

A distressing effect of an EMU Eastward Enlargement: Fiscal policy interaction with structural adjustment

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Abstract:

The proposal of long-term EMU enlargement imposes - willingly or not - a fiscal constraint on transition governments today. However, exaggerated fiscal discipline might feed into the privatisation process, potentially resulting in slow privatisation and restructuring of transition enterprises. The mechanism at work is the following: The government designs the privatisation program, yet may find it self in a fiscal squeeze. Namely, restructuring relocates costs from firms to the public budget, nevertheless it wants to keep the deficit within narrow limits. This problem is analysed within a stylized, dynamic model. The paper finds that EMU type fiscal discipline in early stages of transition can delay or halt privatisation. A different sequencing of policy can remedy the problem.

Key Words: Restructuring, Privatisation, Government Deficit, Transition

JEL classification: H69, L33, P41

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1. Introduction

Those transition governments aiming at swift membership of the European Union have adapted a fiscal policy stance that is driven by an ambition to fulfill EMU membership criteria. Such policy might be advisable and adapted in any case for the well known reasons, however, it might also have potentially harmful effects on the transition government's ability to sustain speedy privatisation. In fact, incomplete privatisation and a low speed of restructuring of firms, be they privatized or not, is a prominent characteristic of many transition economies. Even privatized firms continue to employ excessive amounts of labour and provide a host of social functions. The point of this paper is that such inefficiencies, though undesirable from a micro perspective, might be tolerated by transition governments because removing them would strain the public budget. Comprehensive accounts of privatization and continued inefficiencies, such as overmanning can be found in World Bank [1996], EBRD [1999], Aghion and Burgess [1994], Lieberman et al. [1997], Aukutsionek [1997] and Commander and Schankerman [1997].

The actual restructuring speed in a transition economy - e.g firing of excess labour - is indirectly determined by the privatisation program of the government, because the firm decision to restructure or not depends crucially on its ownership form, i.e. its corporate governance structure in interplay with outside incentives, e.g. tax rules. In this paper it will be demonstrated that EMU type fiscal discipline may constitute a decisive structural barrier to effective privatisation - causing governments to privatise slowly and/or in an inefficient manner.

The mechanism at work is as follows. To create the opportunity for future EMU enlargement the government attempts to keep the public deficit within narrow limits.¹ Also, the transition government is expected and advised to perform a fast and effective privatisation of the economy in order to create the basis for growth. However, there is an inherent conflict between a low budget deficit and effective privatisation, or put differently between macroeconomic stabilization and structural adjustment. Privatisation of SOEs - resulting in restructuring - stretches the government budget. In regard to expenditures, firms scrap social functions that have to be taken over by the state and more importantly excess labour is freed hence, government expenditure on unemployment rises. Concerning revenues, the initial tax base is shrinking while the reorientation of the incentive structure typically includes a lower than average tax on profits. Accordingly, the government is left in a fiscal squeeze.² The government cannot 'afford' to let firms restructure in an effective manner. Thus, the endeavour by transition countries to near balance the budget and to privatise the economy fast and effectively - in that order - is unfeasible. As the present paper will show, in opposite order the two policy goals are no longer in conflict. Several other authors have identified conflicts between fiscal discipline and structural adjustment. For example Tanzi [1993] highlights the various effects transition has

on the government budget. Boeri, Burda and Köllö [1998 - especially chapter 4] emphasize the risk of a fiscal trap in transition. They present evidence of the growing expenditure burden from unemployment. Blanchard [1997 - chapter 4] formalises what he calls the unemployment trap, where growing unemployment results in rising taxes, which in turn reduces employment creation in the private sector. For an account of the various ways in which the euro in particular affects the enlargement process and the applicant countries see Köhler and Wes [1999].

The present paper employs a stylized dynamic model from Schröder [2000]. The model captures the issue in an optimal control framework, where the government wants to privatise as fast as possible, subject to the deficit limit as set by an ambition for future EMU eastward enlargement. The model demonstrates how a conflict emerges from the interaction of the privatised sector and the public budget. The effect of a narrow budget limit can - within the model - impede the restructuring process or even result in an only partially privatised economy. The sequence of policy, and the ratio of wage to profit taxes are decisive for the problem to occur. Further, a high level of unemployment compensation exacerbates the problem, while larger privatisation revenues can ease the situation. Finally, it is found that sufficient growth in the restructured sector can remedy the privatisation deadlock, or speed up the process.

