Globalization and Adjustment in a Small Open Economy: Czech Manufacturing in Transition in 1993-98

Vladimír BENÁČEK
Charles University, Faculty of Social Sciences, Prague
Alena ZEMPLINEROVÁ
Economics Institute, Academy of Sciences of the Czech Republic, Prague

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A b s t r a c t

The aim of this paper is to describe and to test empirically how the process of globalization is reflected on a small open economy that is compelled to re-build its relationships with the world from its very roots. Especially we will concentrate on conditions postulated on such a country by the requirements for present EU accession. According to the so-called Copenhagen Criteria of 1997, the new EU members should have a performing market economy and they should withstand the competitive pressures of the world market after their economies open-up fully to the EU incumbents. These seemingly simple conditions imply, however, that there should be completed a **series of adjustments** in the economies of the applicant countries. These adjustments include the following problems that we will discuss and test in the paper:

- The degree of openness to trade and foreign capital flows;
- The ability of firms to adjust their supply side to the potential of comparative advantages unveiled by the aggregate demand;
- The reallocation of resources in accordance to relative factor endowments, satisfying the principle of optimal returns;
- The convergence of the aggregate price level of a former command economy to a price level pertinent to the given degree of development according to the Balassa-Samuelson hypothesis;
- The process of de-concentration of the former state-owned enterprises followed by a re-concentration in order to comply with the potential given by increasing returns to scale;
- The loosening of administratively created market power in the previously mentioned firms and its replacement by the market power induced by a rising presence of multinational corporations;
- The changes in the character of specialization, especially in the process of product differentiation and the buildup of the intra-industrial specialization.

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1. Introduction

The allocation of resources under central planning was based on different principles than in market economies opened to international competition. Also the structure of trade of the planned economies reflected the endowments and comparative advantages vis-a-vis different, and a rather limited set of partners [1]. To a large extent the state of centrally planned economies was influenced by autarchic tendencies. Therefore, since the very beginning of transition in 1990, the evolution of the Czech economy was marked by a shock that challenged both its past structure of industrial production and the conditions of production and marketing. It was discovered very soon that the opening-up meant a thorough reallocation of existing resources due to an acute outburst of the pressures of globalization.

In the Czech case the first and the most crucial response of the government was a nominal devaluation of 113% in 1990. It was a successful step because its impact on the real exchange rate lasted for 6 years. Therefore the competitive pressures of the world markets could have been softened and its impacts phased-out for a long period. In addition, the government supported a policy of keeping the prices of domestic inputs at artificially low levels [2]. As a result, the Czech exports enjoyed for long both the low unit labor costs and the low capital costs (Benacek (1997b)). Until 1996 the real exchange rate was grossly undervalued, thus supporting the competitive edge in more industries that it otherwise would be without the mentioned schemes. The re-adjustment to the global economy was also supported in that period by expansionary fiscal and monetary policies. An easy access to credits was also accompanied by an intentionally relaxed attitude to some institutional issues, such as the non-prosecution of defaults in debt payment, ill-performing bankruptcy procedures and bail-outs of the failing banking and corporate sectors by the government.

Naturally, the intensive reallocation of resources was undertaken in accordance with the market and the non-market signals that prevailed during 1991-96 and that were influenced by heavy government interventions. These interventions distorted heavily the market conditions. Many antiquated technologies were retained, the labor overmanning was prevailing and too many industries were assumed, by misunderstanding, to be underpinned by comparative advantages. However, this was not a sustainable situation. As the initial real exchange rate depreciation (measured at whatever formula used) was gradually swinging to an appreciation and as the institutional conditions were hardening the budget constraints, the reallocation of resources were subjected to new criteria. Many recent decisions were revealed not viable and they were subjected to a new round of reallocations. A wave of bankruptcies followed during 1997-2000, what implied a partial wastage of resources activated in the previous period of restructuring.

