

THE COMPETITIVENESS AND TRADE OF ENTERPRISES IN TRANSITION: THE IMPORTANCE OF UNORTHODOX STRATEGIES FOR SURVIVAL

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1. INTRODUCTION AND ABSTRACT

The paper aims at explaining the following paradoxes observed in transient economies, which seem to go against the principles of opening up in the pure theory of trade:

- * **Why there may be in the medium-run no clear winners in the inter-industrial specialisation;**
- * **Why there can exist firms among both the labour and the capital intensive industries that are gaining and losing in parallel;**
- * **Why exports and relative prices can increase even in industries evidently without comparative advantage;**
- * **Why there can be so few bankruptcies and overemployment in a situation of sagging aggregate demand and falling productivity of labour.**

The argument in this paper does not rest so much on different human capital endowments in individual firms (influencing their ability to innovate, or even their different inclination to rent-seeking), as on their different extent of **sunk physical capital costs**. Unit-value isoquants of production functions and isocost lines in a standard capital-labour framework are used for the explanatory analysis. The empirical evidence from Czech light and heavy industries is taken for an illustration of the problem.

The first strategy for survival in a situation of a sagging demand on domestic and other transient markets is to depreciate the currency so much that a trade diversion to stable Western markets is feasible in nearly all industries. The second strategy is associated with extensive labour layoffs, accompanied by real wage falls. The third strategy used for survival is linked with the opportunity of decreasing the total capital cost which is usually represented by capital stock depreciation. Thus, in an environment of extensive privatisation, a great deal of the enormous sunk physical capital costs need not be fully recovered. Under the last two strategies, the relative unit factor prices in firms (i.e. wage rate to capital rental ratios) can vary enormously even inside each particular industry and their absolute values can be much lower than those ones with the Western competitors. Thus both the capital and the labour intensive industries or firms can temporarily show signs of high export competitiveness while, at the same time, the long-run development in some of them can be under heavy crisis with shortages of both capital and labour.

Survival strategy based on fixed capital assets depletion is possible only because of weak

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property rights enforcement and other institutional failures. Though it yields some important benefits (e.g. low unemployment and productive use of capital sunk costs) the bottom-line of these developments results in slow restructuring and slow supply response to market signals.

2. HISTORICAL BACKGROUND AND DEVELOPMENT IN TRANSITION

It has been widely accepted in the circles of high politics that five countries of CEFTA² are the most serious "pre-ins" waiting for the EU enlargement. A full integration of these countries of Central Europe with advanced market economies of Western Europe is challenged with the task of economic restructuring, adjustment and convergence. On one hand it is a quantitative task of catching up in the productivity of labour with some of the less developed countries of EU, what is closely related to the levelling of GDP per capita. On the other hand, it is the convergence to the quality of the microeconomic environment supporting the growth. The latter condition includes most varied factors, such as:

- Institutional arrangements, e.g. in legislature, judiciary, fiscal and monetary policy;
- Level of human capital both in the management of private sector and in public administration, and the growth of R&D;
- Openness and efficiency of capital markets and the intensity of financial flows (level of savings transformed into investments).

The restructuring and adjustment in production and trade will be illustrated on industries belonging to two important sectors of Czech economy: heavy industry and light industry. The selection of these two sectors was motivated by separating and comparing typical industries which under central planning had very different history and institutional backing. The heavy industry sector was oriented to different foreign markets than the light industry sector. The division to heavy and light industries also allows to separate two different productive factors used in standard Heckscher-Ohlin framework: physical capital and labour. As is known, the heavy industries are capital intensive (perhaps with the exception of a part of machinery) and light industries are generally more labour intensive. Also the developments during transition were very different in these two segments: light industries are divisible to smaller plants (with the exception of textiles) and their privatisation is relatively easy. Heavy industries are represented by large corporations dependent on economies of scale. Their privatisation was difficult and the government had to help in bailing them out of debts much more intensively. Our argument will be that until 1994 these two seemingly different sectors did not show so much different patterns of adjustment.

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If we look at the Czech economy and assess its advances in getting integrated with the economies of the European Union, we can assume that opening up of its economy in 1991, supported with parallel price liberalisation, introduction of convertibility and intensive privatisation, was the most important move for securing the market-compatible long-run restructuring. Though never satisfying a condition of complete autarchy, the Czech economy

² *Central European Free Trade Area includes Poland, Czech Lands, Hungary, Slovakia and Slovenia. Their total GDP in 1996 was approximately USD 260 bil (at official exchange rates) what is slightly more than GDP of Austria. Potential GDP at PPP level could be over USD 460 bil. In 1995 their total exports (visibles and invisibles) were USD 73 bil and imports USD 81 bil what is slightly less than the trade performance of Austria.*

functioned, in fact, as a closed economy since 1948 until 1989 when foreign trade had hardly any significant impact on the behaviour of producers, prices and allocation of resources. Both exports and imports were centrally administered and the price differentials between domestic and foreign markets were completely "sterilised" by a system of taxes and subsidies. With its degree of openness rising from 36% in 1989 to 62% in 1995 (visible and invisible exports and imports divided by 2 times GDP), Czech Lands can be treated as a textbook illustration of some theories of trade ³.

Let us now look closer at the situation in our two selected segments of the manufacturing sector. The development of heavy industries was a fetish in all command economies, what was especially the case in the Czech Republic. The weight of this sector on the Czech economy was really impressive, either if measured by the output in physical units or by the volume of the accumulated investments in time. Even though Czechoslovakia was a medium-sized country and the GDP per capita in Czech Lands ranged in 1985-91 between \$ 2400 and \$ 9000 ⁴, her capacities in such industries like steel, trucks, aircraft, arms, power-generation, cement, coal, oil refining, etc., were comparable with the advanced economies of Western Europe ⁵. The first four of mentioned industries were orientated to intensive exports on East European markets.

