intended to create efficient manufacturing processes and exploit the region's relative advantages in labor costs.[8] Much of the FDI has been spent for the procurement of machinery and investment to improve efficiency and product quality. As a result, labor productivity and output soared shortly after the initial investment in the tradable goods sector was carried out.[9]

Additionally, it is highly likely that productivity gains were not enjoyed only by foreign-owned companies, contrary to some empirical studies.[10] FDI focused on the metalworking industry, a segment of the manufacturing industry marked by an intense division of labor between companies. High-performance final products require the input of technologically advanced and high-quality intermediary products.[11] Full exploitation of a region's comparative advantage in these industries requires a dense network of experienced subcontractors and skilled workers. Thus, the creation of industrial clusters is of major importance for a big part of the Czech and Hungarian manufacturing industries; the metal industries contribute 57% of total manufacturing value added in the Czech

6.This differentiation might not prove to be true in any case. In particular, if there exist strong tariff or non-tariff barriers to trade, the primary objective even in tradable goods markets can be the purchase of market share. In the case of acceding countries and the free movement of goods, services, capital- and labor-intensive investment in production capacity is not a prerequisite for market access.

7. In real life, a clear-cut discrimination of vertical and horizontal FDI is the exception to the rule. For example, the purchase of Skoda by VW was as well an investment in the decomposition of production as the procurement of a brand and a sales network to get a strong foothold in an emerging car market. An example of clear vertical FDI is the investment of Audi in Györ, Hungary for the manufacture of engines that are assembled in Ingolstadt, Germany.

8. Henrik Braconier, Pehr Johan Norbäck, Dieter Urban, Vertical FDI Revisited, The Research Institute of Industrial Economics (IUI), Stockholm, Working Paper 579, 2002.

9. Similar effects have been reported as the impact of FDI in US manufacturing industries on domestic firms: Wolfgang Keller, Stephen R. Yeaple, Multinational Enterprises, International Trade and Productivity Growth: Firm-Level Evidence From the United States, Working Paper No. 9504, February 2003, NBER Cambridge Mass. http//www.nber.org/papers/w9504.

10. A number of studies mention a loss of productivity for indigenous companies if foreign players penetrate the market. Often these negative effects are linked to a loss of market share to new competitors and therefore are above all a side effect of horizontal FDI. Rashmi Banga, Do Productivity Spillovers Differ from Japanese and US Firms, Indian Council for Research on International Economic Relations, Working Paper 112, New Delhi, September 2003.

11. David Worrall, Tom Donnelly, David Morris, Industrial Restructuring: The Role of FDI, Joint Ventures, Acquisitions and Technology Transfer in Central Europe's Automotive Industry, Motor Industry Observatory, Centre for Local Economic Development, Coventry Business School, Coventry.

Republic and 52% in Hungary. [12] Foreign-owned companies are interested in local subcontractors and put high requirements on manufacturers of intermediary products. There is a demand push which stimulates the upgrading of domestically owned firms. [13]

In the non-tradable goods sector, foreign investment tends more towards horizontal FDI, which is aimed at the penetration of new markets. This tendency is caused not only by the de facto attributes of non-tradable goods and services, but also by regulation of market access and by the existence of indigenous monopolies, former state-owned companies which have been or will be privatized. Foreign investors are mainly interested in distribution networks and access to clients. Although Hungary and the Czech Republic will access to the EU in May 2004 many of the markets put together in the non-tradables sector will not be opened to EU-wide competition immediately. Barriers to foreign suppliers will only be abolished in the course of forthcoming years. Foreign companies cannot wait that long for market access; they have to acquire available firms.

Looking at the patterns of direct and indirect investment together, it becomes obvious that a high portion of the FDI inflow into the tradables sector, even if it is not greenfield investment but investment in an existing company, is for the purchase of machinery and equipment. The economy's capital stock dedicated for production grows. A high portion of the FDI inflow in the non-tradables sector goes into existing companies, which are valued for their market access. Such FDI does not necessarily affect the economy's capital stock, because much of the amount is dedicated for the exchange of assets and not for physical investment and the renewal of equipment. This is why CEE countries have a stronger interest in direct FDI in the tradable goods sector and provide bigger incentives to investors who create workplaces, training, and the like than in non-tradables. [14]

Further to the discussion of the different patterns of direct and indirect FDI, it is obvious that indirect inward investment will not result in an immediate improvement in manufacturing processes. [15]

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12. Jose P. Damijan, Mark Knell, Boris Majzen, Matija Rojec, Technology Transfer through FDI in Top-10 Transition countries: How Important are Direct Effects, Horizontal and Vertical Spillovers, William Davidson Working Paper No. 549, February 2003.

13. For empirical evidence for the transmission of know-how from foreign-owned companies to indigenous firms see: Yumiko Okamoto, Frederik Sjöholm, FDI and the Dynamics of Productivity: Microeconomic Evidence, Working Paper Series in Economics and Finance No. 348, December 1999 and B.Y. Aw, X. Chen, M. Roberts, Firm-level evidence on productivity differentials, turnover and exports in Taiwanese manufacturing, NBER Working Paper No. 6235, October 1997.

14. For the Czech Republic see: Newton Holding a.s. (ed), FDI incentives in the Czech Republic, Prague, February 2003
http://www.newton.cz/redsys/docs/analyzy/macroanalyses/61a4fef3740f5c4dfd9da43d218657d4.pdf.

15. Rashmi Banga, Do Productivity Spillovers Differ from Japanese and US Firms, Indian Council for Research on International Economic Relations, Working Paper 112, New Delhi, September 2003.

Most important are initiatives to get a foothold in the market. It even can be assumed that foreign investment in more efficient processes will be delayed—at least in some markets—until barriers to access are reduced and competition becomes tougher.[16] Perhaps it is too early to find evidence of productivity gains in the non-tradables sector as suggested in the working hypothesis, although intensity of inward investment here was comparable to the tradables sector.

Economic Development within the Tradables and Non-tradables Sectors

The overall analysis of the tradables and non-tradables sectors disclosed a development patterns consistent with the Balassa-Samuelson Model. A more detailed investigation reveals divergent development within each sector. In the non-tradables sector, some industries such as transports and telecommunication, real estate and business services in Hungary and transports and telecommunication and construction in the Czech Republic are growing. Other industries decline; Czech banks suffered the most severe setback. In the tradables sector, only a few industries declined; most grew. The manufacture of electrical goods and transport equipment showed the most dynamic expansion in Hungary as well as in the Czech Republic, with average yearly rates of growth over the whole period 33% and 18%, respectively. In contrast, the output of the chemical industry in Hungary declined and the manufacture of basic metals in the Czech Republic was stagnant. (Table A.4)

More important with regard to Balassa-Samuelson is the divergence in the development of labor productivity within each sector. For instance, in Hungary labor productivity showed noteworthy rates of growth in retail and wholesale trade as well as in the transport and telecommunication industry, whereas productivity declined in other non-tradables industries. Within the tradables sector, labor productivity shrank in the chemical industry. Similar intra-sectoral differences are visible in the statistics for the Czech Republic.

Growth and access to financial means and know-how through FDI were tested as explanatory variables for heterogeneous development within each sector (Table A2). The results support that growth has an impact on labor productivity. There is evidence not only for industries in the tradables sector; even in the non-tradables sector, the correlation coefficient is positive and indicates that there are some opportunities to increase efficiency, at least by exploiting economies of scale. The impact of growth on the development of labor productivity is conventional wisdom,[17] and it can be assumed that

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16. Taking into account that privatization of state-held companies is linked to guarantees to employees, productivity increases will hardly be gained in a stagnant market.

17. Robert J. Gordon, High-Tech Innovation and Productivity Growth: Does Supply Create its own Demand?

at least to a certain extent the discrepancy between the tradables and non-tradables sectors contributed to differences in the growth momentum (Table 4).

TABLE 4: CORRELATION OF OUTPUT, FDI, WAGES AND PRODUCTIVITY

		Pearson's Correlation Coefficient, r			
		Non-tradable goods		Tradable goods	
Variable 1	Variable 2	Hungary	Czech Republic	Hungary	Czech Republic
? productivity	? wages	0.277	0.197	0.411	0.698
? output	? productivity	-0.640	0.573	0.982	0.728
? inward investment	? productivity	0.292	0.455	-0.685	-0.365

Source: National Statistical Bureaus, Ifo Institute.

