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Competitiveness of Central-Eastern European Countries

by Ulrich Thießen¹

1. Introduction

Since inception of transition, central-eastern European countries acknowledged the principle of open borders for trade so as to promote domestic competition and integration into world markets. Considering first, that in western European countries unemployment remained generally high and there has been a long-term tendency for employment in manufacturing to decline and second, that those four central-eastern European countries that decided to establish the Central European Free Trade Area (the CEFTA countries Czech Republic, Hungary, Poland, and Slovak Republic) will eventually become members of the European Union (EU), „international competitiveness” of these countries has increasingly been discussed. Concerns raised regard the extent to which relatively low wages in central-eastern Europe may adversely affect employment and wages in western Europe, particularly in manufacturing sectors. The discussion thus resembles the debate regarding the North American Free Trade Agreement of 1994 and coincides with empirical research on employment and wage effects particularly of North-South trade and attention paid to the concept of competitiveness. This paper aims at evaluating competitiveness of CEFTA countries from two perspectives. On the one hand, trade theory suggests to assess competitiveness on the basis of the factor content of trade. CEFTA countries may thus be competitive in labor-intensive goods owing to relatively low wages. On the other hand, external competitiveness may be driven by exchange rate policy through its influence on the price of domestic goods relative to foreign ones. Standard indicators of competitiveness are used in examining how competitiveness has evolved. Finally, a question of interest is how labor markets in western Europe and especially in Germany have been affected through increased trade between western and central-eastern Europe.

The paper is organized as follows: Section 2 evaluates the concept of international competitiveness from the viewpoint of trade theory and assesses actual trade develop-

ments. Section 3 evaluates developments of several indicators of competitiveness and considers the relationship between competitiveness and devaluation. Section 4 studies the relationship between trade and employment in manufacturing in form of a brief case study using Germany as an example since this country absorbs most of the exports of central-eastern European countries.

2. Competitiveness from the viewpoint of trade theory

2.1 International trade theory

Standard international trade theory (the Heckscher-Ohlin-Samuelson model (HOS)) explains trade flows with differences in factor endowment. In the basic two-goods, two-factor model and based on the assumptions of perfect competition, constant returns to scale and no capital mobility, each economy exports the good which is intensive in the abundant factor. Until inception of transition, trade between CEFTA countries and the western world followed this simple pattern strongly. CEFTA countries exported primarily goods that were intensive in raw materials and capital (raw materials, agricultural goods, chemicals and steel). This reflected relatively low prices for raw materials that CEFTA countries imported from the former Soviet Union or produced themselves and the distorted price structure within CEFTA economies such that the price of capital was held low. Transition of CEFTA economies to market economies since 1989 changed this pattern in two respects: First, the price of capital in CEFTA countries relative to labor rose and second, the degree of capital

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mobility increased². Abstracting for a moment from increased capital mobility (which is discussed below), capital and raw materials became relatively scarce factors whereas labor and even skilled labor became the abundant factor³. Wages are low relative to those in industrial countries because capital scarcity limits labor productivity. In terms of the HOS model, CEFTA countries would be expected, since transition, to experience a shift of exports from capital-intensive to labor-intensive goods. Given that scarcity of capital constrains the productivity of labor, a relatively high factor content of less skilled labor in exports will result. Skilled-labor is likely to crowd out less skilled labor in the production of non-skill-intensive goods requiring falling relative wages for less skilled labor. According to HOS and its implication in form of the Stolper-Samuelson theorem⁴, the impact of this low wage comparative advantage of eastern European countries on western Europe and the rest of the world depends on changes in relative international prices. If the increase in the supply of non-skill-intensive goods results in a significant decrease of the relative price of these goods on world markets, then production in western Europe and other countries with relatively high wages will shift from less skill-intensive goods to skill-intensive ones. Maintained equilibrium in the labor market requires then that the wage of less skilled labor falls not only relative to skilled labor but also relative to the prices of non-skill-intensive and skill-intensive goods (and thus in real terms). If there is wage rigidity in western Europe, employment is likely to be adversely affected. If wages are flexible, the initial decrease in demand for less skilled labor will be offset by increased demand for this labor in all industries owing to an increased proportion of less skilled labor in production.

Consideration of capital flows attains importance primarily owing to openness of CEFTA countries to foreign direct and portfolio investment (including repatriation of profits). Particularly those western industries have an incentive to make use of low wages in CEFTA countries that can readily separate production from research and development and other parts of the enterprise. These capital flows into CEFTA countries are likely to result in rising imports of non-skill-intensive goods on the part of western countries payed for, perhaps even in the short run, by repatriated dividends with no change in the current account of either region. The main effect would be a falling wage of less skilled labor in western Europe relative to skilled labor and capital so that the capital-intensity of the economy decreases with employment being maintained. If the capital flows result in a fall of the relative price of non-skill-intensive goods as in the HOS case discussed above, then the required decline of relative wages of less skilled labor is reinforced.

Traditional (HOS) trade theory cannot satisfactorily explain intra-industrial trade, which has been the most dynamic part of world trade. Hence, consideration must also be given to „new trade theory” which has attracted

considerable attention precisely because of its ability to explain intra-industrial trade⁵. The main assumptions are product differentiation and increasing returns to scale through external effects which appear to be particularly relevant in the case of technology production and thus skill-intensive industries. The expected effects of trade on such markets are not as clearcut as in the HOS case. They depend on additional assumptions regarding the type of scale economies and behavior of firms. It has been argued that free trade among skill-intensive industries may result in permanently higher growth in western Europe if increasing returns to scale arise owing to external effects that do not transcend the domestic market: the initial cost advantage of firms in western Europe makes it difficult for firms in the East to catch up with further decreasing average costs in the West following trade liberalization (Vincentz (1994)). R&D intensive firms would be permanently concentrated in the West. Central-eastern Europe would be at a severe disadvantage regarding skill-intensive industries (adverse-scenario).

2.2 Revealed comparative advantage

To what extent do actual developments fit the HOS and/or the „adverse-scenario?” One way of answering this question is to examine trade data using Balassa’s (1965) indicator of revealed comparative advantage:

$$RCA = \frac{X_{ij}}{\sum X_{ij}} : \frac{X_{ij}}{\sum X_{ij}} \quad (1)$$

where: X_{ij} = exports of commodity i from a given country to region j ,
 $\sum X_{ij}$ = world exports of commodity i to a given region j ,
 X_{ij} = total exports from a given country to region j ,
 $\sum X_{ij}$ = world exports to region j .

Such calculations are subject to the well known qualifications that tariffs and non-tariff barriers as well as export subsidies create distortions. However, trade liberalization among CEFTA countries and the European Union since end of 1991 meant that the former were granted immediate and unrestricted access to the markets of the European

² Note that CEFTA economies are open for capital inflows and that capital outflows are restricted. These restrictions cannot, however, prevent unwanted capital outflows, because the latter may be disguised as current account transactions.

³ Indicators of human capital in CEFTA countries may suggest that its quality is at a level comparable to that in western European countries and above that of most developing countries. See Klodt (1993), p. 428.

⁴ The Stolper-Samuelson theorem states that an increase in the international price of a good causes an increase in the relative return to factors used relatively intensively in the production of that good (Stolper-Samuelson (1941)).

⁵ See Krugman (1993).

Union (EU) regarding manufacturing goods except clothing, textiles, steel and coal products where the European Union intends to gradually phase out tariffs and import quotas until 1998. With these qualifications in mind, indicator numbers above unity suggest that the respective country has a comparative advantage in the production of the respective tradeable good. For instance, a value of 1.5 means that the CEFTA country's share in this commodity's exports to a certain region is 50 percent higher than its share in total exports of goods to the region. Table 1 presents these indices regarding CEFTA countries' trade with the European Union and Germany calculated at the two digit SITC level. It may be expected that the evolution of the indices reflects both the change in the price of labor relative to capital in CEFTA countries at the beginning of transition and CEFTA countries' low wages. Which industries in CEFTA countries are the less skilled-labor-intensive ones? Since detailed data are not available one may use as an approximation the structure typically encountered in industrial countries. Such an exercise is performed for Germany in section 4 below and yields a result similar to that found for the United States. It may therefore be reasonable to assume that those industries which are intensive in less skilled-labor in industrial countries are also less skilled-labor-intensive in CEFTA countries: iron and steel, paper and pulp, plastic, textiles, footwear, leather goods, apparel, glass, furniture and woodproducts among others. These goods are mainly in SITC sections 6 and 8. Table 1 shows a general increase of the indicators in these sections⁶.

On the other hand, the indicators for raw materials (SITC section 2) declined for the former Czech and Slovak Federal Republic and Hungary, which reflects distorted prices prior to transition and scarcity of raw materials in these countries. The rising indicator for Poland reflects Polish resources in coal. This energy wealth, in turn, is reflected in increases of the indicators for iron, steel and fertilizers (SITC sections 56 and 67) which is in contrast to the former Czech and Slovak Federal Republic and particularly Hungary. In sum, while the external sectors of all CEFTA countries appear to have experienced a shift of production towards less skill-intensive industries, Poland experienced an additional shift towards energy-intensive ones. This is in accordance with HOS theory. Industries that are „science-based,” according to a classification suggested in OECD (1993), are found in SITC section 7. The respective RCA index confirms that CEFTA countries do not have a comparative advantage in technology intensive production. However, in contrast to expectations, the index increased markedly since 1992 for each CEFTA country casting doubt on the presumption that CEFTA countries' skill- and technology-intensive industries may permanently lag behind.

Although assessing the comparative advantage of a country or a region explains relative competitiveness of industries, it may not be interpreted as an indicator of competitiveness of an economy. Additional indicators as

presented in the following section and section 3 below need to be considered.

2.3 Structure of foreign trade of central-eastern European countries and trade effects on western Europe

Foreign trade of CEFTA countries is dominated by merchandise (table 2). Manufacturing accounts for about 80 to 90 percent of merchandise trade. Trade in services attains importance in the Czech and Slovak Republics (mainly tourism). These two countries have also a particularly high degree of openness (sum of exports and imports as a share of GDP)⁷. In 1992 and 1993 all countries had deficits in merchandise trade and in income payments and, with the exception of Hungary, small surpluses in trade of services. The merchandise trade deficit of each CEFTA country with western Europe is larger than the merchandise deficits shown in table 2, because the respective shares of exports to western Europe in total exports are larger than the shares of imports from western Europe. In addition, with the exception of the Czech Republic, the merchandise trade deficits are generally widening. Hence, it follows that despite the opening up of western European markets for exports of CEFTA countries since 1991, trade between western Europe with CEFTA countries had a positive effect on aggregate output in western Europe. The positive effect on output in western Europe would even be stronger if CEFTA countries were to abolish remaining exchange controls, because these controls reduce imports on the part of CEFTA. In addition, tariffs and non-tariff barriers in CEFTA countries are, on average, substantially higher than those of the EU⁸.

Assuming a higher marginal efficiency of capital in CEFTA countries compared to western Europe, CEFTA countries should import capital from western Europe and thus incur trade deficits so as to improve their long run growth prospects. However, as discussed below, during 1991 and 1992,

⁶ For iron, steel and simple metal manufactures (SITC sections 67-69) the indices show a uniform increase for all CEFTA countries. There are also general increases for those miscellaneous manufactured articles (SITC section 8) that are relatively simple such as clothing and footwear (sections 84 and 85).

⁷ Therefore, it appears reasonable to assume these economies to be relatively sensitive to exchange rate movements.

⁸ However, liberalization of CEFTA countries' access to the markets of the EU at end 1991 was limited: Agricultural goods were left out from the respective trade-related association agreements and trade in textiles, coal, and steel will be formally liberalized only at the beginning of 1995, 1996, and 1997, respectively. Since 1992 import quotas for these goods were, however, successively raised. The only potential trade barrier for CEFTA countries' exports to the EU would then be application of the „escape clauses” in the association agreements and the instrument of anti-dumping investigation (which has already been used regarding imports of silicon, seamless pipes, iron and steel tubes, frozen strawberries and black currents, and urea), including imposition of anti-dumping duties. This trade barrier may, however, be a serious one, owing to its deterrent potential. See Schumacher and Möbius (1994).