On the other hand, the investment to Czech light industries, the tradition of which can be traced to the 19th century, was generally neglected throughout 1936-1989. Nevertheless, they retained much of their pre-war labour and human capital and their production was important for exports, mainly to the West. It could be expected that collapsing demand, observed throughout the region since 1990, should have the most adverse impact on the survival of heavy industries,

³ *The degree of openness varies with the exchange rate used. If the exchange rate is heavily undervalued the share of exports on domestic production in local currency is overestimated. Similarly, the share of domestic production for domestic use (especially non-tradables) is underestimated in GDP converted to dollars. Thus the Czech degree of openness in 1995 can be decreased from 62% to approximately 50%, if a more realistic "exchange rate" (e.g. 13.50 Kc/\$, instead of market rate of 27 Kc/\$) is applied for the dollar conversion of non-traded commodities. Nevertheless, the impact of opening up in 1991 hit all fundamentals of the small Czech economy. It can be approached by theoretical assumptions of stepping out of autarchy to perfectly opened commodity markets.*

⁴ *The astounding differences, typical only for intransparent, semi-closed economies in transition, were given by using different methods of estimate. The lowest figure was estimated in 1991 by dividing the nominal GDP per capita by current (heavily undervalued) exchange rate. The highest figure is based on the PPP estimates of Heston and Kravis (1987) for 1985 (\$ 9401), adjusted for growth and dollar inflation in 1985-89. The current, more realistic estimates range between \$ 4990 and 7000 for 1996. The trick of a spectacular dollar decline and growth is based on initial sharp nominal devaluation and latter steady real appreciation of Czech Koruna. The alternative (higher) figure is given by converting the value of non-tradables to dollars by using "exchange rate" reflecting the different PPP level in that sector.*

⁵ *Let us mention here that Czechoslovakia with 15 million inhabitants produced at the end of 1980s 15.5 mil t of steel, 51,000 trucks, 253 military and 98 civil aircraft, 89 bil kWh energy, 11 mil t cement, 130 mil t coal, etc. A splendid achievement indeed, unfortunately without any visible impact on the economic efficiency on the consumer side. Simply a production for the production's sake that had no marketing in market economies.*

especially if we assume that Eastern physical capital is not a factor with comparative advantage. On the other hand, cheap labour and closer contacts with Western markets should influence more positively the developments in light industries. Also the relative prices in the light industries should be expected to rise and those in the preferred heavy industries to fall.

Table 1 presents an overview of the developments in the Czech heavy and light industries and reveals the basic "parameters" of real adjustment in 1989-94. Their production and output went generally sharply down, especially in the heavy machinery producing investment goods and arms. In their aggregate, however, the fall in employment was in every industry lower than the fall in production. Though the recession in heavy industries was more severe than in the rest of the economy, their relative export performance (as a rise in the X/Q index) was more intensive than in the light industries. Also the pattern of behaviour in hiring labour and capital, as will be shown, seems to be similar in all industries.

The reality of transition, if compared with recommendations for firms in need of restructuring in stabilised market economies, offers unexpectedly strange patterns of behaviour on the supply side. At the same time one cannot say that the observed particular behaviour would not be rational. One could even say that it is the recommended "standard" behaviour which might lead to higher losses and thus to irrationality. Let us first look at the set of problems typical for transition.

The situation in the majority of big manufacturing firms (former SOEs) at the beginning of transition is marked by:

- an extremely wide dispersion in the use of K and L per unit of output in different firms (see Diagram 1 for an example)⁶ ; this also implies that there should be a wide scattering of efficiency among firms;
- relatively stable or slightly rising K/L ratio;
- sharply declining exports to the former CMEA markets;
- contracting domestic demand;
- rise in competition from imports;
- opening up of the OECD markets and an endeavour to use them for trade diversion and/or trade creation;
- widespread shortage of financial capital for restructuring;
- widespread shortage of human capital and skilled workers;
- lagging legislature and failing property rights enforcement.

3. THE PECULIAR BEHAVIORAL PATTERNS OF PRODUCERS IN TRANSITION

The first problem to be addressed here concerns the viability of the corporate industrial sector during transition to an open market environment. The expectations in the early stages of transition were that the majority of Czech heavy industries should be largely reduced, if not

⁶ *We have desaggregated the K/L ratio into capital per output and labour per output indicators. We can see that it is especially the K/Q ratio in one single industry (i.e. textile) that has an extremely high standard deviation around the statistical mean. We can explain this phenomenon not only by high inflation in the capital goods sector but mainly by highly inconsistent practices in investment policies in command economies. Some firms having new machines and buildings while others retaining an antiquated equipment. Economics and capital yield evidently were not factors that would be important in decision making in command economies.*

completely abandoned. The alleged reason was that:

- these capacities were built to satisfy an artificially created demand;
- their technologies were antiquated and the production would thus be inefficient;
- the lags in the technical progress will make their production often unmarketable in the West;
- their administrative prices were artificial and overvalued in relation to wholesale prices in the light industries.

The well-known developments in the Eastern Germany in 1990-92 were supporting this very gloomy outlook.

The economic explanation of the problem can be done by drawing a "technological inefficiency gap" into isoquants of production for a unit-value product (e.g. per 1 million CZK of net production). As Leamer (1994) has pointed out, the advanced "Western" technology T1 in Figure 1 is distinctly more technically efficient than the backward "Eastern" technology T2. (In fact the higher "technical efficiency of T1 may be caused more by better management, marketing skills and image than by mere differences in "physical" technologies.) Also the cost per unit-value of production of T1 is lower than that one of T2. The position of isocost lines c_1 and c_2 confirms that $c_1 < c_2$ for given competitive wage and capital rental rate ⁷. In this case the incoming FDI and its more advanced technology T1 simply brings the old T2 to bankruptcy, either due to higher physical productivity (where the products are homogenous, with identical prices), or due to higher profits for quality-differentiated products with higher quality per price parameters.

It was a shocking surprise that as early as 1990-91 the Czech metallurgy proved one of the most successful export industries. Very soon four flaws in the above mentioned reasons for the alleged corporate manufacturing sector non-viability became apparent:

- The devaluation can shift the unit-value export isoquant (expressed in the domestic currency) closer to the origin along a given K/L ratio. The domestic wages and rental rates are assumed to remain unchanged in the short-run, what will increase the revenues-to-costs ratio.
- Western technologies cannot be easily transferred/relocated/ to the East because of high transaction costs (due to institutional barriers) and too many macroeconomic uncertainties.
- Western exports to the East (as a substitute for FDI entries) are not as competitive as it was originally thought because the Eastern labour is very cheap, while the gap in efficiency is not as large. Thus the relative unit labour cost is still giving the East some advantage.
- The East can become even more competitive if the physical-capital assets were transformed to its new owners by means of privatisation and the new owners have "invested" none or very little financial capital to these assets for their purchase. Thus their expected capital returns (minimal rental rates) may be extremely low.

Thus, surprisingly, there were very few bankruptcies so far in the Czech corporate manufacturing sector, even though the production has significantly declined. At the same time the aggregate employment has been declining less than production and the same pattern could be seen also in the retention of the physical capital. The result could be described as labour and capital hoarding, what negatively influenced both the technical and the cost efficiency of

⁷ *It is assumed that both technologies are located in the same country under transformation and the relative factor prices (wages and capital rentals, w/r) are identical in both technologies, i.e. both wages and capital rentals are proportionally higher in T1 than those used in T2. However, the total cost per unit of output is still lower in T1.*

production (see Benáček, Shemetilo and Petrov (1997))⁸. This is apparently an unorthodox behaviour which evidently differs from standard approaches to the restructuring of firms on the verge of exit in the developed market economies.