The process of reallocation of resources in open economies is theoretically explained by pure theory of trade based on concepts of comparative advantage. Even though the need to accept a new shape of comparative advantages was recognized quite early in the Czech transition, many conditions had to be re-examined, as the relative productivities and the relative endowments were altered in the second half of 1990s. On top of the changes in

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[1] *Though the COMECON integration block never reached the stage of a customs union, their economic proximity and close co-operation have definitely shaped their division of labor. The collapse of COMECON and the opening up of a free trade area of EU markets can be interpreted as a process or re-integration – a well-known "cold shower effect" that requires a series of re-adjustments.*

[2] *For example, in the first two years the wage increases were regulated, and, for the whole period of 1990s, the state employees were paid wages bellow the national average. Also the capital depreciation was regulated by freezing the asset prices at the pre-inflationary levels and by a low level of depreciation rates. The regulation was also applied on the prices of energy and on the prices of many non-traded goods.*

parameters of the mentioned classical determining factors, there were also changes in the alternative factors determining the pattern of specialization. For example, with the massive entry of foreign investors after 1994 (Hunya (1997)), the potential of economies to scale was rapidly increasing in some industries. As an outcome, the importance of market power was increasing hand in hand with the growing concentration in some industries (Fontagné, Freudenberg, Péridy (1998), Zemplinerová (1999)). That development had an impact on the nature of competition and the division of labor was inclined to switch from inter-industry to intra-industry patterns.

As its openness to the world economy was widening, the globalization of the Czech economy was deepening after 1995. We have therefore decided to test its impacts on production and trade by analyzing the factor contents of exports and imports. Though it was far from being generally recognized at the beginning of transition, it became evident after 1996 that it was the seemingly marginal standing of FDI (foreign direct investment) that became the catalyst of Czech growth (Benacek, Gronicki, Holland et al. (1999), Freudenberg, Lemoine (1999), Kurz, Witke (1997)). The tests of FDI are therefore crucial for unveiling its role in the Czech economy.

2. The Openness of the Czech Manufacturing Industries

The Czech transition commenced with a sharp decline in the manufacturing output. In 1993, relative to 1989, the drop-out in production in real terms was 38% (Stibal (1995)), what confirms the hypothesis that transformation is a very costly event. The recovery in 1994-97 raised the output by 21%. However, the two years of a new wave of restructuring after that (i.e. years 1998-1999) brought a loss in production by another 2%. The recovery was very uneven – some industries experienced an unparalleled expansion (automobile, rubber, plastics, electronics, electrical machines) while some others continued in their poor record (textiles, clothing, shoes, mechanical engineering). The tenets of the trade theory seem to offer a wide inspiration for the explanation of such events.

The most apparent event was the trade diversion and creation. While in 1989 the visible exports comprised 41% of GDP [3], its share increased to 49% in 1998. Since the real GDP was nearly the same in both years, the residual of 8% of GDP represents the net trade creation. The share of EU markets on all Czech exports increased from 28% in 1989 to 64% in 1998, while the share of non-OECD countries declined from 54% in 1989 to 23% in 1998. It is easy to find out that the whole decline in trade with non-OECD countries (that represented 31% of all exports) was the trade diversion from post-Soviet countries to the seven closest EU countries. Brenton and Gros (1995) found out that the Czech trade diversion was concluded in mere 4 years. Even the industrial structure of the diverted trade was largely retained – often at a heavy loss in the terms of trade. This event notwithstanding, the exporters still did not incur losses in proceeds because they were initially more than compensated by devaluation. The evolution in the industrial structure of exports continued and even now it cannot be supposed to reach stability, as the reallocation of resources is still far from being completed.

We have based the analysis of the manufacturing sector on two types of data: the customs statistics of trade (in combined nomenclature) and the industrial statistics from firms with over 24 employees (in NACE nomenclature). The later group represented 88% of all manufacturing employment and 90% of its output. In 1993 there were 2899 such firms (of them 194 were firms with foreign capital). In 1997 their number doubled to 6062 (including

[3] *Here we had to make simulations for the trade with Slovakia that was a part of the country until 1993. Without that the exports of visibles formed 33% of GDP in 1989 and 42% in 1998.*

855 firms with foreign capital), as a result of splitting the large firms after privatization. Manufacturing industries, after a net decline by over 20%, represented 36% of GDP and 29% of all employment in 1997. Their share on visible trade was 95% in exports and 88% in imports. In these aspects the situation is compatible with that one in advanced industrial countries (Graziani (1994)), what is also true about the share of Czech openness to trade.

