

# **Unemployment in Reforming Countries: Causes, Fiscal Impacts and the Success of Transformation**

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## **Abstract**

The paper addresses and summarizes the role of unemployment in the transformation process from an economic system with a dominant state sector to a system with a dominant private sector. After reviewing the basic facts and some of the main explanations why unemployment is high during transition in countries of Central and Eastern Europe the role of unemployment and the fiscal problems due to unemployment is discussed within a model of economies of transition. The model highlights the ambivalent role of unemployment. On the one hand unemployment could jeopardize the transformation process when it reaches a critical value but on the other hand it could be regarded as an unavoidable byproduct and even a necessary device for the success of the whole process. After presenting the main features and conclusions of the model concerning the role of unemployment, another point of view, which lets doubt about the necessity and temporariness of “transitional unemployment”, will be discussed.

**Keywords:** Central and Eastern Europe, transition, unemployment, restructuring, fiscal dynamics.

**JEL-Classification:** E24, H30, H60, P20

## **Contents**

Introduction.....	2
Some basic facts .....	3
The evolution of transformational unemployment: theoretical explanations .....	8
A model.....	12
General Assumptions .....	12
State sector.....	12
Private sector .....	13
General equilibrium.....	14
Growth, restructuring and the dynamic path of the economy.....	15
Fiscal pressures.....	16
Fiscal pressures and the dynamics of the transition process.....	17
Another point of view.....	18
Conclusion.....	20
Appendix.....	21
References.....	25

## ***Introduction***

In general economic terms unemployment appears to be first of all as a waste of scarce resources. But in the general framework of systemic economic transformation in Central and Eastern European Countries (CEE) one has to think about unemployment in a different way. On the one hand, a formerly dominating state sector is steadily eroding. State firms are shedding labor; some are restructuring; others are closed down. On the other hand, a new private sector is emerging and growing. Unemployment is the – maybe temporary - result of this (healthy) process of restructuring and reallocation.

At the beginning of transformation a predominant expectation of economists was that the main force of transformation is a rapid growing private sector, which “steals” workers from the state firms, thereby inducing, as well as allowing, them to reorganize. In this view, unemployment is the result of a healthy process of reallocation. Even if the unemployment pool is large, it is a pool with high turnover and central to an efficient reallocation. In that sense unemployment seems to reduce the reservation wage for the employed in the state sector and seems to work as a disciplinary device for the whole employed to improve the efforts.

Less optimistic views emphasize the threats of high unemployment rates in the transformation process: Firstly, the worsening state budget which could lead to shrinking fiscal support for

firms and the unemployed. Secondly, the decreasing support of workers in state firms for restructuring due to a declining reservation wage in case of growing unemployment and thus a lower hiring rate in the private sector. Another aspect of a large decline of the state sector with shedding labor is an induced decrease in demand. This fact impedes private sector growth and at the same time decreases fiscal revenues reducing the range of options the government has in order to foster transition.

The aim of this paper is to give a brief overview why unemployment is high in transition, to clarify the relationship between unemployment and fiscal constraints, to analyze how things can go wrong and to evaluate the expectations of transitional unemployment presented in economic models. Therefore a short overview about the stylized facts concerning the labor markets and fiscal systems in reforming countries of CEE will be given. The following section gives some of the explanations of how high unemployment came into existence.

With the help of an economic model the interactions of reallocation of resources from the state sector to the private sector, evolving unemployment, the fiscal implications and the success of transformation will be analyzed. Having done so, the paper returns to the nature of unemployment and, in a more speculative mode, to an evaluation of the interactions in the presented model and other models of this kind.

### ***Some basic facts***

Transition in CEE has led to a U-shaped response of output, that is a sharp decline in output followed by recovery<sup>1</sup>. Ex ante the expectations were more optimistic however. The existing distortions in the old system and the expectation of a fast removal of these distortions were the reason for the optimistic point of view that GDP had to grow right at the beginning of transformation.

The real development instead revealed that (i) **reallocation** (i.e. a shift of resources from manufacturing to services and trade, etc.) and (ii) **restructuring** (i.e. existing firms need to change their production lines, to close old plants and build new ones) need time.

What effect has had the u-shaped evolution of GDP to the labor market?

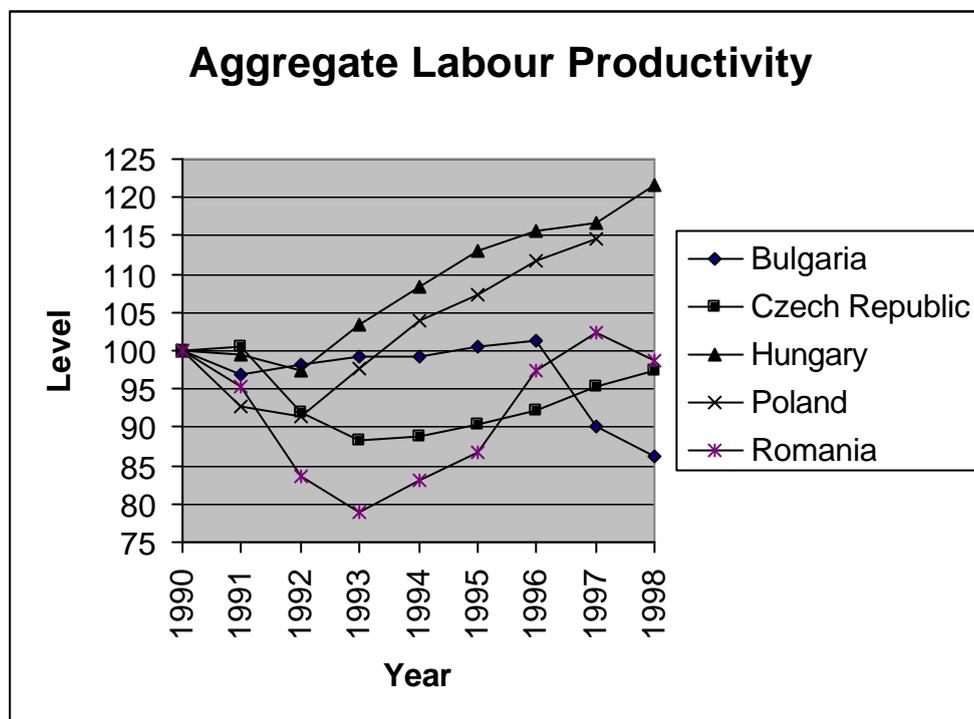
Observing the evolution of the aggregate labor productivity (graph 1), two facts clearly emerge: An initial decline at the beginning of transition, followed by a large increase since then. Exceptions are Bulgaria and Romania with their rather unsuccessful transformation, especially the unsolved problems of state firm restructuring (e.g. EBRD (1998), p. 158 and 184). More surprisingly is the poor productivity performance of the Czech Republic, the

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<sup>1</sup> Regarding this development KORNAI (1994) used the expression “transformational recession” to make clear that the output decline in CEE should not be thought of as a conventional recession.

country which is often perceived as having made more progress – especially in terms of privatization - than the others.

**Graph 1: The evolution of aggregate labor productivity in CEE**



Source: EBRD (various issues).

Reasons for that development are:

- A sharp drop in sale and typically employment lags behind: Labor hoarding initially (and even pre-transitional) and therefore low productivity.
- The fact that productivity recovered to a higher extent than output has a simple implication: the evolution of employment looks worse than that of output.