For a deeper insight into the alternatives in the industrial restructuring, let us first know more about the underlying situation of the Czech manufacturing producers in transition:

a/ Practically all the new owners, entrepreneurs or managers of the successor firms of the former state-owned enterprises, are not identical with those who made decisions and financed the investments into their capital. These decisions were taken by an anonymous planning bureaucracy, void of any financial responsibilities and now without any claims on the current property rights.

b/ From the present market perspective, the past investment decisions were in many cases wrong – overshooting the effective demand and picking up incorrect productive methods (antiquated, technically inefficient and environmentally damaging technology). Thus the misallocation of capital is not a marginal but a problem widespread throughout all economy.

c/ In many cases the acquisition of the capital can be treated as a free gift, generated through the voucher privatisation scheme, direct transfer or restitution) or, in the majority of remaining cases, as a purchase with a very loose relationship between the price paid and the future discounted capital returns (due to their high uncertainty and risks involved).

d/ The new owners are often burdened with short-term debts and there is a widespread shortage of credit throughout the economy. Many evidently profitable investments must be postponed because of this constraint.

e/ The accumulated stock of the physical capital is by all standards enormous (e.g. if its capacity is measured in quantity units) and its mere liquidation may be too costly. That means the value added by using the asset for liquidation may be still higher than the variable (wage) costs saved by closing down plus the expenses for scrapping.

f/ The transfer of the (competitively) privatised capital into alternative productive uses is difficult because its opportunity costs are, apparently, not higher than the yields presently in use. Thus the resale cannot improve the position of the new owner.

g/ An incomplete capital market clearing, incomplete or asymmetric information about the market structure, future demand and prices, may also bar the alternatives of classical restructuring. For example, the failure of the banks in transition to monitor and screen the investment alternatives may make the transfers very difficult.

h/ Last but not least, the ownership of capital need not be permanent. Firm can be controlled by old management, trade union, coalition of investment funds and banks. Weak ownership leads to distorted and short-run aims. Capital stripping can be one of the preferred perverse strategies.

⁸ *These tendencies were first analyzed in the Czech textile and clothing in 1990-93 (see Corado, Benáček and Caban (1995)). It can be argued that the ensuing losses in efficiency have apparently brought an additional, self-imposed burden to the restructuring of the already harshly hit firms. But surprisingly, out of 227 Czech textile and clothing firms with employment over 24 workers, only one went bankrupt during 1990-94 (!). Many others, though heavily leveraged, seemed already in 1995 to be out of the worst, having shown the first signs of profit in 1994. Nevertheless, their development in 1995-97 did not show any signs of revival. Though stabilized, the majority of textile firms stagnated while the manufacturing industries as a whole grew at a rate of 8% in 1995-96.*

As can be seen, the problem of physical capital reallocation to more efficient uses will take a generation and not only a relatively short period of one recession. Let us first look at more standard approaches at solving the problems of widespread inefficiency and risks of a general economic crash.

3. EXPLANATION OF THE SUCCESS IN TRADE DIVERSION AND TRADE CREATION

Falling demand for exports to planned economies already in early 1990 was the first sign of commencing transition. Within three years the volume of this trade shrank to one third what was approximately 12% of GDP in 1992. Nearly a half of this loss was recovered by increased exports to OECD countries. Since 1993 the growth in exports to OECD leads to trade creation of approximately 8% of GDP in 1995. In 1989 the trade diversion from East to West was considered practically impossible (see Benáček (1989) for experiments with an optimising model of trade) because of sticky supply response and alleged low elasticity of Western demand. Therefore a massive devaluation and a wage control were implemented during 1990. It was also assumed that the effects of devaluation will work only in a short-run. Surprisingly, the positive effect has lasted for five years and even in 1997 there was not need to change the exchange rate established already in 1990. Because of its crucial anti-cyclical stabilising role, let us analyse in more detail the (average) impact of devaluation on Czech manufacturing sector.

In 1992 the import quotas and the non-tariff barriers of the OECD countries regulated approximately 40% of Czech exports to these countries. (See European Economy, Supplement A, No. 7, 1994 or Herald Tribune 15 April, 1993). Though many quotas were fully used in early 1990s and acted as bottlenecks for trade expansion, the process of association with EU brought substantial lifting of quotas already in 1993 and in 1997 the majority of quotas were removed. Thus trade barriers in EU, the exports to which represented more than two thirds of all Czech exports, practically did not impede the expansion of trade.

The export price constraint is more complicated because the foreign demand can be very inelastic and cause losses in terms of trade. Fortunately, this was not the case in the majority of exports. Therefore the Czech government was more than successful in promoting the competitiveness of exports by depreciating the currency. Figure 2 is depicting the developments between 1 January 1990 and 1 January 1991. The three devaluations of Koruna (Kc) during 1990 had a cumulative effect on dollar or DM proceeds of 114%. At the same time the factor-price inflation index (as well as the PPI) increased only by 15% during 1990. This meant that in fact at the end of 1990 all unit-value isoquants of the export production (in current prices) could move approximately half way along the K/L ratio to the origin (i.e. from Y_0 to Y_1). At the same time the unit-value isocost line ⁹ shifted only from c_0 to c_1 . In nominal terms, these disproportional

⁹ A standard linear cost function per value added, with labour and physical capital as variables times their sectoral prices, was used in our estimates. While the price of labour, which included social and health insurance payments, was quite reliable to estimate, the explicit price of capital (as a cost) was much more difficult to deal with. It included depreciation as "payment" for the capital inherited from the central planning period and interest on loans. The gross profits were assumed a residual to this function. Unfortunately the financial management under transition is much more complex and many capital transactions hidden in the capital costs, such as fines, hedging funds, speculative transfers of assets (asset stripping or "tunnelling") and payments for loans, etc., could have escaped from our estimates. Nevertheless, these "costs" are hardly anything else but rents or residual

shifts enormously increased the potential rents (supernormal profits p) practically in all export industries at the beginning of 1991. This is depicted by an isocost line C_2 of 0.58 mil Kc tangent to the new unit-value isoquant Y_1 :

$$p_1 = Y_1 - C_2 = 0.42 \text{ mil Kc}$$

The rents here comprise all returns to capital, including the depreciation, which gave a wide space for enormous trade creation in the West. The competitiveness of industries without comparative advantage increased to such a measure that all industries could initially export with a high profit margin and low incentives for restructuring.