Labor productivity grew strongly at the beginning of the period and then moderated in more recent years. This pattern is prominent for the Czech Republic where transition is delayed in comparison with Hungary. In particular, in the Czech tradables sector, the metal working industries show extremely high productivity growth rates in the beginning and a marked slow down later on. The pattern in this sector was similar for Hungary, with the highest productivity gains in the metal industries, compared to other industries. The pace of productivity growth also decelerated, but it was less pronounced than in the Czech Republic.

Most studies that refer to the Balassa-Samuelson effect investigate the validity of basic assumptions about labor mobility, competitive labor markets, and purchasing-power parity (PPP) and try to find evidence for productivity differentials and the evolution of relative prices and wages.[18] Although there is a broad scientific literature focused on Balassa-Samuelson, in most publications the impact of growth on productivity has not been taken into account as an additional exogenous variable with explanatory power for the productivity differential between the tradables and non-tradables sectors. The empirical studies focus on evidence for the traditional assumptions and try to verify the assumption that there is a lack of opportunities to increase labor productivity in non-tradables.[19] But in the era of the New Economy this has become questionable, although this paper failed to support the

18. Empirical studies on the Balassa-Samuelson effect do not investigate the impact of growth. See: Dubravko Mihaljek, Marc Klau, The Balassa-Samuelson Effect in central Europe: a disaggregated analysis, in: BIS Working Papers No 143, October 2003, p. 4.

19. For an explanation and description of the applied explanatory variables in more recent studies see: Dubravko Mihaljek, Marc Klau, The Balassa-Samuelson Effect in central Europe: a disaggregated analysis, in: BIS Working Papers No 143, October 2003, p. 4.

author's initial assumption.

The Impact of Labor Markets on Wage Equalization

Labor mobility and competitive labor markets are crucial elements for the Balassa-Samuelson model. But it is questionable whether cross-sectoral migration of the workforce is sufficiently high. De facto different sectors require different skills, even among blue-collar workers. Moreover, different skill levels link up with divergent wage levels and impede mobility.[20] The results have been confirmed for both countries. The variance of wages is highest in the non-tradables sector, where the average wage in the industry with the highest wage is double the average wage in the lowest-wage industry. This result is due mainly to the extremely high wages in financial intermediation. There are also remarkable differences in average wages among industries in the tradable goods sector, but the variance is much lower. Even in the metal industries, with their homogeneous skill requirements in production and research and development, average wages differ up to 20% (Table A2).

It is a fact that average wage levels differ between industries. More important to get an impression of the functioning of the labor market is development over time. The evolution of wages discloses growing differences between the industries in each sector. The high-wage industries show high growth rates. This result could be in line with a structural change towards industries with higher skills and higher wages. But in neither the tradables nor the non-tradables sector are the high-wage industries growing; moreover, in the non-tradables sector there is a negative correlation between wage increases and output growth on the one hand and productivity gains on the other (Table 4).

Generally speaking, the economic indicators within the tradables sector comply better with theory. Productivity gains and output growth stimulate wage increases. If one takes labor productivity and wages as first approximations of marginal revenue and marginal cost of labor, the relation conforms to expectations. The positive correlation of wages and output growth indicates scarce labor supply for expanding industries.

These results indicate that—if at all—there is some evidence for the Balassa-Samuelson assumptions on the labor market for the tradables sector only, but in no way for the non-tradables sector. This indicates that the transmission of wage rises in some industries to other industries is not a result of the functioning of the labor market, but of wage settlement procedures, which trust in collective wage agreements between unions and entrepreneurs' associations. Such cartels tend to

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20. Jack Strauss, Relative Price Determination in the Medium Run: The influence of Wages, Productivity and International Prices, in *Southern Economic Journal* 1998, 65(2), pp 223-244.

bargain the income distribution among members, and labor mobility is impeded by wage contracts which provide occupational guarantees - most frequent - dependent on duration of employment.

Within such a framework, sectoral discrepancies in bargaining power will be more important for an agreement on wage raises and the explanation of inter-industry differences. Further on, the results suggest that in particular such elements are more important for wage settlements in the non-tradables sector than in the tradables sector. Additionally, strong interest to keep the standard of living in relation to other industries induces unions in the non-tradables sector to get at least the same wage raises as in the tradables sector with its productivity growth. For industries which are worse off and unions with poor bargaining power there is a minimum requirement for wage agreements: to maintain the standard of living. As a result of such a non-competitive labor market there is a threat of a vicious cycle which endangers international competitiveness. In fact, wages grow stronger than productivity, not only in the non-tradables sector, but even in the tradables sector with its currently high productivity gains. This means that unit-labor costs grow even in industries that manufacture goods for international markets.

As a result, some of the production in the tradables sector that only relocated to CEE countries during the 1990s has relocated even further eastward and to southeast Europe. This has become a challenge for the more advanced countries in the region, in particular for Hungary. It can be expected that job-creation in the tradables sector will lose momentum, because growth will moderate in the years to come. In connection with some losses in low-wage employment, this sector will not contribute much stimulus to the labor market.[21] This means that growth must shift towards the non-tradables sector and domestic demand has to play a bigger role in the future process of transition. Such a development will fit the political objective of the European community to increase the standard of living. It will only be successful if the CEE countries succeed in up-grading the quality of their products and in entering know-how driven markets.

Much of the high inflation was caused by the labor market institutions in connection with the productivity differential between the tradables and the non-tradables sectors. Under non-competitive conditions, wage increases were too high, even in industries with strong productivity growth. If one assumes that there will be an ongoing moderation in output and productivity growth in the tradables

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21. Most of the relocation remains in Europe. This is particularly true in the cluster comprising metal-related industries. In other industries, such as textiles, clothing, toys, basic chemicals and plastics, a relocation to the Far East and the PR of China is taking place. For the outlook on employment in CEE manufacturing see: The Vienna Institute for International Economic Studies (WIIW) (ed.), Competitiveness of Industry in CEE Candidate Countries – Composite Paper – Part 6, p. 6-1, Vienna July 2001.

sector, the factor driving wage settlements in the non-tradables sector to exceed productivity gains will be reduced and inflation will decelerate. But further efforts will be necessary to improve the functioning of the labor market, to stabilize unit-labor costs. After accession to the European Monetary System, CEE countries will no longer be able to maintain their competitiveness by depreciating their currencies.

The Balassa -Samuelson Effect

The empirical investigation and the discussion in the scientific literature disclosed some doubts about the assumptions of the Balassa-Samuelson model. Above all, the assumption of a competitive labor market and inter-industry labor migration is not realistic. In both countries under investigation the development of wages shows inter-industry differences which are not in accordance with conventional economic wisdom. It has been argued that cartelization of wage settlements is, on the one hand, a question of the bargaining power of the parties involved. There is a lower bound for wage increases, the inflation rate, because one of the indispensable objectives in wage settlements is to maintain the standard of living. Another important objective is to keep up with the general expansion of wealth.[22] The transmission of wage increases is more an effect of market deficiencies than of a functioning market. This means that, in fact, strong productivity gains in the one sector affect the other sector, but the Balassa-Samuelson assumption does not hold.

Another important assumption of the Balassa-Samuelson model concerns efficiency gains in the tradables and non-tradables sectors. Technological progress, automation and structural changes in industries and individual companies can be exploited in the manufacture of tradables goods, whereas in non-tradables, and in particular in services, such progress is limited. The application of advanced ICT, which mainly has been applied in service industries, logistics and trade has enabled just these branches to raise the efficiency in the non-tradables sector overall.[23] This paper found no evidence for Hungary and the Czech Republic, but in Germany, the country used as benchmark, labor productivity

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22. This market deficiency has been observed in the short and medium run. It contradicts the common neo-classical assumptions on the equality of marginal costs and marginal productivity of labor. There will be two alternatives in the long-run: The government can work to improve the functioning of the market and lay a foundation for a more efficient allocation of resources. In the deficient labor market environment the cartelized wage settlements will weaken those industries, where the bargaining parties do not stick to necessary economic requirements. This will induce a decline of the industries concerned. In the long-run, labor input will come within reach of the neo-classical assumptions.