Table 1

Central European Countries: RCA - Indices regarding Trade with Western Europe

Number of section (SITC)	Exporter: Poland				Exporter: Czech and Slovak Republics				Exporter: Hungary			
	Importer: European Union											
	1987-1989 ¹⁾	1990	1991	1992	1987-1989 ¹⁾	1990	1991	1992	1987-1989 ¹⁾	1990	1991	1992
Classification of industries according to OECD (1993):												
Resource intensive (access to natural resources)												
0	2,00	2,17	1,73	1,25	0,72	0,81	0,55	0,40	2,41	2,44	2,43	1,76
01	2,81	2,11	1,63	1,27	2,26	1,83	0,77	0,36	8,21	8,24	7,48	5,69
02	0,30	0,41	0,09	0,05	0,62	0,92	0,36	0,14	0,19	0,22	0,13	0,04
1	0,15	0,15	0,13	0,07	0,39	0,47	0,48	0,42	0,55	0,47	0,46	0,52
2	1,80	1,72	1,73	1,90	2,05	2,03	1,66	1,63	1,47	1,40	1,50	1,43
21	2,02	2,07	2,47	3,59	0,36	0,29	1,35	1,41	0,32	0,52	0,74	1,71
22	3,19	3,32	1,30	0,48	0,09	0,20	0,25	0,66	2,11	1,92	2,25	1,99
24	3,18	2,54	2,50	3,18	6,32	5,53	3,02	2,47	1,86	1,67	2,18	2,16
25	0,32	0,12	0,34	0,50	3,88	3,58	2,06	1,99	0,01	0,01	0,03	0,05
27	5,07	2,80	2,40	2,19	2,82	3,16	2,71	2,74	0,31	0,24	0,21	0,15
28	0,95	1,70	2,59	3,12	0,65	0,78	2,05	2,20	1,18	1,59	1,42	1,69
3	1,48	1,20	1,09	1,02	0,91	0,65	0,47	0,41	0,38	0,32	0,27	0,20
32	16,83	13,37	11,94	11,21	4,63	4,62	4,44	3,71	0,12	0,17	0,14	0,07
33	0,38	0,34	0,26	0,19	0,68	0,37	0,16	0,13	0,41	0,34	0,32	0,24
4	0,66	0,48	0,80	0,70	0,46	0,54	0,59	0,34	1,94	1,04	1,13	0,95
68	3,21	2,77	3,26	3,70	0,12	0,14	0,58	0,80	1,03	1,19	0,85	0,95
Scale intensive (length of production runs)												
5	0,60	0,91	0,90	0,70	1,11	1,13	1,14	0,86	0,97	0,95	0,97	0,96
51	0,57	0,82	1,04	0,72	2,02	1,85	1,67	1,09	1,77	1,54	1,49	1,50
52	1,42	1,61	1,56	1,37	1,05	1,29	1,24	1,11	0,50	0,59	0,46	0,44
56	1,86	6,93	7,47	6,43	0,93	1,08	3,06	4,17	3,46	3,30	2,78	0,54
57	0,41	0,87	0,80	0,64	1,21	1,41	1,67	1,21	1,04	1,32	1,79	2,24
59	1,09	1,22	0,95	0,74	0,40	0,51	0,38	0,41	0,33	0,39	0,30	0,40
6	1,19	1,28	1,45	1,59	1,70	1,88	1,86	2,02	0,99	1,12	0,98	1,01
62	0,64	0,65	0,70	0,88	1,33	1,60	1,45	1,55	1,25	1,43	1,20	1,10
63	16,70	14,27	13,53	13,23	2,69	2,65	2,97	2,96	1,93	2,28	1,83	1,71
66	0,84	0,93	1,31	1,29	2,25	2,52	2,82	3,05	0,81	0,81	0,98	0,99
67	1,27	1,65	1,50	1,62	3,55	4,07	3,40	3,45	1,47	1,66	1,11	1,13
69	1,24	1,46	1,71	1,93	0,76	0,96	1,36	1,96	1,05	1,26	1,47	1,69
7	0,38	0,33	0,32	0,39	0,44	0,44	0,61	0,62	0,37	0,46	0,50	0,58
75	0,02	0,01	0,01	0,02	0,02	0,02	0,03	0,09	0,03	0,03	0,05	0,13
Labor intensive (labor costs)												
61	0,15	0,62	1,24	2,04	0,29	0,23	0,80	1,42	1,35	1,69	1,69	1,49
65	0,54	0,49	0,60	0,58	2,10	2,07	1,80	1,66	0,93	1,03	0,89	0,81
8	1,24	1,32	1,54	1,66	1,15	1,15	1,26	1,39	1,68	1,67	1,70	1,90
81	0,54	0,78	1,01	1,04	1,45	1,30	1,91	3,35	1,00	1,44	2,01	1,91
82	2,95	3,23	4,13	4,50	2,25	2,27	2,34	2,93	2,24	1,93	2,19	2,40
83	1,63	1,69	1,43	0,85	3,59	3,18	2,54	2,36	2,02	2,60	2,61	2,71
84	2,65	2,77	3,07	3,38	1,46	1,52	1,71	1,81	3,63	3,43	3,18	3,57
85	2,03	1,89	1,90	1,83	1,90	1,89	2,40	2,89	3,34	4,05	4,09	4,74
Not classified												
9	0,60	0,50	0,52	0,57	1,11	0,83	0,95	0,94	1,04	0,51	0,68	0,71

1) Average.

Source: OECD, Foreign trade by commodities 1992.

Table 1 continued

Central European Countries: RCA - Indices regarding Trade with Western Europe

Number of section (SITC)	Exporter: Poland				Exporter: Czech and Slovak Republics				Exporter: Hungary			
	Importer: Germany											
	1987-1989 ¹⁾	1990	1991	1992	1987-1989 ¹⁾	1990	1991	1992	1987-1989 ¹⁾	1990	1991	1992
Classification of industries according to OECD (1993):												
Resource intensive (access to natural resources)												
0	1,98	1,81	1,48	1,18	0,85	0,89	0,66	0,50	1,85	1,86	2,18	1,79
01	4,21	2,77	1,98	1,50	2,93	2,32	0,75	0,35	5,49	5,94	5,85	4,44
02	0,04	0,03	0,03	0,01	0,39	0,18	0,11	0,09	0,08	0,05	0,04	0,03
1	0,12	0,09	0,13	0,05	0,64	0,78	0,67	0,57	0,81	0,55	0,53	0,61
2	1,27	1,38	1,62	1,88	1,72	1,78	1,36	1,38	1,21	1,02	1,00	0,91
21	1,49	0,92	1,31	3,52	0,55	0,62	1,25	3,62	0,19	0,51	0,52	1,89
22	2,44	1,97	1,24	0,34	0,12	0,33	0,31	0,68	1,75	1,72	1,89	2,12
24	3,33	4,10	3,55	4,22	7,41	6,53	3,64	2,97	0,36	0,39	0,38	0,42
25	0,29	0,07	0,45	0,71	1,61	1,42	0,74	0,88	0,00	0,01	0,03	0,06
27	0,44	0,68	1,99	3,25	4,85	5,57	4,40	3,95	0,35	0,27	0,35	0,18
28	1,04	1,35	2,48	2,74	0,77	0,65	1,41	1,47	1,01	1,07	0,93	0,97
3	1,11	1,07	1,03	0,80	1,87	1,29	0,76	0,60	0,59	0,48	0,39	0,28
32	30,22	23,06	22,38	16,57	27,48	22,71	15,98	11,27	0,18	0,29	0,11	0,18
33	0,42	0,50	0,34	0,20	1,42	0,75	0,25	0,18	0,74	0,56	0,52	0,36
4	1,33	1,12	1,56	1,24	0,92	0,86	1,17	0,55	1,40	0,53	0,62	0,62
68	5,32	4,00	4,20	4,43	0,18	0,20	0,58	0,59	1,01	1,21	0,78	0,82
Scale intensive (length of production runs)												
5	0,51	0,75	0,73	0,63	1,24	1,19	1,28	0,95	0,69	0,63	0,61	0,56
51	0,50	0,54	0,73	0,58	2,06	1,39	1,73	1,00	0,85	0,74	0,77	0,68
52	0,90	1,26	1,35	0,93	0,94	1,16	1,19	0,89	0,56	0,62	0,60	0,48
56	2,12	6,72	6,70	6,44	1,73	2,18	6,66	7,83	6,02	4,62	3,60	1,04
57	0,46	0,88	0,87	0,81	1,53	1,88	1,92	1,29	0,77	0,84	0,79	0,99
59	0,89	0,98	0,63	0,53	0,60	0,76	0,48	0,56	0,17	0,10	0,15	0,20
6	1,61	1,55	1,70	1,85	1,60	1,81	1,78	1,92	1,02	1,20	1,06	1,04
62	0,32	0,33	0,35	0,45	0,59	0,83	0,79	0,85	0,96	0,83	0,79	0,85
63	1,71	3,62	4,11	4,21	3,70	3,60	3,30	2,92	2,27	3,60	3,30	2,92
66	1,16	1,32	2,06	1,90	2,56	3,21	3,93	4,08	1,07	3,21	3,93	4,08
67	1,40	1,54	1,52	1,83	2,98	3,33	2,78	2,91	1,30	3,33	2,78	2,91
69	1,68	1,86	1,92	2,26	0,64	1,05	1,42	2,07	1,54	1,05	1,42	2,07
7	0,21	0,30	0,30	0,28	0,25	0,37	0,62	0,63	0,48	0,37	0,62	0,63
75	0,00	0,00	0,00	0,01	0,01	0,02	0,04	0,10	0,04	0,02	0,04	0,10
Labor intensive (labor costs)												
61	0,21	0,72	1,51	2,57	0,17	0,06	0,54	0,95	1,31	1,63	2,07	2,03
65	0,26	0,34	0,50	0,47	2,07	1,95	1,58	1,38	0,72	1,02	1,02	0,88
8	1,46	1,50	1,58	1,70	0,92	0,97	1,09	1,25	1,80	1,78	1,70	1,84
81	0,66	0,94	1,00	0,88	0,66	0,77	1,59	3,05	1,36	1,82	1,96	1,38
82	3,92	4,06	4,50	3,36	2,34	2,33	2,13	2,41	2,63	2,13	2,44	2,54
83	1,58	1,57	1,31	0,81	2,21	2,80	1,98	1,69	2,09	2,14	1,70	1,56
84	2,41	2,40	2,40	2,71	1,11	1,19	1,29	1,37	2,68	2,51	2,21	2,52
85	1,18	1,19	1,28	1,24	0,82	0,64	1,26	1,77	3,53	4,26	4,08	4,57
Not classified												
9	0,55	0,48	0,81	0,72	0,97	0,70	1,09	0,92	0,98	0,71	1,24	1,01

1) Average.

Source: OECD, Foreign trade by commodities 1992.

Table 1 continued

SITC - Classification

Number of section	products
<i>Classification of industries according to OECD (1993):</i>	
<i>Ressource intensive (access to natural resources)</i>	
0	Food and live animals
01	Meat and meat preparations
02	Dairy products and birds' eggs
1	Beverages and tobacco
2	Crude materials, inedible, except fuels
21	Hides, skins and furskins, raw
22	Oil seeds and oleaginous fruits
24	Cork and wood
25	Pulp and waste paper
27	Crude fertilizers, (other than those of group 56) and crude minerals (excluding coal, petroleum and precious stones)
28	Metalliferous ores and metal scrap
3	Mineral fuels, lubricants and related materials
32	Coal, coke and briquettes
33	Petroleum, petroleum products and related materials
4	Animal and vegetable oils, fats and waxes
68	Non-ferrous metals
<i>Scale intensive (length of production runs)</i>	
5	Chemicals and related products, n.e.s.
51	Organic chemicals
52	Inorganic chemicals
56	Fertilizers (other than those of group 27)
57	Plastics in primary forms
59	Chemical materials and products, n.e.s.
6	Manufactured goods classified chiefly by material
62	Rubber manufactures, n.e.s.
63	Cork and wood manufactures (excluding furniture)
66	Non-metallic mineral manufactures
67	Iron and steel
69	Manufactures of metal, n.e.s.
7	Machinery and transport equipment
75	Office machines and ADP Equipment
<i>Labor intensive (labor costs)</i>	
61	Leather, leather manufactures, n.e.s., and dressed furskins products
65	Textile yarn, fabrics, made-up articles, n.e.s. and related products
8	Miscellaneous manufactured articles
81	Prefabricated buildings; sanitary plumbing, heating and lighting fixtures and fittings, n.e.s.
82	Furniture and parts thereof; bedding, mattresses, mattress supports, cushions and similar stuffed furnishings
83	Travel goods, handbags and similar containers
84	Articles of apparel and clothing accessories
85	Footwear
<i>Not classified</i>	
9	Commodities and transactions not classified elsewhere in SITC

the observed widening of trade deficits has been associated with real effective currency appreciations. Given that CEFTA countries have either pegged exchange rate regimes (Czech and Slovak Republics and Hungary) or a crawling-peg regime (Poland), the nominal exchange rate is exogenous. Therefore, deteriorating trade balances⁹, rather than being a reasonable outcome, may also result from deliberate policy decisions on the part of CEFTA countries aimed at maintaining overvalued currencies, i.e. higher terms-of-trade than can be afforded. In the second case, long run growth prospects for CEFTA countries may be dampened because the costs (interest rate) of servicing the foreign debt may exceed the rate of return earned by employing the imported goods.

Regarding the effect of trade on employment in western Europe, it is necessary to consider the above discussed effects on relative wages as suggested by trade theory. As is well known, the trade balance is not the best measure of the effects of trade¹⁰. If trade had a significant effect on international relative prices, then changes in relative wages would be required so that overall employment remains unchanged. As found in section 4 below for Germany, relative prices of traded goods with a high factor content of production labor appear, if anything, to have very slightly increased. To the extent that this finding was applicable to western Europe, it would mean that the argument for trade to have adversely affected demand for less skilled labor would have to be built on a more sophisticated theory than the HOS theory¹¹.