The strong performance of productivity leads to an unemployment picture which looks substantially worse than that of output although there are tendencies for a decline of the unemployment rates. But much of the decline can be accounted for by expiration of benefits and the fall in the number of registered unemployed as well as continuing shifts in non-participation (see COMMANDER and TOLSTOPIATENKO (1997)).

Graph 2 underestimates the scope of unemployment, because of early retirement programs and a general decrease in participation rates (black market participation increases). To show this it is useful to look at the following equation. Let  $P$  be the population of working age,  $N$  be employment,  $U$  be unemployment, and  $O$  be non-participation. Then:

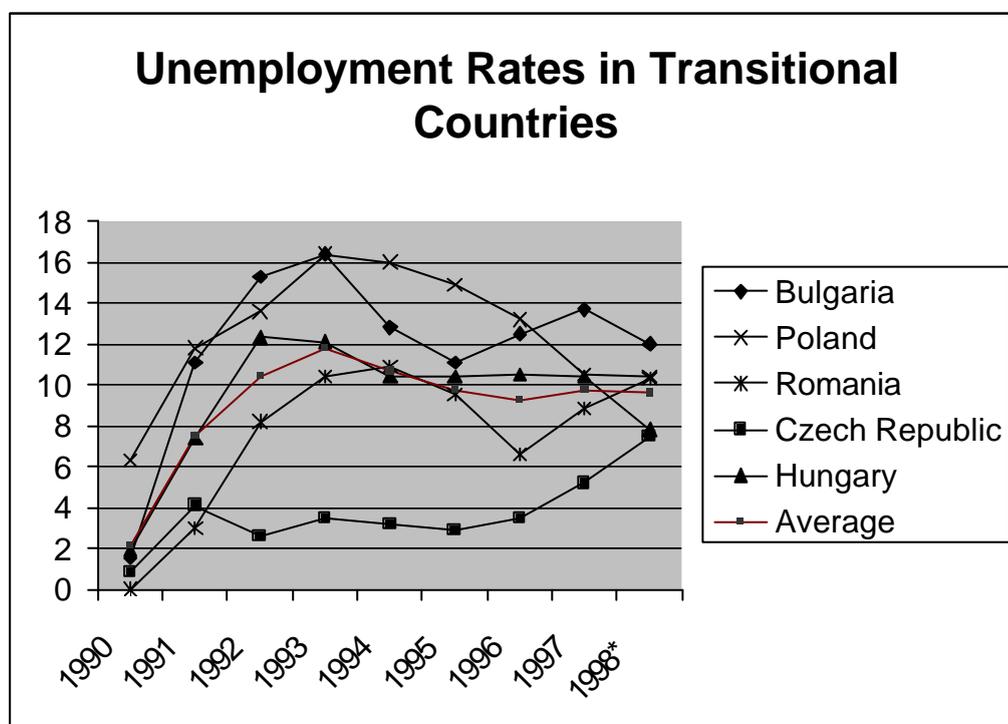
$$\Delta P = \Delta N + \Delta U + \Delta O$$

$$X := \Delta U / (\Delta P - \Delta N), (\Delta \text{ means: } 1989-1994).$$

A  $X$ -value of 1 indicates that the entire adjustment has shown up in unemployment and a value of 0 indicates that the entire adjustment has shown up in participation rather than in unemployment. BLANCHARD (1997, p. 11) finds 0.85 for Poland, 0.41 for Hungary and 0.27 for the Czech Republic. Thus, an important part of the reason why Czech unemployment rate has been so much lower than those of the other countries is that much more of the adjustment has taken the form of a reduction in participation (another reason, as we saw earlier, is that productivity growth has been lower than e.g. in Hungary and in Poland, leading to less of a decrease in employment in the first place).

**Graph 2: The evolution of unemployment in CEE**

Source: EBRD (various issues).



What fiscal implications does the evolution of unemployment in transitional countries have?

The transition has led to dramatic movements in both government revenues and spending.

**Table 1: Selected Countries in Transition: General Government (in percent of GDP)**

	1989	1994
<b>Bulgaria: Total Revenue</b>	59.8	38.0
Profit tax	23.2	7.2
Wage tax and social security contribution	13.7	12.8
VAT, excises and customs duties	10.9	13.1
<b>Czech Republic: Total Revenue</b>	69.5	51.2
Profit tax	11.0	6.2
Wage tax and social security contribution	21.9	22.5
VAT, excises and customs duties	19.5	14.4
<b>Hungary: Total Revenue</b>	59.6	53.3
Profit tax	8.1	2.0
Wage tax and social security contribution	19.8	20.7
VAT, excises and customs duties	18.9	14.9
<b>Poland: Total Revenue</b>	41.5	46.7
Profit tax	9.7	3.4
Wage tax and social security contribution	10.8	18.6
VAT, excises and customs duties	8.9	14.8
<b>Romania: Total Revenue</b>	51.0	31.4
Profit tax	7.3**	3.8
Wage tax and social security contribution	13.0	15.7
VAT, excises and customs duties	18.8	7.6
<b>Bulgaria: Total Expenditure</b>	61.5	45.0
Goods and services	24.1	15.2
Social security benefits	10.4	12.9
Capital expenditures	5.5	1.5
Subsidies	15.5	1.3
<b>Czech Republic: Total Expenditure</b>	72.3*	50.7
Goods and services	25.2*	25.1
Social security benefits	13.6*	13.7
Capital expenditures	8.5*	7.1
Subsidies	25.0*	3.4
<b>Hungary: Total Expenditure</b>	60.9	62.0
Goods and services	20.5	18.3
Social security benefits	14.4	17.6
Capital expenditures	6.6	6.6
Subsidies	12.1	4.5
<b>Poland: Total Expenditure</b>	48.8	48.7
Goods and services	10.3	10.4
Social security benefits	11.2	20.7
Capital expenditures	3.3	3.1
Subsidies	12.9	2.2
<b>Romania: Total Expenditure</b>	42.6	32.4
Goods and services	9.8	12.4
Social security benefits	9.5	10.5
Capital expenditures	17.6	4.4
Subsidies	5.7	3.8

Source: IMF (1996), table 19/20. \*Value of the former Czechoslovakia, \*\*value of 1990.

Some of the changes in spending and revenues are due to transformation per se, rather than to high unemployment. On the revenue side, the appropriation of rents by workers in state firms especially in Poland at the beginning of the process (which has led to the disappearance of profits in state firms) is an appropriate example. Thus revenues from profit taxation decreased dramatically. The emergence of the private sector has been no substitute, as private firms have reported little profits and as the governments of the reform states have been reducing

enterprise taxation to promote foreign direct investments and growth of the private sector (see EASSON (1999)). Other forms of taxation like a value added tax or a personal income tax had to be put in place and to compensate the loss of profit taxation.

But, in addition, lower output, using lay off and high unemployment have made budget balance much more difficult. Despite the tightening of unemployment benefits, expenditures on social benefits have increased. Declining generosity and the increasing pass-through of claimants from unemployment insurance to social assistance have been factors containing the direct fiscal cost of unemployment. But on the other side, as mentioned before, the reform countries have used early retirement programs to soften the lay-offs in the state firms. And indeed, the present problems of the pension system are rather due to the transformation process than to demographic developments: While the old age dependency ratio, defined as the population aged over 65 as a percentage of the working age population, remained fairly constant in the Czech Republic, Hungary and Poland between 1989 and 1995, there was an increase in the system dependency ratio, defined as the number of the claimants as percentage of the contributors, in the Czech Republic from 42.0 % (1990) to 61.0 % (1995), in Hungary from 47.0 % (1990) to 76.9 % (1996) and in Poland from 40.0 % (1990) to 61.3 % (1996) (see IMF (1998), p. 114).