The paper proceeds as follows. The next section presents some evidence on fiscal discipline and sluggish privatisation and restructuring in transition economies. Section 3 introduces and solves the model. Section 4 reports on some results of an simulation of the model. Section 5 concludes.

2. Observations of EMU-type fiscal discipline and sluggish privatisation

The long term ambition of EMU enlargement has been manifested in the Copenhagen Criteria of 1993. The Copenhagen Criteria - set out by the EU - are criteria that the Central and Eastern European applicant countries had to fulfill before membership negotiations would be opened. The so called third Copenhagen Criteria states very clearly that the applicants (and future members) have to display adherence to the aims of political, economic, and monetary union. Transition governments have interpreted this demand to imply fulfilment of the Maastricht criteria, i.e. exchange rate stability, low inflation and fiscal discipline. Data from transition economies reflect this ambitions. Turning to privatisation, it is much harder to define the degree and speed of privatisation and restructuring. Also, and more importantly, governments do react to the fiscal squeeze . Given the conflicting demands of a low deficit and effective privatisation,

other fiscal policy measures might be applied.³ Hence, we can not expect a mapping from low deficits to slow privatisation.

Table 1 presents key indicators for a selection of transition economies. We observe that the economic recovery from the transitional recession has hardly been concluded by any of the countries. Despite this devastating economic downturn, the budget deficits of transition economies are surprisingly low, reflecting their endeavour to fulfil the criteria of long-term EMU membership. In 1999 seven out of the 10 eastern European applicants are within reach of the 3% Maastricht budget deficit criteria. Turning to the issue of privatisation we observe that the private sector share in GDP is still rather low for most of the countries. For comparisons note that the average EU private sector share is at 85 percent.⁴ In terms of large scale privatisation, all of the shown countries are still holding more than 25% of the initial state enterprises assets in state hands. Finally, on restructuring none of the countries features a performance comparable to a western industrial economy. Thus, we observe sluggish privatisation and restructuring paired with tight budget policies.

Table 1 about here

As evidence of the budget impact that privatisation and restructuring imposes on transition governments let's consider the case of East Germany. It has been established that the real costs of transition at all levels, i.e. the total of West German funds that were pumped into East Germany from 1990 until 1996, are to be estimated at 1000 billion DM [Sinn and Weichenrieder, 1997, p.181], [DIW, 1997]. This amounts to approximately 60 percent of East German GDP (and 5 percent of West German GDP) in that period.⁵ On top of these inflows the New Länder accumulated substantial per capita public debt, running by 1996 an average Länder deficit of 5 percent of GDP. Obviously in East Germany the transitional recession has been overcompensated, still the case illustrates that the sort of fiscal deficits we ought to expect in transition are certainly not in the range of only a few percent of GDP.

3. The model

The present model builds on Schröder [2000], where also the micro structure of firm behaviour is modelled explicitly, here we will only sketch firm behaviour and move on to the budget impact of privatisation.

We assume that there exists a continuum of equally-sized - and initially state owned - firms f in the economy. All firms generate a value added Π at a required labour cost of W (i.e. proportional to the number of workers), identical for all firms. This gives potential profits $V=\Pi-W$. However, firms start out with a certain inefficiency level, such that their actual gross profit Π_f is given by:

$$\Pi_f = \Pi - W - L_f \tag{1}$$

Where L_f is the cost of the pre-restructuring inefficiency, for example idle labour or firm social assets ($L_f \geq 0$). Firms are assumed to respect their income (and liquidity) constraint $\Pi_f \geq 0$, i.e. no soft budgets. Π , W , L_f and V are measured in identical units, i.e. the wage rate. Now in such setting restructure means to cut L_f .