The question is whether this arrangement was sustainable in time. The galloping producers' inflation of 55% during 1991, as an aftermath of the 114% devaluation and the price liberalisation, has wiped a large part of the post-devaluation export rents. Fortunately it increased the factor costs much less than by 55% in 1991. The rise in wages lagged significantly behind both inflation (PPI) and the nominal depreciation¹⁰. Though the cost of capital was also sharply increasing, the vast majority of producers could nearly completely eliminate its adverse effects, as will be explained later. Thus the shift of unit-value isocost line from c_0 closer to origin of our graph could proceed gradually, in average by 20% every year. At the end of 1993 the unit-value isocost line was approximately in point A, while the position of Y_1 was still fixed. The downward drift of the unit-value isocost line could become a tangent of Y_1 as late as in the mid of 1995. At that time the economy was already in growth and the productivity was rising approximately at the same level as inflation. Therefore since 1995 the unit-value isoquant Y_1 was able to copy the continuing downward shift in the unit-value isocost line.

The next important question to be explained are the losses caused by the reductions in the dollar unit prices, while the volume of exports to OECD countries was sharply increasing. For example, as we found in our study, in 1991 the unit export price fell in average by 7 % in the textile and clothing sector, while the volume of its export to OECD increased by 17%. Even though this points to a very high price elasticity of 2.4, the losses in terms of trade could have been important. If this trend continued, in 1993 the competitive edge from devaluation would be eliminated by the combination of the cost inflation and the losses in the unit export prices. This did not happen because the producers reacted by restructuring their exports. The fall in all unit prices was compensated by increased volume of exports in commodities with higher prices per ton (i.e. where the value added per input material was higher). This move has compensated an important part of the losses in unit prices in 1990-92. Since 1993 the export prices were steadily rising by approximately 3% per year.

Even though the extent of devaluation, inflation and terms of trade changes is much higher in transient economies than what is standard in stabilised market economies, their principles of functioning are not different. In some (rather shorter than longer) time their cumulative effects will bring the currency again to a pressure or some exports will have to subside, imports will replace the domestic production and the domestic producers lacking

claims from unconsolidated owners.

¹⁰ *The Czech Koruna has remained fixed to a basket of main currencies since December 1990 until May, 1997, though the cumulative inflation index in 1991-96 was 2.76 (i.e. 176% inflation) for consumer prices and 2.37 for producer prices. This unprecedented exchange rate perseverance, shattering all common sense of relative PPP logic and the law of one price, persevered for 6 and a half years when in May 1997 it was forced to float and depreciate by 15% to rising dollar and by 8% to sagging DM. In the next 4 months (i.e. to this date) Koruna was again surprisingly steady.*

comparative advantage will have to go bankrupt. On the other hand producers with comparative advantage will dramatically increase their export production. Surprisingly, we cannot see these trends in the Czech economy, even after 7 years of intensive transition. Therefore let us analyse more closely the behavioural patterns of producers and the development on the cost side.

4. SUNK CAPITAL COST AND POLICIES FOR SURVIVAL IN ENTERPRISES

In the following reasoning we assume no inflation and an existence of linearly homogenous production technology with constant returns to scale: $Y = f(K, L)$. Figure 3 illustrates the position of a standard firm before transition. The isoquant Y_0 depicts the total net production of \$2 million and the tangent isocost line of budget $C_0 = \$2$ million determines the optimal allocation of factors (K, L) at point M, while the competitive wage rate is w_0 and the standard rate of return on K is r_0 . The transition now brings a **loss in demand by 50 per cent**. The enterprise is forced, willy-nilly, to curtail its net production to a half. In theory, it should cut proportionally its factor inputs: a half of the labour is fired and a half of the capital is sold. With the given technology, the new optimal allocation of production now worth \$1 million should be in N, using a half of both the labour and capital.

However, according to our empirical evidence, **the restructuring did not end up at the new optimum point N, but instead at point P, reflecting a hoarding "strategy"**. This means hoarding $L_2 - L_1$ labour and $K_2 - K_1$ capital in excess of the optimal allocation in N. This means that some behavioural and institutional inflexibilities could not allow the firm to act efficiently. So the firm had to rely on some "survival strategy" that would countervail the accepted cost inefficiency. Indeed, the empirical evidence of transition shows that having acted contrary to the prerequisites of deep restructuring, after 3–4 years of pains and struggle, the firm seems to have survived the harshest stage of transition.

The labour hoarding tendencies, well-known from the planning heydays and continuing in the transition, have already been brought to attention [see e.g., Commander, Coricelli (1995)]. In this country this phenomenon is explained as follows:

- (1) By political reasons. The socially conscientious Czech managers might give a high priority to employment and public consensus. Though good for the explanation of the excess labour, this argument, however, cannot be extended to the tendency for the physical capital hoarding;
- (2) By optimistic expectations of the managers, who believed in a recovery in the aggregate demand. In the middle of 1994 these expectations proved to be correct;
- (3) By the local labour market rigidities and the capital market imperfections;
- (4) By the low wages. The labour costs are still a small part of the total costs and this may imply that it is not important to save on shedding labour.

Even though all these considerations may be relevant, there may be further important reasons behind the widely observed capital "hoarding" behaviour:

- (5) The sunk costs;
- (6) The shortage of financial capital for new investments;
- (7) The institutional and market failures.

The crucial economic importance of the last three points mentioned is based on the assumption that industrial restructuring generally depends on the income maximising and the market performance. Before proceeding with the explanation of arguments (5) and (6), let us sum up the economic circumstances for the allocation of output to inefficient point P in Figure 3. It can be proved that this allocation is "sub-optimal" and thus irrational, if no other constraints are laid on the decision. Even being able to produce the same output Y_1 with less amount of labour

and capital, enterprises prefer to keep them in excess. This leads to some unexpected paradoxes:

- Y/L declines, even though it is evident that a more economical use of the bloated variable costs inherited from the past must be one of the main aims of restructuring;
- Y/K dramatically falls, even though the constant over-investment into fixed assets with notoriously low marginal efficiency was one of the main reasons for the collapse of the central planning, and the strategy of restructuring should be directed to an increasing capital efficiency;
- K/L ratio is rising, even though the economies in transition show on one hand an ostensible oversupply of cheap labour, confronted on the other hand by a widespread shortage of capital. Instead of scrapping the inefficient capital and switching to cheap labour, contrary to Heckscher-Ohlin, this capital is used even more intensively;
- The decline in the use of labour can be higher than the decline in the use of capital, even though the price of labour seems to have declined sharply and the price of capital has risen.

As the empirical evidence from the period 1991-94 shows, the reallocation of factors in the short-run of restructuring in the former state-owned enterprises is mainly concentrated in the yellow-shaded **triangle MNR**, which is characterised by the following constraints:

- the holdings of K in firms are not rising above the original endowment K_0 ;
- the productivity of labour is not rising (actually it may be even falling) ;
- the K/L ratio is not decreasing.