Before reforms, profit tax had the lion share in total revenues. On the expenditure side, producer subsidies were very significant and state enterprises had an important role in providing social services and fringe benefits to their employees. After reforms, there was a major redistribution from subsidies to transfers, although unprofitable enterprises seem to receive support through “soft budget constraints”, including weak enforcement of bankruptcy and tolerance of tax arrears. Indeed, tax arrears are a kind of subsidy to loss-making firms. The fact that tax arrears grew more in countries in which tax pressure was stronger like Hungary and Poland in the beginning and mid-nineties (see SCHAFFER (1995)) tends to confirm the view that fiscal pressure was loosened, slowing down the pace for restructuring for a while in countries with high unemployment rates and attendant high social expenditures. Summing up, the transformation process has been associated with a deterioration of fiscal accounts. The changes have forced the countries to rely on a combination of new taxes, cuts in capital expenditures and budget deficits. Despite a clear need for more infrastructure, capital expenditures have been cut in every country. The main pressures for the budget came from growing social expenditures. High rates of social security contributions likely have affected the mushrooming of the second economy in CEE and therefore reduced the tax base.

### ***The evolution of transformational unemployment: theoretical explanations***

We have seen that there is huge unemployment in the transformation process. But is it just transitional or persistent? What have been the reasons for the evolution of unemployment in the reform process? In the literature three basic mechanisms can be found (see for the following BLANCHARD (1997)):

- 1. Reallocation**
- 2. Disorganization**
- 3. Restructuring**

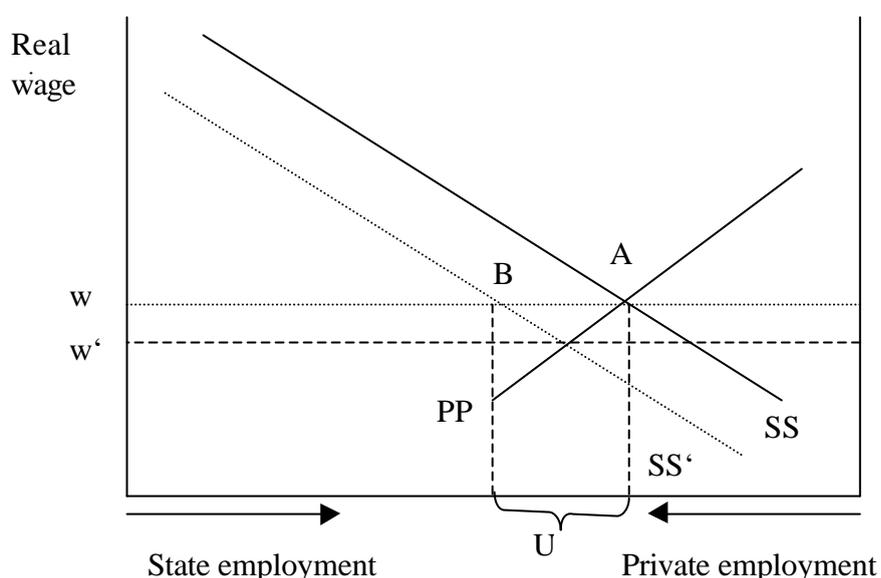
Think of pre-transition economies dominated by state firms, producing low quality goods. Think of transition as allowing for the production of better goods in private firms. **Reallocation** is therefore the process through which resources like capital and labor are reallocated to the new private sector.

The question is: Under what circumstances will reallocation lead to a sharp decrease in output and a sharp increase in unemployment?

This question can be answered by using a very simple two sector model where the state sector produces mediocre goods and the private sector produces better goods. The assumptions of the model are: Identical production functions with constant returns of scale; the two kinds of goods are perfect substitutes, up to a quality differential: one private good is worth  $(1+\theta)$  state goods,  $\theta > 0$ . Furthermore it is assumed that capital in both sectors is fixed in the short run.

In an economy without distortions only private goods would be produced. But the reality at the beginning of transition was that most of the produced goods were state goods. State production was subsidized and private production was subject to taxation or other restrictions. The transformation process eliminated subsidies and restrictions.

**Graph 3: Production and employment in the state and in the private sector**



The results of the elimination of subsidies can be seen in graph 3. This elimination shifts the SS curve, the labor demand curve of the state sector, to the left (SS' curve), because the labor demand shrinks, and at a given real wage the price for the state product is bound to fall. The PP curve (private sector labor demand) does not shift. The pre-transition-equilibrium is represented by point A and the new one is B. At a given real wage  $w$  the result is lower state employment, and thus an increase in unemployment from 0 to U. As long as the real wage does not decline to  $w'$ , transition leads to an initial increase in unemployment, unless real wages or interest rates decrease substantially.

If we accept this, two open questions remain: Why do wages not adjust avoiding unemployment? Why did the state remove the subsidies to state firms?

One part of liberalization is the removal of the support of inefficiently producing firms. And indeed, when prices were liberalized, budgetary subsidies to producers of the previously price controlled goods were eliminated relatively straightforwardly, precisely because prices were allowed to rise to market-clearing level. The data suggests that there was a substantial decline in subsidies in almost every reform country of CEE (see table 1).

Data also suggests that the consumption wage (nominal wage divided by CPI) decreased. This was not the case for the production wage (nominal wage divided by GDP deflator) which is relevant for the labor demand (see BLANCHARD et al. (1994), p. 63). Why do CPI and GDP deflator differ? The differences are due to the larger weight of food and housing in consumption, and the presence of imported goods in consumption and not in GDP. If one can trust the data then the assumption of a constant real wage seems quite realistic.

But what happened to the restrictions/taxation of the private sector goods? A lifting of taxation would have led to a shift of the PP curve to the left and therefore to an increase in private sector employment. The abolishment of the restrictions to produce privately actually took place, but obviously this effect did not compensate the negative employment effect of the subsidy removal.

What conclusion can we draw by introducing the fiscal implications within this simple model? On the one hand, the elimination of subsidies improves the budget balance. On the other, if the removal of subsidies causes unemployment and unemployment is accompanied by unemployment benefit then it is not sure that the budget will improve. What is the condition for an improvement of the budget? The subsidy rate  $f$  pre-transition is equal to  $q$ , otherwise only private goods would have been produced. Therefore the amount of subsidies is equal to  $fP_S Y_S$ . Let  $B$  be the unemployment benefits per worker; then after transition and the

disappearance of the state sector unemployment benefits are equal to  $BN_S$  or equivalently  $(B/W)WN_S$ . Then, transition leads to an improvement in the budget position if and only if the rate of subsidies is such that

$$q > a \frac{B}{W}$$

This condition may well fail. It is more likely to fail the lower the quality differential of private goods, the higher the share of labor in production, and the higher the ratio of unemployment benefits to the wage (the “replacement rate”). If it fails, the elimination of subsidies leads to a deterioration of the budget under these extreme assumptions.

Another explanation for transformational decrease of output and unemployment is the so called **disorganization**. When central planning ended, production in the state sector was organized around bilateral relations between state firms. Typically firms had only one supplier for each input or one buyer for each output. Once the central planner disappeared, large disruptions appeared: If for example one supplier does not deliver and the production function of the producer is of Leontief-type, production may come to a stop.

To emphasize this argument one can use a small model by BLANCHARD (1997): Think of a state firm which needs  $n$  inputs in order to produce  $n$  units of output if all inputs are available, otherwise output is equal 0. Each input is produced by one supplier. Each supplier has an alternative use of input, with value  $c$ . Think of  $c$  as a private alternative. Think of transformation as leading to an increase in  $c$ : transition allows suppliers to consider alternative uses.