23. Micro-economic empirical studies on the impact of the New Economy disclose strong gains in productivity in mature industrialized nations, above all for the US, but also for Europe. See: Robert J. Gordon, High-Tech Innovation and Productivity Growth: Does Supply Create its own Demand? NBER Working Paper No. 9437, January 2003; Stephen D. Oliver, Daniel E. Sichel, Information Technology and Productivity: Where are we now and where are we going? Federal Reserve Bank of Atlanta *Economic Review,* 2002; and Mark Sieling, Brian Friedman and Mark Dumas, Labor Productivity in the Retail Trade Industry, 1987-99, *Monthly Labor Review,* December 2001.

did grow more strongly in the non-tradables sector than in the tradables sector during the period under investigation (Table 5).

TABLE 5: BALASSA-SAMUELSON EFFECT IN COMPARISON WITH GERMANY

| | Average yearly % change | | | | | | Tradable-Non-tradable Difference | |
| | Productivity | | Wages | | Prices | | | |
	Tradable Goods	Non-tradable Goods	Tradable Goods	Non-tradable Goods	Tradable Goods	Non-tradable Goods	Productivity	Prices
1995 – 2001								
Czech Republic	6.1	-1.7	11.1	11.7	4.4	9.5	7.7	5.1
Hungary	3.8	-0.4	18.8	16.9	14.2	18.7	4.2	4.5
Germany	2.3	1.8	2.8	1.2	1.0	-0.2	0.5	-1.2
1998 – 2001								
Czech Republic	3.9	1.7	7.9	8.9	3.4	6.2	2.2	2.8
Hungary	3.6	-0.3	16.1	14.9	11.9	14.8	3.9	2.9
Germany	1.6	1.5	2.5	1.3	0.7	-0.9	0.1	-1.6

Note: Latest year for Hungary 2000. Total tradable goods except electricity. Total non-tradable goods except public administration
Source: National Statistical Bureaus, Ifo Institute.

Although there are some doubts about the basic assumptions of the Balassa-Samuelson model, the predicted effects were found. The results are obvious for both CEE countries. The relationship between productivity and price differentials holds not only for the entire period (1994 – 2001) but also for the more recent years (1998 – 2001). However, the relative development of the two sectors changed remarkably. The differential in productivity growth shrank considerably and in line with this, the price differential was also reduced in comparison with earlier years (1994 – 1997).

As an explanation for this development it is assumed that much of the productivity potential in the tradables sector was exploited by foreign investors, who provided know-how and advanced production equipment to overcome the backwardness of industrial manufacturing in the CEE countries. Many companies in the transition countries caught up to the international state-of-the-art, and further gains in productivity will be utilized less easily. Some support for this assumption is given by the soaring efficiency gains in the metal industries during the early years and the noteworthy moderation of the industry's development in more recent years.

These results indicate that the Balassa-Samuelson effect lost some importance and will further fade in the years to come.[24] This means that the diminished productivity gap will contribute to lower inflation rates. Already, between 1998 and 2001 the relative productivity and price developments in the

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24. Mihály Andràs Kovács, How real is the Fear? Investigating the Balassa-Samuelson Effect in CEC5 Countries in the Prospect of EMU Enlargment, February 2003.

Czech Republic and Hungary are not far from the situation in Germany. [25] This means that the Balassa-Samuelson effect—which is often said to pose a risk to early accession of the transition countries to the EMU—will not be significant and does not require a specific exchange rate policy.

The price level of non-tradables or the inflation of consumer prices are not a burden for early accession to the EMU; what endangers early accession to the EMU is the monetary and foreign exchange policy of Hungary—the combination of high macro-economic inflation rates whose negative impact on competitiveness have been compensated for by an exchange rate policy with a pre-announced crawling-peg regime since 1996. The policies behind this development must first be adjusted. Changes are on the way. The Czech Republic provides another picture. The country's macro-economic inflation is nearly in line with the requirements of the EMU and the Czech koruna has become a stable currency during the more recent years as a result of a managed exchange rate regime against the Euro and an inflation target for monetary policy. [26] Although there have been some losses in price competitiveness, monetary performance and foreign exchange suggest an early accession to the EMU.

The Accession of CEE countries to the EMU

The ten new Member States which will join the EU in May 2004 are not allowed to opt out of accession to the EMU. An early adoption of the Euro could pose a threat to the further economic development of the transition economies, because exchange rate policies to smooth the transition process will no longer be possible. Above all, the adjustment of their economic structure is linked to changes in relative prices as a result of changes in factor productivity. This must be taken into account by monetary policy to prevent distortion in the process of transition and results – for most of the CEE countries – in a loser policy and higher inflation rates.

The Balassa-Samuelson model provides one explanation for this higher inflation rate. It suggests that there are structural differences in relative prices and productivity between mature and emerging economies. According to the model, transition countries that catch up with mature industrialized countries have higher inflation rates until the productivity gap is closed. This process can be time-consuming and require a delay in the adoption of the euro. The empirical investigation showed that

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25. For other less mature economies, which are members of the EMU the levels of relative price and productivity developments are comparable, see: Hans-Werner Sinn, Michael Reutter, The Minimum Inflation Rate for Euroland, CESifo Working Paper No. 377, Munich, December 2000.

26. Willem H. Buiter, Clemens Grafe, Anchor, Float or Abandon Ship: Exchange Rate Regimes for Accession Countries, in: Center for Economic Policy Research Discussion Paper Series No. 3184, January 2002, p.55.

structural change and gains in productivity had an extreme momentum during the early years of the transition, but slowed down during the latter years under investigation. If we can assume that the productivity differential between the tradables and non-tradables sectors, which is responsible for higher inflation, has been reduced to a level similar to that found in some of the less advanced EMU Member States, then Balassa-Samuelson effect is no longer a noteworthy structural barrier to entry in the EMU.

Most other preconditions for accession to the EMU are largely dependent on adequate monetary and financial policies.[27] This is quite obvious if one compares the development of the Czech Republic and Hungary. The Czech central bank pursues a more stability-oriented monetary policy than the Hungarian central bank. As a result, the foreign exchange regime was dedicated to a stable Czech koruna and the currency fluctuated against the euro within a range of +/-15%, which met the criterion for participation in the EMU. Inflation, as measured by the consumer price index, was 3.1% between 1999 and 2002, only 1.8% higher than for Germany, and thus close to the 1.5 percentage point maximum above the average of the three Member States with the lowest inflation rates.

The major obstacle for Hungary to meet the criteria for accession to the EMU lies in its monetary policy. The Balassa-Samuelson effect is of marginal importance only. A readjustment of monetary policy and an explicit inflation target are necessary for Hungary and the other CEE countries which are dedicated to join the EU in 2004. This is a necessary prerequisite to stabilize the foreign exchange rate without endangering price competitiveness of the acceding countries. Therefore, inflation targeting is indispensable for Hungary's accession to the EMU.

The Maastricht Treaty asks for a two-year period in which applicants for the EMU must fulfill certain minimum requirements. Monetary, foreign exchange, and financial policies must be adopted to prove that the applying country fits in the EMU. One obstacle to successfully passing the test period exists for those countries that are already members of the EU but not of the EMU, because part of the EU *Acquis* requirements is a totally open capital account. Therefore, the ten new Member States, which cannot opt out of accession to the EMU, face the risk of speculative attacks on their currencies which could cause further delay in the introduction of the euro. Fighting off such attacks is – if even possible – costly.

