Speed of adjustment and self-fulfilling failure of economic reform

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Abstract

An economic reform programme where inefficient public labour is laid off is considered. The immediate effect is a lowering of wages and increased profitability in the private modern sector. Over time, as capital accumulates in the modern sector, wages and production increases. Big bang reform generates a sharp transitory drop in wages while gradual reform gives a more modest decline. In the presence of a subsistence wage constraint popular resistance can cause the cancellation of big bang reform. Two arguments for gradualism can in that case be made. First, a more gradual reform requires a less abrupt drop in the wage, and will therefore be feasible. Second, the initial wage drop will be stronger if a cancellation of reform is expected and, since cancellation is dependent on the severity of the initial wage drop, multiple equilibria occurs. The existence of multiple equilibria is dependent on the speed of reform. Sufficiently gradual programmes have a unique successful equilibrium.

Keywords: JEL(O11,E61) Economic reform, Multiple equilibria

1   Introduction

Economic reform affects the distribution of income. The winners of trade liberalization are the owners of capital and labour employed in traded goods sector while the losers are found among agents of the non-traded goods sector. Privatization of parastatals or downsizing of the government usually implies dismissing a number of bureaucrats and other workers. The average taxpayer gains via the improved fiscal position, but experiences also a loss to the extent the provision of government services declines. The rationale for these reforms are often efficiency gains, that are assumed to be achieved via structural shifts, as prices are set right and as factors of production are utilized in accordance with their true rate of return. Structural adjustments as these take time, and the full potential of the efficiency gains only materialize in the long run. Hence, reforms generally imply considerable transitory burdens for sections of the population, as the income distribution effects precede the efficiency gains. The popular support for reform then depends on the individuals's weighing of future gains against current needs. A reform which, in the long run, is to the benefit of all may be rejected if the current costs are too high. An illustration of the short term cost of transition is given in Figure 1.

Figure 1 about here

The figure shows the real wage developments in major Eastern European countries after the break of the wall. The declining real wages in the early 90s stand out as a common trend in this picture. There is some improvement at the end of the period in some of these countries. Whether the longer term developments will be significantly

beneficial for the wage earners is yet to be seen.

Economic reform and income distribution are core issues in development economics, especially in the study of economies in transition. One central issue is how the speed of reform may affect the transitional burdens. The contribution of the present work is the discussion of the political feasibility of reform programmes. The analysis illustrates how the speed of adjustment affects the severity of transitional burdens, and consequently the support for reform.

The present example of structural reform is fiscal adjustment in a closed economy consisting of an efficient modern private sector, an inefficient public sector, and an informal sector. The fiscal adjustment takes the form of laying off public surplus labour and reducing taxes. The short run effect of the reduction in labour demand is a reduction in the wage. Reduced wage and reduced taxes increase the return to capital in the modern private sector. Savings are stimulated and the private capital stock will grow over time, in a pace determined by the level of savings.[1] Labour and capital are assumed to be strong complements and when the private capital stock grows the wage will recover as demand for labour increases. The transitional wage movement depends on the speed of reform. Big bang reform gives a strong wage decline but also a high return to capital. Hence, the savings response will be strong and the recovery of labour demand is relatively fast. Gradual reform moderates the immediate wage drop but also slows the recovery.

In the absence of additional constraints, overall efficiency is maximized given big bang removal of the public surplus labour. Fast reform may be infeasible, however, if the required wage reduction is restricted due to political constraints. In the analysis reform proposals are assumed to be subject to a vote before implementation. If implementation implies suffering for a substantial section of the population reform is rejected and conse-

cuntly cancelled. In the analysis the exposed group are self-employed unskilled workers in the informal sector. They are assumed to be pushed below subsistence if labour demand in the formal part of the economy falls to low. When this constraint is binding big bang reform will be politically infeasible. A sufficiently gradual programme, however, will be feasible as the immideate wage drop is moderated in gradual reform.

The analysis continues by investigating the possibility of self-fulfilling expectations. In a cancelled reform the future return to capital will be lower than in completed reform. Expectations about a cancellation will therefore adversely affect savings and investment and consequently reduce labour demand. The result may be a self-fulfilling failure where expectations about cancellation itself generate an outcome that causes the cancellation of reform. Expectations about reform completion, on the other hand, will stimulate investment and labour demand and may thus generate a self-fulfilling success. The possibility of dual equilibria depends on the speed of adjustment. Sufficiently gradual reforms imply a labour demand during the transition period that is sufficiently high, independent of agents's expectations. The possibility of a vicious circle is thus broken and the reform is sure to be completed. Sufficiently gradual programmes have one unique successful equilibrium. This credibility argument is the second main result.