This structure implies that the state firm faces  $n$  bargaining problems, one with each of its supplier. State firm production will take place only if the firm can convince each one to supply.

Why might bargaining fail even when it is efficient to produce in the state firm?

One reason is asymmetric information: The firm may not know what alternative opportunities each supplier has. The specific realization of  $c$  (the alternative use of each input) is private information to each supplier. The state firm instead announces the price as a take-it-or-leave-it-price to each supplier. If the price exceeds the reservation price of all suppliers then production takes place in the state firm. Otherwise it does not, and all suppliers use their own private opportunity.

The results are: Pre-transition suppliers face poor alternative opportunities so that the state firms can offer a price which does not allow to a better alternative than to supply. Not knowing which suppliers are bluffing and which are not, the state firm has no choice other

than to offer a given price taking the risk of not getting the inputs. The result can be a decrease in total production, triggered by the improvement in private opportunities. This suggests that the disappearance of the central planner and the appearance of new private opportunities are associated with the initial output and employment decline. The problem of the state firm comes from the inability of the firm and its suppliers to divide efficiently the rents from production. One way to avoid some of the inefficiencies is through long-term relations. The prospect of repeated interactions in the future gives both sides an incentive to be more truthful, to achieve a more efficient outcome today<sup>2</sup>. Transition is precisely the type of environment in which long-term relations play only a limited role: suppliers who know that state firms will either close or, at least, restructure and change many of their suppliers may have little incentives to behave other than opportunistically. Empirical evidence of the phenomenon of disorganization has been the so called CMEA shock, which means the abundance of the previous system of trade between Central and Eastern European countries and the near-collapse of trade among them.

Beside reallocation and disorganization there is another important dimension to transition, namely the **restructuring** of state firms. If they are to survive at all, state firms must change in fundamental ways: Because of the incentives of central planning, state firms were too large, they were too vertically integrated, their products were of poor quality and there was considerable hoarding of inputs, including labor. Thus, they must redefine their product line, close plants which are no longer needed and lay off the workers in those plants.

The question is, under what circumstances will restructuring, regarded as productivity improvements in state firms, lead to a decrease in state sector employment and under what conditions will it lead to a decrease in overall employment?

The question of how productivity improvements in one sector will affect employment in that sector and employment in the economy as a whole is an old one in economics. The modern answer has been revisited in a general equilibrium context by COHEN and SAINT-PAUL (1994). It goes as follows. State firms will shed labor if the demand for the output of the state sector is sufficiently inelastic. If the elasticity of state goods and private goods is low enough, the demand for state goods will be inelastic. An increase in productivity will lead to an increase in output but not enough to avoid a decrease in employment in the state sector. What will happen to employment in the private sector? At a given real consumption wage, the price of state goods will allow private firms to pay their workers less in terms of private goods. The demand

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<sup>2</sup> This is one of the results of game theory; one can think of suppliers here also as workers. In an end game when there is asymmetric information about the workers own effort there is a Nash-equilibrium in the sense that the workers try to shirk because there is no threat if shirking is noticed.

for labor in the private sector therefore will go up. Whether it will go up enough to offset the decrease in employment in the state sector is ambiguous; it depends on the elasticity of the demand for labor in the private sector.

To summarize, these explanations tell a story why unemployment is unavoidable and a consequence of the transformation process but not why it could be necessary in a certain amount for its success and how the future development will be.

### ***A model***

This section briefly describes a model of reallocation of labor from the declining state sector to the private sector developed in CHADA and CORICELLI (1994)<sup>3</sup> and highlights the role of unemployment in this process. Thereby unemployment is regarded as transitional and might be considered as a summary indicator of the role of restructuring the economy<sup>4</sup>. It acts as a support device for both the speed and the success of reforms. But when it reaches a certain amount it can jeopardize the success of the whole process due to fiscal pressures which are becoming stronger while the transition progresses. The model stresses the economic view that unemployment in the transition process is assumed to be transitional (a by-product of the process) and even necessary for the whole process.

### **General Assumptions**

- There are two sectors (state and private), each producing a basket of traded goods; the prices are determined by the world market.
- The transition process is viewed as the release of factors of production from a declining state sector to an expanding private sector.
- Labor is the only input; the labor supply is assumed to be constant and normalized to equal unity.

### **State sector**

The state sector is represented by a labor dominated firm, i.e., a firm controlled by a worker council.

The worker council has the objective function: (1)  $V_t = L_t^1 [W_t^1 - (d_t B + (1 - d_t) W_t^2)]$

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<sup>3</sup> The model is related to work by AGHION and BLANCHARD (1994), BURDA (1992) and by CORICELLI (1996).

<sup>4</sup> Using the EBRD classification of countries on the basis of the speed of reform, one can illustrate an interesting difference between “fast” and “slow” reformers: “Fast” reformers (Czech Republic, Hungary, Poland and the Slovak Republic) display a significant higher ratio of unemployment rates to GDP growth in the first years of transition (1989-1993) than “slower” reformers (Bulgaria and Romania) (see EBRD, various issues). This could be interpreted as an indication of the positive correlation between unemployment and structural change during the transition. However, the presence of the Czech Republic in the “fast” reformer group represents an important exception.

where  $L_1^t$  ( $L_2^t$ ) denotes the share of labor employed in the state (private) sector,  $W_1^t$  ( $W_2^t$ ) the real wage paid in the state (private) sector expressed in units of the private sector good,  $B$  the exogenous level of unemployment benefit,  $d_t$  the probability that a worker laid off from the state sector remains unemployed and  $(1-d_t)$  the probability that he obtains employment in the private sector.

The worker council, hence, maximizes the expected difference between its members income and what they would earn if they left the state sector (reservation wage).

The restriction is a production function with diminishing returns to labor:

$$(2) \quad Q_t^1 = F(L_t^1) = (L_t^1)^b \text{ mit } 0 < b < 1.$$

The worker council maximizes its objective function with respect to wages and employment subject to a zero profit condition: (3)  $(1-t)PQ_t^1 - W_t^1 L_t^1 = 0$

According to the fact that most of the tax revenues are resulting out of the taxation of state sector firms rather than of private firms, only the sold products of state owned firms are taxed<sup>5</sup>.

Maximizing (1) with respect to the restrictions (2) and (3) yields the employment rule in the

$$(4) \quad F'(L_t^1) = b(L_t^1)^{b-1} = \frac{1}{(1-t)P} [d_t B + (1-d_t)W_t^2]$$

### Private sector

The private sector is characterized by multiple firms where employment and wage decisions are determined purely by profit maximizing considerations. Unlike the state firms, private firms have no benefit from maintaining employment high and are free to fire workers. Worker effort is endogenously determined by an efficiency-wage mechanism, which is expressed as an increasing function of the premium of wages over the unemployment benefit, and of the rate of unemployment  $U$ . Output is produced by a technology of the C.-D. type, with diminishing returns to labor measured in efficiency units:

$$(5) \quad Q_t^2 = H_t [E(W_t^2 - B, U_t) L_t^2]^a \text{ where } 0 < a < 1 \text{ and } E(0, U_t) < 0 \text{ for all } U_t.$$

One can see that the unemployment rate works as a disciplinary device and helps increasing private sector wages by inducing more efforts and therefore raising the marginal product. A byproduct of the premium wages is that a high wage produces unemployment and unemployment itself reduces the pressure on wages in the short run.