Table 1: Openness of the manufacturing sector in three EU candidate countries in 1993-97 measured in percentages

Country	Share of exports on output		Share of imports on output		Share of firms with foreign capital on output	
	1993	1997	1993	1997	1993	1997
Czechia (unadjusted)	53	59	48	66	12	23
- adjusted *	-	53*	-	59*	-	-
Hungary	33	46	44	48	41	61
Poland (estimation)	15	17	24	31	19	30

* Customs statistics of 1997 adjusted to the methodology of 1993 where outward and inward processing trade and leasing were excluded.
Sources: Czech Statistical Office, 1999, Marczewski (1999), Hunya (1998), Viszt E. (1998). Figures for Poland were estimated from data for 1994 and 1996

As Table 1 shows, Czech manufacturing is more open to trade than it is in Hungary or Poland. Unfortunately the import penetration to Czech economy was rising faster than in the other countries and the Czech export openness was growing at a lesser speed. If we would eliminate the growth in the outward and inward processing trade then the export openness would be stagnating. Czech manufacturing was also lagging behind in a lower level of foreign capital absorption. The massive inflows of FDI during 1998-2000 are expected to close even that gap soon and the openness of the Czech economy will remain on par with EU countries.

3. Flexibility of Adjustment to Aggregate Demand

The process of catching up with less advanced EU countries, as required by the EU criteria for accession, depends on the flexibility of adjustments to world markets. The problem of the transition countries is three-fold and it rests on the supply side [4]:

- in their inability to boost the volumes of output;
- in the low unit prices (for the given category of exported products);
- in the lack of exports of commodities containing highly skilled labor and/or advanced technologies (Rosati (1994)).

During 1990-95 the exports of machinery and products of final consumption were replaced by raw materials and intermediate products (Landesmann, Szekely (1995)). On the other hand, the transfer of technologies and know-how, and the integration of Czech production into the networks of MNCs, mediated for example by FDI, is considered to be a major factor for the revival of the Czech manufacturing. The issuing rising competitiveness in quality would then increase the exports and replace the imports by domestic production. The external equilibrium would be then achieved with a parallel real exchange rate appreciation and a supernormal growth in GDP per capita measured in Euros.

[4] *On the other hand many politicians claim that it was the lack in aggregate demand that became the barrier to growth. Their preferred policies are obvious: the uncompromised exchange rate depreciation, deficit fiscal spending and monetary expansion.*

Unfortunately, the processes observed during 1993-97 were different from the envisaged scenario. The growth in the Czech economy was impeded by the low response of the domestic supply to both sharply rising domestic aggregate demand and the opportunities offered by the widening foreign demand for Czech exports. Table 2 (at the end of this paper) illustrates the argument. We have assumed that the aggregate demand (both domestic and foreign) was exogenously given. Then we could quantify how the domestic firms responded to such a potential to their growth. The nominal domestic aggregate demand increased by 94% at the end of the 4 years' period, what was quite a phenomenal success fed by domestic expansionary policies. However, the response in domestic output, sales and value added was less than that. Surprisingly the response in wages was much stronger. Thus the wages increased more than what was the increase in productivity (in value added), what undermined the competitiveness and brought the inflation in.

The increase in investment was very weak. The most disappointing was the response in cash flows. The profits before taxation even shrank by half. That means, the firms overpaid the workers in order to produce goods that sold bellow a price that would satisfy normal returns to capital. Their competitiveness therefore was low on both domestic and foreign markets. The labor shedding strategy (employment was cut by 0.5% annually) was applied so timidly that it caused neither reversals in the wage and the consumer market inflation, nor a decrease in labor cost. The only winners were the imports that easily filled the gap between domestic production and absorption, and led to the balance of trade disequilibrium. At the same time the imports had their price level significantly above the price level of domestically produced products. The coefficients of supply elasticity to the changes of aggregate demand illustrate that the domestic supply side was generally behaving in an inflexible way.

The whole story becomes even clearer if the nominal growth is decomposed into its inflationary and real components. The real growth in the domestic aggregate demand was approximately 12% per year while the remaining 8% was the producers' inflation. The elasticities on the **real domestic supply side** were even lower than in the nominal case. Especially the provision of domestic production for domestic final consumption developed unfavorably. The only good news was an improvement in the real response in exports that implied an improvement in export prices by 3.8% annually [5]. The real imports showed its flexibility by having the coefficient of elasticity of 1.45. Here the inflationary nature of the local aggregate demand expansion and the rigidities on do domestic supply side was best revealed.