The linkage between speed of adjustment and popular support is demonstrated in several countries. One example is Zimbabwe's structural adjustment programme which commenced in 1990 with ambitions of a massive reduction in public employment. To date, only a small fraction of these reductions have taken place, clearly indicating the political difficulties of laying off as long as private sector labour demand is far from sufficient. Another example is Poland: Following a very ambitious programme, put forward in the early 1990's, political unrest was experienced in 1993-1994, delaying both restructuring

and privatization. It is possible that this backlash put the reforms on hold longer than would have been necessary given a more sober programme.

The present analysis is a stylized description of reform, involving fiscal adjustment and government downsizing. The model may well, however, be directly translated into other contexts of transition, whether the distinction goes between traded/non-traded, government/private or exportables/importables. The essential feature that drives the results is the possibly intolerable transitional burden as the mobilization of capital requires a high rate of return. In the words of Dornbusch (1990):

> What markets consider a sufficient policy action may simply be beyond the political scope of democratic governments. In fact, if governments went far enough to create the incentives that would motivate a return of capital and the resumption of investments on an exclusive economic calculation, the implied size of real wage cuts might be so extreme that on political grounds, asset holders might consider the country too perilous for investment.

Adding to Dornbusch's argument a mechanism, through which asset holders are compensated for "perilousness" by an even higher rate of return, establishes the possibility of dual equilibria.

The consequences of a minimum wage on the optimal speed of reform are discussed among many in Mussa (1986), Torvik(1994) and Mehlum (1998). Further, several works analyse political constraints to reform and the possibility of reversal. Important contributions have been made by Blanchard et al. (1991) and Krueger (1993). Among the contributions modelling political support in detail are Rodrik (1995), who explores how support for reform may change over time as agents find themselves among the reform's

winners or losers. Dewatripont and Roland (1992b) discuss the political economy of transition from plan to market and find that the extent of compensation required increase with the speed of reform. Roland and Verdier (1994) analyse privatization and find critical mass effects and multiple equilibria, due to externalities and coordination failures. Multiple equilibria are also a possibility in Rodrik's (1991) analysis of rational investors's response to reform in the presence of policy uncertainty.

Little work has been done linking the speed of reform to the possibility of multiple equilibria. Frooth (1988) uses a two-period model of trade reform to analyse the possibility of self-fulfilling failure when there are restrictions to international borrowing. The programme is aborted if the current account balance is sufficiently worsened. Frooth finds that a self-fulfilling failure is most likely given big bang reform.[2] This is in contrast to the conclusion of van Wijnbergen (1992). He analyses the removal of price controls in a two-period model and finds that self-fulfilling failure is most likely in gradual reform as gradualism increses the scope for intertemporal speculation. The opposite conclusions in the studies by Frooth and van Wijnbergen demonstrates that no general results apply on this broad issue. The present analysis is similar to these two contributions in the general spirit. The present focus is essentially different, however, as it concentrates on functional income distribution and the accumulation of productive capital. These are crucial factors for the understanding of the success and failure of the ongoing structural adjustments efforts in many parts of the world. The article is organized as follows: Section 2 and 3 presents the model and the dynamics following economic reform. Section 4 discusses gradualism versus big bang and the possibility of self-fulfilling failure.

2 The model

The model is in real terms and describes a closed economy. The economy is made up of three sectors: An inefficient public sector, an efficient private modern sector, and an informal sector. The formal part of the economy (the modern sector and the government sector) is assumed to only employ skilled labour. In the informal sector workers are unskilled and self-employed.

2.1 The formal sectors

The formal part of the economy has a production structure similar to Castanheira and Roland's (1996) dynamic general equilibrium model for economies in transition. While Castanheira and Roland allow for the public sector to have variable though inferior productivity, the present assumption is that the public sector is totally unproductive. All production in the formal part of the economy, X_t, is carried out in the private modern sector. The modern sector's factors of production, skilled labour, L_t, and capital, K_t, are used in fixed proportions with unit coefficients. Hence, production at time t is given by a Leontief function

$$X_t = \min(L_t, K_t) \tag{1}$$

This production function implies a capital/output ratio of 1. This is consistent with an implicit assumption about the unit of time being 3 years. This assumption implies a yearly capital/output ratio of 3, which is in the range of most estimates.