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<sup>5</sup> There is an obvious downward trend in revenues of enterprise income taxation in almost every reform country of CEE (see EBRD, various issues). DABROWSKI (1997) emphasizes that "... in the beginning of reform the state sector firms seemed to show greater tax discipline than the private sector ...".

The workers reservation wage consists of the unemployment benefit, this is due to the assumptions that a fired worker from the private sector could not be hired in the state sector. In simple words, once you are dropped out of the state sector it is impossible to return. The employment rule of the private sector follows as:

$$(6) \quad L_t^2 = \frac{[aH_t]^{1-a} [E(W_t^2 - B, U_t)]^a}{[W_t^2]^{1-a}} \Rightarrow L_t^2 = L^2 \left[ W^2 \left( U_{-t}, B \right), U_{+t}, H_{+t}, B \right] = L^2 \left( U_{+t}, H_{+t}, B \right)^6$$

### General equilibrium

The private sector randomly selects the desired workers from the pool of unemployed. The probability that a worker laid off from the state sector is employed in the private sector is defined by

$$(7) \quad 1 - d_t = \frac{L_t^2}{U_t + L_t^2}$$

The higher the share of the private sector the higher the probability to be employed in this sector. Substituting (6) and (7) in the labor demand equation of the state firms (4) gives

$$(8) \quad L_t^1 = L_t^1 \left[ U_{+t}, W_{-t}^2(U_{-t}), L_{-t}^2(U_{+t}, H_{+t}, B), (1-t)P, B \right]$$

State sector employment is thus a decreasing function of human capital in the private sector and of unemployment benefit, but an ambiguous function of unemployment. On the one hand labor demand in the private sector increases with unemployment (disciplinary device) and on the other unemployment makes the reluctance for the worker council stronger to restructure. Under certain conditions the labor demand is a positive function of unemployment <sup>7</sup>

$$(9) \quad L^1 = L^1 \left( U_{+t}, H_{+t}, (1-t)P, B \right)$$

General equilibrium in the labor market is defined by

$$(10) \quad L^1 \left( U_{+t}, H_{+t}, (1-t)P, B \right) + L^2 \left( U_{+t}, H_{+t}, B \right) + U_t = 1$$

When initial conditions are characterized by a large share of state sector employment and by low unemployment, the above function can be expressed as a UH-curve which is hump-shaped (see figure 1 in the appendix).

<sup>6</sup> The + and – mean the effect of a marginal change of the independent variable on the dependent variable.

<sup>7</sup> The condition is that the elasticity of workers effort in the private sector with respect to unemployment is less than a positive constant (see CHADA, CORICELLI and KRAJNYAK (1993)).

## Growth, restructuring and the dynamic path of the economy

The driving force for the restructuring and the reallocation from the state to the private sector is an assumed faster (potential) rate of productivity increase in the private sector. Two cases are possible: First a neoclassical exogenous productivity growth process, where employment and production will be restructured towards private sector's goods so that a successful transformation will be the only possible outcome. Second an endogenous growth model, where human capital is acquired through learning by doing of the working force.

$$(11) \quad \frac{\dot{H}_t}{H_t} = \mathbf{q}$$

The process is presented in figure 1 (appendix): On the left hand-side of the peak unemployment rate, both unemployment and human capital are increasing. Since the private labor demand is an increasing function of both, it must be expanding. Since private labor demand and unemployment are expanding, the remainder, state sector labor demand, must be shrinking. Since state employment is an increasing function of unemployment and a decreasing function of human capital, employment in the state sector will be shrinking at the right side of the peak of unemployment rate. Since unemployment and state sector employment are falling, the remainder of the labor force, private employment, must increase. This is the expectation of the "typical" development of unemployment in systemic transformation.

In the early stages of the transition process, the analysis shows that the speed at which the private sector absorbs labor is slower than the state sector sheds labor, leading to a rise of unemployment. In the later stages the opposite is true and unemployment disappears up to a natural rate of unemployment.

Consider now the case when growth is endogenous. Suppose that skills or human capital specialized in the production of the private sector are acquired via a learning-by-doing-mechanism. The growth of the skill level is posted to be a function of the resources devoted to the production of the private good.

$$(12) \quad \frac{\dot{H}_t}{H_t} = (\mathbf{q}_1 + \mathbf{q}_2) L_t^2 \left( U_{+t}, H_{+t}, B_{-t} \right) - \mathbf{q}_2$$

The rate of growth is a positive function of both pure speed of learning parameters  $\mathbf{q}_1$  and  $\mathbf{q}_2$  in the state and in the private sector, and the resources devoted to producing the private good. The equation implies that there will exist distributions of the labor force between the two sectors such that the ratio of skill levels remains constant over time: the effect on the growth

of the relative skill level of a smaller share of labor in the private sector is offset exactly by the higher speed of learning in that activity. The locus of these points can be plotted as a function of human capital and unemployment: the downward sloping  $\dot{H} = 0$  curve in figure 2 (appendix). To the right of the locus, human capital increases continuously while to the left it falls continuously. The UH curve in figure 2 represents the equilibrium of the economy at each point in time. The production possibility curve will shift out over time with experience gained by the labor force in favor of the private sector good. There are now no forces in the system that would necessarily place the economy on a path converging to eventual specialization in the private sector good. There is thus a clear role for the government to ensure reallocation: policies that allocate labor towards the private sector.

We conclude that with these assumptions the possibility of a successful reform increases the higher unemployment is at a given level of human capital (figure 2).

### Fiscal pressures

The role of unemployment in this process becomes clearer if one considers the role of the state budget or fiscal constraints.

Suppose that only the state sector good is taxable (with an exogenous tax rate) and that the expenditures of the government consist of the assumed constant unemployment benefits  $B$ . Then the budget balance is given by

$$(13) \quad D_t = tPQ_t^1 - BU_t$$

As figure 3 in the appendix suggests, the transition process can entail a considerable deterioration in the budget balance as the traditional base for government revenues declines and expenditures for unemployment benefits rise.

Endogenizing the state sector tax rate<sup>8</sup>, one can show that with respect to the equilibrium in the labor market and if unemployment benefits play a quantitatively important role, an improvement in the budget balance requires a policy that attempts to maintain the state sector. That means lowering the tax rate in SOE, by reducing the outflow of workers from the state sector and thus lowering the unemployment rate<sup>9</sup>. This directly reduces government expenditures on unemployment benefits<sup>10</sup>.

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<sup>8</sup> KORNAI (1992) discusses the existence of soft taxes in SOE, which are negotiated between the government and the enterprises.

<sup>9</sup>This might be an explanation of the modest outflow rates of the unemployment pool in transitional countries.

<sup>10</sup>You can compare that with the results of the Laffer-curve.

### Fiscal pressures and the dynamics of the transition process

We've seen that an improvement in the budget balance requires a lowering tax rate. What consequences does now a change of the tax rate to the unemployment rate have? A once-and-for-all decrease in the tax rate shifts the UH-curve down:

$$(14) \quad \left. \frac{dU}{dt} \right|_{UH} = \frac{\left( -\frac{\partial L^1}{\partial t} \right)}{\left( \frac{\partial L^1}{\partial U} \right) + \left( \frac{\partial L^2}{\partial U} \right) + 1} > 0$$

Since unemployment is now lower at each level of H, the wage paid in the private sector is higher (the disciplinary device is shrinking), and employment in the private sector shrinks. Since unemployment and employment in the private sector are lower the remainder of the labor force, the employment in the state sector, must be higher. The speed of transition is thus lower.