Turning to corporate governance and the resulting inefficiency levels, one can distinguish between two types of firms. 1) Firms p that are privatised to efficient owners. 2) Firms i that are not yet privatised or alternatively are privatised to inefficient owners. Firms p might for example be governed by outsiders who decide on L_p maximising their net profit $(1-\tau)\Pi_p$, where τ is the profit tax rate of the economy. As can be seen from (1), the resulting inefficiency level must be $L_p=0$, generating a gross profit $\Pi_p=V$. Firms i might for example still be state owned or are governed by insiders. In any case, what is needed for the model to work is that those in control of the firm benefit to some degree from the inefficiency, and take this into account when deciding on the inefficiency level L_i . For certain parameter values firms of type i will not restructure. These parameters, like the profit tax τ , the income tax ω , the net unemployment compensation μ (taken to be less than the net wage $(1-\omega)$), the allocation of shares in the firm or the amount of non-voting stock are in fact all determined by the government and/or part of the privatisation program, which is also determined by the government. Thus the government can not just control the speed of privatisation but also indirectly control the amount of newly privatised firms that actually do restructure. Hence, it should be clear that the government can perfectly but indirectly control the degree of restructuring in the economy.

Now consider the government's situation. The government faces a continuum of firms, and has to switch the ownership status from being i type firms to being p type firms over time. Let α_t be the share of privatised and outsider owned firms (p) at time t ($0 \leq \alpha_t \leq 1$). At time zero all firms are state owned, i.e. $\alpha_0=0$. Further, we denote by $\sigma_t (= \alpha_{t+1} - \alpha_t \geq 0)$ the volume of firms converted from i into p type at the beginning of period t . Note that we assume privatisation to be irreversible.

Converting firms into restructuring entities has effects on the government budget. First of all there is some sales revenue from privatising firms. Secondly, during restructuring, the new p firms (former i firms) fire their $L_i=V$ idle labour, reducing inefficiency to zero ($L_p=0$), and increasing their gross profit accordingly. The amount V is converted from wages to profits, hence, subject to different tax rates.

At $t=0$, when no firms have been privatised, total revenue must equal $R_0=\omega\Pi$. Let's assume that the government has initial total expenditure $E_0=\omega\Pi$ (e.g. schooling, defence, etc.).⁶ The government's revenue account in period t , after some restructuring has taken place and including the new σ_t -step taken for that period must be given by:

$$R_t = (\alpha_t + \sigma_t)(\tau V + \omega W) + (1 - \alpha_t - \sigma_t)\omega\Pi + s\sigma_t V \quad (2)$$

Namely, the government collects income tax and profit tax revenue from privatised firms, but only income tax revenue from non-privatised firms, and has some privatisation revenue. Privatisation revenue in period t depends on the amount of firms privatised in that period, and on the sales price achieved; the price is assumed to be a fixed proportion s of the post restructuring gross profit of a firm. Hence, potentially more profitable firms would achieve a higher price.

On the expenditure side the accounting identity is composed of two constituents. One is the already introduced E_0 - initial expenses that have to be maintained as the economy proceeds. The other is related to the release of redundant labour under restructuring:

$$E_t = \mu\sigma_t V + E_0 \quad (3)$$

The first term on the right hand side reflects the compensation at the rate μ for those people who are laid off at the beginning of period t . Note that it is assumed that the unemployed get off the governments budget after one period - which, in fact, biases the model pro-restructuring.

Solution with an EMU-type deficit constraint

It is assumed that in each period the government has restricted its choice of a deficit level by some constant $B>0$. Namely, B is the deficit level that the government judges to be in line with long-term EMU enlargement. The constraint is given by:

$$R_t - E_t \geq -B. \quad (4)$$

There are several other - and good - reasons why the public deficit might be curtailed in a transition economy, for example the general malfunctioning of the financial sector, or the fear of inflationary pressures from a monetized deficit, or the fear of sending the government into an unsustainable debt spiral, yet here we interpret this constraint to stem from adherence to future EMU membership.

The above equations constitute the basis for an optimal control problem in α_t , subject to the motion equations (2) and (3) and the inequality conditions set by the deficit limit (4) and the irreversibility assumption of restructuring $0 \leq \alpha_t \leq \alpha_{t+1} \leq 1$. As the objective function it is assumed that the government is interested in restructuring the economy as fast as possible; or is advised/urged to do so by an outside institution.⁷ This corresponds to minimizing the number of σ -steps until $\alpha_t=1$. The solution to this problem is straightforward: In each period the government should strive for the largest possible σ -step. In particular this amounts to choosing σ such as to hit the limit dictated by the budget constraint. Doing so as long as $\alpha_t < 1$ we simply solve constraint (4) after substituting for R_t and E_t . Solving with regard to σ_t gives:

$$\sigma_t = \frac{B - E_0 + \omega \Pi - (\omega - \tau) \alpha_t V}{(\mu - s + \omega - \tau) V} \quad (5)$$

Equation (5) shows the share of i -firms (σ_t) privatised into p types at any time t . The central theme of the paper is featured by the fact that σ_t is reduced as the deficit requirement - i.e. the ambition to fulfill EMU standards - becomes stricter (lower B).