The situation in the domestic supply side would be even much worse if the domestic supply response would be adjusted by excluding the firms with FDI (that generally perform without serious problems) and approximately 40% of indigenous firms that are profitable. The remaining indigenous firms, that represent around a half of the manufacturing production, are those firms that have their elasticity of supply close to zero. Their future depends on a new round of deep restructuring - at that time with conditions much stricter than it was during the period of 1991-1997.

If it was the inelastic supply side that was in the core of problems with the insufficient growth of the Czech economy, than the remedies for a real improvement must rest outside the expansionary fiscal, monetary and exchange rate policies. The attention should be then given to the performance of factor markets. For example on the labor market there remained for long a chronic overmanning of enterprises and a lack of human capital. On the capital market the semi-state banks did not comply with their monitoring and screening obligations and offered loans that in 35% of cases led to non-performing debts. The highly insufficient

[5] *Since the nominal effective exchange rate was changing insignificantly during the period 1993-97 we cannot say that the „inflation" in exports was caused by depreciation.*

property rights enforcement precluded the exit of many firms that were not economically viable. This situation caused a shortage of labor and rising real wages beyond the productivity gains. That tendency, plus the rise of bureaucracy and the non-performing public administration, discouraged many foreign investors from taking over and restructuring the local firms. The revamping of economic institutions, such as capital market, judiciary system, privatization of banks, public services, system of taxation and public spending, public R&D and education is thus the only hopeful way how to improve the adjustment capacities of the Czech economy.

4. **Factor Intensities**

According to the neo-classical trade theories, the patterns of specialization are given by relative factor endowments and factor intensities of domestic production. The relative nature of the factor endowments means that, once a country abandons its original integration block and integrates its economy with a different set of countries, its comparative advantage in factors can change. This could have happened once the Czech economy switched in its trade alignments from COMECON to an OECD partnership. Also the government interventions could distort the comparative advantages and lead to a biased trade patterns.

The analysis of factor intensities of exports, imports and total production is therefore important, once our aim is to map the circumstances of changing patterns of trade. There were already several studies that quantified the Czech trade factor intensities before and after the transition (Drabek (1984), Benacek (1987), Hanel (1995), Landesmann (1996), Hoekman, Djankov (1997) and Stolze (1997)). Unfortunately all of them worked with data prior to 1995. Our analysis aims to find out how the factor requirements have changed in the period 1993-1997. Usually the following factors are used for such purposes: physical capital, unskilled labor, human capital and natural resources. We have adopted for that purpose the classification of factor contents by industries, as designed by Neven and Wyplosz (1994). Accordingly, the industries in a 3-digit NACE classification were clustered into five categories that are indicated in Table 3 in the first column. Our task was to find out what was the growth rate in the given five groups and how this influenced their structure at the end of 1997.

Table 3: The share of commodity groups classified by factor requirements in production (Q), imports (M) and exports (X) in 1993 versus 1997 (in %)

Commodity group:	Q 1993	Q 1997	M 1993	M 1997	X 1993	X 1997	Trend
1 – advanced technologies	14.2	12.9	27.6	23.3	15.4	12.7	↘
2 – human capital	18.4	21.3	32.9	31.0	20.1	26.7	↗
3 – labor	19.4	21.5	14.2	18.7	24.3	27.3	↗
4 – physical capital & labor	35.0	32.3	20.4	22.9	33.1	29.1	↘
5 – physical & human capital	13.0	12.0	4.8	4.1	7.1	4.2	↘
All commodities	*100%*	*100%*	*100%*	*100%*	*100%*	*100%*	

Source: Czech Statistical Office enterprise database (for Q), customs statistics (for M and X)

As one can see in Table 3, during the whole studied period the position of exports of physical capital intensive commodities weakened while exports of commodities with high contents of labor gained. That would be consistent with general expectations in the evolution of comparative advantages in post-Communist countries (Hanel (1995), Stoltze (1997). The buildup of capital intensive industries during the period of central planning (1948-1989) was artificial and the majority of the huge volumes of physical capital endowments falling behind

in the parameters of technical efficiency. Thus they qualified more as sunk costs than a capital that had an economic usage. The falling tendency is industries with advanced technologies can be partially explained from the point of view of consumer behavior. As the country was experiencing a fall in income and the budget constraint was becoming tighter, the expenditure on advanced technologies was treated as expenditures on a luxury that should fall at such a situation. It was also discovered that advanced technologies have lesser space in domestic production since their engagement lacked the comparative advantage.