The public sector employs only skilled labour G_t. The total supply of skilled labour, normalized in size to 1, is fully employed either in the modern or the public sector. Hence,

given the size of public employment, employment in the modern sector is given by

$$L_t = 1 - G_t \tag{2}$$

Given the skilled wage, w_t, the public wage bill is given by $w_t G_t$. Public expenditure is financed through an ad valorem tax, by rate τ_t, levied on the production of the modern sector. Assuming that the public budget is in ballance it follows that

$$w_t G_t = \tau_t X_t \tag{3}$$

Total production is distributed to skilled workers in the modern and public sector, who earn the same wage, and to owners of the capital, who receive a constant rate of return r_t on their capital stock

$$X_t = w_t(G_t + L_t) + r_t K_t \tag{4}$$

Assuming full capacity utilization in the modern sector (i.e. $X_t = L_t = K_t$), the equations (1)-(4) determine X, L, K, w, and τ as functions of the policy variable G, and of the (yet to be determined) interest rate r

$$K_t = (1 - G_t) \tag{5}$$

$$X_t = (1 - G_t) \tag{6}$$

$$w_t = (1 - r_t)(1 - G_t) \tag{7}$$

$$\tau_t = \frac{w_t G_t}{X_t} = (1 - r_t)G_t \tag{8}$$

Full capacity utilization implies that increasing public employment reduces the private capital stock 1 to 1. The public sector is not contributing to the generation of values hence production and wages decrease as well. The wage level also declines when the interest rate increases. Lastly, the tax rate increases with the public wage bill and declines with increased production.

2.2   The informal sector

The informal part of the economy is modelled as simple as possible. Entry into the sector is free and production is given by the production function $Y(N)$, where N is the number of self-employed unskilled workers. The informal wage γ is assumed to be given by the average productivity of labour

$$\gamma = Y(N)/N$$

Assuming decreasing return to scale in infomal sector, the informal wage will decline in the number of self-employed workers. Self-employment in the informal sector is assumed to be the only option for the unskilled workers and they are assumed not to have access to credit. It is further assumed that the informal wage γ is at the level of subsistence when only unskilled are self-employed.[3]

The skilled workers will shun self-employment as long as $w > \gamma$. If the demand for labour in the formal sector is sufficiently low, however, self-employment will be an attractive option also for the skilled workers. Hence, γ represents a lower boundary for the wage flexibility in the formal sector. A w below γ will generate a flow of skilled workers into self-employment that push the wage in the informal sector down below subsistence. Hence, reforms implying $w < \gamma$ will imply starvation for the unskilled workers and is

in the following assumed to be infeasible due to political constraints. The conditions underlying these political constraints are discussed thoroughly below. Before going in detail on feasibility of reform the dynamics of the model must be determined.

2.3 The dynamics of the model

In order to solve the model the interest rate must be determined. The supply of savings is determined by dynamically optimizing agents, all having access to a perfect credit market. These agents, the skilled labour, maximize an unit elasticity CRRA utility function with discount factor θ, giving individual (indexed by i) utility

$$U_i = \sum_{t=0}^{\infty} \left(\frac{1}{(1+\theta)^t} \ln(C_{i,t}) \right) \tag{9}$$

Given (9), the Ramsey rule[4] gives agent i's consumption path as follows

$$C_{i,t+1} = \frac{1+r_{t+1}}{1+\theta} C_{i,t} \tag{10}$$

Summing all agents, it follows that the aggregate consumption path has the same growth rate as the individual consumption paths

$$C_{t+1} = \frac{1+r_{t+1}}{1+\theta} C_t \tag{11}$$

Abstracting from depreciation, and ruling out inflow of capital from abroad,[5] accumulation of the economy's only asset, physical capital, is given by savings, S. Since the unskilled workers are excluded from the credit market the entire product of the informal

sector will be consumed. It follows that $K_{t+1} - K_t = S = X - C$ and hence

$$K_{t+1} = K_t + X_t - C_t = K_t + S_t \tag{12}$$

The difference equation (11) determines consumption and thus, combined with (12), the supply of capital over time. The supply of capital is determined by domestic savings and is thus a function of the interest rate. From the Leontief production function it follows that demand for capital will be determined solely by the number of skilled labourers available for the formal sector. Given the level of public employment demand for capital will be inelastic and the equilibrium interest rate will be determined by supply.

The present model is in this respect different from the standard Ramsey formulation where the demand for capital gradually declines as the marginal return of capital asymptotically approaches zero. One familiar implication of this smoothly decreasing demand for capital is the asymptotic transition path. In the present model, zero-elastic capital demand implies that the stock of capital adjusts fully in finite time. Following any exogenous shock, the new steady state will be reached over only one period.[6] This property substantially simplifies the solution of the model. Even though the agents live for ever and have perfect foresight, the number of transition periods is limited and exact closed form solutions can be found for all variables.

Following from (6), changing public employment will shift the steady state and induce transition. Reduced public employment increases the labour available for the private sector and increases the demand for capital. During transition to a higher level of production, the rate of interest will be high and savings will be positive.