Finally, there have been considerable official transfers, especially from western Europe, to CEFTA countries, and in particular to Poland, so that the current accounts of CEFTA countries deteriorated less than the net export figures shown in table 2.

In sum, CEFTA countries incur merchandise trade deficits larger than surpluses in services trade (with the exception of the Czech Republic). The increasing division of labor between central-eastern and western Europe has a positive effect on aggregate output in western Europe with the employment effect being primarily dependent on relative wage flexibility. Tariffs, non-tariff barriers, and exchange controls on the part of CEFTA countries dampened their trade deficits. To a small degree, financing through transfers from western Europe occurred.

3. Competitiveness from the viewpoint of exchange rate policy

Given that comparative advantage reveals relative competitiveness of specific sectors but not that of an economy and that the trade balance may not be used as an indicator

⁹ With the exception of the Czech Republic, where the trade balance appears to have become a surplus during 1994.

¹⁰ See Trabold's contribution „Internationale Wettbewerbsfähigkeit einer Volkswirtschaft“ in this volume.

¹¹ On this theoretical side see, in particular, Bhagwati (1991).

Table 2

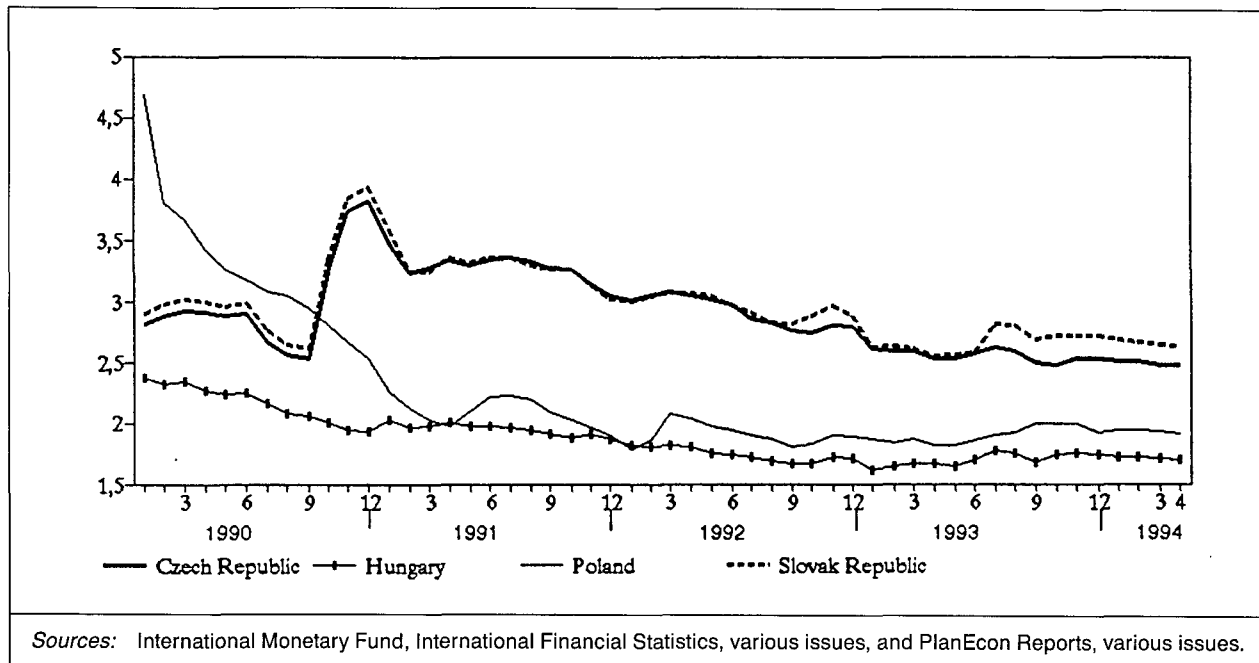
Structure of Foreign Trade of Central European Countries
in convertible currencies; as percent of GDP

Czech Republic ¹⁾			Poland		
	1992	1993		1992	1993
Exports	40,05	46,44	Exports	19,43	18,59
Merchandise	27,69	31,60	Merchandise	16,75	15,82
Services	10,51	13,24	Services	1,93	2,15
Transportation	3,87	3,93	Transportation	...	...
Travel	3,97	4,92	Travel	...	...
Other	2,67	4,39	Other	...	...
Income receipts on assets abroad	1,85	1,60	Income receipts on assets abroad	0,75	0,63
Imports	40,24	47,02	Imports	23,26	24,82
Merchandise	32,53	33,17	Merchandise	16,14	18,49
Services	5,88	41,84	Services	1,52	1,72
Transportation	1,50	2,35	Transportation	...	...
Travel	1,65	1,66	Travel	...	...
Other	2,73	7,82	Other	...	...
Income payments on foreign assets in the Czech Republic	1,83	2,05	Income payments on foreign assets in Poland	5,60	4,61
Net exports	-0,18	-0,57	Net exports	-3,83	-6,23
Merchandise	-4,84	-1,57	Merchandise	0,61	-2,67
Services	4,63	1,41	Services	0,41	0,43
Income payments	0,03	-0,40	Income payments	-4,85	-3,99
<p>1) Excluding transactions with the Slovak Republic. <i>Source:</i> Czech National Bank, Annual Report 1993. International Monetary Fund, International Financial Statistics.</p>			<p><i>Source:</i> National Bank of Poland, Information Bulletin No. 12, 1993, and International Monetary Fund, International Financial Statistics.</p>		

Hungary			Slovak Republic ²⁾		
	1992	1993		1992	1993
Exports	...	...	Exports	76,95	68,39
Merchandise	28,24	22,41	Merchandise	61,01	49,06
Services	...	...	Services	14,35	17,61
Transportation	...	...	Transportation	3,86	4,14
Travel	3,47	3,27	Travel	1,87	3,52
Other	...	...	Other	8,62	9,95
Income receipts on assets abroad (excluding direct investment)	1,18	1,26	Income receipts on assets abroad	1,59	1,71
Imports	...	...	Imports	82,90	73,24
Merchandise	28,37	31,40	Merchandise	67,69	57,33
Services	...	...	Services	13,29	13,85
Transportation	...	...	Transportation	1,20	1,29
Travel	1,81	2,05	Travel	1,55	1,95
Other	...	...	Other	10,54	10,60
Income payments on foreign assets in Hungary (excluding direct investment)	4,61	4,39	Income payments on foreign assets in the Slovak Republic	1,92	2,06
Net exports	-5,23	-12,56	Net exports	-5,95	-4,85
Merchandise	-0,14	-8,99	Merchandise	-6,69	-8,27
Services	-1,55	-0,29	Services	1,07	3,77
Income payments (including direct investment)	-3,55	-3,28	Income payments	-0,33	-0,35
<p><i>Source:</i> National Bank of Hungary, Monthly Report No. 8, 1994, and International Monetary Fund, International Financial Statistics.</p>			<p>2) Including transactions with the Czech Republic. <i>Source:</i> Slovak Statistical Office, Economic Monitor, and Bulletin.</p>		

Chart 1

CEFTA Countries: Evolution of Ratios of Official Exchange Rates to PPP Rates
1990-1994



of competitiveness, this section uses exchange rate developments in evaluating CEFTA countries' price and cost performance in international markets. The relationship between competitiveness, on the one hand, and devaluations, on the other, is also considered.

3.1 Purchasing power parity

The evolution of the spread between the market or the official exchange rate and the purchasing power parity (PPP) reveals to what extent a currency's under- or overvaluation changed over time¹². In the context of CEFTA and eastern European countries, since inception of transition, undervaluation vis-à-vis the PPP has been common. Two main factors may explain this undervaluation: First, according to the „productivity differential theory,” undervaluation results from differences in the productivity gaps between tradeables and non-tradeables in high and low income countries. Second, as long as there is a shortage of financial assets denominated in domestic currency whose expected (risk-adjusted) real interest rate is positive, foreign exchange and foreign currency deposits serve as inflation hedges. In other words, until in CEFTA countries productivity in the production of tradeables rises sufficiently in relation to productivity in the production of non-tradeables and until the expected (risk-adjusted) real interest rate in CEFTA countries equals that prevailing in industrial countries, undervaluation vis-à-vis the PPP is likely to persist.

External competitiveness may be assessed by examining the degree of undervaluation relative to other central-

eastern European currencies. A currency can be regarded as overvalued if the respective degree of undervaluation (relative to PPP) is low compared to other CEFTA currencies. According to Chart 1, official exchange rates of CEFTA countries' currencies have been persistently undervalued relative to their respective PPP rates. However, the spread declined in all cases, remaining rather stable since 1993. The currencies of the Czech and Slovak Republics have considerably wider spreads than those found for Hungary and Poland. From this perspective the currencies of the Czech and Slovak Republics may thus appear „competitive” relative to those of Hungary and Poland. Given CEFTA countries' pegged exchange rates, the deviation of the official exchange rate from the PPP rate can be considered a policy variable. With trade balances deteriorating (particularly vis-à-vis western Europe and with the exception of the Czech Republic), an open question thus is whether the currencies, especially of Hungary and Poland, may have been overvalued in the sense that they are not compatible with price competitiveness of their external sectors.

3.2 Real effective exchange rate

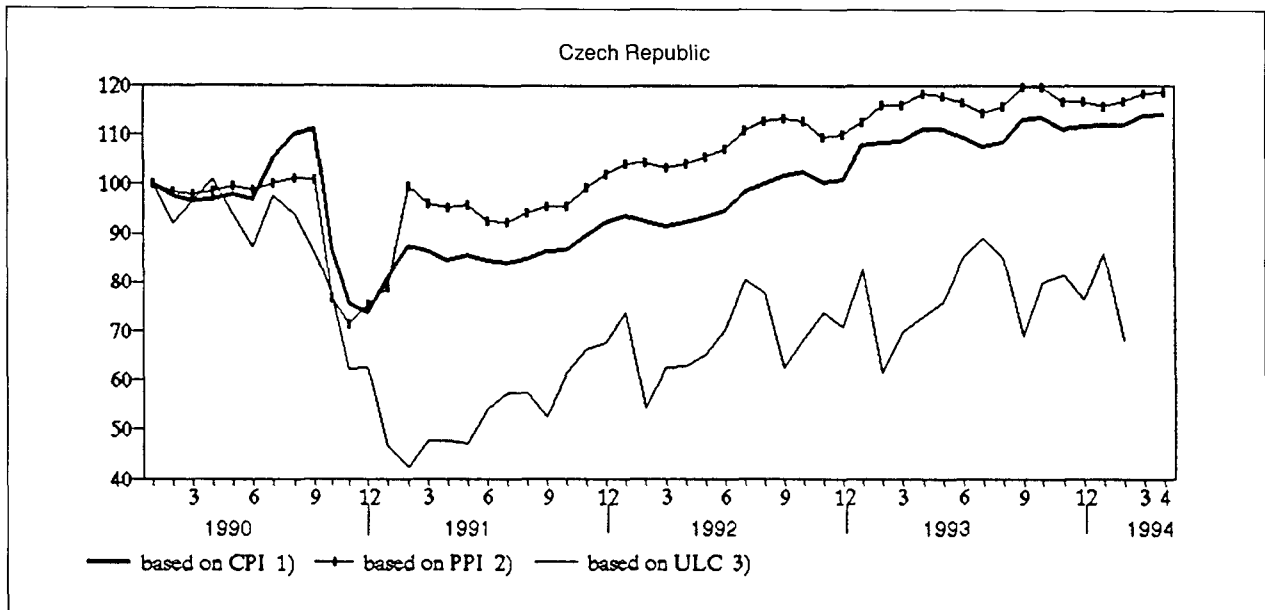
Chart 2 shows developments of three real effective exchange rate indices for each CEFTA country, i.e. nominal

¹² The PPP exchange rate vis-à-vis the US dollar is the implied value of the exchange rate based on relative consumer prices in the respective country and in the United States.