The most surprising finding, however, concerned the usage of the human capital. While at the beginning of transition (1990-93) both the gross domestic production and the production for exports orientated to products with lower contents of value added and lower contents of human capital, the later stages of transformation have signaled that the role of the human capital was rising significantly. We can interpret this finding as a signal that the processes of real adjustment required six years before gaining momentum and set the economy on a new qualitative path.

We have also confronted the above findings with results of a different method of analysis. We have estimated an econometric model where we tried to "explain" the revealed comparative advantages in exports (we have used exports per sales as an endogenous variable) divided into 93 industries (NACE classification). The data were for the year 1994. Results are summed up in Table 4 where UE/VA, LE/VA and K/VA are relative factor requirements of university educated labor (proxy for the human capital), lower educated labor and physical capital. CR3 is the concentration ratio (estimated as the share of the three largest firms on total output in given industry), TFP is the total factor productivity, BAL is the Balassa index of intra-industrial specialization and DP is the index of inflation in given industry. In fact, the above specifications cover the basic determining factors of trade, as they are explained by the mainstream of theories of industrial location and specialization.

The results are compatible with the previous findings. The labor usage (both as skilled and unskilled) is positively correlated with exports while the capital usage is influencing the exports in an opposite direction. The total factor productivity variable is highly significant, what stressed that the costs are important for the competitiveness of exports.

Table 4: Regression coefficients from the analysis of export intensities

Statistics	b_1 (UE/VA)	b_2 (LE/VA)	b_3 (K/VA)	b_4 (CR3)	b_5 (TFP)	b_6 (BAL)	b_7 (DP)
slope coefficients	11.89	7.41	-0.027	0.127	0.006	0.002	0.190
t-statistics	6.75	2.88	-9.98	5.15	9.78	1.24	12.98
probability of 0 hypothesis	0.00	0.01	0.00	0.00	0.00	0.22	0.00

R-squared: 0.940 F-statistics (probability of 0 hypothesis): 0.00

Remark: These results were received after applying the robust method of parameter estimation based on least trimmed squares at the breakdown point. Because of the complexity of that method, the reader should see its more complex explanation in Benacek, Visek (1999).

The variable DP describing the change of nominal prices during 1991-94 deserves a special attention. It is assumed that the difference in indices of the industrial inflation reflects the narrowing of the gap between the world prices and the former prices under central planning. The index of DP reflects how the domestic relative prices changed after opening up to the West and how it converges to the price levels on world markets. This is also closely related with the improvements in terms of trade and the improvements in quality. The higher is the imported "inflation" in the given industry, the higher is the growth in its exports. The

Stolper-Samuelson and the Haberler theorems are consistent with this hypothesis. There, after the opening-up of an autarchic economy, the highest price increase is in the industries with comparative advantage. On the other hand, the industries with comparative disadvantage are challenged with a domestic price decrease. Our econometric test did not refute our hypothesis and the positive relationship between export intensity and inflation in industry is statistically most significant from all selected variables. This finding refutes the common sense offered by the PPP hypothesis where inflation (if uncompensated by exchange rate depreciation) is taken as a sign of a losing competitiveness in exports. In case the „inflation" comes from abroad as an increase in export prices, the PPP hypothesis gives a false conclusion.

The results of the mentioned estimation, based on robust technique of estimation, are consistent with another intuitive hypothesis: that the Czech economy in 1994 had a dual character. There can be observed two parallel patterns of behaviour among producers. In the first group of industries (that were used in estimation for Table 4) there prevails the behaviour similar to that in stabilised market economies. That means, the behaviour of firms, as far as their parameters of economic performance are concerned, was compatible with standard economic theory of resource allocation. The second group consisted of industries where the restructuring was at the beginning and the behavioural pattern of their firms was similar to one under socialist ownership. First, it was characterized by lower profits and higher debts. Second, their estimated parameters were either insignificant or they had an opposite sign that would contradict the rational behavior. For example, the allocation of their resources did not show a tendency of substituting between the usage of labor and physical capital.