The problem is restated by writing out σ_t as $\alpha_{t+1} - \alpha_t$. Now equation (5) can be written as the following difference equation:

$$\alpha_{t+1} - \frac{\mu - s}{(\mu - s + \omega - \tau)} \alpha_t = \frac{B}{(\mu - s + \omega - \tau) V} \quad (6)$$

The solution to (6) gives the privatisation path α_t as:

$$\alpha_t = \frac{-B}{(\omega - \tau) V} \left(\frac{\mu - s}{\mu - s + \omega - \tau} \right)^t + \frac{B}{(\omega - \tau) V} \quad (7)$$

The nature of the privatisation path is driven by the base of the exponential term, i.e. the dynamic part of the solution. Obviously the base could be negative resulting in an oscillating

path, we will not award such path any economic significance and restrain our analysis to cases of $0 < \frac{\mu - s}{\mu - s + \omega - \tau}$.

We can now state the following results:

- 1) If $\mu > s$ and if $\omega < \tau$, then adjustment is explosive, i.e. privatisation is swift.
- 2) If $\mu > s$ and if $\omega > \tau$, then adjustment is convergent, i.e. privatisation is delayed.
- 3) If $\mu < s$ and if $\omega > \tau$, then adjustment is explosive, i.e. privatisation is swift.
- 4) If $\mu < s$ and if $\omega < \tau$, then adjustment is convergent, i.e. privatisation is delayed.

To illustrate these results consider the meaning of result 1. In plain words it states, that if expenditures on the unemployed are large relative to privatisation revenue, but the government tax rate (and hence revenue) on profits is larger than taxes on wages, then such government - under the above restrictions - will privatise an increasing number of firms in each period, completing privatisation swiftly.

What relative size of the unemployment compensation level to the proportion of privatisation sales revenue and wage taxes to profit taxes are we to expect? Even though unemployment compensation in transition economies has been low by western standards, so has privatisation revenue. Recall that s is the proportion of post privatisation profits that is achieved as the sales price. Two effects have been at work during privatisation in transition economies, firstly via the steep increase in the supply of privatisation objects, paired with a lack of domestic wealth and buyers, prices have been depressed. This has subsequently been dubbed the fire sale prices problem [Sinn and Weichenrieder, 1997]. Secondly, many transition governments have employed voucher systems in privatisation, resulting in no or very little sales revenue for the government.⁸ Turning to the relative size of wage to profit taxes we expect several forces to bias for a $\omega > \tau$ assumption. Firstly, the general reorientation of the incentive structure will typically include a lower than average tax on profits. This is intended to stimulate business activity and discourage tax evasion. Secondly, taxes on wages and income are relatively easy to administer. Since transition governments have few other tax tools in place, they rely disproportionately much on such taxes. Thirdly, data collected by the IMF [1996, table 19 and 20] show that during the process of transition, the role of the profit taxes becomes marginal compared to the importance of wage taxes. Thus we would expect to be in a result 2 type scenario. Revenue from privatisation is small compared to unemployment expenditure and wage taxes dominate as a source of revenue for the government, accordingly we will find a convergent path (from (7) and result 2), or in other words privatisation will be delayed.

For the convergent adjustments (result 2 and 4) we can derive the long term equilibrium by examining the particular solution to (7). The long term equilibrium in case of a convergent path is given by $\lim_{t \rightarrow \infty} \alpha_t = \frac{B}{(\omega - \tau)V}$, and is thus independent from μ and s . A narrow budget limit (low B) will not only reduce each individual σ -step, but may also prevent the government from implementing a complete privatisation program, namely $\lim_{t \rightarrow \infty} \alpha_t < 1$ if $B < (\omega - \tau)V$. The likelihood of this situation to occur grows with the pre-reform inefficiency level (V).