It is questionable if a test of the monetary and foreign exchange policy of acceding countries

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27. Mateusz Szczurek, Exchange Rate Regimes and the Nominal Convergence, Warsaw, December 2003

makes sense, although the Maastricht Treaty requires it. Accession to the EMU will abolish the acceding countries' national policies; the European Central Bank (ECB) will carry out these policies for all Member States. This suggests that the period of before accession to the EMU should be as short as possible. Buiter and Grafe suggest abolishing the test-phase before an EU-Member State is allowed to access EMU. They underscore that it is more important that governments meet the criteria for financial stability, the government deficit and the government deficit ratio, whereas a test of monetary and foreign exchange stability is not worth the risk of a speculative attack.[28]

The higher inflation rates in the new Member States will not pose a threat to the overall stability of the euro, because of the size of these new EMU economies. But high inflation rates incorporate the risk of misallocation of resources. In association with a non-competitive labor market, this endangers the competitiveness of these countries within the EU and in international markets. Therefore, a strict monetary policy and inflation target in the advent of accession to the EMU must be pursued to adapt the acceding economies to the stable environment in the EMS and to prevent a supply-push inflation induced by wage agreements that will be based on past experience of price increases.

With regard to the risk of a speculative attack on the currencies of the new Member States, it is suggested to provide the opportunity for early accession to the EMU for those economies that fulfill the financial criteria and take successful measures for the reduction of inflation. This would enable countries such as the Czech Republic to enjoy the advantages of early accession and would create incentives for others to push adequate monetary policies to enter EMU as early as possible. Participation in the monetary union will not be possible until 2006 if the letter of the Maastricht Treaty is not changed.

Impact of the Peoples' Republic of China on the Evolution of the Greater European Union

Since the beginning, the objectives of the creation of the EU have been to establish an economically, politically, and socially united Europe. During the early decades it was more a free trade area, but since 1993 with the Single Market project, which introduced the four freedoms (free movement of goods, services, capital and labor) at least an economic area has been created. Although there are noteworthy differences among the Member States, cross-border accessibility to markets stimulates convergence.
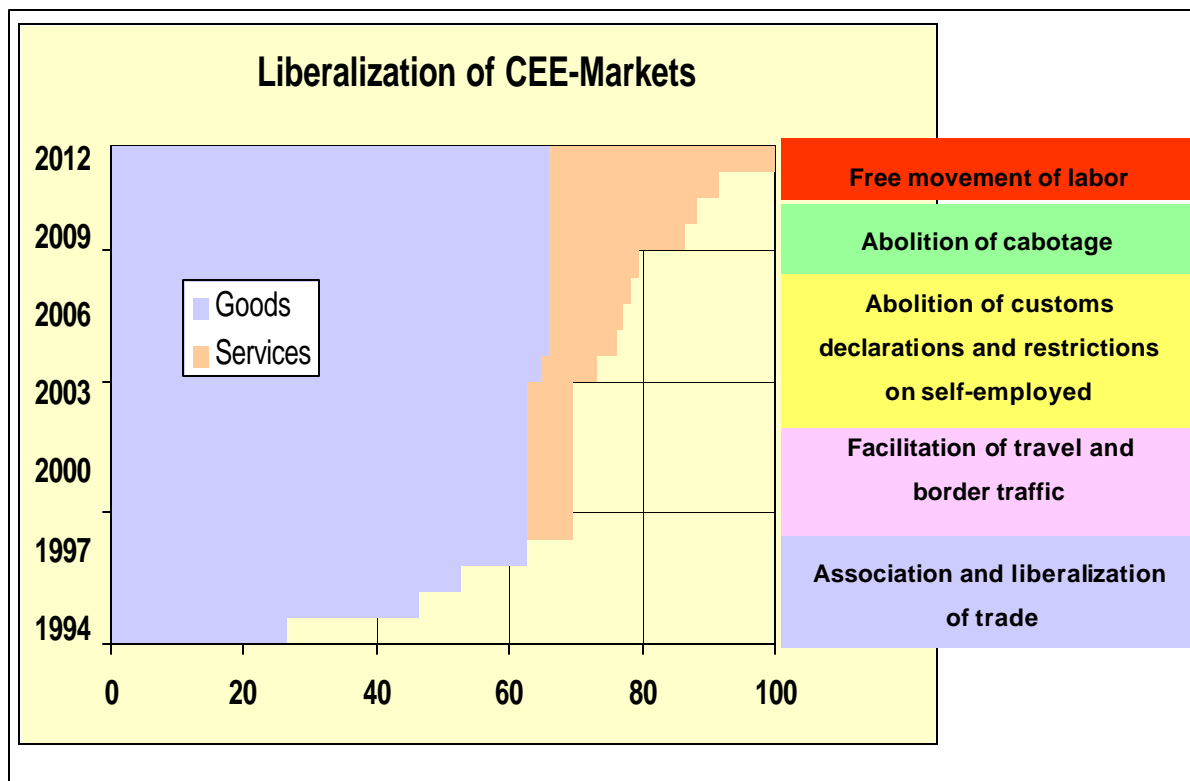
The same is true for the ten acceding countries in 2004. Although not all markets will be

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28. Willem H. Buiter, Clemens Grafe, Anchor, Float or Abandon Ship: Exchange Rate Regimes for Accession

liberalized simultaneously, in the long-run convergence will take place (Graph 1). These countries cannot opt out of participation in the EMU, and it was shown that a delay will be more a threat than an advantage. Therefore, it is presumed that a quick introduction of the euro and a dynamic integration of these countries in the Single Market will take place within this decade. Economic actors already anticipated this development, and companies invested in new locations to exploit production advantages primarily for tradables and with comparable intensity to gain access to new markets, primarily for non-tradables.

GRAPH 1:   STEPWISE INTEGRATION OF ACCEDING COUNTRIES

Liberalization of CEE-Markets

Free movement of labor		
Abolition of cabotage		
Abolition of customs declarations and restrictions on self-employed		
Facilitation of travel and border traffic		
Association and liberalization of trade		

Legend: Goods, Services

Y-axis: 1994, 1997, 2000, 2003, 2006, 2009, 2012
X-axis: 0, 20, 40, 60, 80, 100

Source: IFO Institute.

As a result of the integration and in concordance with the outspoken European political objective of convergence, the acceding countries will not serve as low-cost locations for the production of tradable goods in a globalized world. Although wage levels are lower than in the more mature Member States they are not on such a level that these locations can compete with emerging Asian countries and the Peoples' Republic of China. This means that these countries that up to now are characterized

by structures which fit into the division of labor within the former CMEA have to meet the challenges of international markets.

The sectoral investigation of FDI disclosed that within the tradable goods' industries there was a focus on the metal industry with regard to investment per capita and high productivity and output growth. Other industries were much less dynamic. With the exception of basic metals and semi-finished goods, the manufacture of products of the metal industry is characterized by intense intra-sectoral linkages, high quality requirements, and the input of skilled labor. Moreover, much of the output is capital goods produced in small batches to customers' requirements. This means that engineering industries are so-called immobile industries, where close contact between the R&D department and production is necessary. Therefore, the opportunities for relocation of production are limited. Although this is no longer true in a strict sense because of the possibilities created by new ICT, the pattern of relocation of engineering industries' production reveals that regional linkages have not lost any importance and regional clusters provide advantages.

It is assumed that in concordance with convergence there will be a structural change in the economies of the acceding countries towards the supply side structure of the current EU-15 Member States, as compared with overseas' economies. In particular, in the global market for tradable goods the division of labor with non-EU trading partners will become more homogenous if one compares the external trade of the acceding economies with EU-15.

Comparison of foreign trade discloses noteworthy similarities between the EU-15 and the acceding states. For example, focusing on exports to the PR China reveals the dominant position of capital goods and transport equipment in both regions (Graph 2). The acceding countries show higher shares in their exports than EU-15 for deliveries of crude materials (agricultural, chemical production and metals) and manufactured goods (leather, textiles, semi-finished from metal and non-metal materials, etc.). Many products of both of these export groups are labor-intensive and skill requirements are low. With regard to chemical products and metals, the acceding countries have high production capacity stemming from the era of state-planned economy, which cannot be maintained in the long run, but benefits currently from the booming Chinese economy which absorbs much of the global production in primary goods. The available export levels are not sustainable because of not sufficiently low wages on the one hand, and because of the erection of new capacity for the production of primary goods in China, on the other. The acceding countries must shut down some of this capacity.