Given the development in public employment $(\ldots, G_{t-1}, G_t, G_{t+1}, \ldots)$, the paths for

the endogenous variables follow from the model above. Inserting (6) and (5) in (12) gives

$$C_t = 1 - 2G_t + G_{t+1} \tag{13}$$

inserting in (11) and solving for r_t gives

$$r_t = (1 + \theta)\frac{1 - 2G_t + G_{t+1}}{1 - 2G_{t-1} + G_t} - 1 \tag{14}$$

inserting in (7) gives

$$w_t = (1 - r_t)(1 - G_t) = \left(2 - (1 + \theta)\frac{1 - 2G_t + G_{t+1}}{1 - 2G_{t-1} + G_t}\right)(1 - G_t) \tag{15}$$

Steady state is characterized by $G_{t-1} = G_t = G_{t+1}$. It is readily seen from (14) and (15) that the steady state values of interest rate and skilled wage are given by $r_t = \theta$ and $w_t = (1 - \theta)(1 - G_t)$.

3   Economic reform

Consider the case where the economy is in a steady state with a level of public employment $G_0 > 0$. Then, in Period 0 the government decides to remove this public sector surplus labour. Their announcement is unexpected as it for example follows the break of the wall or a surprise agreement with the IMF. At this point in time the size of G_0 is determined. The reform will thus materialize at the earliest in Period 1 by a reduction in G_1. Hence, the historically determined X_0, r_0, and w_0 will not be affected. S_0, C_0, and r_1, however, will deviate from their historic steady state levels as demand for capital in Period 1 increases following the reduction in G_1.

For expositional clarity, public employment is assumed to be reduced to zero over at most two periods, $G_0 > G_1 \geq G_2 = 0$. As G_0 is determined by history and with $G_2 = 0$ as the target, the various programmes will only differ in their speed, captured by the size of G_1. The case where public employment is set to zero already in Period 1 ($G_1 = 0$) is the *big bang* case, while the case where public employment is reduced stepwise ($G_1 > 0$) is labelled *gradualism.* Inserting the public employment path in (14) and (15), and assuming fully flexible factor prices,[7] the equilibrium values r_t° and w_t° over the transition periods follows in Table 1.

Table 1 about here

As noted above, in steady state $r_t = \theta$ and $w_t = (1 - \theta)(1 - G_t)$. This basic result is reflected also in Table 1. The economy starts out at the historic steady state in Period 0 and ends up in the new steady state in Period 3. The shape of this over-all movement is affected by the speed of reform, i.e. the size of G_1.

Big bang reform implies an instant removal of public employment ($G_1 = 0$) Inserting in Table 1 it follows[8] that $w_1^\circ < w_0^\circ < w_2^\circ = w_3^\circ$ and that $r_1^\circ > r_0^\circ = r_2^\circ = r_3^\circ = \theta$. That is, the wage follows a J-curve, falling before finally settling at a higher level, while the interest rate goes through a transitional hump before returning to the steady state level.[9] Given gradual reform ($G_1 > 0$) the mobilization of private capital is carried out over two periods. The required adjustment is less abrupt, the transition paths are smoothed, and steady state is not reached until Period 3. w_1 will be higher while w_2 will be lower than in big bang. These transition paths, in addition to production and consumption paths, are illustrated in Figure 2, with the big bang in the upper panel and one gradual case in

the lower.[10] Production and consumption are given by thin and dashed line respectively and follow directly from (6) and (13).

Figure 2 about here

Figure 2 illustrates the arguments above: The big bang wage path goes through a steep decline in the first transition period, recovers rapidly, and settles at the new and higher steady state level in Period 2. In a gradual reform process the wage path is smoother. The initial wage drop is less, but the recovery is slower.[11] In both cases the short run effect of reform is a reduction in the wage. Reduced wage and reduced taxes, however, increases the return to capital. Savings are stimulated and the private capital stock will grow over time, in a pace determined by the level of savings. As Labour and capital are strong complements the wage will recover as the private capital stock grows. Big bang reform gives a strong wage decline but also a high return to capital. Hence, the savings response will be strong and the recovery of labour demand is relatively fast. Gradual reform moderates the immediate wage drop but also slows the recovery.

Given the menu of reform alternatives $G_1 \in [0, G_0]$, the actual reform design will be determined by policy-makers ambitions and political constraints. In the following section an agenda-setting government framework à la Romer and Rosenthal (1979), adopted from Dewatripont and Roland (1992a), is introduced: *Reform plans are proposed by the government who is assumed to be in control of the agenda of reform proposals, but these proposals are, however, subject to political constraints. In this context, we assume that a majority (or even unanimity) of workers is required to approve a reform plan prior to its implementation.*(p.292)

3.1 The agenda-setting government and political constraints

The reform-minded government is assumed to propose a reform plan with the objective of maximizing over all efficiency. As production in the informal economy is constant this implies the maximization of formal sector production X. The government first announces the plan that subsequently is subject to a vote. If the plan is approved, the reform is completed as announced. If not, the reform is cancelled and the economy is left at status quo.