Endogenizing the tax rate: With respect to (14) the government budget constraint can be expressed as

$$(15) \quad tP[L_t^1(U, t, H_t)]^b - BU_t \left( t, H_t \right)_{UH} = \bar{D}$$

The required movement in the state sector tax rate necessary to maintain budget balance, as private sector human capital accumulates, is given by

$$(16) \quad \frac{\partial t}{\partial H} = \frac{tb(L^1)^{b-1} \left( \frac{\partial L^1}{\partial H} \right) - B \left. \frac{\partial U}{\partial H} \right|_{UH}}{B \left( \frac{\partial U}{\partial t} \right) + Q^1 \left[ \frac{t}{Q^1} \left( -\frac{\partial Q^1}{\partial t} \right) - 1 \right]}$$

This expression is negative at the beginning of transition process to maintain budget balance as H increases.

To illustrate the effects of budgetary pressures on the transition process, figure 4 presents the effects of a small constant improvement on the path of the budget balance when private sector activity is assumed to grow exogenously over time. The lower tax rate on the state sector necessitated by the improvement in the budget balance raises employment in the state sector and lowers unemployment. If wages and employment in the private sector are responsive to the level of unemployment, private sector employment will be lower and the speed of transition will be slower.

If the process of skill accumulation is endogenously determined budgetary pressures that create incentives to maintain the state sector can not only slow down the transition process,

they can jeopardize its eventual outcome. For low levels of human capital high unemployment rates are necessary to place the economy on a path leading to specialization in the private sector good. On the other hand, at high levels of human capital, a low level of unemployment may be sufficient for eventual specialization in the private sector good. A reduction in the tax rate on the state sector shifts the UH-curve down in figure 5. Skill levels which are previous levels of human capital implying convergence to private sector production, now imply with lower unemployment rates and the new UH'-curve, and could lead to state sector production.

What can we learn about the modeling of the transition process and the implicit role of unemployment?

Unemployment in this model is on the one hand harmful because it creates fiscal pressures on the expenditure side and it can therefore lead to a decrease in the activity of reallocation and restructuring. On the other hand it functions as a disciplinary device to increase the effort of workers and to create new jobs in the private sector. Higher unemployment tends to moderate wage demands. In the case of endogenous growth it acts even as a job- and human-capital-creating-device in the private sector and it is therefore crucial for the success of the whole process. This mechanism becomes even more obvious if the transformation process is accompanied by budgetary pressures and if there is reluctance to restructure the state sector and to reallocate labor from the state to the private sector.

### ***Another point of view***

The process of systemic transformation in Central and Eastern Europe potentially entails budgetary costs as the traditional tax base shrinks and the expenditures rise due to increasing unemployment. The presented model helps explaining this process. Here the role of unemployment is presented in a more optimistic view. Like the other related models it stresses that there is a strong relation between unemployment and the wage in the private sector and therefore private job creation. A point of view which was predominant in economic thinking of western economists and which tells, maybe, just one side of the story. Nevertheless it shows how fiscal interactions can induce a high unemployment trap and slow recovery from the initial shock. There is an optimal speed of job destruction compatible with successful transformation. But it does not explain the nature or better the persistence of "transitional" unemployment.

A high unemployment rate is consistent with two different labor markets: a highly active labor market in which many workers go through unemployment on their way to better jobs. But on the other side one has also to account the fact that transformation has led to high

unemployment, and high unemployment rapidly becomes a stagnant pool, where the unemployed have little hope of finding a job quickly.

Indeed, the private sector growth proved insufficient to equilibrate this. Inflow to unemployment has been low despite of the output reduction at the beginning of the process (maybe as a result of fiscal pressures), but outflow from unemployment to a private sector job was even lower (see COMMANDER and TOLSTOPIATENKO (1997)). Furthermore, outflows from unemployment tend to be dominated by exits from the labor force resulting in high dependency ratios and rising tax burdens (see CEPR (1998), p. 6). Large cuts in benefits have only accelerated this trend, but have not themselves led to significant job creation. Private employers have preferred to hire workers employed in the state sector and to pay them relatively high wages rather than to recruit at lower cost among the unemployed.

As a consequence of this development the share of long-term unemployment is high, roughly 50-60 % in most countries (see CEPR (1998), p. 6). And the recent recovery of output has not resulted in much employment growth.

**Table 2: Growth and employment in CEE**

Country	Time period	Real GDP growth (%)	Employment growth (%)	Employment elasticity of growth
Czech Republic	1993-1996	12.0	-1.1	-0.1
Hungary	1993-1996	5.0	-5.0	-1.0
Poland	1992-1996	22.7	-1.7	-0.1
Romania	1994-1996	17.4	0.0	0.0

Sources: OECD-CCET Labor Market Database and Short-Term Economic Indicators for Central and Eastern Europe, various issues.

Table 2 documents this “jobless growth”. At the same time economic growth has been accompanied by significant real wage growth, not only in the low-unemployment Czech Republic, but also in countries like Poland and Hungary with very high unemployment rates (see CEPR (1998), p. 46.). This suggests a deficient competition for jobs between insiders and outsiders, thereby preventing unemployment from exerting significant moderating effects on wage growth. Thus, a central issue for analyzing labor markets in transition must be: how re-employable are the unemployed in these countries?

Beside the questions of the characteristics of the outsiders (human capital) and the role of wages a central issue in this context is the regional mismatch and the mobility of the workers. And indeed the regional distribution of unemployment and vacancies is heavily unbalanced (see i.e. BOERI and SCARPETTA (1996)). This is due to the giving concentration of leading

industries at the start of transition, agglomeration effects on the development of a service and retail infrastructure, the collapse of agricultural output and the housing shortages.

### ***Conclusion***

Whether the pool of unemployed could fulfill its role to create more efforts in the private sector or not is difficult to answer. Those having lost their jobs are often considered not to be “high quality” workers (unemployment was regarded as a social stigma and couldn’t play its role as a disciplinary device). Also, when a private firm started to spin-off from the public sector, the new entrepreneur may be keen on bringing with him his former colleagues.

Economic modeling of the fiscal interactions of unemployment in the transition process is a good instrument to illustrate the differences in labor markets of the reform countries and those of western countries. Several models have analyzed the transition process by focusing on endogenous feedback from job destruction to job creation. In the context of the model presented in this paper among other things unemployment was regarded necessary for the success of transition or in particular to foster job creation in the private sector. The reality especially in Hungary and Poland which is characterized by high unemployment rates, low hiring rates of the private sector out of the unemployment pool and a relatively high private sector share in overall production does not really reflect this more optimistic view about the role of unemployment.

Summing up, unemployment in the transformation process was unavoidable but not necessary to that degree and in its nature. Due to its fiscal impacts, especially the fiscal ramifications of the low dependency ratios and the resulting higher taxes on labor, it seems to be more an obstacle than a device in order to create new jobs.

Appendix

Figure 1. Dynamic Path of Economy with Exogenous Accumulation of Human Capital.