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GRAPH 2   EUROPEAN EXPORTS TO THE PR CHINA (1995 – 2001)
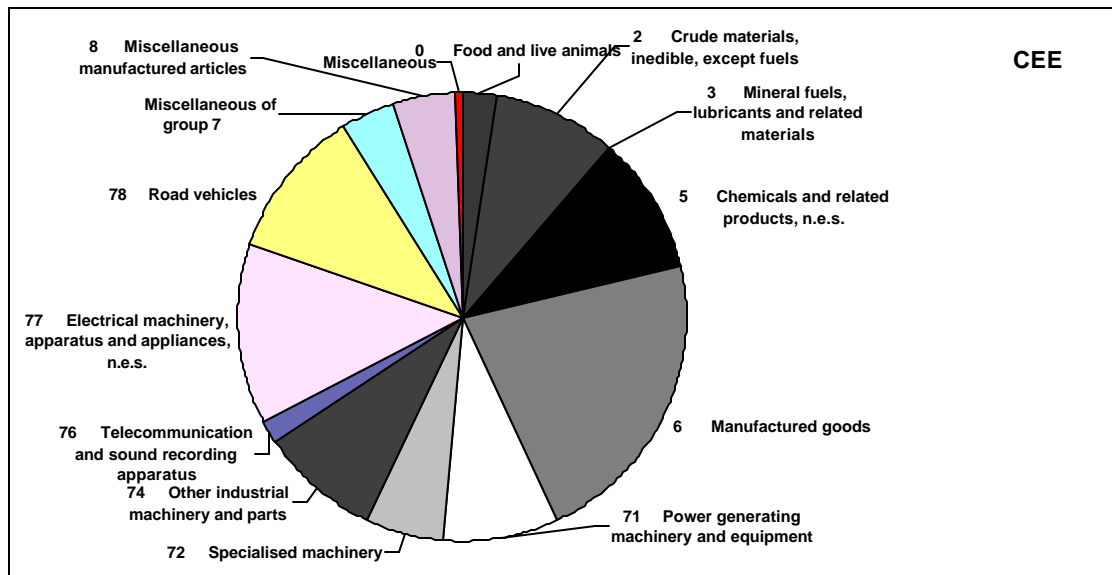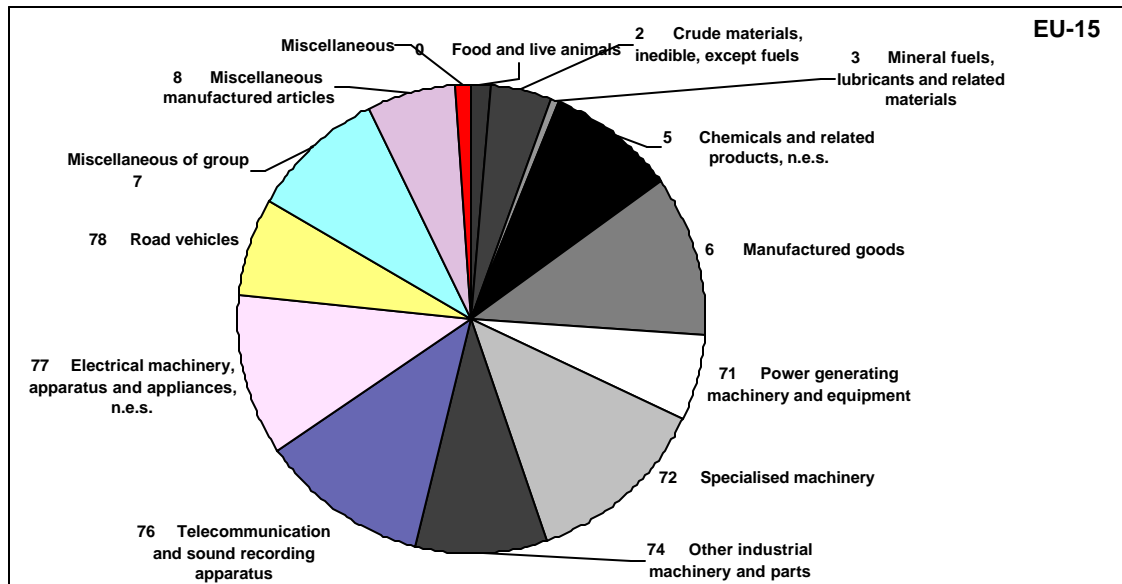
Source: OECD Trade Statistics, Ifo Institute.

A closer look makes known some differences in exports. Within the capital goods industries, the acceding countries' exports to China are driven by motor vehicles and power generating equipment, which each command more than a one-tenth share, whereas these products comprise around 5% of exports from the EU-15. Telecommunication exports, in which the EU-15 is extremely strong are comprised primarily of equipment for digital infrastructure for fixed and mobile telephone networks.

China's exports to the EU and to the acceding countries are dominated by ICT and electrical

machinery (Graph 3). European imports of telecommunication equipment comprise mobile phones and other consumer goods as a part of international division of labor in this sector. Many of these goods have been classified as high-tech in scientific literature, but their assembly is low-wage manufacture and carried out in emerging Asian countries. Within Europe, Estonia, Hungary, Scotland and Ireland are focusing on the manufacture of such mass products. The related industries can be characterized as "mobile" industries. A close regional relationship between R&D and production is not necessary. The upstream and downstream linkages along the value-added chain are less important than in the metal industries. This means that production relocation is highly sensitive to wage differentials. These products are not in the focus of the European industrial output and China is not a major challenge to Europe as an emerging supplier to global markets.[29]

GRAPH 3   EUROPEAN IMPORTS FROM THE PR CHINA (1995 – 2001)

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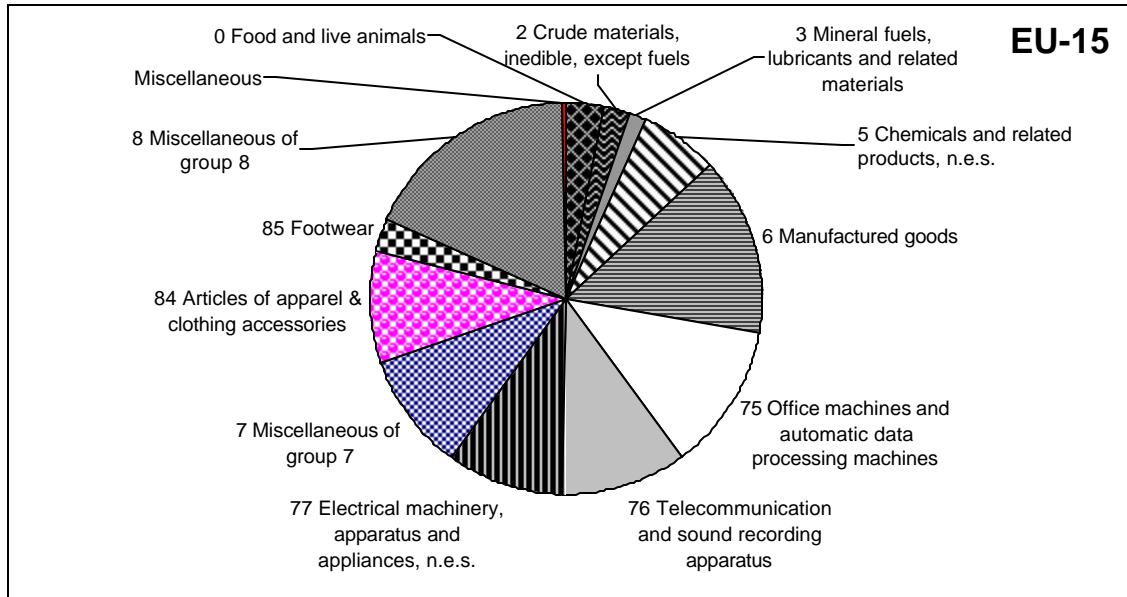
29. China has become a challenge for the US manufacturing industry. Since the breakdown of the so-called New Economy, much low-tech manufacturing and assembly has been relocated to Asia.