Looking only at the formal sectors it is clear that big-bang reform maximizes efficiency. As the skilled labour own all the capital they will gain from, and therefore support, fast reform. For the unskilled workers the critical condition is whether w remains above γ throughout the transition process or not. As long as $w > \gamma$ the number of self-employed workers remains fixed and they will continue to enjoy their subsistence consumption level γ. They will thus be indifferent between reform and status quo. If, however, the transition is too fast w will be pushed down to γ, skilled workers will enter into self-employment and consequently unskilled consumption will be pushed below the level of subsistence. Figure 2 includes two alternative levels of γ. When γ is low (γ') the skilled wage w will be above γ even for the big bang reform and the unskilled workers will not be hurt during transition . When γ is high (γ'') big bang reform will require a w below the skilled workers subsistence.[12] A sufficiently gradual reform, however, will go clear of this limit. Hence, in the case of $\gamma = \gamma''$, big bang implies starvation for the unskilled workers and they will strongly oppose reform.

The outcome of the vote over reform depends both on the number of unskilled workers and on the assessment of the skilled workers. The opposition towards speedy reform will be sufficient to give reform cancellation if 1) the unskilled represents the majority, 2)

there is sufficient altruism towards the starving, or 3) when the starving are likely to destabilize the economy, generating an inferior outcome for all. In the following it is assumed that at least one of these conditions are satisfied. Hence, a drop in the skilled wage below γ will not be politically feasible. The outcome of the reform vote is formally specified as follows: Reform is approved if and only if $w_i \geq \gamma \ i = 1, 2$.

Taking this political constraint into account, a reform-minded government will only announce feasible programmes. That is, programmes sufficiently gradual to assure a market clearing formal wage above the wage in the informal part of the economy. This leads to the feasibility argument for gradualism:

- Given a subsistence consumption constraint big bang reform, leading to a strong reduction in wages, may be politically infeasible. Gradualism then represents a feasible reform alternative.

The analysis above does not explicitly discuss transfer schemes to compensate losers. The present argument for gradualism may, however, be translated into an argument for an unemployment benefit. The results above would also be valid given a transfer scheme where G_1 is interpreted as skilled workers receiving *benefit* w_1 instead of being public employees producing nothing and receiving *wage* w_1. This does not rule out that other transfer schemes may be more efficient than gradualism. However, asymmetric information, intertemporal commitment problems and other distortions generally limit the scope for targeted compensation schemes.

3.2 Credibility and self-fulfilling failure

The analysis above was done under the assumption that the reform was sure to be approved given that it was feasible. As will be shown in this sub-section this condition

is not sufficient. Also ex ante feasible programmes may generate an excessive wage drop due to self-fulfilling mechanisms. Before going in details, the status quo and the timing of events will be explicitly specified.

Given the Leontief production function and the wage constraint an over-night firing of government workers can be ruled out. The accumulation of capital, required to hire the fired workers, takes time. Therefore a reform programme, which starts in Period 1, $G_0 > G_1^A \geq G_2^A = 0$ must be announced (A indicates announcement) at the beginning of Period 0 in time have impact on labour demand in Period 1. The critical vote is assumed to be carried out at the end of Period 0, just before the actual reform implementation. At this point in time K_1 is determined and the actual consequences of reform implementation can be observed by the voters. If, for example, $K_1 < 1 - G_1^A$ reform implementation will imply that skilled workers enter into self employment. That in turn implies starvation for the unskilled workers and reform implementation will therefore be voted down. If the reform is rejected, the following status quo policy is implemented: Firing of public workers is brought to the point assuring $w_1 \geq \gamma$ (that is $G_1 = 1 - K_1$) and the programme is put on hold for the ensuingperiods.[13] Hence status quo implies

$$G_1 = 1 - K_1 > G_1^A \text{ and } G_2 = G_1$$

The sequencing of events is summarized in Table 2.

Table 2 about here

Cancelled reform is characterized by $G_2 = G_1$, in contrast to completed reform where $G_2 = 0$. Rational agents with perfect foresight will incorporate the possibility of cancella-

tion in their decision making. Solving (15) and (14) given $G_2 = G_1$ gives the transitional development for interest rates and wages in cancelled reform. The results are summarized in Table 3, where superscript $*$ indicates *cancelled* and $\circ$ *completed* (as in Table 1)

Table 3 about here

By comparing the outcome of completed and cancelled reform it becomes clear that $r_1^* \geq r_1^\circ$ and $r_2^* \leq r_2^\circ$ while $w_1^* \leq w_1^\circ$ and $w_2^* \geq w_2^\circ$. The explanations are as follows: In a cancelled programme there is no savings in Period 1, hence $r_2^* \leq r_2^\circ$. Consumption in Period 1 will therefore be higher than in the completed programme, hence $r_1^* \geq r_1^\circ$ The effects on wages follow from these interest rate effects, combined with the lower level of production from Period 2 and onwards, given cancellation.