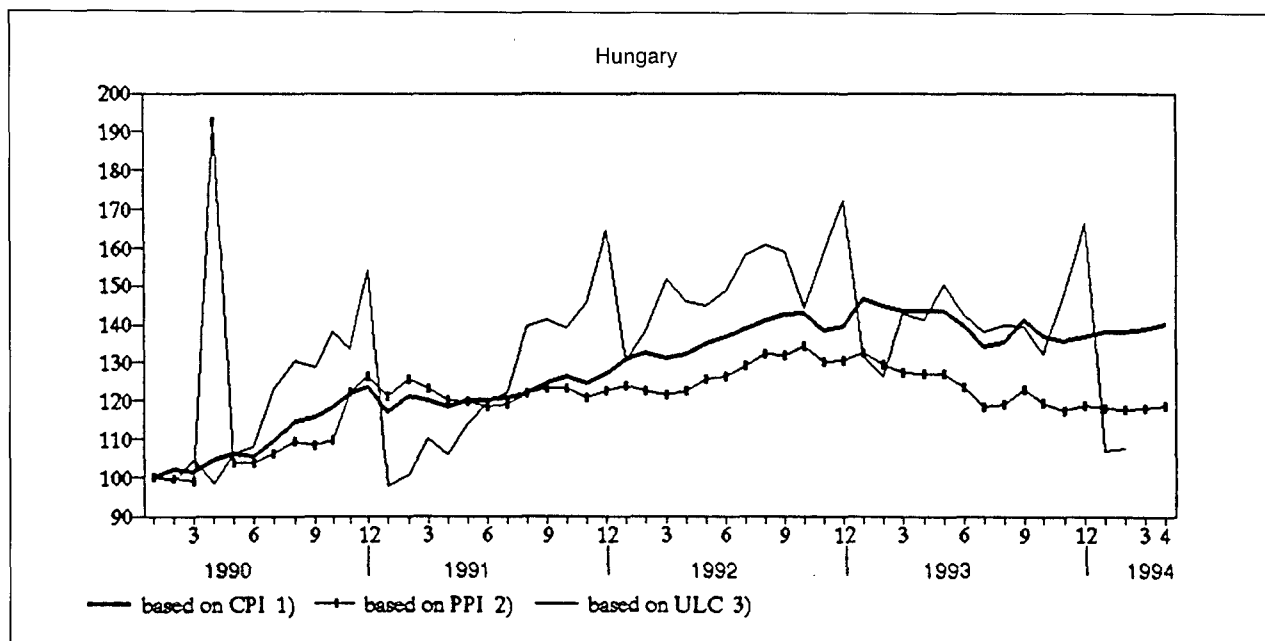
Chart 2

CEFTA Countries: Evolution of Real Exchange Rates 1990–1994

Panel A



Panel B



trade weighted exchange rates adjusted for price and cost changes¹³. CEFTA countries experienced increases of the indices relative to the levels at the beginning of 1990. The increase has been pronounced in the case of Hungary that had the strongest trade balance deterioration among CEFTA countries. The indices have to be interpreted carefully, particularly when based on unit labor costs (ulc): Trabold's detailed discussion of the real effective exchange rate as an indicator of competitiveness¹⁴ suggests that it is a good indicator only in the short-run. In a short period, say

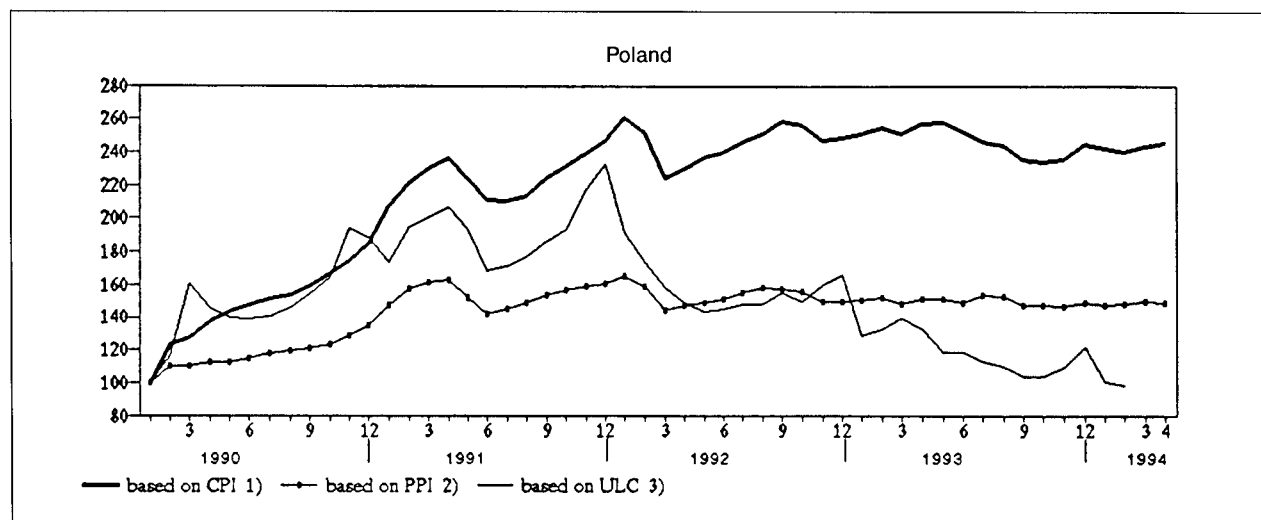
up to a year, an overshooting nominal exchange rate and a deviation of wage growth from that which would be warranted given certain productivity growth may be considered exogenous influences that improve or worsen competitiveness. With an increasing time horizon, the real effective exchange rate may preferably be considered en-

¹³ An increase of the indices indicates a real appreciation.

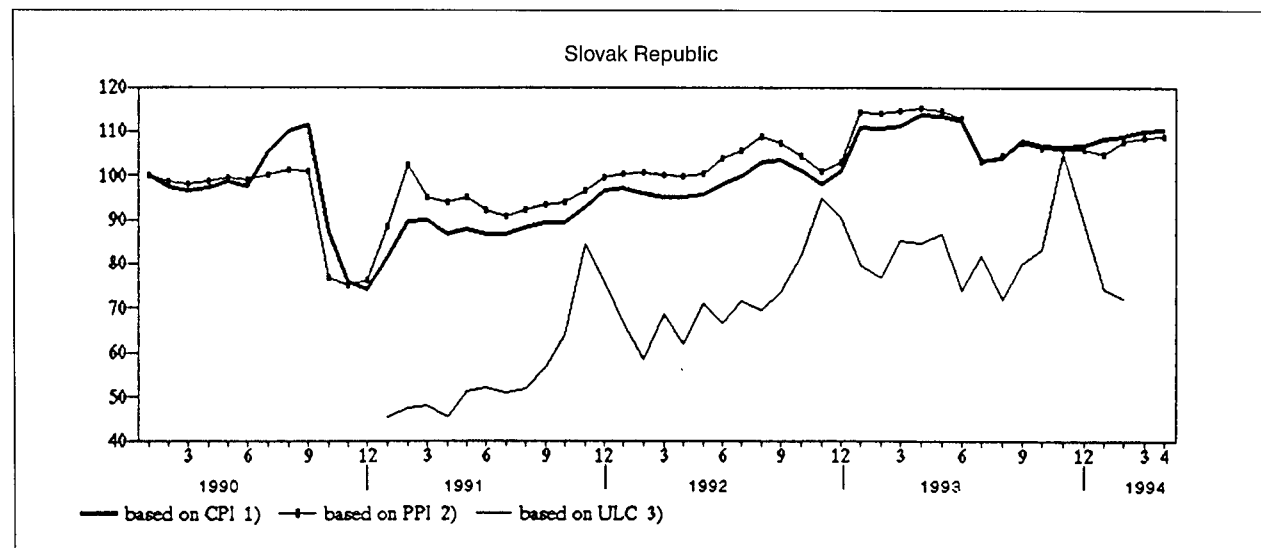
¹⁴ Again, see his essay „Internationale Wettbewerbsfähigkeit einer Volkswirtschaft“ in this volume.

Chart 2 (continued)

CEFTA Countries: Evolution of Real Exchange Rates 1990–1994
Panel C



Panel D



1) Nominal effective exchange rate deflated by consumer price index. — 2) Nominal effective exchange rate deflated by producer price index. — 3) Nominal effective exchange rate deflated by unit labor cost index.

Sources: Unit labor costs calculated as nominal average gross wage in industry deflated by industrial producer prices and divided by real industrial output. Indexes of average gross nominal wage in manufacturing, industrial producer price indexes, and indexes of real output in manufacturing from Czech Statistical Office, Monthly Bulletin, and Monthly Statistical Surveys, Hungarian Central Statistical Office, Monthly Bulletin of Statistics, National Bank of Hungary, Monthly Report, Polish Central Statistical Office, Monthly Statistical Bulletin, National Bank of Poland, Information Bulletin, and Slovak Statistical Office, Economic Monitor and Monthly Bulletin, respectively. Effective exchange rate indexes from PlanEcon Reports, various issues.

dogenous and thus a function of the factors that determine an economy's long run ability to adjust¹⁵.

¹⁵ In a theoretical contribution on this ability, Flassbeck (1992) emphasizes the influence of the chosen wage formation system and exchange rate system. The problem of maintaining international competitiveness is above all that of ensuring sufficiently flexible wages and/or exchange rates so as to achieve compatibility of nominal income demands with what can be offered in real terms.

Chart 2 suggests that competitiveness of Hungary and Poland deteriorated during 1990 to 1991. The trend of real effective appreciation was halted during 1992. Nevertheless, trade balances of both countries continued to deteriorate. In Poland, since about the adoption of the crawling peg exchange rate regime in October 1991, devaluations appear to have outpaced increases in unit labor costs thus providing for improved competitive-

ness¹⁶. In the Slovak Republic further rises of real exchange rates were prevented through a 10 percent devaluation in July 1993.

If non-wage remuneration in CEFTA countries would be a uniform mark-up on average wages, then the evolution of ulc-based indices could be directly compared. On that assumption, our data would indicate that (with international prices for exports given) producers of tradeables in Poland and Hungary were subject to substantial pressure on profit margins during 1990 and 1991, whereas exporters in the Czech and Slovak Republics experienced large gains in competitiveness. However, since then developments appear to have reversed such that competitiveness of Poland and Hungary improved while that of the Czech and Slovak Republics worsened. Nevertheless, the trade balances tended to deteriorate in all countries.

As already mentioned, the deterioration should be welcomed if it would be the result of a higher return on capital than offered in industrial countries and thus contribute to growth prospects. If, however, it is the result of overvalued currencies it would entail the risk of future growth sacrifices because the cost of servicing external debt may exceed the return on capital. Under the assumptions that the exchange rate is flexible and that a trade deficit is not the result of a relatively high return on capital in the country with the trade deficit, one would expect, *ceteris paribus*, a tendency for the real exchange rate to depreciate. Therefore, to the extent that we observe no tendency for real exchange rates to depreciate in CEFTA countries (Chart 2), favorable assessments of competitiveness and long run growth prospects may well be the underlying factors. The risk of future growth sacrifices remains if this assessment is not verified.

A study of productivity and absolute measures of unit labor costs would be required to understand better central-eastern European countries' competitive positions. A recent attempt to perform such measurement regarding major industrial countries provided useful results (Turner and Van't Dack (1994)). However, even for industrial countries measurement of productivity in the services sector is notoriously unsatisfactory¹⁷.

3.3 Devaluation

To what extent is external competitiveness related to fiscal and monetary policy and is the aim of rising export revenues better served through devaluations or through macroeconomic policies that provide for a low inflation rate in line with trading partner countries or even lower so that competitiveness may improve owing to domestic price stability? Particularly those CEFTA countries that have relatively high external debt may need to improve their trade balance so that foreign debt servicing does not pose a future growth constraint¹⁸. Poland and Hungary have relatively high and growing net external debt to GDP ratios (about 50 percent in each country), and debt service obligations amount to about 20 and 40 percent of annual export

revenues of goods and non-factor services, respectively. Net external debt in the Czech and Slovak Republics is substantially lower. However, owing to a deterioration of both the trade balance and substantial fiscal deficits in the Slovak Republic, external and domestic debt to GDP ratios in this country have been growing whereas they remain about constant in the Czech Republic. The reasons why external competitiveness may not be best served through devaluation are manifold. Before elaborating on these considerations it ought to be emphasized that the empirical evidence shows that nominal devaluations can be very effective after a period during which macroeconomic imbalances have been built up, provided they are associated with consistent fiscal and monetary policies. Edwards (1989) defines a devaluation as successful if (1) three years later not more than 70 percent of the initial impact on the real exchange rate is eroded, and (2) three years after the devaluation either the ratio of current account to GDP or the ratio of net foreign assets to money shows an improvement relative to the year before the devaluation. The analysis of 39 episodes of devaluations in developing countries shows that in the successful cases, domestic credit and fiscal policies that followed the devaluation were significantly different from those pursued in the unsuccessful cases¹⁹. The two devaluations pursued by the former Czech and Slovak Federal Republic at the end of 1990 have been very effective when judged on the basis of the Edwards criteria and using the real exchange rate based on unit labor costs.

The considerations according to which devaluations may not be as beneficial as suggested by traditional theory can be summarized in four groups. First, devaluations may affect inflationary expectations and result in long run inflation persistence. Second, devaluations may have an adverse fiscal impact, particularly when external public debt is large relative to domestic public debt. Third, devaluations can have an adverse impact on growth and there is empirical evidence supporting this hypothesis. Fourth, devaluations may entail unwanted distributional effects.

As regards inflationary expectations and inflation persistence, Alogoskoufis (1992) used a conventional mone-

¹⁶ The data do not allow to consider non-wage remuneration, thus making the unit labor cost based indices unreliable. This, of course, is in addition to the several limitations of (especially) ulc-based real exchange rates discussed by Trabold in this volume.

¹⁷ European integration may perhaps promote improvement of the standards of productivity measurement and their unification.

¹⁸ During the 1980s several of the so-called highly indebted developing countries restrained growth in order to generate trade balance surpluses with which to service external debt (see, for instance, Guidotti and Kumar (1991)).