GRAPH 3 (continued)
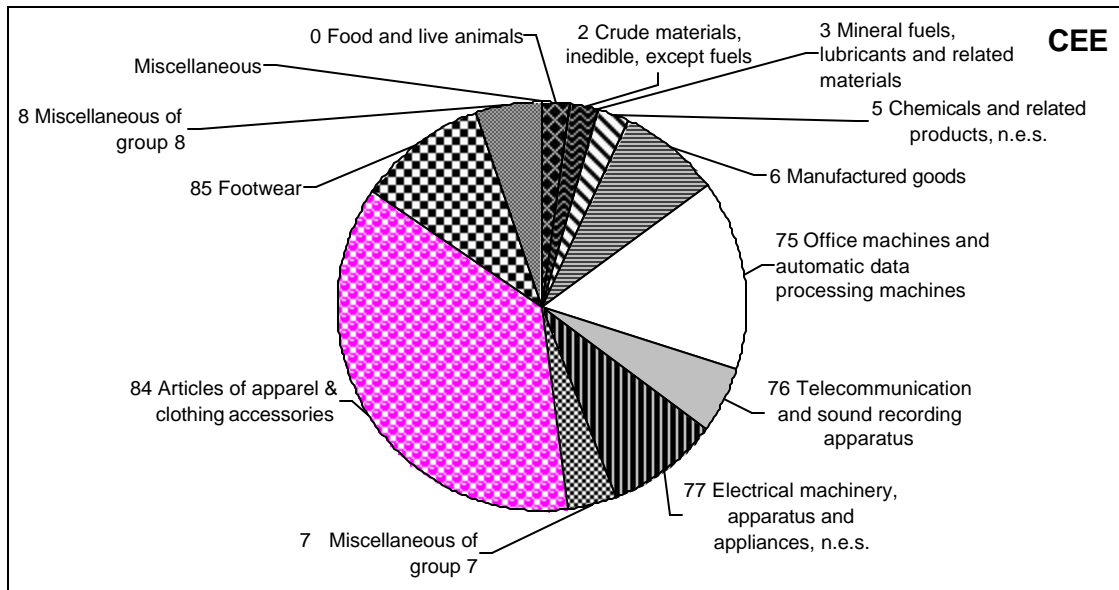
Source: OECD Trade Statistics, Ifo Institute.

The traditional strength of the PR of China is in low-tech goods, toys, clothing and the like. Its general commonality with Chinese ICT exports is volume production of standardized goods. Clothing and footwear comprise more than 40% of total Chinese exports to the acceding countries. Toys have not yet reached a noteworthy market penetration in these countries. With only a 10 to 15% share, China's exports of clothing and footwear to the EU-15 are far less important. It can be assumed that high quality textiles and clothes are more important in total market demand in the richer EU-15 countries, and that these originate in Turkey, North Africa, Spain, Italy and Portugal.

Summarizing the information on the European-Chinese trade some similarities have been identified between the acceding countries and the EU-15 which indicate strengths and weaknesses. Generally speaking, the European economy has some difficulties as a location for the production of serial products if higher wages are not justified by higher skills. This is why labor market rigidities hampered the establishment of production sites for advanced ICT equipment during the 1980s and 1990s, at least in some of the more mature continental European countries. The focus of inter-EU manufacture of ICT is on niche products, and relocation is more an evolutionary process than a challenge.

With regard to the creation of the Single Market and the political objective of convergence, a structural change in the manufacture of tradable goods can be expected for the acceding countries.

The higher capacities than in the EU-15 for the manufacture of crude material, semi-finished goods, textiles, apparel etc. will be reduced, and the structure of the production of tradables will come within reach of the EU-15, where advantages are provided by clustering. Strong growth will concentrate in a couple of industries only, above all in the metal sector, but simultaneous growth of output and productivity will prevent an increase in employment.[30] The closure of plants in low-wage industries will be compensated by new capacities in Asia, in particular the PR China.

The focus on the manufacture of products that require strong intra- and inter-sectoral linkages might be perceived as a comparative advantage, but it is a small segment to maintain the current share of acceding countries in international markets for manufactured goods. Since 2001, many product markets have come under pressure and put stress on the acceding countries in the transition process. The problem is the exchange rate of the euro against the Japanese yen and the renminbi and, to a lesser extent, against the US dollar. A deflationary trend in the PR of China linked to depreciation of the renminbi, which is pegged to the US dollar, causes distortions in the international division of labor.

These projected structural changes should take place in a framework that supports an evolutionary process, bolstered by an adequate economic policy. National institutions have to be modified to the needs of globalization and to further micro-economic adjustments. This means, in particular, a stable environment that provides accurate factor price signals for the production of goods and services in the real economy. Distortions in the financial markets and foreign exchange provoke a misallocation of resources.

As outlined in this paper, the challenges for the acceding countries from their integration into the EU are manageable and supporting economic growth, although the European *Acquis* asks for a comprehensive adjustment of national institutions. But from a global point of view, one of the major problems for the integration of the acceding countries into the EU stems from the success of China boosted by a 40% devaluation against the euro, which even took place in combination with deflation. This situation incorporates the risk of unmanageable tensions in the most affected industries and

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30. The prospects for growing employment in the acceding countries are not bright. Manufacturing will, on average, not create new workplaces. There is some hope that moderate growth in employment will take place in service industries. See: Peter Havlik, Michael Landesmann, Roman Römisch, Robert Stehrer, Björn Gillsäter, Competitiveness of Industry in CEE Countries – Composite Paper, The Vienna Institute for International Studies (WIIW), Vienna 2001, p. 1-2f.

endangers the difficult process of liberalizing global markets.[31] Protectionist initiatives already emerge.

One of the problems of the current distortion in international trade emerges from the exchange rate regime in China, the pegging of the renminbi to the US dollar.[32] This peg can be understood as the reason why China ranks second in the world behind Japan in holdings of U.S. dollar foreign exchange reserves, which amount to US$270 billion. Bilateral exchange rate variations between the Japanese yen and the US dollar, on the one hand, and the euro and the US dollar, on the other, have a direct impact on the renminbi exchange rate, which might not be justified by the bilateral relations. Therefore, an appreciation of the Chinese currency will not solve the problem induced by a peg to one currency only. A currency basket is better suited to China's multilateral relationships in the global economy.

Conclusions

The integration of the CEE economies acceding to the EU-15 has been propelled by foreign direct investment. The vertical inward investment has focused primarily on tradable goods industries and had an immediate effect on growth of output and productivity. The influx of horizontal FDI has been directed mainly to non-tradable goods industries. Although intensity—as measured by FDI per capita— was similar as compared to vertical FDI, the impact on growth of output and productivity in non-tradable industries was low. Differences in the objectives of investors were discussed as an explanation for this specific pattern. Moreover, high growth momentum in exports drove progress in the tradable goods industries. In the non-tradable goods industries, investors purchase mainly market share and up to now they are not exposed to full competitive pressure, because the liberalization of many domestic markets, particularly in services, will only take place in the future. It can be expected that then the opportunities of advanced ICT will be fully exploited to meet the challenge. In contrast to the original assumptions of Balassa-Samuelson, nowadays technology and management provide opportunities for strong productivity gains even in service industries.

Another important assumption of the Balassa-Samuelson model that does not hold in the case of the acceding states is that of a competitive labor market and labor mobility. The harmonization of the

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31. Protectionist initiatives from the European textile and clothing industries already emerge, see: Textilhersteller fordern von der EU Schutzzölle gegen China, in Handelsblatt 16 January 2004.

32. The PR China uses the VAT as an instrument to control external trade. Usually exporters get back the VAT paid, but currently exporters from China are refunded less than 100%. The difference can be understood as a tax on exports to outweigh unjustified advantages. But this extra-burden is not nearly sufficient to balance the renminbi's depreciation of around 45% against the euro.

evolution of wages has been based on some indispensable factors, such as participation in productivity gains, maintaining standards of living, and maintaining relative social standards. While the business environment provides some explanation for the increase in wages for tradable goods industries, no correlation was found for the non-tradable industries . This indicates that deficiencies in the labor market are above all prevalent in segments related to non-tradable industries.

The empirical investigation has confirmed the effects described by Balassa-Samuelson, but there are some doubts that the assumptions of the underlying the model hold. Future research should spend more effort verifying the model's assumptions, in particular the likely explanatory variable "growth" for productivity, which has not been taken into account in most investigations.