As G_1 approaches zero the difference between completion and non-completion disappears. The reason is simple enough. When G_1 is close to zero the programme is close to being a big bang programme and, as the big bang programme is finalized by the end of Period 1, a cancellation has no effect. The difference between Period 1 wage, given completion, w_1°, and given cancellation, w_1^*, is illustrated in Figure 3.

Figure 3 about here

The curves w_1° and w_1^* represent the transitional wage given expectations about completion and cancellation respectively. Adding to this the condition that reform is rejected and cancelled if the equilibrium wage falls short of γ, gives rise to multiple equilibria. The lowest feasible G_1 given expectations about completion is $\underline{G}_1^\circ$. The lowest feasible G_1 given cancellation is $\underline{G}_1^*$.

Programmes in the range $G_1^A < \underline{G}_1^\circ$ are rejected and cancelled no matter what the agents expect. Rational agents will therefore expect a cancellation. The same is true for programmes in the range $G_1^A > \underline{G}_1$ that gives a skilled wage short of γ in Period 2. Using the terminology of Sachs et al. (1996), these programmes are *not credible*. Programmes in the range $\underline{G}_1^* < G_1^A < \overline{G}_1$ are *fully credible*. They are approved no matter what the agents expect, rational agents will therefore expect completion. Programmes in the range $\underline{G}_1^\circ < G_1 < \underline{G}_1^*$ will be approved and completed only if the agents expect a completion and cancelled if the agents expect a cancellation.[14] This intermediate interval is thus characterized by multiple equilibria and is therefore only *partially credible*.[15]

An alternative view of the credibility regions, clearly displaying the two equilibrium arms, are given in Figure 4. Here, the reform announcement, G_1^A, is given along the horizontal axis and the actual outcome along the vertical axis.

Figure 4 about here

Approved programmes are found along the 45°-line where the outcome is as announced, $G_1 = G_1^A$. Cancelled programmes are given by $G_1 = \underline{G}_1^*$ (the condition that assures $w_1 = \gamma$)

Reform announcements to the left of $\underline{G}_1^\circ$ are bound to fail, hence the outcome is $\underline{G}_1^*$. Reform announcements between $\underline{G}_1^*$ and $\overline{G}_1$ are bound to succeed, hence the outcome is $G_1 = G_1^A$. For programmes $\underline{G}_1^\circ < G_1^A < \underline{G}_1^*$ there are two options: Self-fulfilling success, $G_1 = G_1^A$, or self-fulfilling failure, $G_1 = \underline{G}_1^*$. The possibility of multiple equilibria modifies the simple policy lesson from above - that programmes not should be faster than $\underline{G}_1^\circ$. An intermediate range exists where failure is possible due to self-fulfilling mechanisms. Only

sufficiently gradual programmes are sure to succeed. This second main result adds to the feasibility argument given above and can be formulated as follows:

- Self-fulfilling expectations can cause both failure and success of reform. The possibility of such dual equilibria depends on the speed of reform. Sufficiently gradual programmes have one unique successful equilibrium.

Given that big bang reform forces the unskilled workers below subsistence reform must be gradual in order to be *feasible*. Reform must be even more gradual, however, in order to be *fully credible*. If the government has means to convince all agents that the programme will be completed, credibility is not an issue, and the optimal programme is the one that just steers clear of the minimum wage constraint. Without such means, pessimistic rational agents may generate self-fulfilling cancellation. The only way to avoid this possibility of a vicious circle is to play safe and propose an even more gradual programme.

Another possibility could be to shift the date of the vote forward in time. In that case the decisions of the voters would be known when the investment decisions are made. The mechanisms through which the self-fulfilling expectations worked is then cut off and the problem would be solved. The condition for this solution is that there is no vote in a certain time span around the beginning of period 1. This may not be feasible however. Given the far-reaching transitions presently considered, the critical time span would be several years long and cancelling votes/elections for years would require authoritarian rule.[16] Furthermore, even in the case where a formal vote were avoided, a starving population could force an informal 'vote' by destabilizing the economy and force the government to cancel the reform.