¹⁹ Specifically, the successful cases were characterized by a reduction in the rate of growth of domestic credit to the public sector as a share of GDP, in the growth rate of domestic credit to the public sector, and in the growth rate of domestic credit. Note that this definition of success is related to improvement of the external side and not to real output. In most of these episodes real output declined.

tary model of the exchange rate, extended to incorporate mark-up pricing and forward-looking wage setters who consider expected inflation and unemployment, to show that a policy of accommodation of price shocks through devaluation results in a permanently higher inflation rate. This is because market participants expect that owing to this policy external competitiveness will be improved with unemployment decreasing. Consequently, wage demands are higher than in the absence of accommodation. It may be argued that inflation persistence due to an accommodative policy is preferable to relatively high unemployment. However, Alogoskoufis' analysis implies that the inflation-unemployment trade-off is impaired as long as the policy is accommodative. If there was a credible commitment on the part of the central bank not to accommodate price shocks, then a lowering of inflation without adverse real effects is facilitated and growth would benefit from low inflation. Such a commitment may, however, lack credibility if the central bank has to coordinate exchange rate policy with the government (such as in Hungary) and if fiscal deficits contribute to money growth²⁰.

An additional channel through which devaluation may contribute to inflation that is not considered in Alogoskoufis' (1992) should be seen in diminished incentives to improve productivity growth. If important exporters can exert pressure on governments to maintain their international competitiveness through devaluation and have the expectation that devaluations will be implemented should competitiveness deteriorate, then the incentives to improve productivity growth are clearly reduced²¹.

The impact of devaluation on the budget deficit is controversial. On the one hand, there is the view that the costs of domestic debt servicing fall, because an overshooting devaluation creates an expectation of appreciation so that the return on domestic currency assets is lower than otherwise (Ize and Ortiz (1987))²². To a certain degree this effect will compensate the rise in the local-currency cost of servicing foreign-currency debt. However, CEFTA countries entered transition with very low domestic public debt so that an analysis should concentrate on external debt. The question whether a sustained real devaluation increases or lowers the budget deficit has been analyzed by Reisen (1989) through decomposing the fiscal balance into one that is nontradeables related and one that is tradeables related. Consider the usual budget identity:

$$D + iB + i^*(B^* - F^*) = \dot{B} + \dot{B}^* - \dot{F}^* + \dot{M}, \quad (2)$$

where D is the noninterest budget deficit, i and i^* are nominal interest rates on domestic and foreign currency debt, respectively, B is domestic currency public debt held outside the central bank, B^* is foreign-currency public debt, F^* is the stock of foreign assets held by the public sector, and M is base money. A dot over a variable indicates its change over time.

The identity ought to be adjusted for inflation so that the real effects of a real devaluation can be assessed. Lower

case letters are used to express real variables. In addition, the noninterest budget balance is decomposed into a non-tradeables related one $(g-t)$ and a tradeables related deficit $(g^*-t^*)e$, where g is real government expenditures, t is real government revenues, and e is the real exchange rate (EP^*/P) , i.e. the nominal exchange rate E multiplied by the foreign price level P^* and divided by the domestic price level P . This yields:

$$\begin{aligned} (g-t) + (g^*-t^*)e + rb + r^*(b^*-f^*)e \\ = \dot{b} + \dot{b}^*e - \dot{f}^*e + \dot{m}, \end{aligned} \quad (3)$$

where r and r^* are real interest rates on local-currency and foreign-currency debts, respectively, and $b = B/P$, $b^* = B^*/EP^*$, $f^* = F^*/EP^*$, and $m = M/P$.

Collecting the variables in (3) that depend on the real exchange rate e shows how the budget deficit is affected:

$$[r^*(b^*-f^*) + (g^*-t^*)]e \geq (\dot{b}^* - \dot{f}^*)e. \quad (4)$$

Assuming no changes in interest rates (no overshooting) and abstracting from output effects, the fiscal balance deteriorates in response to a real devaluation when real interest payments on net external debt exceed the noninterest budget surplus. If there is an initial deficit in the tradeables related balance, the deterioration is more likely²³.

Rough estimates of a breakdown of the fiscal balance into tradeables and non-tradeables related parts with regard to the relatively highly, externally indebted CEFTA countries Hungary and Poland are given in table 3. The estimates reflect an attempt to provide an upper bound for the tradeables related fiscal surplus, which is a deficit in the case of Hungary. External debt in Hungary has to be serviced nearly entirely on the basis of going market interest

²⁰ The extent to which the latter occurred in CEFTA countries could be assessed through estimation of a simple money creation equation:

$$\Delta \ln M_t = a_0 + a_1 \Delta \ln M_{t-1} + a_2 \Delta \ln M_{t-2} + a_3 \Delta \ln M_{t-3} + a_4 DEF_t + u_t,$$

where M_t is broad money, DEF_t is the fiscal deficit as a share of base money, and u_t is a white noise term. Unfortunately, high frequency data on base money are not yet available.

²¹ To test for the relevance of this argument would require an empirical analysis of productivity growth in sectors that are highly dependent on export demand in countries that pursued exchange rate stability through domestic price stability versus such sectors in countries that used devaluations. (Such an investigation cannot, however, be offered in this paper).

²² One example for such overshooting is Bulgaria, where the devaluation of January 1991 provided for relative exchange rate stability of the lev to the US dollar until fall 1992 despite inflation running at about 340 percent in 1991 and 91 percent in 1992. The expected appreciation made lev denominated assets attractive, contributed to limited currency substitution and lowered domestic debt servicing cost.

²³ In response to devaluation with exchange-rate overshooting and thus a fall in the real domestic interest rate, the fiscal balance will deteriorate when the foreign-currency portion of public debt plus the initial deficit on tradeables is larger than the savings made by reducing the cost of domestic debt service (see Reisen (1989), p. 12).

Table 3

**Hungary and Poland: Decomposition of Government
Non-Interest Expenditures and Revenues¹⁾**
estimates; in percent of GDP

	Non-interest expenditures directly related to:				Revenues directly related to:			
	Tradeables Sector		Non-tradeables Sector		Tradeables Sector		Non-tradeables Sector	
Hungary	10 percent of goods and services	0,83	Current expenditures	7,47	Customs duties, import levies	0,03	Wage taxes	6,02
	Tax rebate to exporters	0,74	Subsidies and transfers	16,09	5 percent of profit taxes	0,01	Profit taxes	2,61
	10 percent of capital expenditures	0,41	Capital expenditures and net lending	3,72			Other	16,02
	Total	1,99	Total	27,28	Total	0,05	Total	24,64
Poland	10 percent of goods and services	0,44	Current expenditures	19,10	Taxes and levies on foreign trade	2,30	Personal income tax	6,30
	5 percent of subsidies	0,17	Subsidies and transfers	13,10	5 percent of profit taxes on nonfinancial institutions	0,18	Profit taxes	4,23
	10 percent of capital expenditures	0,15	Capital expenditures and net lending	1,70			Other	16,08
	Total	0,76	Total	33,90	Total	2,48	Total	26,60

¹⁾ Hungary is consolidated government for 1993; Poland is state budget for 1992.
Sources: National Bank of Hungary, Annual Report 1993, Central Statistical Office, Warsaw, Statistical Bulletin, January 1994, and author's estimates.

rates, and thus the budget response to real devaluation on the basis of this approach would appear to be negative. Poland, on the other hand, has relatively large revenues derived from tariffs so that the tradeables related fiscal balance may appear to be in surplus. Poland's external debt has been concessional to a large part, although it had a positive real interest rate. Hence, the budget response to real devaluation in Poland may be positive. On the other hand, it is questionable whether Poland can maintain relatively high tariffs if it wishes to gain improved market access to other regional trade blocks and become even a member of the EU. In addition, tariffs hinder domestic competition. Thus, foreign trade related revenues may have to decline making it more likely that the budget response to devaluation is negative.

Turning to the output response to devaluation, traditional theory, such as the Mundell-Fleming model, suggests that it is expansionary in the short run when output is below capacity or without an effect if the economy operates under full employment (Dornbusch (1973)). More recent theoretical analyses found that there is a possibility for devaluations to have a negative impact on output²⁴. Important demand side channels which explain contraction are, first, price elasticities of imports and exports sufficiently low for the trade balance to deteriorate, second, a price level increase (dependent on the degree of indexation) causing a negative real balance effect and lower aggregate demand, and third, an income redistributive effect whereby devaluation redistributes income from groups with a low marginal propensity to save to groups with a high marginal

propensity to save. On the supply side, increases in working capital requirements and in the domestic price of intermediate inputs are the reasons why in some models devaluation results in upward shifting aggregate supply and therefore contraction.

Given the dependence of CEFTA countries on imports of high skilled-labor-intensive and capital-intensive goods, two of the channels, i.e. low short-run average price elasticity of imports and price increases of intermediate inputs, may be of particular relevance²⁵. Sensitivity of wages to devaluations may become important if unemployment is low as in the Czech Republic. If these channels have importance in CEFTA countries, then the possibility for devaluations to be contractionary is nontrivial.

Finally, distributional consequences of devaluations should be considered. Is a real devaluation, required to restore external equilibrium, likely to cause distributional effects that would not occur had devaluation been avoided

²⁴ See the survey of these models in Rojas-Suarez (1987). Edwards (1989) above quoted regression analysis corroborates the view that devaluations can be contractionary. In all cases the coefficients of the unlagged (nominal and real) exchange rate regressors are significantly negative. Since the hypothesis for the sum of the (unlagged and lagged) exchange rate coefficients to be zero cannot be rejected in some cases, while it can be rejected in others, the long-run real output effects of devaluations are unclear.

²⁵ More than half of the imports of each CEFTA country may be classified as high skilled-labor- and capital-intensive goods with the shares of less skilled-labor- and natural-resource-intensive goods in exports being much higher.

Table 4

Germany: Production, Employment, and Trade in Manufacturing, 1960–1993
share; in percent

Year	Manufacturing					
	share in total GDP	share in total employment	imports to total GDP	imports to manufacturing GDP	net exports to total GDP	net exports to manufacturing GDP
1960	40,3	n.a.	7,2	17,9	7,5	18,6
1970	38,4	38,2	10,7	27,9	6,6	17,2
1975	36,6	n.a.	11,7	32,1	8,2	22,3
1980	32,4	33,3	15,9	49,3	6,0	18,4
1985	32,0	31,2	18,7	58,4	8,6	26,8
1990	30,6	30,7	18,6	60,7	6,3	20,5
1991	30,0	30,5	20,0	66,6	3,0	10,0
1992	28,7	29,7	18,5	64,4	3,4	11,9
1993	n.a.	28,3	15,6	n.a.	3,9	n.a.

Sources: Statistisches Bundesamt, Statistisches Jahrbuch für die Bundesrepublik Deutschland, various issues; Statistisches Bundesamt, Fachserie 1, Reihe 4.1.1; Fachserie 7, Reihe 1, Reihe 7, and Fachserie 18, Reihe 1.1.

in the first place? Edwards' (1989) analysis of devaluation episodes yields that there has not been a significant change in income distribution for the sample. In those cases where the share of labor in GDP rose or decreased in the three years following the devaluation, the change has generally not been larger than 3 percentage points. However, to the extent that devaluations result in higher inflation, perhaps a permanently higher inflation rate, they are likely to redistribute income from money holders and tax payers to owners of fixed capital and land.

In sum, the ambiguities of devaluation, in particular the risk of permanently higher inflation, may suggest that it is preferable to maintain competitiveness and improve the trade balance through control of the domestic price level such that market agents do not expect devaluations. This would imply an inflation performance at least as good as that of the main trading partner countries.

4. Competitiveness of CEFTA countries vis-à-vis western Europe: A case study of Germany

Given the tendency in industrial countries for the shares of manufacturing sectors and of manufacturing employment in GDP to decline with unemployment generally rising and international trade particularly with low wage countries increasing, several studies analyzed the impact of import competition on employment and wages²⁶. They differ substantially in the assessed adverse employment effects of trade with low wage countries. This section studies potential labor market effects of trade with CEFTA countries for Germany on the basis of a factor content analysis.

4.1 Manufacturing and trade in Germany

Table 4 shows that West Germany experienced a long-term decline of the shares of manufacturing in GDP and of

manufacturing employment in total employment. The decline of the manufacturing share in GDP appears to have accelerated after the first oil price shock. By contrast, the shares of net manufacturing exports both in GDP and in manufacturing GDP do not show such a clear trend. Germany's manufacturing sector remained a net exporter throughout. In the mid 1980s net exports had their largest share since 1960 while employment in manufacturing continued to decrease. The rising aggregate demand caused by German unification in 1990 had a strong adverse impact on net exports with the current account becoming negative. However, the impact was one time: since 1992 the shares of net exports in GDP and in manufacturing GDP recovered strongly. Overall, an impression of the table is that at least until 1990, net exports, trade and import competition may not have been related to the trend decline of manufacturing employment²⁷.