5. Level of Concentration and Market Power

It could be assumed that the evolution of the Czech economy, from the central planning to the world-wide openness, should be associated with two phenomena:

- a rise in the participation in the intra-industry trade;
- a rise the number of industries that are involved in international trading [6].

The growing up of the present system of international specialization is marked by attaining a high intensity in the intra-industry trade that is usually closely linked with product differentiation, oligopolistic competition, market power and high degree of concentration. At the same time industries with comparative advantages should grow faster than the remaining industries, what increases the inter-industrial specialization and the dominance of some industries in the creation of GDP and trading.

After the estimation of indices of intra-industrial specialization by applying the Grubel-Lloyd formula to trade at SITC 3-digit classification, we have calculated their over-all weighted averages for 1993 and 1997. The degree of intra-industrial trade increased in the given period from **** to ****, what is a substantial change. Such a development is usually associated with the rising importance of scale economies and the market power. We will use the index of concentration ratio (CR) as a proxy variable for the market power:

$$CR_i^3 = (y_i^1 + y_i^2 + y_i^3) / Y_i * 100,$$

where y_i are the indices of output in the first three largest enterprises in each of the given industry i = 1, 2, 3, …, k. Y_i is the output of industry i.

[6] *This process implies the widening of industrial diversification. There were two reasons for it: the rising importance of factors behind the intra-industry trade and the market pressure to dismantle the inherited system of an artificial inter-industry specialization under central planning.*

The results for 1993 and 1997 show that the concentration in the manufacturing industries as a whole has decreased from the level of **** to ****. The reason for such a development is obvious – the restructuring has not been completed yet. The growing firms were either those ones that were not the largest or the successful large firms were not able to expand quickly due to the burden of restructuring.

Let us now test a hypothesis of path-dependency in the development of comparative advantages. Our assumption will be that if the comparative advantage does not change in time and then (for a small open economy) the fastest growing industries should be those ones that already were the largest by the volume of output. The large industries would then become even larger. For this purpose we will use the following statistics of rate of industrial concentration (RIC):

$RIC_z = \sum_{j=1}^{z} Y_j / Y$ where Y is output of industry j = 1, 2, …, k that is ranked in descending order by output. Indices z = {1, 2, 3, 5, 10, 30, 101}

A similar calculation was done for exports and imports instead of output.

Table 5: Shares of "z" largest manufacturing industries in output, export and import in 1993 and 1997 (in %)

RIC_z	Output		Exports		Imports	
	1993	1997	1993	1997	1993	1997
RIC_1	6,3	6,9	7,9	7,2	5,6	4,9
RIC_2	8,8	11,7	12,8	12,2	8,5	9,5
RIC_3	16,8	14,7	19,7	15,7	15,3	12,8
RIC_5	22,5	20,1	24,1	20,8	21,3	18,2
RIC_{10}	46,1	41,4	42,4	40,3	42,4	38,6
RIC_{30}	74,7	72,3	75,6	72,3	75,6	73,1
Total RIC_{101}	100	100	100	100	100	100

Source: Czech Statistical Office, Customs and Output Statistics, 1999

As is evident from the results, our hypothesis was rejected by all observations with the number of industries larger than three and smaller than 31. It can be explained by a development where the comparative advantages were located outside of the 30% of percentiles of largest industries. I.e. outside of those industries that were leaders during the pre-market period of central planning. That would also imply the existence of sunk costs and a need for a deep inter-industrial reallocation of resources that is more costly than the intra-industrial reallocation.

To conclude, in the vast majority of Czech manufacturing industries there was not observed a tendency for higher concentration in the majority of industries, even though the intra-industrial specialization was sharply increasing. The potential for the usage of market power or the increasing returns to scale was therefore rather limited. It is a sign that the process of adjustment in the Czech economy to modern patterns of industrial organization has not yet been completed.

6. Foreign Direct Investment and Exports

Firms with the foreign direct investment became the most dynamic sector of the Czech economy. Here the quality prevailed over the quantity, since the inflows were less intensive than it was observed in Hungary or Poland. Nevertheless, because of the intensive re-

investment policies of foreign investment enterprises and the revival of interest in foreign investments to the Czech economy that was initiated in 1999, one can expect that their fast growth will close the gap vis-a-vis the situation in Hungary. The 34% share of gross investment on Czech GDP during 1995-99 is one of the highest in the world. The firms with FDI invest approximately three times more per output, as was the case in an average enterprise under indigenous owners. The FDI inflows for 1999 and 2000 are expected to reach approximately $ 12 billion. That will be more than $ 10 billion that accrued during 1990-1998.