All the results above are achieved under a moderate cancellation assumption. Rodrik (1991) has an alternative assumption where reform failure implies a complete return to the pre-reform policy and hence reversal of investments. Applying this radical assumption would reinforce the present self-fulfilling mechanism as cancellation would imply an even stronger fall in capital return. Adding also, as Rodrik, irreversibility of investments would strengthen the results even further.

4   Conclusion

The possibility of failure of a reform programme depends on the degree of gradualism in the announced reform plan. Two arguments for gradualism are made. First, a rapid transition requires a high interest rate and a low transitional wage. A subsistence consumption constraint limits the feasible wage drop and determines the maximum speed of transition. Reform programs faster than this limit, e.g. big bang reform, are bound to fail. Second, agents's expectations about failure may prove self-fulfilling. The existence of multiple equilibria is dependent on the degree of gradualism of the reform. Sufficiently gradual programmes have one unique, successful, equilibrium.

These results, following from the interplay between efficiency, income distribution and political constraints, are achieved in a stylized general equilibrium model. The transparent analysis reveals important mechanisms that will also be present in other models. The essential linkages underlying the results are: 1) the capital accumulation is influenced both by present and expected future return, 2) fast reform lowers the transitional wage, 3) a political constraint that affects the future return on capital, and 4) forward-looking agents. This set of features is clearly not confined to the present model. Hence, the Ramsey consumer and Leontief production function may be replaced by alternative

assumptions without affecting the qualitative results. Consider, for example, the production structure. The essential property is the immediate real wage drop following reform. This wage drop is generally only avoided in models which either allow for a high degree of substitution between factors of production or where a substantial stock of capital is made available from the contracting sector. In these cases, labour will have high marginal productivity also in the short run, and the wage drop can be avoided. As Figure 1 clearly demonstrates, however,a real wage drop is rather a rule than exception in economies of transition.

The transition process would also be helped by a substantial inflow of foreign investments at the early stage of reform. This could be achieved in a model allowing for international capital mobility. International investors would be attracted by the high return to capital but they are also sensitive to political risk. Their involvement could thus exacerbate, instead of alleviating, the problem of self-fulfilling expectations. Less risk conscious investors or economic aid, however, could remove the pivotal role play by expectations and generate a predictable reform success.

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Notes

[1]As the economy is closed investments is determined by the level of domestic savings. Implications from allowing for flexible in- and outflow of capital is discussed in the concluding section. As pointed out in a study by Schmidt-Hebbel et al (1996 p. 93), however, the assumption about constrained access to foreign financing is realistic for many developing countries: 'In the extreme situation of low (or zero) access to foreign capital, a condition faced by many developing countries during 1980s, national saving and domestic investment will be highly (indeed perfectly) correlated.'

[2]A continous time model with similar mechanisms and results is used by Buffie (1995).

[3]The assumption about γ being exactly the subsistence consumption level is mainly a conseptional simplification. It alows me to talk about starvation as soon as the unskilled wage falls short of γ.

[4]See for example Takayama (1993)

[5]Implications from allowing for in- and outflow of capital is discussed in the concluding section.

[6]This is under the condition that the required changes are physically possible.

[7]The subsistence constraint $w \geq \gamma$ will be discussed in detail below.

[8]Given the natural limitations $C_1 > 0$ and $w_1 > 0$ for $G_1 = 0$, it follows from $w_1 = (1 - 4G_0 - \theta) / (1 - 2G_0)$ that reforms under consideration must commence at $G_0 < (1 - \theta) / 4$.

[9]The initial downturn of wages implies that the relative factor price shift in the dis-

favour of labour dominates the efficiency gain. This result may be altered if the intertemporal elasticity of substitution in consumption is increased from its assumed level of one. It is easily shown, however, that an overnight removal of government employment inevitably gives reduced wage in the corresponding continous time model, irrespective of the intertemporal elasticity of substitution. As the present model is a discrete time approximation to this continous time reality, it is essential that it reflects the feature of wage drop following big bang.

[10]The numerical example is based the following parameter values (to be used throughout the paper): $\theta = 1/8$, $G_0 = 1/6$. Note that the implicit assumption about a period length of three years implies a year by year discount factor of $\theta/3 = 4.2\%$.

[11]A complete picture of the transitional wages, w_1° and w_2°, is given in Figure 3 below.

[12]It should be noted that the equilibrium wage in Table 1, in Figure 2, and in the following figures are calculated under the assumption that $L = 1 - G$. Thus, the implication for the formal labour supply, when skilled workers enter into self-employment as $w < \gamma$, is not accounted for. In an all-inclusive calculation the wage drop would be somewhat moderated as soon as the constraint $w = \gamma$ was broken. This modification do not alter the essential result that unskilled labour is pushed below subsistence for any reform requiring $w < \gamma$.