Increases of trade and import penetration accelerated after 1975 until the late 1980s (table 5), reflecting not only ef-

²⁶ On the United States see Revenga (1992), Lawrence and Slaughter (1993), Krugman and Lawrence (1993), Sachs and Shatz (1994); on north-south trade in general see Wood (1993) and (1994); on trade between western Europe and central and eastern Europe see, for instance, Collins and Rodrik (1991), Follo and Smith (1993), Klodt (1993), and Andersen and Dittus (1994).

²⁷ As in the case of the United States, the decline of manufacturing employment may have to be explained with long-term trends such as strong productivity growth in manufacturing relative to the services sector and thus a secular decline in the relative price of manufactures compared to nonmanufactures. Assuming an aggregate price elasticity of demand of less than unity, the fall in the relative price of manufactures results in a decreasing share of consumption of manufactures and, under the assumption of no trade effects, into a declining share of manufacturing in GDP (Krugman and Lawrence (1993)). In this section, however, only the question is examined whether trade has and is likely to contribute to the decline in manufacturing employment.

Table 5

Germany: Share of Imports in GDP 1960–1993
in percent

	1960	1970	1975	1980	1985	1990	1991	1992	1993
Total	14,11	16,23	17,95	23,19	25,44	22,94	22,87	21,06	17,53
Industrial countries	10,09	12,95	13,50	17,26	20,05	18,41	18,62	17,14	13,69
European Union	5,58	8,37	9,32	11,26	12,93	11,57	11,89	10,95	8,11
USA	1,97	1,79	1,39	1,75	1,77	1,49	1,50	1,40	1,29
Japan	0,09	0,30	0,42	0,71	1,14	1,32	1,41	1,26	1,10
Central and Eastern Europe	0,56	0,65	0,84	1,19	1,44	1,47	1,16	1,16	1,16
former Soviet Union	0,22	0,19	0,32	0,51	0,75	0,73	0,50	0,43	0,42
Poland	0,11	0,11	0,14	0,17	0,17	0,28	0,26	0,27	0,28
former Czechoslovakia	0,09	0,11	0,11	0,13	0,14	0,18	0,18	0,24	0,25
Hungary	0,06	0,07	0,09	0,12	0,12	0,18	0,15	0,15	0,15
Developing countries	3,43	2,62	3,59	4,73	3,93	2,70	2,66	2,35	2,22
OPEC countries ¹⁾	2,16	1,48	0,58	0,56	0,53	0,21
P.R. of China	0,10	0,05	0,05	0,10	0,14	0,32	0,41	0,38	0,44
Taiwan	0,01	0,04	0,09	0,15	0,16	0,25	0,28	0,25	0,24
South-Korea	0,00	0,01	0,07	0,12	0,14	0,18	0,20	0,18	0,18
Brasil	0,17	0,17	0,22	0,20	0,35	0,21	0,19	0,18	0,14
Hongkong	0,03	0,10	0,16	0,22	0,20	0,20	0,20	0,16	0,14
Singapore	0,00	0,01	0,04	0,08	0,07	0,12	0,12	0,12	0,13
Malaysia	0,13	0,05	0,05	0,10	0,11	0,09	0,11	0,12	0,11
India	0,06	0,04	0,05	0,08	0,08	0,11	0,10	0,09	0,10
Thailand	0,03	0,02	0,03	0,08	0,08	0,09	0,10	0,10	0,10
Indonesia	0,06	0,05	0,04	0,05	0,06	0,06	0,07	0,07	0,09

¹⁾ excluding Ecuador.
Source: Statistisches Bundesamt, Facterie 7, Reihe 1.

ffects of the oil price increase but also technological progress (reductions in transportation and communication costs), trade liberalization on the part of both the EU and the General Agreement on Tariffs and Trade and market liberalization in developing countries especially China. Note that in contrast to the successor states of the former Soviet Union, central-eastern European countries are among the few whose share in German imports increased nearly continuously during the past three decades. Noteworthy are also China's rising share and the advances achieved by Taiwan, South-Korea and Brasil. German unification entailed a surge for imports and a large initial deterioration of the current account but the increase of GDP was even larger so that import penetration declined. The evolution of West Germany's trade structure (table 6) suggests that this decline is likely to be transitory: unification did not halt the long run trend of rising shares of both exports and imports in GDP. In addition, manufacturing imports from low wage countries, the latter being proxied by non-OECD countries, were little affected by unification (table 7).

Nevertheless, trade balances and import ratios are poor indicators of trade effects on the labor market because they do not reveal underlying changes in relative prices of tradeables.

4.2 Skill-intensity of production and protection

Increased trade with low wage countries and an increase in the supply of less skilled-labor-intensive traded goods could be expected to result in a fall of relative prices of these goods. According to HOS theory and the Stolper-Samuelson theorem, this would trigger an adjustment process in the domestic economy whereby relative wages of less skilled labor fall and the less skilled-labor intensity of domestic production increases. To examine whether Germany's manufacturing sector experiences such a process requires knowledge of the skill-intensity of production. The substantial work performed with regard to the United States appears to have established the legitimacy of the use of the categories „nonproduction workers“ (white collar workers) and „production workers“ (blue collar workers) as proxies for skilled and less skilled labor, respectively²⁸. With regard to Germany, use of this proxy has not been common but this may be due to the limited quantity of studies on trade effects rather than an unacceptable quality of this proxy. However, use of this proxy in simple regressions per-

²⁸ See Berman, Bound, and Griliches (1994), and the respective appendices in Lawrence and Slaughter (1993) and Sachs and Shatz (1994).

Table 6

**Structure of West-German Foreign Trade
as percent of GDP**

	1970	1980	1992
Exports	22,97	30,00	31,85
Merchandise	18,55	23,80	23,08
of which:			
Manufacturing	17,11	21,44	21,28
Services	4,42	6,20	8,77
of which:			
Travel	1,32	1,34	1,17
of which:			
Transportation	0,89	0,78	0,56
Passenger fares	0,23	0,24	0,32
Other transportation	0,21	0,33	0,29
Royalties and licence fees	0,07	0,07	0,11
Other services	2,27	3,16	3,11
Income receipts on West-German assets abroad	0,75	1,63	4,38
of which:			
Direct investment receipts	0,06	0,16	0,22
Other receipts	0,70	1,46	4,15
Imports	21,22	30,37	31,48
Merchandise	16,23	23,19	22,05
of which:			
Manufacturing	13,13	20,25	19,63
Services	4,99	7,18	9,43
of which:			
Travel	0,70	0,79	0,81
of which:			
Transportation	0,08	0,10	0,13
Passenger fares	0,22	0,26	0,34
Other transportation	0,40	0,43	0,34
Royalties and licence fees	0,19	0,18	0,25
Other services	3,21	4,80	4,85
Income payments on foreign assets in West-Germany	0,89	1,41	3,52
of which:			
Direct investment payments	0,19	0,37	0,38
Other payments	0,70	1,04	3,13
Net-exports	1,7	-0,4	0,4
of which:			
Merchandise	2,3	0,6	1,0
Services	-0,6	-1,0	-0,7
<i>Sources:</i> Deutsche Bundesbank, Statistische Beihefte zu den Monatsberichten der Deutschen Bundesbank, Zahlungsbilanzstatistik, various issues.			

formed to examine whether relative prices of skill-intensive goods versus less skill-intensive ones have changed yielded less satisfactory results than the use of the proxy „salaries (excluding wages) to total employment.” In addition, ordering industries according to this latter proxy corresponds well to an ordering on the basis of the share of R&D expenditures in value added²⁹. Therefore, „salaries to total employment” was used as a proxy for skill-intensity of industries. The Statistische Bundesamt distinguishes 35 industries in manufacturing. They were ordered according to the ratio of salaries to employment in 1990 as shown in column 2 of table 8. The 10 groups were formed discretely so as to avoid clustering. Column 3 gives the capital share

in value added (which is a weighted average where the weights are value added). Also shown are the shares of each skill group in total value added, production employment, non-production employment, and imports and exports of manufacturing. Table 9 indicates some of the industries in each skill group. Table 10 provides a breakdown of net-trade in manufactured goods into net-trade with high wage countries (OECD countries minus Greece, Portugal, Spain, and Turkey) and net-trade with low wage countries (developing countries plus Greece, Portugal, Spain, and Turkey). As expected, with low wage countries Germany has trade deficits regarding the least skill-intensive goods. Evidently Germany's competitive strengths are concentrated in the medium range of skill-intensity.

To see whether Germany's trade policy is biased toward protecting less skilled-labor-intensive industries, table 11 uses the skill-intensity classification of industries to assess the degree of protection. The second and third column give tariff rates on the basis of customs value of imports and trade statistics value of imports, respectively. A consistent set of tariff equivalents of non-tariff barriers in Germany is difficult to find. Weiss et. al. (1988) find that non-tariff barriers (NTB) in Germany affect only the so-called sensitive sectors agriculture, food, coal, iron and steel, textiles, and clothing. They provide estimates of tariff equivalents of NTBs for the year 1985. Given that the evolution of domestic price and import price indices since 1985 for these industries does not reveal that NTBs have been lowered, the estimates were accepted as a lower bound for NTBs in the year 1992³⁰. Total protection in table 11 is shown as the sum of columns three and four. Apparently, Germany has a bias of protection towards less skilled-labor-intensive industries.

4.3 Employment, relative price changes of traded goods, and wages

The next step in the analysis of the extent to which HOS theory may contribute to understanding the influence of German trade with low wage countries is to find out whether the decline in manufacturing employment has been concentrated in less skilled-labor-intensive industries, and whether there has been a tendency for the less skilled-labor-intensity of the economy to change. Table 12 gives the changes in employment of skilled and less skilled labor for each skill group of industries during 1975 and 1993. Under the assumption that it is legitimate to classify production labor as less skilled and nonproduction labor as skilled, the

²⁹ Detailed statistics on R&D expenditures have been published for only 16 out of the 35 industries of German manufacturing, preventing the use of R&D expenditure shares as a proxy for skill intensity of industries.

³⁰ For instance, during 1985 through 1992 import prices of iron and steel decreased significantly more than domestic prices. Import prices of textiles decreased whereas domestic prices increased. Import prices of clothing remained about stable whereas domestic prices increased.

Table 7

Germany: Share of Manufacturing Imports in GDP and in Manufacturing GDP

Year	Share of manufacturing imports in GDP			Share of manufacturing imports in manufacturing GDP		
	Total	From		Total	From	
		OECD countries ¹⁾	Non-OECD countries		OECD countries ¹⁾	Non-OECD countries
1960	7,2	6,3	0,9	17,9	15,7	2,2
1970	10,7	9,5	1,2	27,9	24,8	3,1
1975	11,7	10,2	1,6	32,1	27,8	4,3
1980	16,0	13,4	2,5	49,3	41,5	7,8
1985	18,7	15,8	2,9	58,4	49,4	9,0
1990	18,6	15,6	3,0	60,7	51,0	9,7
1991	20,0	16,8	3,2	66,6	56,0	10,7
1992	18,5	15,5	3,0	64,4	54,1	10,3
1993	15,6	12,5	3,1	n.a.	n.a.	n.a.

¹⁾ Australia, Austria, Belgium, Canada, Denmark, Finland, Greece, Italy, Japan, Luxembourg, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, USA.

Sources: Statistisches Bundesamt, Statistische Jahrbücher der Bundesrepublik Deutschland, various issues; Fachserie 7, Reihe 3, various issues.

table shows that nearly every industry reduced employment of less skilled labor and many increased that of skilled-labor. On the whole, labor demand for less skilled workers fell and that for skilled workers increased. Employment reductions have been strong in less skilled-labor-intensive industries as predicted by HOS theory. However, the increases of nonproduction employment show that the skill intensity of production rose. It rose in each skill group. (Less skilled-labor-intensive industries reduced both types of labor but the reductions of less skilled labor have been stronger than those of skilled labor). This is in contrast to what HOS theory would predict but the theory does not ac-

count for technical progress. Technical progress requires increasing skill-intensity. Then, of course, it may be argued that the observed employment trends in manufacturing are the result of technical progress and not of international trade. For instance, employment of less skilled labor in less skilled industries may have fallen by so much because technological progress favored these industries and was biased in the sense of inducing substitution of skilled labor for less skilled labor. However, if technological progress was stronger in less skilled industries compared to skilled ones and trade had no effects, then one would expect a tendency for prices of goods produced by less skilled-

Table 8

Germany: Characteristics of Manufacturing by Skill Group, 1990

Skill group	Salary per employee ¹⁾		Share of all manufacturing				
	(DM 1000)	Share of capital in value added (in percent)	Value added	Production Nonproduction employment		Import	Exports
1	50-53	54,2	1,7	0,5	1,7	1,4	1,6
2	40-49	45,3	4,6	1,1	2,5	11,6	2,1
3	30-39	62,6	11,7	6,1	12,5	11,9	13,7
4	20-29	61,7	30,6	27,8	36,4	15,6	31,3
5	18-19	53,3	16,0	19,5	13,4	19,3	23,5
6	17	58,0	15,8	13,6	14,0	19,7	11,9
7	15-16	53,8	5,8	11,9	8,5	8,4	7,0
8	13-14	50,3	5,6	7,7	4,6	4,2	3,8
9	11-12	52,0	4,8	7,3	3,9	3,3	2,3
10	10	53,2	3,8	4,5	2,4	4,6	2,8

¹⁾ Salaries (excluding wages) divided by total employment.