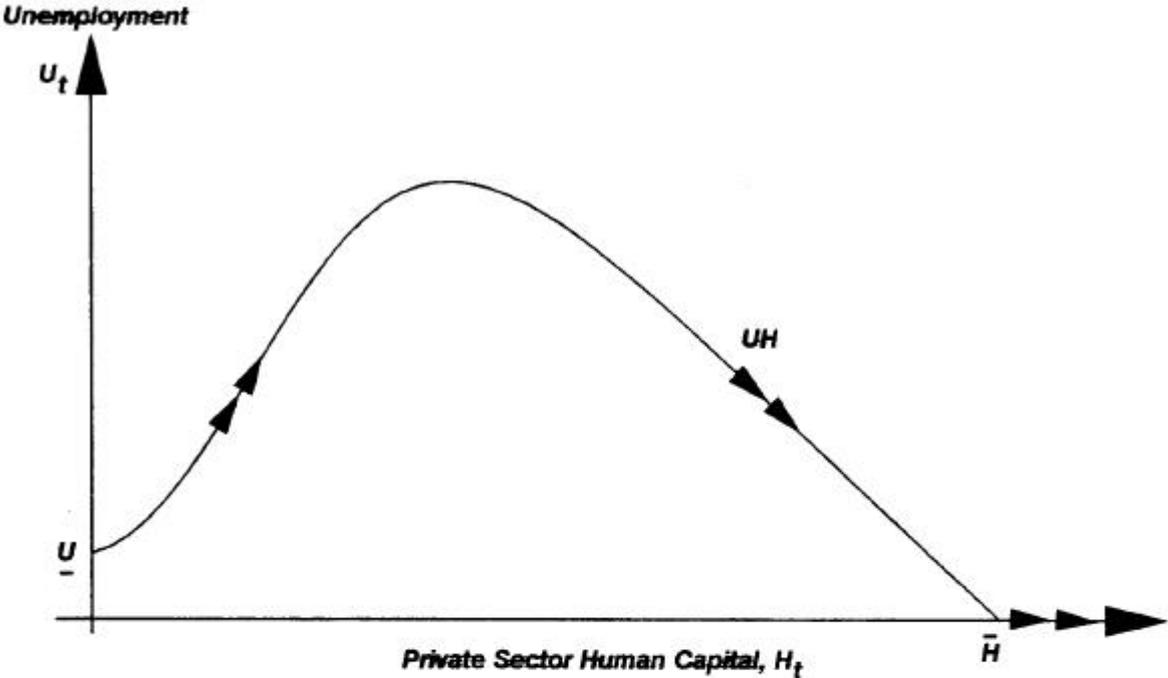
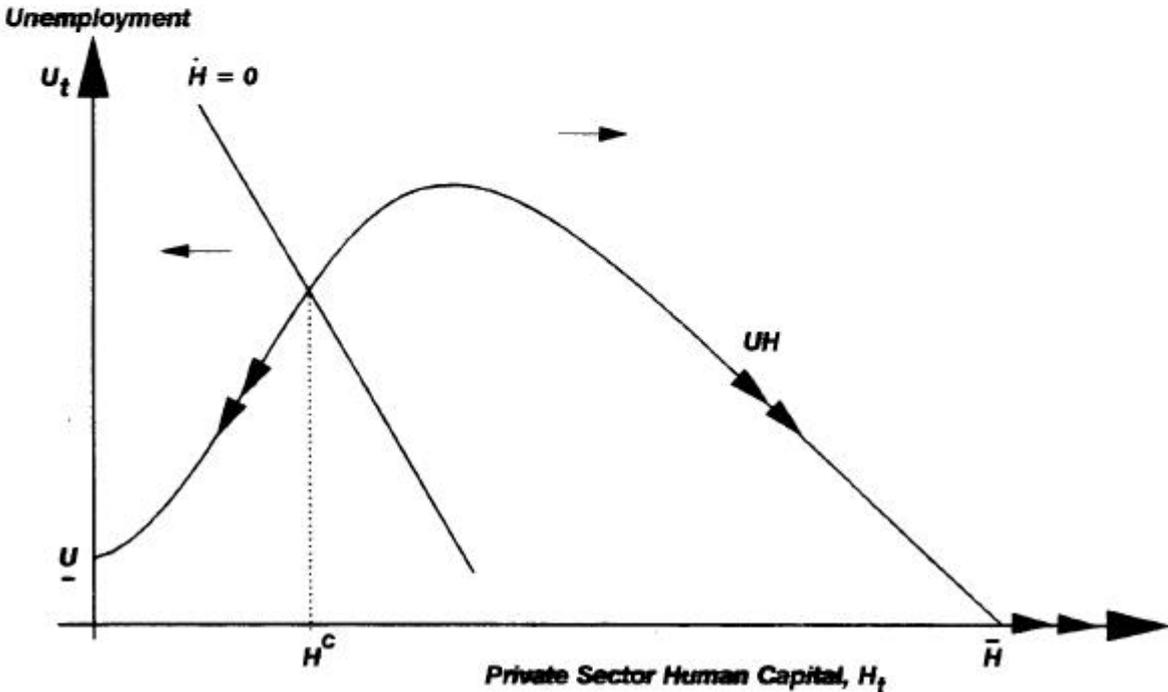
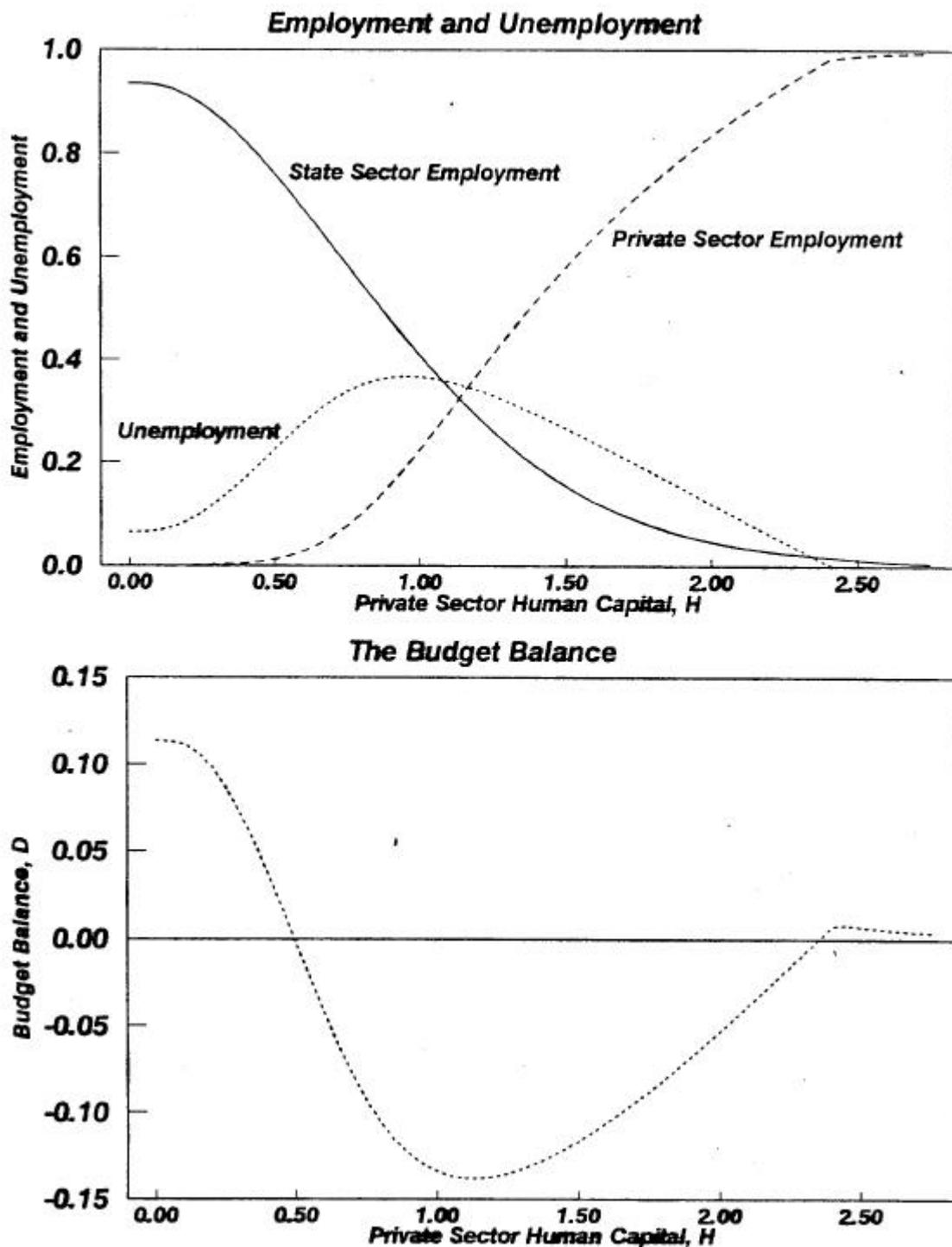


Figure 2. Dynamic Path of Economy with Endogenous Accumulation of Skills.