It is important to ask for what period t^* the adaptation process will be completed. When will the economy be completely and effectively privatised into firms that do restructure? Solving $\alpha_{t^*} = 1$ for t^* gives:

$$t^* = \frac{\text{Log}\left(\frac{B - (\omega - \tau)V}{B}\right)}{\text{Log}\left(\frac{\mu - s}{\mu - s + \omega - \tau}\right)} \quad (8)$$

Given that we have a convergent path it is easy to verify that $\frac{\partial t^*}{\partial B} < 0$ - assuming that an α_t value of 1 can be reached at all. Hence, a less restrictive budget requirement will decrease the time needed to privatise the economy completely and effectively. Further, under the assumption that we are in a result 2 type scenario, it is true that $\frac{\partial t^*}{\partial \mu} > 0$, i.e. a higher restructuring (one-time) costs per dismissed worker increases t^* , while $\frac{\partial t^*}{\partial s} < 0$, i.e. a larger sales revenue from privatisation decreases t^* . Also $\frac{\partial t^*}{\partial (\omega - \tau)} > 0$, i.e. a larger fiscal drain triggered by redistributing the tax base from wages to profits increases t^* .⁹ Stated differently, higher unemployment compensation, lower privatisation revenue or a larger tax wedge delay complete privatisation.

The above section has established that - for reasonable parameter values - a tight EMU type budget limit will hinder a transition government in privatising swiftly. A very strict budget limit may even obstruct complete privatisation in the long run. Relative tax rates matter for the problem to occur. A high level of unemployment compensation exacerbates the problem, while an increase in privatisation revenue relieves it. If, however, balancing the budget was proceeded by complete privatisation the problem could be avoided all together. Thus the long-term aim of EMU eastward enlargement might have a decisive negative impact on the short-term privatisation effort of the applicant countries.

4. Numerical simulations of an extended version

In an simulation version of the above model [Schröder and Yndgaard, 1998]¹⁰ - which introduces growth effects in the private sector, an unemployment pool, debt accumulation and interest payments - it is found that growth in the private sector remedies the case of privatisation standstill. The reason is that revenue to the public budget swells due to the growth of privatised firms. Else, all the results from the analytical solution do carry over.

Figure 1 presents the screen output from one simulation experiment and illustrates the time profile of the adaptation process. In particular the model is solved with growth in the restructured sector. In this mode the X-axis in each panel measures the time periods (steps). The lower window shows the specific parameter values and the number of steps needed for the path to conclude. All parameter names correspond to the variable names of the model.

In figure 2, the top left panel ALFA and the corresponding panel SIGMA show that under the chosen parameter values full restructuring will be achieved. After 35 steps α has reached the value of 1 - accordingly σ drops to zero. It is noticeable that the time profile of σ reveals an initial relatively large step. At the beginning the full B deficit can be used for restructuring, because no 'historic' unemployment exists. However, in the following periods the unemployment pool strains the budget, see panel U_Pool, U_cost and EXPENDITURE.

Figure 1 about here

The DEFICIT panel clearly mirrors the extreme path traced. During the transformation process the deficit tracks the limit exactly, except for period 35. REVENUE to the public budget rises due to growth in the privatised sector. The simulation assumes growth in the private sector, the GROWTH panel follows an upward trend, also reflected in the REVENUE panel, where the increased tax revenue from the growing p-firm sector is featuring. To minimize the time of restructuring the expenditure is maximized within the limit set by the (increasing) revenue plus permitted deficit B. The final step to full restructuring is calculated residually; hence the last step is of an irregular shape.

If we simulate what happens to the same scenario once the positive growth effect is removed (i.e. $\gamma=0$), we are practically back in the analytical case of section 3. The simulation shows that again the deficit limit is traced exactly. However, the restructuring share in the economy is not reaching a level of more than a few per cent, corresponding to the particular solution of (7). Most firms remain inefficient *i*-types. An initial large σ -step has transformed so many firms into *p*-types, that the shift in the tax base from wages to profits worsen the budget situation considerably. After this step any additional privatisation is financed by those resources that are

freed once the unemployed move from the μ compensation to v compensation. Finally the process grinds to a halt at incomplete restructuring. This illustrates the impact and importance of the growth effect. Namely, given growth, any budget limit ($B > 0$) will eventually result in complete restructuring, still privatisation will be delayed from strict limits.