Sources: Statistisches Bundesamt, Fachserie 7, Reihe 1; Fachserie 18, Reihen 1.1, 2, and S. 18.

Table 9

Germany: Selected Industries in Each Skill Group

Skill Group	Industry
1	Office and computing machines
2	Aircraft and space vehicles, petroleum refining, finishing of fissionable materials
3	Chemicals
4	Electrical equipment, electronics, appliances, machines, optical instruments, watches, cigarettes
5	Periodicals, metal, motor vehicles, rubber
6	Foodprocessing, construction materials, ship-building, iron and steel
7	Paper and pulp, plastic
8	Textiles, glass, music instruments, toys, steel finishing
9	Leather tanning and finishing, footwear, iron and steel foundries, woodproducts
10	Clothing

Source: Author's grouping using Statistisches Bundesamt, Fachserie 4, Reihe 4.2.

labor-intensive industries to decline relative to those of skill-intensive goods. Moreover, ceteris paribus, one would expect pressure on wages of less skilled labor to result in some tendency for the wage differential between skilled and less skilled labor to increase and/or for unemployment of less skilled labor to rise relatively more.

Table 13 presents regressions showing how relative prices have changed during the recent past and earlier periods. The regressions use price data of the Statistische Bundesamt provided for most of the 35 manufacturing in-

Table 10

Germany: Net Trade in Manufactured Goods as a Share of Total Trade in Manufactured Goods by Country- and Skill Group, 1990¹⁾ as percent

Skill Group	All countries	High wage countries ²⁾	Low wage countries ³⁾
1	0,66	-0,67	0,64
2	-1,16	-1,34	0,11
3	2,41	1,42	6,52
4	7,02	5,13	14,10
5	5,27	5,69	7,39
6	-0,30	-0,84	1,77
7	1,35	1,43	2,32
8	-0,21	0,28	-1,87
9	-0,58	-0,21	-1,82
10	-1,28	0,12	-4,56

¹⁾ Exports minus imports divided by the sum of exports and imports. — ²⁾ OECD countries (see Table 9, footnote 1/) except Greece, Portugal, Spain, and Turkey. — ³⁾ Developing countries plus Greece, Portugal, Spain, and Turkey.

Source: Deutsches Institut für Wirtschaftsforschung, Außenhandelsdatenbank.

Table 11

Germany: Trade Protection of Industries 1992

Skill group	Tariff rate according to		Tariff equivalents of quotas and other barriers ³⁾	Total protection ⁴⁾
	customs value of imports ¹⁾	trade statistics value of imports ²⁾		
1	1,6	0,4	0,0	0,4
2	4,0	0,0	0,0	0,0
3	7,1	0,5	0,0	0,5
4	5,1	1,6	0,0	1,6
5	8,5	1,7	0,0	1,7
6	12,2	0,8	1,6	2,4
7	9,3	0,9	0,0	0,9
8	12,0	2,6	12,9	15,5
9	9,9	1,5	0,7	2,2
10	13,3	4,2	18,7	22,9

¹⁾ Tariff revenue divided by customs value of imports. — ²⁾ Tariff revenue divided by value of imports according to trade statistics. — ³⁾ Estimates from Weiss et. al. (1988) extrapolated as explained in the text. — ⁴⁾ Sum of effective tariff rate (column 3) and estimate of tariff equivalent of non-tariff barriers.

Sources: Tariff rate: Statistisches Bundesamt, Fachserie 7, Reihe 1 and 2.1.
Tariff equivalents of quotas for textiles, clothing, and iron and steel: Estimates for 1985 taken from Weiss et al. (1988), p. 15, extrapolated as explained in the text.

industries. However, some import price deflators start only in 1968 or later, some export deflators start in 1976, and domestic prices are provided for only 28 industries (going back to the 1950s or earlier). Nevertheless, these data appear sufficient to run meaningful regressions. Given that the evolution of total factor productivity may have diverged among industries, possibly compensating for changes in relative prices, trade theory requires that actual output

Table 12

Germany: Change in Employment by Skill Group 1975–1993 in percent

Skill group	Production	Nonproduction	Total
	employment		
1	-57,1	25,0	-17,9
2	18,4	70,6	43,1
3	-19,9	15,9	-4,5
4	-17,0	10,6	-7,4
5	11,4	42,5	18,5
6	-23,0	-3,8	-17,9
7	5,5	19,3	9,0
8	-37,5	-24,6	-34,6
9	-13,1	-5,3	-10,7
10	-51,1	-30,4	-47,1

Source: Statistisches Bundesamt, Statistisches Jahrbuch für die Bundesrepublik Deutschland, various issues.

Table 13

Regressions of Price and Total Productivity Changes on Skill Intensity

Independent variable	Dependent variable										
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	Domestic price 1976-93	Domestic price 1963-76	Import price 1977-93	Export price 1977-93	Domestic price 1985-93	Import price 1985-93	Export price 1985-93	Effective domestic price 1976-88	Effective import price 1976-88	Effective export price 1976-88	TFP 1972-88
Skill intensity	-0,00 (-0,03)	0,00 (0,27)	-0,00 (-0,22)	-0,00* (-2,32)	-0,00 (-0,20)	-0,00** (-3,09)	-0,00* (-2,47)	0,00 (0,88)	-0,00 (-0,61)	-0,00 (-1,49)	-0,00 (-0,52)
Dummy for computers	-0,04** (-3,25)	no	-0,02 (-1,41)	-0,03 (-1,70)	-0,02 (-0,76)	0,03 (1,15)	0,04 (1,09)	0,01 (0,60)	0,02 (1,13)	0,05* (2,12)	0,03** (4,62)
Constant	0,03** (5,24)	0,03** (6,83)	0,02** (3,91)	0,03** (5,84)	0,01 (1,48)	0,02** (2,60)	0,03** (2,76)	0,03** (3,82)	0,04** (6,45)	0,04** (4,76)	0,01** (3,06)
Summary statistics:											
R squared adjusted	0,35	-0,04	0,06	0,39	-0,03	0,21	0,12	0,03	0,03	0,08	0,50
Number of observations	29	28	33	30	28	33	33	28	32	30	29

Note: Prices are average annual change in respective price index for the indicated period. Effective prices are the sum of the average annual changes in the respective price index and total factor productivity for the indicated period. Total factor productivity 1972-88 is the average annual change in TFP during 1972-88. Skill intensity is the industry's ratio of salaries (excluding wages (Löhne)) to total employees. T-statistics in parentheses. One asterisk (*) denotes significance at the five percent level; two asterisks (**) denote significance at the 1 percent level.

Sources: Data from Statistisches Bundesamt, Fachserie 4, Reihe 4.1.1, Fachserie 16, Reihe 2.3, and Fachserie 17, Reihe 2 and 8, various issues, respectively; Total factor productivity indices 1971-1988 calculated by Dr. Alfred Haid, Deutsches Institut für Wirtschaftsforschung.

prices need to be adjusted for changes in total factor productivity. The adjusted output prices are called effective prices. Table 13 presents regressions of changes of the different price deflators without and with this adjustment. In three out of ten price regressions the skill-intensity variable is significant and the coefficient is almost uniformly zero. Thus, low wage countries' import penetration in Germany has not resulted in the expected decline of output prices of less skilled-labor-intensive goods relative to those of skill-intensive ones. For the period 1985 through 1993, when central-eastern European countries began to contribute to import penetration on the part of low wage countries, prices of goods produced by less skilled industries appear to have increased marginally relative to those of skilled industries (regressions 6 and 7). Productivity growth appears to have affected industries uniformly (regression 11) with the exception of the computer industry. Since the lead of the computer industry in productivity growth declined somewhat during recent years, the dummy for computers has the expected negative sign only in those price regressions that cover a relatively long period back to 1977.

Chart 3 shows how relative wages evolved. There has been a clear tendency for wages of skilled-labor to fall relative to less skilled-labor. The period during about the mid 1970s to mid 1980s is an exception, when skilled-labor increased its earning differential. Since the mid 1980s there has been a marked fall of this differential and thus further improving income equality. Of course, the wage differential

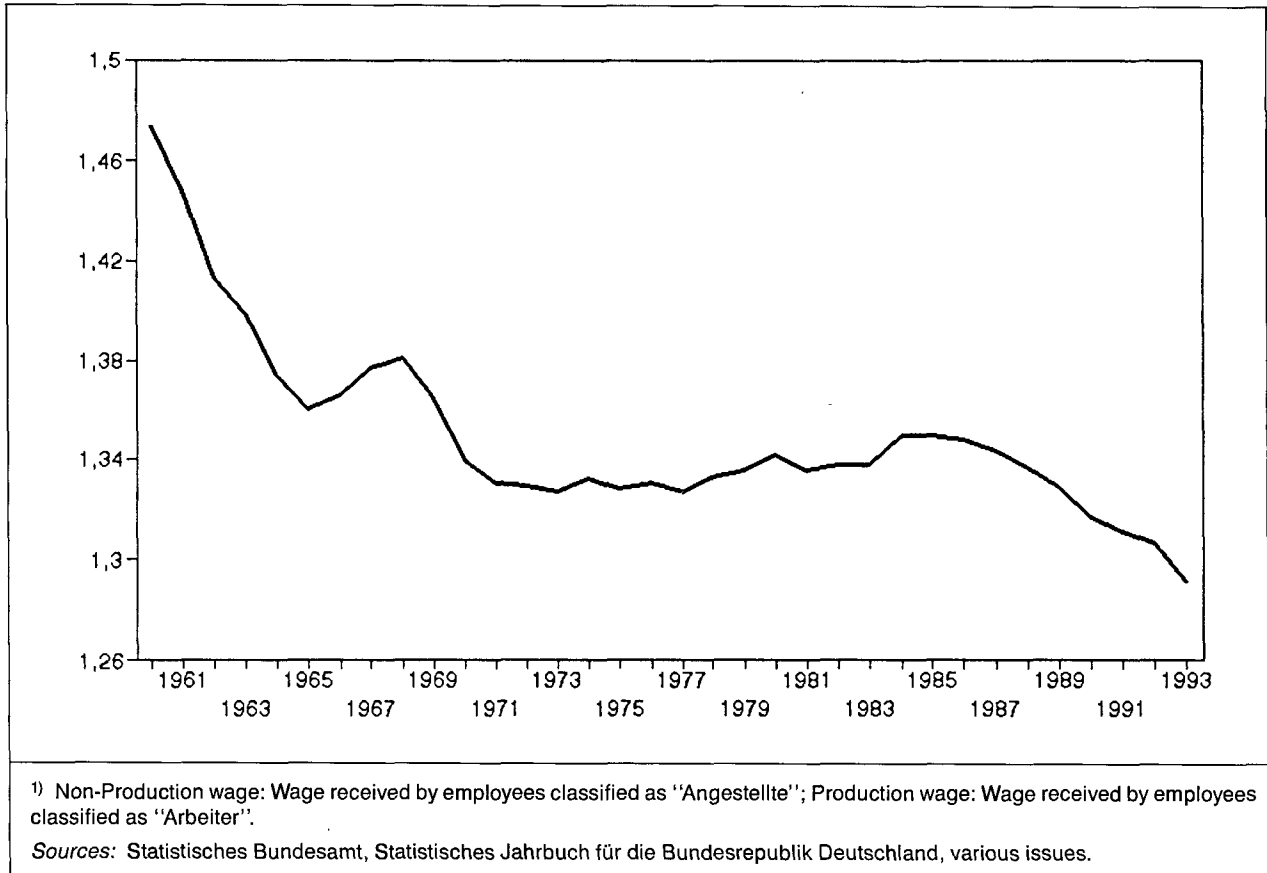
is subject to many influences coming not only from demand but also from supply of skilled-labor relative to less skilled-labor and behavior of wage negotiating parties who may tend to promote income equality. As indicated by table 12 above and as discussed in Abraham and Houseman (1993, pp. 15-21), demand for skilled-labor increased strongly in Germany. However, the authors find that supply increased too and that the German education and training system is characterized by a high degree of flexibility in adjusting to the needs of employers. Nevertheless, there is evidence that promotion of earnings equality on the part of wage negotiating parties has been of significance³¹, and the relative unemployment rate of less skilled-labor increased. Given the above finding that relative prices of goods produced by low skill-intensive industries appear to have, if anything, slightly increased and that productivity growth in these industries appears not to have lagged behind, less skilled-labor has clearly been favored. Hence, the trend of the improvement of relative earnings of less skilled-labor may, to some extent, be justified on account of output price developments but at the same time it may have been too strong, thus possibly contributing to the present problems faced by less skilled-labor.

In sum, it is difficult to attribute declining employment in the German manufacturing sector to increased low wage competition when utilizing traditional trade theory. HOS

³¹ See Abraham and Houseman (1993), p. 24.