The position of FDI in 1997 is illustrated in Table 6. For comparison, we have added similar results for Hungary and Poland.

Table 6: The share of enterprises with foreign capital on output and exports (in %)

NACE classification	Czechia 1997		Hungary 1996		Poland 1997	
	Exports	Output	Exports	Output	Exports	Output
Manufacturing in total	42,0	26,2	73,9	61,4	40,0	30,4
Food and beverages	37,0	17,1	59,7	49,5	44,0	27,7
Tobacco	100,00	100,0	100,0	98,7	94,9	86,2
Textile	23,7	14,6	67,7	49,6	16,2	7,7
Apparel	17,4	10,9	51,7	35,2	35,9	30,8
Leather, shoes	10,7	7,8	63,5	46,1	22,4	10,1
Wooden products	38,5	21,5	69,0	42,6	37,5	29,9
Paper	28,9	27,6	75,9	66,9	60,9	48,3
Printing, publishing	25,4	25,7	83,1	73,7	65,0	44,7
Oil refining	0,0	0,2	100,0	99,2	2,6	0,6
Chemistry	22,9	14,3	89,3	78,7	12,3	24,7
Rubber, plastics	63,8	45,0	60,9	54,6	71,5	47,0
Other non-mineral products	44,8	38,9	71,7	63,5	47,3	34,7
Metallurgy	11,3	4,1	50,6	34,7	8,3	7,6
Processed metal products	42,0	24,6	50,9	33,2	35,9	22,2
Mechanical machinery	17,2	12,6	71,5	45,1	25,7	18,6
Computers, business machines	20,2	11,6	22,2	19,1	23,9	13,5
Electrical machines and equip.	54,4	37,4	96,3	82,7	50,2	32,7
TV and telecommunication	47,1	35,4	91,3	79,0	90,9	64,5
Medical and optical equipment	63,0	24,8	72,3	45,8	28,1	28,4
Motor vehicles	82,2	76,2	90,4	84,8	91,7	82,3
Other transportation equipment	5,2	2,6	90,1	71,8	23,5	15,8
Furniture and other products	35,4	29,7	54,4	29,6	63,0	45,9
Recycling	48,4	35,1	66,8	42,4	49,7	24,2

Sources:
Czech data: own estimation from databases of Czech Statistical Office, 1998
Database on FIE in Central European Manufacturing, WIIW, Vienna, 1998, p. 89-91
Marczewski (1999) p. 32-33.

References:

Benacek V.: International Trade Theories and the Adaptation Process to Structural Change in a Planned Economy, (edit. L. F. Pau, B. Martos), Pergamon Press, Oxford, 1987

Benacek V.: The Competitiveness and Trade of Industries in Transition: Why Are Their Strategies for Survival so Similar? CERGE, DP Series č. 7, 1997, p. 1-19

Benacek V., Gronicki M., Holland D., Sass M.: The Determinants and Impact of FDI in Central Europe. Discussion paper, NIESR, London, 1999

Benacek V., Visek J. A.: The Usage of Factors in a Dual Economy: Specialization in the Czech Foreign Trade. *Proceedings of MACROMODELS'99*, University of Lodz, Poland, 1999

Drabek Z.: A Comparison of Technology in Planned and Market–Type Economies. Eupean Economic Review, 1984, p. 293-318

Fontagné L., Freudenberg M., Péridy N.: Intra-Industry Trade and Single Market: Quality Matters, CEPR, Londýn, Discussion Paper no. 1959, 1998

Freudenberg M., Lemoine F.: *Central and Eastern European Countries in the Interantional Division of Labour in Europe.* Working Papers of CEPII, Paris, 1999

Graziani G.: Italy's manufacturing trade with Eastern Europe – Specialization patterns and possible impact of liberalization on Italian industry, *European Economy*, no. 6, 1994

Hanel P.: Factor Intensity and Composition of Foreign Trade. Czech Republic, 1989-94. CERGE-EI, Praha a IHS, Vídeň, 1995