Many tradable goods industries have quickly narrowed the technological gap and nearly caught up to the EU level. This means that productivity differentials, which in any case are an important driver of inflation, have narrowed recently and will be further reduced in the years to come. A comparison with Germany makes visible that there is no longer an inflationary potential based on the Balassa-Samuelson effect. But differences in monetary policy and exchange rate regimes suggest that participation in the EMU can induce distortions in the transition process. For instance, this is true for Hungary with its high inflation rates, whereas for the Czech Republic the introduction of the euro will be less problematic.

The acceding countries should immediately introduce adequate monetary and exchange rate policies to fulfill the requirements for early accession to the EMU. Because after 1 May 2004 they are new Member States of the EU, and in line with the EU *Aquis* they must open their capital account. This is a phase where speculative attacks can provoke tensions in the transition process. In accordance with the Maastricht Treaty, these countries have to pass a two-year test phase before they can enter. From an economic point of view, this makes no sense, because monetary policy will then be carried out by the ECB and there will no longer be a national exchange rate policy. Accession should take place as soon as possible once the inflation rate has converged to the EU level and financial requirements have been met. But this would mean that a political decision is necessary to abolish the requirement for the two-year test period.

The integration of the acceding countries into the EU means that they join one of the leading and most developed economic areas. As a result, the CEE countries will no longer be able to compete in markets for low-wage products and mass production. This means that there is no future for much of

their production capacity, which was important as long as these countries were integrated in the former CMEA. A comparison with the EU disclosed that there are some similarities and opportunities for the creation of new, more competitive clusters than in the past. In particular, strong intra-sectoral linkages are currently evolving in the metal manufacturing industries.

But CEE countries remain exposed to low-wage competition in mass production and have to meet the challenge of emerging countries which possess more adequate framework conditions for production. More recently, competitive pressure has even increased because of the growing strength of the euro. The CEE countries will have to accelerate the shutting down of capacity that cannot be economically operated in the long run. This puts stress on the countries that are currently in a fragile process of transition.

The PR China and its high growth momentum in exports have caused much of the difficulties. The depreciation of the renminbi in combination with a domestic deflationary tendency incorporates the risk of misleading signals to economic actors. In particular, CEE countries suffer from the current distortions in the exchange rates, because their currency regimes are biased towards the euro. This development incorporates the threat of distorting the transition process, and the intensity of the problem is linked to the Chinese foreign exchange regime, the peg to the US dollar, which is not appropriate to the PR China's multilateral trade relations. Although there is a predominance of US dollars in China's foreign exchange reserves, it is suggested to give up the peg to the dollar and link the renminbi to a basket of globally important currencies to take into account the complexity of the global economy. In the long run it will be more important to moderate distortions by exchange rate variations through a more adequate exchange rate regime.

Annex

TABLE A 1   BALASSA-SAMUELSON EFFECT IN THE NON-TRADABLE GOODS INDUSTRIES

	Hungary			Czech Republic		
	1995 - 2001	1995 - 97	1998 - 2001	1995 - 2001	1995 - 97	1998 - 2001
Monthly gros s wages						
Agriculture, hunting, forestry and fishing	16.6	19.7	14.3	11.5	15.5	8.5
Mining and quarrying	16.7	21.3	13.3	11.5	15.5	8.5
Food products, beverages and tobacco	16.9	19.7	14.9	10.9	14.6	8.2
Electricity, Gas, Water	18.3	21.8	15.7	11.5	15.5	8.5
Construction	15.7	17.8	14.2	9.8	13.8	6.9
Trade, hotels and restaurants	15.7	18.3	13.8	11.8	15.0	9.5
Transport, storage, telecommunications	18.4	21.7	16.0	13.0	18.4	9.1
Financial intermediation 3)	19.4	22.4	17.3	13.4	15.6	11.8
Real estate, renting & business activities	19.0	19.1	18.8	11.5	16.6	7.8
Education	16.9	19.7	14.9	10.2	14.2	7.2
Health and social work	16.9	19.7	14.9	10.9	14.1	8.6
Other community, social & personal services	16.9	19.7	14.9	11.2	16.9	7.2
Labour productivity						
Agriculture, forestry, fishing	0.0	0.0	0.0	9.1	7.5	10.3
Mining and quarrying	3.2	2.0	4.1	3.9	6.0	2.4
Food products, beverages and tobacco	0.5	-3.3	3.6	-10.1	-17.7	-4.0
Electricity, gas, water supply	4.7	1.7	7.1	0.3	-3.0	2.8
Construction	-3.0	-7.0	0.1	0.9	1.3	0.6
Wholesale, retail trade, repair motor vehicles	-3.2	-3.9	-2.6	2.0	-4.5	7.1
Transport, storage, telecommunications	3.7	4.9	2.8	0.9	1.4	0.5
Financial intermediation	0.0	3.2	-2.3	-14.3	-24.5	-5.7
Real estate, renting & business activities	-4.4	-3.6	-5.1	-3.0	-4.7	-1.7
Education	4.7	1.7	7.1	-5.0	-2.6	-6.8
Health and social work	4.7	1.7	7.1	-3.6	-0.5	-5.9
Other community, social & personal services	4.7	1.7	7.1	-4.4	-1.5	-6.5
Prices						
Agriculture, hunting, forestry and fishing	15.9	16.3	15.5	3.7	6.3	1.8
Mining and Quarrying	15.9	16.3	15.5	4.4	5.8	3.4
Food products, beverages and tobacco	16.3	21.5	12.5	7.8	5.8	9.3
Electricity, Gas, Water	19.1	19.2	19.0	4.4	5.8	3.4
Construction	19.2	25.5	14.8	7.9	11.1	5.5
Wholesale, retail trade, repair motor vehicles	19.2	25.5	14.8	8.6	13.7	5.0
Transport, storage, telecommunications	19.2	25.5	14.8	6.9	12.8	2.6
Financial intermediation	19.2	25.5	14.8	25.3	42.0	14.1
Real estate, renting and business activities	19.2	25.5	14.8	10.7	12.8	9.2
Education	19.2	25.5	14.8	12.0	13.7	10.7
Health and social work	19.2	25.5	14.8	12.0	13.7	10.7
Other community, social and personal services	19.2	25.5	14.8	12.0	13.7	10.7

Source: National Statistical Bureaus, Ifo Institute.

TABLE A 2: BALASSA-SAMUELSON EFFECT IN THE TRADABLES INDUSTRIES

	Hungary			Czech Republic		
	1995 - 2001	1995 - 1997	1998 - 2001	1995 - 2001	1995 - 1997	1998 - 2001
Monthly gross wages						
Textiles and textile products	17.0	21.0	14.1	9.1	12.4	6.7
Wood and wood products	14.7	19.9	11.1	9.9	14.3	6.7
Chemicals, chemical prod. & man-made fibres	20.4	24.5	17.4	11.8	16.7	8.3
Nonmetallic products	18.4	22.5	15.3	11.4	16.3	7.8
Basic metals and fabricated metal products	16.3	21.8	12.4	10.3	14.5	7.2
Machinery and equipment n.e.c.	18.1	22.3	14.9	11.7	16.9	8.0
Electrical and optical equipment	18.5	22.1	15.9	11.8	17.5	7.7
Transport equipment	20.6	27.0	16.1	13.0	18.2	9.2
Manufacturing n.e.c.	15.8	20.4	12.4	9.8	13.1	7.3
Electricity, Gas, Water	18.3	21.8	15.7	11.5	15.5	8.5
Labour productivity						
Textiles and textile products	-2.8	-3.4	-2.3	4.3	3.4	5.1
Wood and wood products	3.3	1.5	4.8	2.8	-1.0	5.6
Chemicals, chemical prod. & man-made fibres	-12.5	-7.7	-16.0	8.9	17.9	2.5
Other non-metallic mineral products	10.3	9.3	11.1	6.2	15.2	-0.1
Basic metals and fabricated metal products	7.2	11.0	4.5	4.7	4.9	4.5
Machinery and equipment n.e.c.	6.4	6.8	6.2	8.9	13.2	5.7
Electrical and optical equipment	10.8	15.3	7.5	11.7	26.5	1.7
Transport equipment	21.2	26.1	17.6	12.9	24.6	4.8
Manufacturing n.e.c.	-1.9	-2.9	-1.1	9.0	18.3	2.5
Electricity, gas, water supply	4.7	1.7	7.1	0.3	-3.0	2.8
Prices						
Textiles, wearing apparel, and leather	15.8	18.6	13.7	4.4	5.8	3.4
Wood, paper and publishing	15.3	21.6	10.8	4.4	5.8	3.4
Refined petroleum and chemicals	20.6	19.1	21.8	4.4	5.8	3.4
Nonmetallic products	12.3	14.3	10.8	4.4	5.8	3.4
Basic metals and metal products	14.9	19.5	11.6	4.4	5.8	3.4
Machinery and equipment	12.3	14.3	10.8	4.4	5.8	3.4
Electrical and optical equipment	12.3	14.3	10.8	4.4	5.8	3.4
Transport equipment	12.3	14.3	10.8	4.4	5.8	3.4
Recycling and other manufacturing	15.5	18.5	13.3	4.4	5.8	3.4
Electricity, gas, and water supply	19.1	19.2	19.0	4.4	5.8	3.4