This "peculiar" reaction of producers to falling demand can be to a large extent explained by sunk capital costs. In an extreme case we can speak about **completely sunk capital costs**, that means that **the investment into given capital assets becomes completely specific not only to the industry, but also to the given firm. Thus all parts of the firm's capital holdings can be complementary and completely immobile to any economically productive alternative uses.**

To conclude, the producers in the manufacturing firms under transition may often find themselves trapped in a situation where a complete specificity of the capital makes them stay with the given capital endowment, which thus becomes a barrier to their exit. This is an important explanation of the paradox of the capital hoarding, especially in the firms most harshly hit by the loss of demand due to transition.

Let us now turn to Figure 4 and re-tell the story from our previous empirical findings. This figure just redraws the situation from Figure 3 into a unit-value system of isoquants and isocost lines. All of the schedules, including all points mentioned (except point M), will concern production worth \$ 1 million only. The original output capacity of this firm was \$ 2 million allocated into point M. At the start of transition the demand falls to \$ 1 million and stays there. Our firm must solve its problem of allocating its given resources for producing a unit value ($Y = \$ 1$ million) of output by using the strategy that reflects the sunk costs.

As the reallocation of capital and labour from inefficient point M to the optimal allocation in N will burden the new owners with the disposal of capital by K_0-K_1 (i.e. scrapping a half of K_0), they discover that all their domestic competitors also try to abandon the capital. The prices for the disposed capital are either zero or even negative. This is a sunk cost situation. Paradoxically, such "windfall" capital could still generate some (though very small) positive returns, for example, in taking part in producing for exports to the EU. That means, there could be even gained some profit. Certainly, with very low export prices, in no case the capital can be recouped completely but, as a last resort, at least part of it can be regained. There could hardly be any expectations left for the capital returns (profit) to be well above the depreciation rate. Often

even the depreciation can be recovered only partially. Therefore the new capitalist owners will finally prefer to keep the physical capital (even though, or because, it has no market value) and attempt to recover at least a part of its cost in the future. After all, they have obtained the fixed capital either free or with a large premium for uncertainty and risk, or due to imperfect competition on the capital (privatisation) market. Scrapping the old capital completely and purchasing the latest state-of-the-art technology, which would be more profitable, is completely out of their financial means and credits are also not available.

Keeping the capital **in full** (in point R), while its normal returns are not guaranteed, is a typical case of decisions under the sunk cost constraints [see Sutton (1991)]. These cases are also very well known from the pure theory of trade, when the opening up of markets suddenly offers a new pattern of specialisation [Ohyama, Jones (1995) or Mercenier, Schmitt (1995)]. Then the demand in some commodities falls, being crowded-out by imports [Krugman, Obstfeld (2003), pp. 26-34]. We may even assume that capital is a **specific factor** that cannot move instantaneously and costlessly from one firm to another. As the specific factors theory explains [Krugman, Obstfeld (2003), pp. 38-66], factors specific to import-competing sectors or, more precisely, factors that cannot be disposed-off will lose in income distribution. Their loss (the price discount) is actually the condition for the sector /firm/ survival, even though the production must be curtailed.

In our situation the owners can do nothing better than reconcile with only a partial recoupment of their immobile capital, which also implies a decrease in their internal rate of capital return to r_2 ; that is, to the returns below the initial level of r_1 , as pressed down by the dead-weight of the sunk costs. If the old K of our firm became completely isolated from the present capital market (i.e. it becomes unmarketable outside the "privatisation market"), **its opportunity cost could fall close to zero**. If the wages remain unchanged, the new internally generated unit-value isocost line can thus be shifted from the fixed point $1/w_1$ upward, for example to the point $1/r_2$.

If all our capital endowments are subject to the sunk cost and with no exogenously given market constraints on the returns of our sunk capital, we enter the **uncertain world of sub-optimal allocations under second-best choices**. If all the capital of our demand stricken firms, which was invested under the central planning, is now found to be a sunk capital, the firm's new allocation of factors under restructuring can well be in R, where L_0-L_1 labour is fired per each unit of output. Therefore point R represents a strategy with no labour hoarding, where the productivity of labour remains constant under whatever cuts in production, meanwhile the original endowment of K is **fully retained**. The allocation of the unit-value production in R would be clearly inefficient both relative to the unit-value isoquant Y_1 and the unit-value isocost C_1 . However, if the returns on capital can be lowered¹¹ and the new unit-value isocost can be thus set as C_2 , the firm can survive the transition having low profits and low (but still positive) capital returns.

Nevertheless, under the given $-w_1/r_2$ ratio it would still be more efficient to reallocate the unit-value output from R to S, which lies on unit-value isoquant Y_1 while R lies up in the technically inefficient zone. This would be a standard behaviour of producers as profit maximises under the condition of mobile capital and perfect functioning of both the capital and the labour markets. **In the early stages of transition none of these assumptions seems to apply**. Our empirical evidence supports neither the allocation in S, nor at any other point to the left of the line

¹¹ *That means, there are no economic or institutional obligations requiring that the return on capital is much higher (e.g. as high as is the K-market interest rate).*

NR, where the rate of labour layoffs is higher than the rate of the fall in output.

In the environment of a **complete** capital sunk cost and **flexible** labour market, the short-run allocation of factors should be just at point R. This point is given by the intersection of a unit-value technically inefficient isoquant Y_2 and the upper bound K_0 . Y_2 is constructed by shifting Y_1 upward along the given K_1/L_1 ratio. This will keep the function f in the production function unchanged and the upward shift is caused by multiplying the function by a parameter \mathbf{A} , which describes the loss of allocative efficiency (or X-inefficiency) due to sunk cost. The allocation of production on the isoquant Y_2 is a viable strategy in the short-run and does not close the door for the future growth of production.

As the accepted internal returns on sunk K are falling relative to the returns on L (i.e. the w/r slope is rising up from the point $1/w_1$), there is a tendency in the firms with falling demand under transition to retain more "cheap" K in production at the expense of relatively "expensive" L . The **K/L ratio should thus tend to rise** from K_0/L_0 to K_1/L_1 . As the cost of capital r can fluctuate and diverge **below the capital market value** according to most random and subjective circumstances, the K/L ratio in a given industry can vary in an unpredictable way. This makes the distinction between capital and labour intensive production (or industry) indeterministic. In some extreme case a firm with a capital intensive production and working in an environment of extreme (new) capital shortage may become efficient by "depreciating" the value of old inefficient capital to zero. The "contrived" cheapness of the capital may have the same effects on trade as if the firm introduced a capital-saving innovation in this type of production that would lead to a **competitive advantage** in costs.