Hoekman B., Djankov S.: Determinants of the Export Structure of Countries in Central and Eastern Europe, *The World Bank Economic Review, no.* 9, 1997

Holland D., Pain N.: The Diffusion of Innovations in Central and Eastern Europe: A Study of the Determinants and Impact of FDI. NIESR, London, Working Paper no. 137, 1998

Hunya G.: Large Privatization, restructuring and foreign direct investment. WIIW, Vienna, Working Paper no. 166, 1997

Kurz C., Wittke V.: From Supply Base Driven to Market Driven Integration: Patterns of Integrating Central-East European Economies. WP Series, Univ. of Goettingen, 1997

Landesmann M.: Emerging Patterns of European Industrial Speicalization: Implication for Labour Market Dynamics in Eastern and Western Europe, WIIW Research Reports no. 230, 1996

Landesmann M. and Szekely I.: Industrial Structural Changes in Central and Eastern European Economies. In *Industrial Restructuring and Trade Reorientation in Eastern Europe.* Landesmann M., Szekely I. (edit.), Cambridge University Press, 1995

Marczewski K.: Foreign trade, industrial growth and structural change in Poland. Discussion Paper no 75, Foreign Trade Research Institute, Warsaw, 1999

Neven D., Wyplosz C.: Relative prices, trade and restructuring in European economy. Discussion Paper, no. 1451, CEPR, London, 1996

Rosati D.: The Economic Interpenetration between the EC and Eastern Europe: Poland, in European Economy, Reports and Studies, no. 6, 1994

Stibal J.: Exportni vykonnost zpracovatelskeho prumyslu Ceske Republiky v roce 1994 (in Czech), CVEV, Prague, 1995

Stolze F.: Current structural changes and emerging foreign trade patterns in the Postreform Czech Economy, 1989-1996, *Eastern European Economics*, 1997, p. 41-87

Zemplinerova A.: The Role of Foreign investment enterprises in the Privatisation and Restructuring of the Czech Economy, Research Reports no. 238, WIIW, Vienna, 1997

Zemplinerova A.: Impact of Foreign Investment on the Restructuring and Growth in Manufacturing. Prague Economic Papers, no. 4, 1998, p. 329-345

Zemplinerova A.: Market Concentration in Manufacturing and the Competition Policy in Czechia (in Czech). Politická Ekonomie no. 2, 1999, p. 191-204

Zemplinerova A., Benacek V.: FDI in the Czech Manufacturing Sector. Prague Economic Papers, č. 2, 1997, s. 141-155

Zemplinerová A., Stíbal J., 1997, Monopoly in the Context of the Privatization Process. In: The Privatization Process in East-Central Europe (edit. Mejstřík M., Derviz A. a Zemplinerová A.), Kluwer, Amsterdam

Table 2: The response of the aggregate supply in manufacturing to the development of aggregate demand, 1993-97

Indicator	Nominal growth in 1993-97 in %	Elasticites relative to nominal changes in domestic demand	Real growth in 1993-97 in %	Elasticites relative to real changes in domestic demand	Inflation index for 1993-97 in %
Output	72,5	0,77	37,2	0,63	25,7
Sales	69,8	0,74	35,1	0,60	25,7
Physical capital investments	48,1	0,51	7,9	0,13	37,3
Wages	85,0	0,90	30,6	0,52	41,7
Employment	-1,9	-0,02	-1,9	-0,03	---
Depreciation	33,3	0,35	-2,9	-0,05	37,3
Value added	66,6	0,71	32,5	0,56	25,7
Gross profits	-50,6	-0,54	-60,7	-0,04	25,7
Exports (enterprise statistics)	71,6	0,76	47,4	0,81	16,4
Exports (customs statistics)	65,4	0,69	42,1	0,72	
Imports (customs statistics)	107,8	1,14	84,9	1,45	12,4
Production for domestic consumption:					
- by customs statistics:	80,4	0,85	31,7	0,54	25,7
- by enterprise statistics:	72,9	0,77	32,2	0,55	25,7
Aggregate domestic demand	**94,3**	**1,00**	**58,6**	**1,00**	**25,7**

Sources: Czech Statistical Office and Ministry of Industry, 1999 (enterprises with 25 and more employees)