**Figure 3. Employment, Unemployment and the Budget Balance During the Transition Process.**



**Figure 5. Dynamic Path of Economy with Improved Budget Balance and Endogenous Tax Rate**

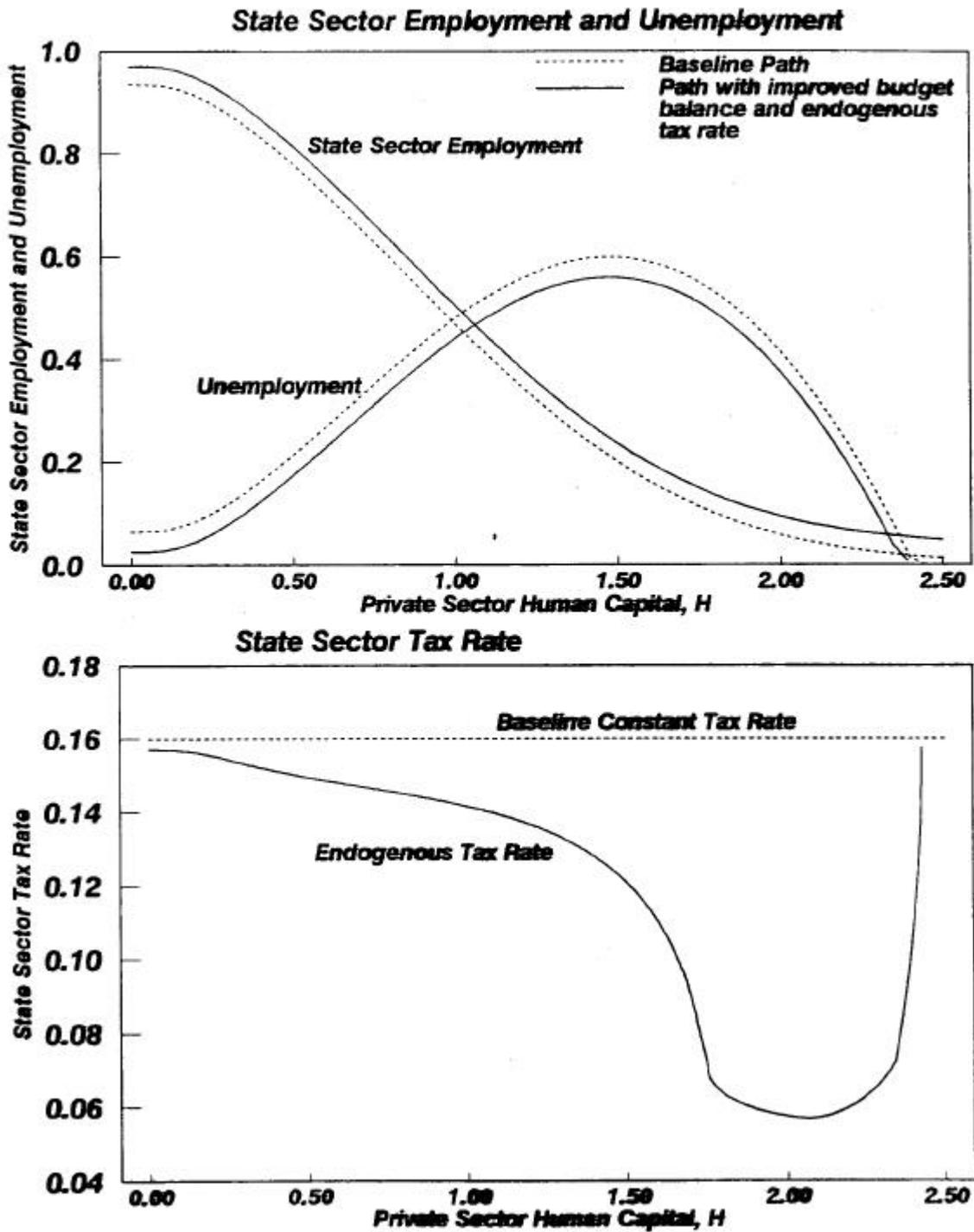
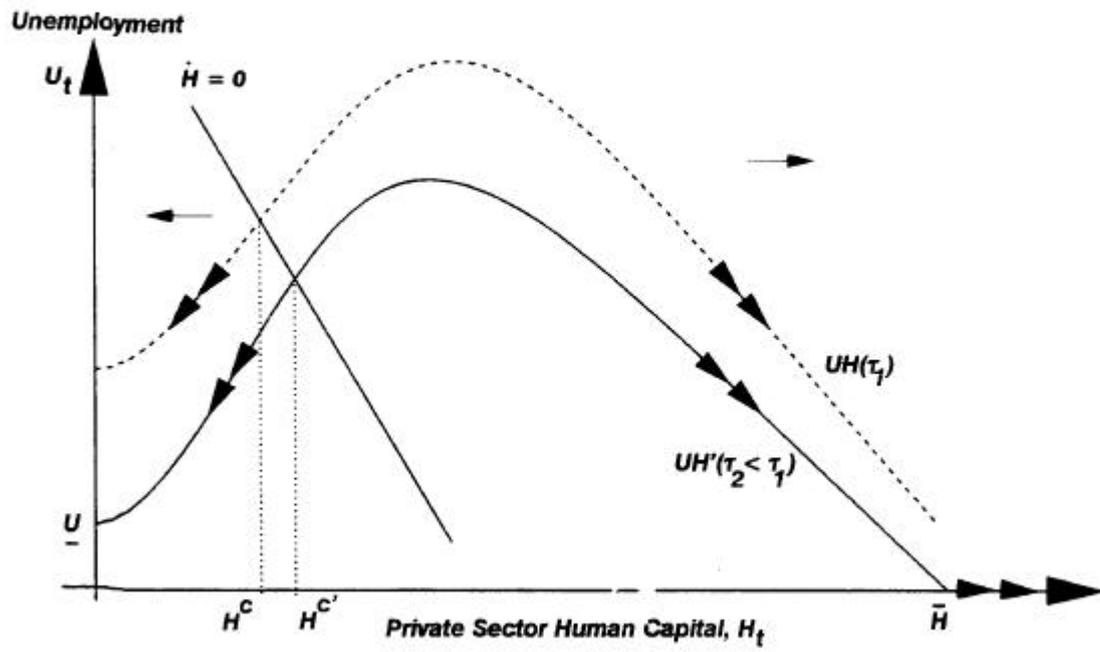


Figure 6. Decrease in State Sector Tax Rate with Endogenous Skill Accumulation.



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