Quite surprisingly, such competitive advantage can run against the comparative advantage in the Heckscher-Ohlin interpretation. Because the capital endowments in transition economies relative to the EU market economies are much lower than relative labour endowments, the comparative advantage in factors in transition economies rests with labour. However, the transition circumstances, by making the capital goods extremely cheap, can soften this fact to a point of reversing the comparative advantage to the favour of capital. We may call it a "contrived" (false) comparative advantage. The short-run underselling of its foreign competitors, however, must not be interpreted as a long-run comparative advantage.

We can expand our logic even further. While the market rental price of a unit of old K becomes even lower than implicit return r_2 (for example, old K is nearly free), it might seem profitable to substitute as much (valueless) capital for labour as is possible. For example, for a firm strictly guided by profit maximisation, the factor substitution could allow to fire more workers than in point N and move along the isoquant Y_1 to point T. Even as an extreme behaviour, some firms may purchase more capital than what was their original endowment and move along Y_1 beyond point T.

However, this strategy does not seem to be empirically supported to the left and above the points R or N. We can ask why this intensive labour shedding strategy is not observed in any East European country in transition. The answer rests in uncertainties, capital and labour market failures, and positive expectations. The managers are afraid of becoming burdened with too much of the antiquated K and running short of the footloose labour (disappearing in the mushrooming small businesses), in case the demand might expand in the future. The real allocation would be thus better sought in the gap between the isoquants Y_2 and Y_1 , to the right of the line NR and above the original K_0/L_0 line - as depicted by the yellow-shaded area to the right of NR. The real allocation depends (among other constraints) on the extent of the sunk capital cost, the factor costs w , r and expectations for future sales.

In case of allocating the production to point P, the result is an allocative (cost)

inefficiency that would be derived from the market w_1 and r_1 factor prices. That can be interpreted as a shift from the efficient point N to a point on Y_2 tangent to cost function with $-w_1/r_1$ slope. The profitability could be then gained by lowering the wage-rate below w_1 .

The central point of our analysis is that, contrary to the stabilised market economies, the cost and the ownership of capital in transition is to a large extent a random variable. It depends on a fluke of chance how much the new private owner of the capital had to pay for his ownership. The market price based on marginal efficiency was generally unknown, the communist accounting prices and the depreciation charges were fictitious, the process of capital auctioning for privatisation was plagued by informational asymmetry, many deals were subject to corruption and the price need not have been finally paid. Thus the capital returns had no sound base for its calculation. The result is as follows: while the price of labour retained certain association with the economic fundamentals, the price of capital lost in many cases its any economic substantiation.

Therefore in transition the meaning of “capital rental price”, “capital returns”, “depreciation rate” or “profit rate” became subject to a high uncertainty. Actually their value could be let to become a residual chosen at random. Thus the parameter r of capital price could become an **endogenously given parameter**, set by the capital owner and adjusted at will to the level of competitiveness of the product. As can be shown in Figure 4, the slope of the isocost (budget) line c can be often chosen by the enterprise. If the enterprise would not be profitable at the market values of labour and capital, the relative price $-w/r$ can be raised in some cases up to infinity, bringing thus the production isoquant to a zone of profitability. The area of efficiency thus widens from the line C_1 up to C_3 . Often such “miracles” could be exercised before the firm was offered for a sale to a strategic investor.

Given that, the price of capital in transition often could not be used as an **exogenously given parameter** for the efficient capital allocation. Especially the industries hit by the comparative disadvantage and exposed to import competition¹² could use the mentioned property of the privatised capital for raising their competitiveness. The more **capital-intensive** the industry (or the firm) is, the higher is the chance for reversing the comparative disadvantage into a production with **competitive advantage**. Thus much of the **export expansion** could be observed in industries (or firms) that were undergoing a crisis and contraction. Exports offer a unique opportunity for a fast expansion of production enabling thus an accelerated recoupment of a part of the capital assets, at least. The same may happen to an inefficient privatized firm active in an industry enjoying the comparative advantage. In order to avoid the bankruptcy, it can be forced to apply a similar strategy of “minimal recoupment”, once the rate of capital returns is flexible downwards.

The average cost curve can be therefore lowered by using the described strategy. In an extreme case of zero capital returns the average cost equals the average variable cost, what brings the bread-even point down to the shut-down point. The space for profitability is thus widened, even though both the marginal cost and average variable cost remain unchanged.

Generally speaking, in such cases where the capital recoupment is not liable to have legally enforced returns that would have to cover the costs of its rental (interest plus the full recovery of the principal invested), what is typical for privatization of (often antiquated) assets for free, there is an option to raise the competitiveness of production for export or import-competition by opting for lowering the rate of capital returns up to zero. This opens a wide area

¹² *Very often, these were the capital-intensive industries, which lacked the comparative advantage. It was generally agreed that comparative advantage in transition countries rested either in labour-intensive or natural-intensive industries.*

of allocative efficiency

5. INEFFICIENCY AND POSTPONED BANKRUPTCIES

Now we can proceed to institutional barriers - most probably the most common cause of the efficiency losses and the inefficiency transition from bad to good firms during transition. As the transition shakes the whole system of hierarchies, discipline, ownership, organisation, ethics and the institutions of the contract enforcement, the former state owned enterprises (SOEs) easily get into a chaotic situation of "pre-privatisation" or "post-privatisation agony". The problem is centred around property rights, final (strategic) owners and corporate governance. As is convincingly explained by Witztum (1994), the social and ethical consequences of the transition may have a negative impact on the labour effort to participate in production, thus causing losses in the marginal productivity of labour. Also the old managers or transient quasi-owners need not be orientated to long-run gains and the strategy of capital stripping may reflect their orientation to rent-seeking and moral hazard. The allocation of production in point P may be, under given X-inefficiency, a local optimal short-run allocation. The sunk capital cost argument and labour inefficiency thus become complementary elements in the whole unproductive (i.e. re-distributive) institutional setup.

As the property rights and other standard business institutions become accepted by society and as the workers are more prone to reconcile with the neo-classical logic of income distribution (e.g. they tolerate more the existence of income distribution from the capital holdings and arbitrage), their co-operation and work commitments to the firms improve. This shifts both the unit-value isoquants and the allocation of factors closer to the origin of the graph and closer to the isocost C_1 . Many of the firms following the discussed capital recoupment strategy will slowly wither in a natural way even without bankruptcy. New allocations of investments to surviving firms, following the long-run growth and displacing the inefficient sunk capital, will be done on the competitive rate of return of capital which is much higher than our r_2 . The growth of the allocative (cost) efficiency is also influencing the marginal productivity of labour and the wages are rising. This growth is a signal that the transition is fading away and the whole economy is returning to a standard economic paradigm. Thus, in a gradual process, even the firms harshly hit by transition can recover and survive the shock.