Chart 3

Germany: Ratio of Non-Production wage to Production wage 1960–1993¹⁾



theory would predict that relative prices of less skill-intensive goods decline. However, if there has been any change at all, relative prices of goods produced by low skill industries appear to have slightly increased during the past 8 years. Even when assuming very strong export growth on the part of less skill-intensive industries of central-eastern European countries, it would be surprising if this could reverse the trend of relative price behavior abruptly.

5. Conclusions

Without doubt, central-eastern European countries have a comparative advantage in exporting less skilled-labor-intensive goods, with Poland being competitive also in energy-intensive industries. However, it is difficult to find empirical evidence supporting the hypothesis for central-eastern Europe's skill- and technology-intensive industries to lag permanently behind the West as could be theorized under the assumptions of an initial cost advantage on the part of the West and decreasing average costs prevailing in these industries. Nevertheless, the export potential for central-eastern European countries to western Europe appears to be greatest in the area of less skilled industries, particularly when considering that the still existing import

barriers on the part of western European countries may be reduced.

The fact that currencies of central-eastern European countries are undervalued when using PPPs may reflect primarily differences in the productivity gaps between tradeables and non-tradeables in industrial countries versus CEFTA countries. Hence, to speak of „undervaluation” may be misleading because the competitive strengths of CEFTA countries cannot be measured by the performance of sectors that produce non-tradeables. In addition, CEFTA countries experienced a deterioration of trade balances (excluding, since recently, the Czech Republic), especially vis-à-vis western Europe. The deterioration was associated with real effective appreciations of their currencies, although in the cases of Hungary and Poland the appreciation has been halted since some time. Trade deficits should be welcomed, if the accumulation of external debt improves growth prospects. If, however, they are the outcome of pegging the exchange rate, which may be facilitated by overly optimistic assessments of growth prospects, they bear the risk of future growth sacrifices. Given that many objections have to be raised regarding devaluation, central-eastern European countries may consider whether achieving price

stability is the superior means to improving external competitiveness.

Western Europe and especially Germany is the primary export market for central-eastern European countries. The finding that relative prices of the output of less skilled industries do not appear to have fallen on European markets implies that adjustment requirements for western European manufacturing were either modest or were met in the form of quantity adjustments, i.e. changes in production and employment levels. Further research is necessary to clarify this issue.

Germany still protects its less skilled industries but it experienced both a marked increase of import penetration by

low wage countries during the past two decades and falling employment in manufacturing, particularly of less skilled labor. However, its education system proved flexible in turning out the required shares of skilled labor. With low wage countries, Germany has trade surpluses especially in skill-intensive industries. A strategy to adjust to increased integration of central-eastern European countries into world markets should incorporate improved skill-related wage differentiation and elimination of the support lent to less competitive sectors of the economy such as agriculture, mining, shipbuilding and iron and steel production so as to be able to lower the tax burden on enterprises and personal incomes and thus restore the incentives to work, save, and invest.

References

- Abraham, Katherine G., Susan N. Houseman (1993): Earnings Inequality in Germany, NBER Working Paper No. 4541, Cambridge, Mass.
- Alogoskoufis, George S. (1992): Monetary Accommodation, Exchange Rate Regimes and Inflation Persistence, in: The Economic Journal, Vol. 102, May, pp. 461-480.
- Andersen, Palle, Peter Dittus (1994): Trade and Employment: Can We Afford Better Market Access For Eastern Europe? Austrian National Bank, Working Paper No. 17.
- Balassa, Bela (1965): Trade Liberalization and 'Revealed' Comparative Advantage, in: Manchester School of Economic and Social Studies, Vol. 33, No. 2, pp. 99-123.
- Berman, Eli, John Bound, Zvi Griliches (1994): Changes in the Demand for Skilled Labor Within U.S. Manufacturing Industries: Evidence from the Annual Survey of Manufacturing, in: Quarterly Journal of Economics, Vol. 109, No. 2, pp. 81-97.
- Bhagwati, Jagdish (1991): Free Traders and Free Immigration: Strangers or Friends? Working Paper No. 20, Russell Sage Foundation, New York, April.
- Collins, S.M., D. Rodrik (1991): Eastern Europe and the Soviet Union in the World Economy, Institute for International Economics, Policy Analyses in International Economics, No. 32.
- Czech National Bank (1993): Annual Report 1993, Prague.
- Deutsche Bundesbank, Statistische Beihefte zu den Monatsberichten der deutschen Bundesbank, Zahlungsbilanzstatistik, Monthly, Frankfurt am Main, various issues.
- Deutsches Institut für Wirtschaftsforschung, Außenhandelsdatenbank, Berlin.
- Dornbusch, Rüdiger (1973): Devaluation, Money, and Nontraded Goods, in: American Economic Review, 63 (December), pp. 871-880.
- Edwards, Sebastian (1989): Real Exchange Rates, Devaluation and Adjustment. Exchange Rate Policy in Developing Countries, Cambridge, Mass., London.
- Flassbeck, Heiner (1992): Theoretische Aspekte der Messung von Wettbewerbsfähigkeit, in: Deutsches Institut für Wirtschaftsforschung, Vierteljahrshefte zur Wirtschaftsforschung, Heft 1/2, pp. 5-26.
- Guidotti, Pablo E., Manjoman Kumar (1991): Domestic Public Debt of Externally Indebted Countries, International Monetary Fund, Occasional Paper No. 80, June.
- International Monetary Fund, International Financial Statistics, Washington, D.C., various issues.
- Ize, Alain, Guillermo Ortiz (1987): Fiscal Rigidities, Public Debt, and Capital Flight, in: Staff Papers, International Monetary Fund, Vol. 34 (June), pp. 311-332.
- Katz, Lawrence: Understanding Recent Changes in the Wage Structure, in: NBER Reporter, Winter 1992/93.
- Klodt, Henning (1993): Perspektiven des Ost-West Handels: Die komparativen Vorteile der mittel- und osteuropäischen Reformländer, in: Die Weltwirtschaft, Heft 4, pp. 424-440.
- Krugman, Paul R. (1994): Competitiveness: A Dangerous Obsession, in: Foreign Affairs, March/April, Vol. 73, No. 2, 1994.
- Krugman, Paul R., Robert Z. Lawrence (1993): Trade, jobs, and wages, NBER Working Paper, No. 4478.
- Lawrence, Robert Z., Matthew Slaughter (1993): International Trade and American Wages in the 1980s: Giant Sucking Sound or Small Hiccup?, in: Brookings Papers on Economic Activity: Microeconomics II, 1993, pp. 161-226.
- National Bank of Hungary: Monthly Report, Budapest, various issues.
- National Bank of Poland: Information Bulletin, Monthly, Warsaw, various issues.
- OECD (1993): Industrial Policy in OECD Countries: Annual Review, Paris.
- OECD (1992): Foreign Trade by commodities, Paris.
- PlanEcon Report: Czech Economic Monitor, Irregularly, Washington, D.C., various issues.
- PlanEcon Report: Hungarian Economic Monitor, Irregularly, Washington, D.C., various issues.
- PlanEcon Report: Polish Economic Monitor, Irregularly, Washington, D.C., various issues.
- PlanEcon Report: Slovak Economic Monitor, Irregularly, Washington, D.C., various issues.
- Polish Central Statistical Office: Statistical Bulletin, Monthly, Warsaw, various issues.
- Reisen, Helmut (1989): Public Debt, External Competitiveness, and Fiscal Discipline in Developing Countries, Princeton Studies in International Finance, No. 66, Princeton, November.
- Revenge, Ana L. (1992): Exporting Jobs? The Impact of Import Competition on Employment and Wages in U.S. Manufacturing, in: Quarterly Journal of Economics, No. 107, pp. 225-282.
- Rojas-Suarez, Liliana (1987): Devaluation and Monetary Policy, in: Staff Papers, International Monetary Fund, Vol. 34 (September), pp. 439-470.
- Rollo, J., A. Smith (1993): EC trade with eastern Europe, in: Economic Policy, No. 16, pp. 139-181.
- Sachs, Jeffrey, Howard J. Shatz (1994): Trade and Jobs in U.S. Manufacturing, in: Brookings Papers on Economic Activity, No. 1, pp. 1-69.
- Slovak Statistical Office: Economic Monitor, Monthly, Bratislava, various issues.
- Slovak Statistical Office: Bulletin, Monthly, Bratislava, various issues.
- Statistisches Bundesamt: Statistisches Jahrbuch für die Bundesrepublik Deutschland, Annually, Wiesbaden, various issues.
- Statistisches Bundesamt: Fachserie 1, Reihe 4.1.1, Yearly, Wiesbaden, various issues.
- Statistisches Bundesamt: Fachserie 4, Reihe 4.2, Yearly, Wiesbaden, various issues.
- Statistisches Bundesamt: Fachserie 4, Reihe 4.1.1, Yearly, Wiesbaden, various issues.
- Statistisches Bundesamt: Fachserie 7, Reihe 1, Yearly, Wiesbaden, various issues.
- Statistisches Bundesamt: Fachserie 7, Reihe 2.1, Yearly, Wiesbaden, various issues.
- Statistisches Bundesamt: Fachserie 7, Reihe 7, Yearly, Wiesbaden, various issues.
- Statistisches Bundesamt: Fachserie 16, Reihe 2.3, Half-yearly, Wiesbaden, various issues.
- Statistisches Bundesamt: Fachserie 17, Reihe 2, Yearly, Wiesbaden, various issues.
- Statistisches Bundesamt: Fachserie 17, Reihe 8, Yearly, Wiesbaden, various issues.
- Statistisches Bundesamt: Fachserie 18, Reihe 1.1, Yearly, Wiesbaden, various issues.
- Statistisches Bundesamt: Fachserie 18, Reihe 2, Irregularly, Wiesbaden, various issues.

- Statistisches Bundesamt*: Fachserie 18, Reihe S. 18, Irregularly, Wiesbaden.
- Stolper, W.F., R.A. Samuelson* (1941): Protection and Real Wages, in: *The Review of Economic Studies*, Nr 9, pp. 58–73.
- Schumacher, Dieter, Uta Möbius* (1994): Analysis of Community trade barriers facing Central and Eastern European countries and impact of the Europe Agreements, Deutsches Institut für Wirtschaftsforschung (DIW), Berlin, January.
- Turner, Philip, Jozef Van't Dack* (1993): Measuring International Price and Cost Competitiveness, Bank for International Settlements Economic Papers, No. 39, November, Basle.
- Vincentz, Volkhart* (1994): Internationaler Handel auf unvollkommenen Märkten: Implikationen für Osteuropa, in: *Konjunkturpolitik*, 40. Jahrg. H. 2, pp. 175–195.
- Weiss, Frank D. et. al.* (1988): Trade Policy in West Germany, Institut für Weltwirtschaft, Kiel.
- Wood, Adrian* (1994): North-South Trade, Employment and Inequality. Changing Fortunes in a Skill-Driven World, Oxford.
- Wood, Adrian* (1993): The factor content of North-South trade in manufactures reconsidered, in: *Weltwirtschaftliches Archiv*, pp. 719–743.

Summary

Competitiveness of Central-Eastern European Countries

This paper studies international competitiveness of four central-eastern European countries (Czech Republic, Hungary, Poland, and Slovak Republic). On account of standard indicators of competitiveness, the findings are that these countries have a comparative advantage in exporting less skilled-labor-intensive goods, that the empirical evidence does not appear to support the hypothesis for the performance of their skill- and technology-intensive industries to lag permanently behind the West and that their international competitiveness may have been burdened by real appreciations. In addition, the hypothesis for the integration of central-eastern European economies into western European markets to adversely affect employment, particularly of less-skilled-labor, is examined using the German example. Employing traditional trade theory, existence of such a relationship appears doubtful. However, further research would be required.

Zusammenfassung

Wettbewerbsfähigkeit der mittel-osteuropäischen Länder

Dieser Beitrag untersucht die „internationale Wettbewerbsfähigkeit“ der vier mittel-osteuropäischen Länder Polen, Slowakische Republik, Tschechische Republik und Ungarn. Die Benutzung gewöhnlicher Indikatoren der Wettbewerbsfähigkeit ergibt, daß diese Länder Wettbewerbsvorteile in bezug auf Industrien besitzen, die durch einen weniger hohen Grad der „Intensität an Wissen“ gekennzeichnet sind, daß der empirische Befund die Hypothese einer langfristig nur geringen Leistungskraft ihrer Industrien mit hohem Faktoranteil an Wissen und Technologie nicht zu bestätigen scheint, und daß ihre internationale Wettbewerbsfähigkeit möglicherweise durch reale Aufwertungen belastet wurde. Außerdem wird am Beispiel der Bundesrepublik untersucht, ob die Hypothese bestätigt werden kann, daß die Wettbewerbsfähigkeit mittel- und osteuropäischer Länder im Zusammenhang mit dem beobachteten Beschäftigungsrückgang (vermuteter) wenigerqualifizierter Arbeit in der Industrie steht. Auf Basis der traditionellen Handelstheorie erscheint diese Verbindung zweifelhaft. Hier ist jedoch weitere Forschung notwendig.