Source: National Statistical Bureaus, Ifo Institute.

TABLE A 3: GROWTH OF THE NON-TRADABLES INDUSTRIES

	Hungary			Czech Republic		
	1995 - 2001	1995 - 1997	1998 - 2001	1995 - 2001	1995 - 1997	1998 - 2001
Real production						
Agriculture, hunting, forestry and fishing	0.0	0.0	0.0	1.4	1.6	1.2
Mining and quarrying	-8.8	-7.6	-9.8	-3.8	-3.5	-4.0
Food products, beverages and tobacco	1.2	3.1	-0.2	-0.9	8.9	-7.7
Electricity, gas, water supply	-1.1	0.8	-2.5	1.3	-0.6	2.7
Construction	1.8	1.3	2.1	1.6	4.5	-0.5
Trade, hotels and restaurants	0.3	-2.2	2.3	1.4	-0.5	2.8
Transport, storage, telecommunications	3.4	2.0	4.5	2.3	0.6	3.7
Financial intermediation 3)	1.5	2.7	0.7	-17.0	-25.2	-10.2
Real estate, renting & business activities	4.3	4.6	4.0	-1.2	0.3	-2.4
Education	-1.3	-7.2	3.4	-4.7	-5.3	-4.1
Health and social work	0.1	-3.3	2.8	-3.5	-2.5	-4.2
Other community, social & personal services	-1.9	-6.2	1.4	0.6	1.3	0.1
Employment						
Agriculture, forestry, fishing	-2.9	-1.9	-3.6	-5.6	-5.6	-5.6
Mining and quarrying	-11.2	-8.9	-12.9	-5.3	-3.6	-6.6
Food products, beverages and tobacco	-1.7	0.3	-3.1	0.7	6.5	-3.4
Electricity, gas, water supply	-3.7	0.0	-6.4	-1.6	-2.2	-1.2
Construction	3.2	1.9	4.2	-0.7	2.1	-2.8
Wholesale, retail trade, repair motor vehicles	2.6	1.0	3.8	0.6	3.8	-1.8
Transport, storage, telecommunications	-0.4	-1.9	0.6	-0.2	1.0	-1.2
Financial intermediation	-1.2	-0.2	-2.0	3.3	5.9	1.4
Real estate, renting & business activities	8.6	7.7	9.3	0.9	1.4	0.6
Education	-0.8	-3.1	1.0	-0.4	-0.5	-0.4
Health and social work	0.6	0.9	0.3	1.3	-0.8	3.0
Other community, social & personal services	-2.4	-2.6	-2.2	1.4	-0.3	2.7

Source: National Statistical Bureaus, Ifo Institute.

TABLE A 4: GROWTH OF THE TRADABLES INDUSTRIES

	Hungary			Czech Republic		
	1995 - 2001	1995 - 1997	1998 - 2001	1995 - 2001	1995 - 1997	1998 - 2001
Real production						
Textiles and textile products	1.6	-1.0	3.6	0.0	-1.3	1.0
Wood and wood products	5.5	3.2	7.2	6.8	8.8	5.4
Chemicals, chemical prod. & man-made fibres	-0.2	2.6	-2.2	5.8	6.6	5.2
Nonmetallic products	9.3	11.3	7.7	3.8	2.8	4.6
Basic metals and fabricated metal products	8.8	10.9	7.2	0.0	-0.4	0.4
Machinery and equipment n.e.c.	7.6	7.4	7.7	4.6	11.7	-0.4
Electrical and optical equipment	34.7	28.2	39.7	17.7	24.1	13.1
Transport equipment	33.2	34.7	32.1	17.6	23.9	13.1
Manufacturing n.e.c.	2.8	-1.9	6.5	8.2	12.7	4.9
Electricity, gas, water	-1.1	0.8	-2.5	1.3	-0.6	2.7
Employment						
Textiles, wearing apparel, and leather	3.3	5.7	1.5	-4.4	-4.7	-4.2
Wood and wood products	0.3	0.8	-0.1	0.7	4.2	-1.8
Chemicals, chemical prod. & man-made fibres	9.9	7.2	11.9	-7.4	-11.9	-3.9
Other non-metallic mineral products	-0.4	3.0	-2.9	-0.3	-0.8	0.1
Basic metals and fabricated metal products	0.8	1.5	0.4	-2.2	-1.8	-2.6
Machinery and equipment n.e.c.	-0.4	0.0	-0.7	-5.0	-5.9	-4.4
Electrical and optical equipment	12.0	9.4	13.9	4.5	2.2	6.1
Transport equipment	4.5	2.2	6.2	0.0	-4.9	3.7
Manufacturing n.e.c.	2.3	-0.3	4.3	0.6	1.2	0.1
Electricity, gas, water supply	-3.7	0.0	-6.4	-1.6	-2.2	-1.2

Source: National Statistical Bureaus, Ifo Institute.

TABLE A 5   INWARD INVESTMENT IN NON-TRADABLE GOODS INDUSTRIES

	Czech Republic			Hungary
	FDI per employee and year (CZK)			Total FDI per employee (HUF)
	1994 - 2001	1994 - 1997	1998 - 2001	up to 2001
Agriculture, hunting, and forestry	1,283	543	2,344	231,300
Mining and quarrying	24,820	4,460	51,385	690,788
Food and tobacco	35,502	17,021	62,859	911,902
Electricity, gas, and water supply	80,964	52,146	130,023	3,554,642
Construction	50,67	5,094	6,306	336,143
Trade, hotels and restaurants	22,503	5,212	45,420	1,061,244
Transports, Communication	33,792	26,893	49,138	2,169,014
Financial intermediation	229,528	44,139	472,300	7,480,875
Real estate and business activities	36,793	2,176	78,431	3,436,563
Education	72	32	97	3,243
Health and social work	1,000	500	1,250	20,024
Other social and personal services	6,044	1,514	10,570	259,066

Source: National Statistical Bureaus, Ifo Institute.

TABLE A 6   INVESTMENT IN TRADABLE GOODS INDUSTRIES

	Czech Republic			Hungary
	FDI per employee and year (CZK)			Total FDI per employee (HUF)
	1994 - 2001	1994 - 1997	1998 - 2001	up to 2001
Textiles, wearing apparel, and leather	10,324	1,690	21,540	1,522,598
Wood, paper and publishing	39,181	28,337	59,820	959,144
Refined petroleum and chemicals	93,630	43,388	167,280	2,124,297
Nonmetallic products	50,559	24,543	89,214	1,845,913
Basic metals and metal products	20,897	8,675	38,344	2,566,855
Machinery and equipment	50,195	12,226	100,712	5,172,121
Recycling and other manufacturing	17,533	14,413	25,036	1,329,253
Electricity, gas, and water supply	80,964	52,146	130,023	3,554,642

Source: National Statistical Bureaus, Ifo Institute.