5. Conclusion

The long-term aim of EMU eastward enlargement - be it the ambition of the existing members or the applicant countries - has a clear impact on present day fiscal policy in many Central and Eastern European countries. This paper has shown that tight EMU-type fiscal policy might be at odds with swift and effective privatisation. This highlights that the observed sluggishness in the privatisation progress of transition countries could in fact stem from inconceivable goals at the governmental level: Transition governments are in a fiscal squeeze. On the one hand privatisation relocates costs from the restructured firms to the public budget; on the other hand - in order to show adherence to the aim of monetary union - the public deficit should be kept within narrow limits. Hence, governments might be unable to 'afford' effective privatisation and restructuring and hence engage only half-heartedly in privatisation.

The present paper utilises a stylized dynamic model to consider this point. It is found that the speed of adjustment - privatisation and restructuring - is constrained by an EMU type budget limit. Allowing for structural reform to proceed the aim of low deficits can circumvent this squeeze. High levels of privatisation revenue could remedy the problem, yet voucher privatisation schemes and depressed prices have blocked this road of finance for most transition governments. A higher degree of unemployment compensation intensifies the problem. Also having a low ratio of wage to profit taxes does - within the model - remedy the problem. Finally, growth in the new private sector speeds up the privatisation process through increased government tax revenue. As a policy recommendation it could be advisable to link the deficit aims - as implied by future EMU enlargement - to the degree of successful privatisation and restructuring.

The above conclusions should not be understood to imply that cautious fiscal policy is irrelevant or exclusively harmful. On the contrary there are many good reasons for sound fiscal policy. However, it must be realised that an overambitious thrive for long-term EMU eastward enlargement with the corresponding short-term low budget deficits might come at a very real cost for transition countries.

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TABLE 1
GDP, Budget Deficit and Measures of Privatisation and Restructuring

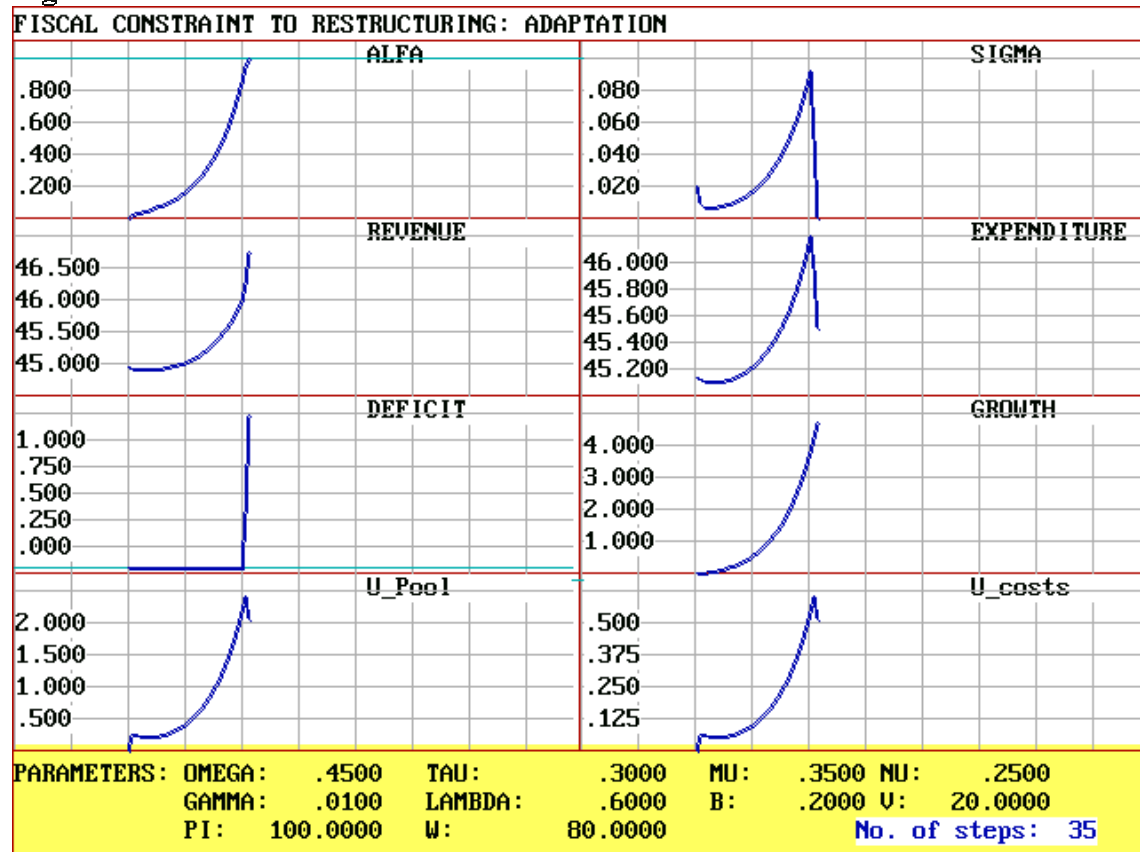
	GDP level 1999 (1989=100)	Budget Deficit percent of GDP			Privatisation, 1999		Restructuring, 1999
		1992	1995	1999	Private sector share in GDP	Progress ¹⁾	Progress ²⁾
Bulgaria	68	-5.2	-6.4	-1.0	60	3	2+
Czech Republic	93	-3.1	-1.8	-3.8	80	4	3
Hungary	99	-7.6	-6.2	-5.6	80	4	3+
Poland	122	-6.7	-2.8	-3.5	65	3+	3
Romania	75	-4.6	-2.6	-3.1	60	3-	2
Slovak Republic	101	-	0.2	-3.6	75	4	3
Slovenia	108	0.2	-0.5	-1.0	55	3+	3-
Estonia	76	-0.3	-1.3	-4.7	75	4	3
Latvia	60	-0.8	-3.3	-3.8	65	3	3-
Lithuania	62	0.5	-4.5	-8.6	70	3	3-