Let us now return to the point of the sunk capital cost argument. As the firms have "solved" the disposal of a large part of the physical capital incorrectly allocated in the Communist past by postponing the problem to a later period, or by accepting a strategy of consecutive stages of capital liquidation (e.g. by attrition), we can now re-open the issue of bankruptcies. Why were there so few bankruptcies in the Czech manufacturing sector when the bottom lines of so many firms were in the red and the efficiency was so low? How could the problem of sunk capital costs have been closed so easily with such a reconciliatory move? The answers should be sought at the current status of ownership in these firms:

Those agents who decided about investing the public resources into current stock of the now privatised capital are no longer in the game. The state, the planning bureaucracy and the nomenklatura "entrepreneurs" in banks and other SOEs have never acted as real capitalists¹³. The socialism neither prepared economic or legal conditions for the post-Communist state to claim a full return of the principal invested into the physical capital and the implicit interest

¹³ See Eswaran, Kotwal (1989) for an insight in the role of capitalists in investing into capital assets, averting the risk of moral hazard and claiming the residuals.

earned. These funds were, by and large, invested anonymously, and as such, they had to be later relinquished freely from the state paternalism. The voucher scheme, the restitutions and the transfers to municipalities or foundations were examples of how this problem can be decently solved. Appropriation of the property was a less graceful way of doing the same. Auctions and tenders may sound more capitalistic, however, the state did not attempt to recover the past investment outlays, but just to take a lump sum share on the expected future capital yields. In the uncertain environment of transition these future yields were usually underestimated. The Czech government has also bailed out more than a third of the bad debts which could have been a cause for the initiation of the bankruptcy procedures.

Thus the new owners of the former SOEs - investment funds, banks, the National Property Fund and 6 million small shareholders - have hardly any serious economic motive for bringing their "own" companies, burdened mainly with huge sunk costs, to bankruptcy. Particularly it was the case when some of the new big owners were able to collude (as the investment funds and the banks which established them) and thus free themselves from a competing litigation for beggarly bankruptcy assets.

The East-European heavy industries can thus be sufficiently "competitive" in the short-run, even though some of the strategies used for survival are not productive in generating sufficient funds for restructuring. Nevertheless, as such, many of these firms can be worth retaining, even though in the long-run their competitiveness may get eroded by appreciating domestic currency (in real terms), rising wages, physical attrition of the "cheap" Eastern capital, technology transfers from the West and by labour exits to industries with sustained comparative advantage. Weak ownership, failures in property rights enforcement, disorganised capital market, uncertain sunk capital costs, inefficient labour market and generally low efficiency of production make the whole production set for decision-making fuzzy. This may result in a very unorthodox and unexpected foreign trade performance in the short or medium-run.

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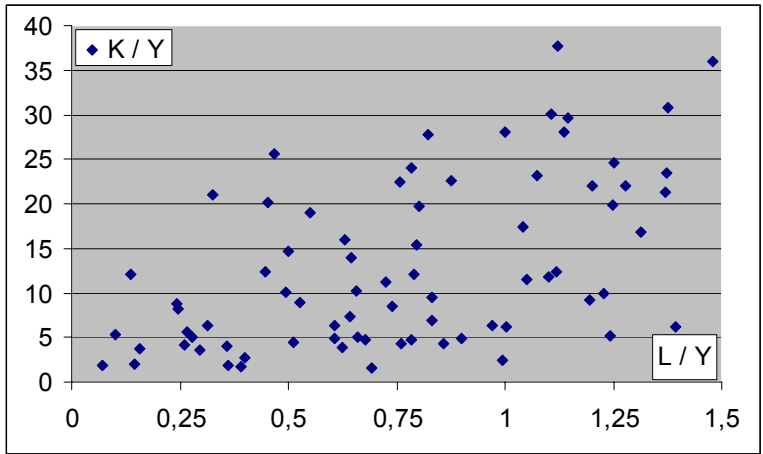


Diagram 1: Capital per labour scatterplot for textile 1992 (unit-value data).

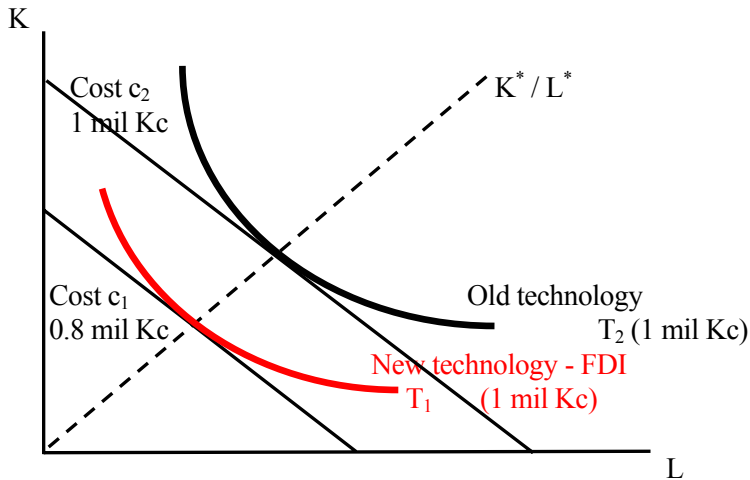


Figure 1: Western technology T1 (coming with the FDI) is more efficient than Eastern technology T2 for the production of an indential product (production isoquants are in unit-values).

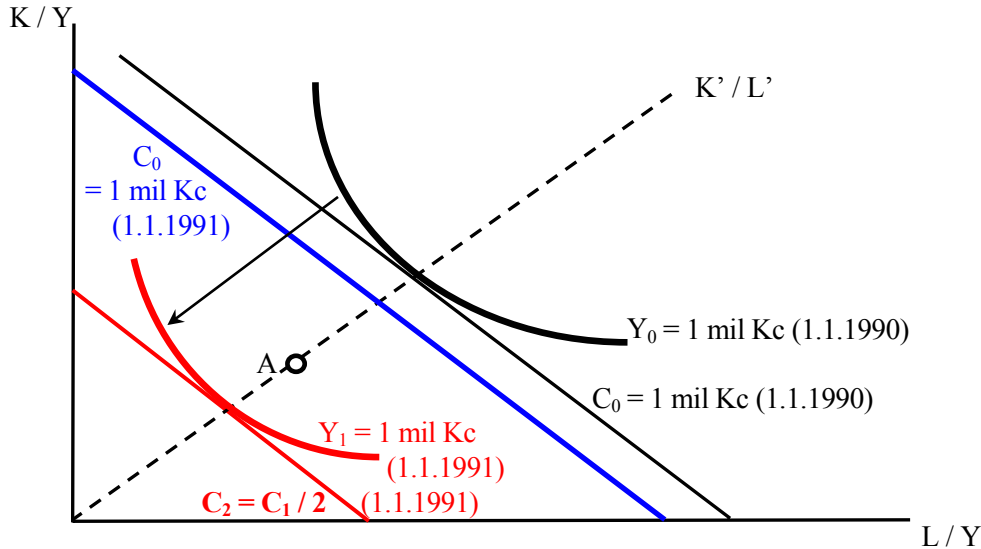


Figure 2: The impact of inflation and/or devaluation on the competitiveness of Czech exports in 1990-91.