Source: EBRD [2000], Tables 1.1 and 1.3, individual country data. EBRD [1998], Table 2.1, 3.1 and 3.5.

Notes: 1) Privatisation progress replicates an EBRD measure of progress in large scale privatisation (status 1998). 1: little private ownership, 2: some sales completed, 3: more than 25% of large scale assets in private hands, 4: more than 50% of state owned enterprises in private hands, 4+: more than 75% of enterprise assets in private hands.

2) Restructuring progress replicates an EBRD measure of corporate governance and enterprise restructuring. 1: soft budget constraint, few reforms, 2: moderately tight credit and subsidy policy, 3: hard budget constraints, actions to promote corporate governance, 4: substantial improvements in corporate governance, e.g. significant new investments, 4+: Standards and performance typical of advanced industrial economies, market driven restructuring.

Figure 1



Endnotes:

1. Other motives for a low deficit could be to avoid inflationary consequences of transition or to reduce the dominating role of the public sector.
2. Obviously there are plenty of other forces affecting the government budget of a transition economy. For example does tax collection default during the reorientation of the economy. Another example is that revenue from privatisation should provide an extra source of government income. However, - on this latter point- privatisation revenue has been negligible in many cases.
3. Evidence of transition governments reacting to the fiscal squeeze by reducing benefit levels and duration, and the increasing reliance on - easy to collect - labour taxes is presented in Boeri et al [1998, section 4.1 and 4.3].
4. It was pointed out to me by Dr. Alena Zemplerova from Charles University, that at least in the case of the Czech Republic, the official statistics on private sector share in GDP are probably exaggerated. The cause for concern are improper definitions of how much state control shares in a firm are permissible, for an entity still to be regarded as private.
5. All percentages are author's calculations. National accounting and Länder deficit data comes from DIW [1996/97] several issues, but in particular Volkswirtschaftliche Gesamtrechnung.
6. Tax revenue and expenditure in period 0 might actually not go through the government books, but could be indirectly collected and redistributed by the state owned enterprises. Therefore the visible budget figures of the socialist economy can well be less than those of the post reform budgets. For a further discussion see Tanzi [1993].
7. In fact the second Copenhagen Criteria (existence of a functioning market economy) can be said to demand swift privatisation from the eastern European applicant countries.
8. Notice also, that even in the East German privatisation program - were the two above problems should not exist - revenues have been disappointing
9. Prove of $\frac{\partial t^*}{\partial(\omega - \tau)} > 0$ is provided in an appendix, available from the author on request.
10. See Schröder and Yndgaard [1997] for details on the simulation software, the model specifications and a comprehensive presentation of experiments, results and interpretations.