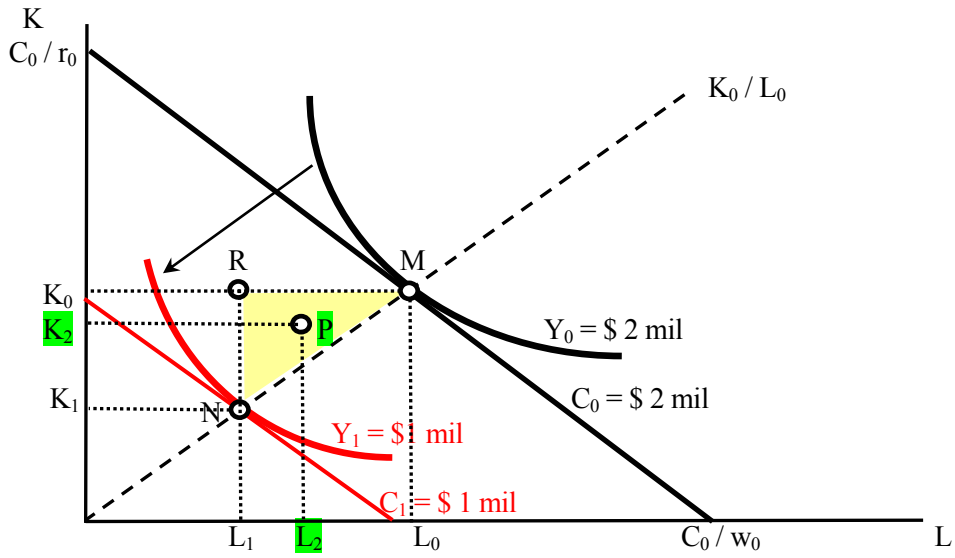


Figure 3: Factor use in production after a hypothetical loss in demand by 50%.

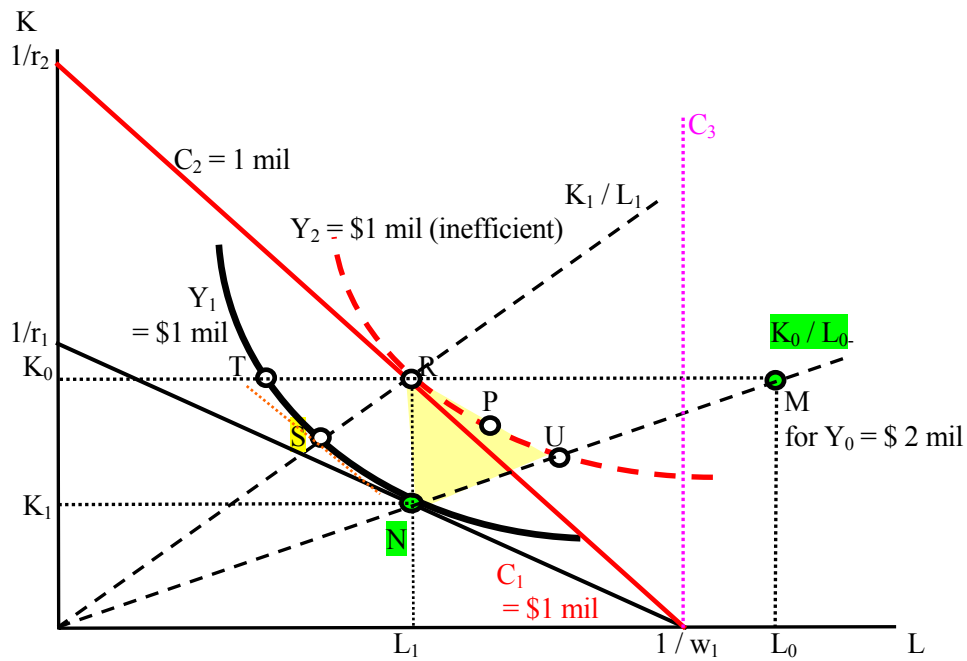


Figure 4: The sunk capital costs and the loss of efficiency in domestic production after the demand collapse.

Table 1: Production, labour and exports in Czech heavy and light industries in 1989-1994
 Production and exports are in billion Kc, labour is in 1000 workers

Industry	Gross output 1989	Labour 1989	Export 1989	Gross output 1994	Inflat. index 89-94	Gross output 1994 cp ^a	Labour 1994	Gross output 1994/89 ^a	Labour index 1994/89	Export 1994 ^b	X/Q 1989 ^b	X/Q 1994 ^b
Metallurgy	93.7	230	12.1	127.9	2.19	58.4	193	0.62	0.84	45.3	0.13	0.35
Machinery	75.6	377	25.4	66.9	2.48	27.0	185	0.36	0.49	24.4	0.34	0.36
Means of transport	58.5	210	15.5	67.9	2.73	24.9	100	0.43	0.48	23.1	0.27	0.34
Subtotal heavy industr.	227.8	817	53.0	262.7	-	110.3	478	0.48	0.59	92.8	0.23	0.35
Textile and clothing	39.0	187	10.5	46.0	2.10	21.9	129	0.56	0.69	17.8	0.27	0.39
Leather and shoes	12.3	49	3.8	13.5	1.99	6.8	36	0.55	0.73	4.5	0.31	0.33
Wooden products	18.9	73	4.9	41.0	2.34	17.5	93	0.93	1.27	15.6	0.26	0.38
Subtotal light industries	70.2	309	19.2	100.5	-	46.2	258	0.66	0.84	37.9	0.27	0.38
Other industries	340.4	754	38.8	533.2	-	249.1	605	0.73	0.80	91.7	0.11	0.17
All industries	638.4	1 880	111.0	896.4	2.21	405.6	1341	0.64	0.71	222.4	0.17	0.25

Source: Database of enterprises with more than 24 employees, 1989 and 1994, Prague, Czech Statistical Office

Remark: Because our statistics do not show production and employment in firms with less than 25 employees and the production in new-borne small firms in clothing and wooden products has risen since 1989, the figures for 1994 can be underestimated by approximately 5% in textile and clothing and by 15% in wooden products. This influence in other industries was negligible.

^a Values in constant prices of 1989

^b Values in current prices of given year