[13]Note that the status quo is moderate as it does not imply a restoration of the historic public employment G_0. The downsizing of the government is brought to the point made possible by the private investments already made, but further reductions are not made. This fits well with observations from Eastern Europe where political backlashes take the form of freezing of the reform processes rather than a complete return to the historic state.

[14]The equilibrium concept is Nash equilibrium with all agents as players and with full information. Hence, equilibrium requires concurrent expectations, ruling out solutions where one fraction expects cancellation and the other completion.

[15]As γ increases, the *fully credible* range gets smaller, and for sufficiently high γ, no fully credible two period reform exists. The reform will then have to go over three or more periods. This case will not be discussed, but it is a straight forward extension of the present analysis.

[16]This issue is discussed at length in Mehlum (1999).

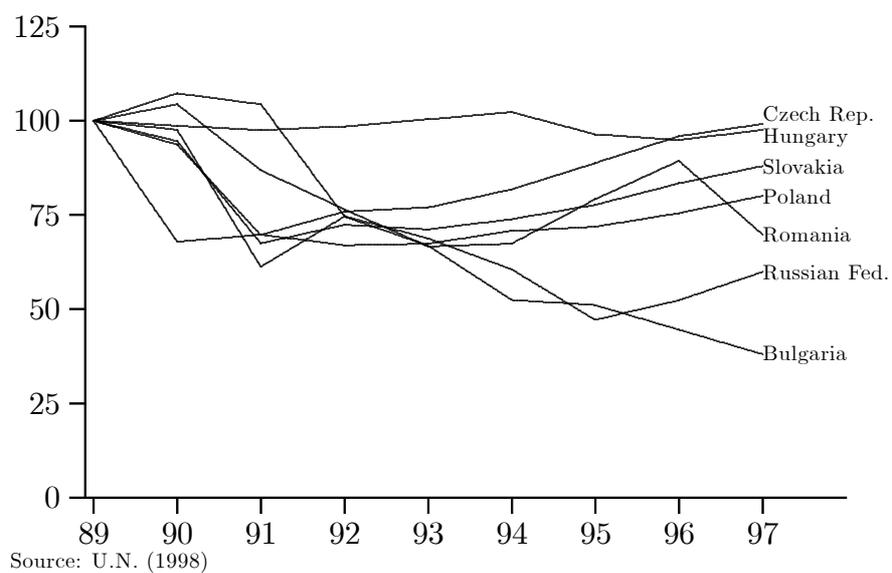Figure 1: Real wage for Eastern Europe (1989=100)

Source: U.N. (1998)

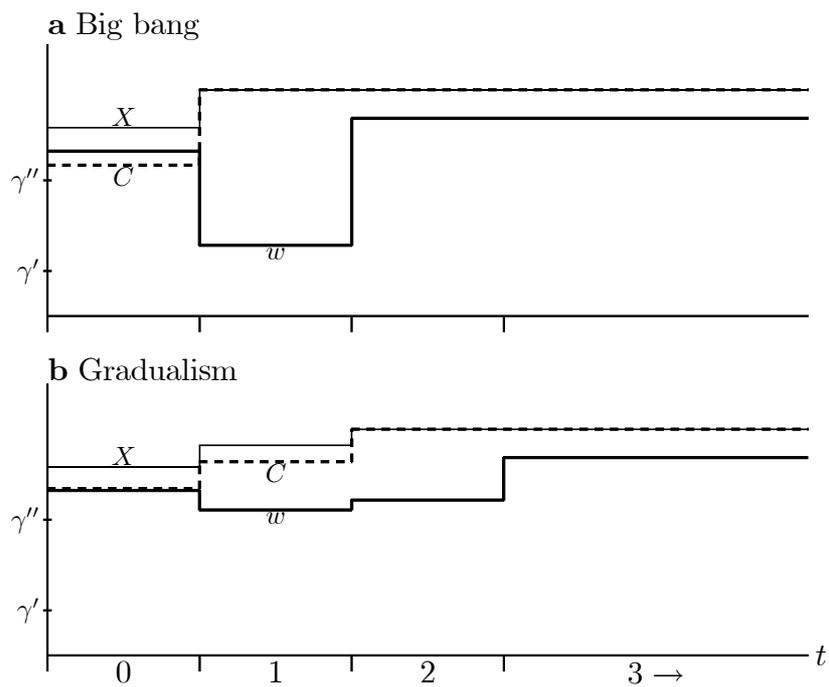Figure 2: Production, wage, and consumption paths following reform

a Big bang

b Gradualism

Table 1: Transition paths for interest rate and wage

Period	r_t°	w_t°
0	θ	$(1-\theta)(1-G_0)$
1	$\dfrac{\theta+2G_0-G_1(3+2\theta)}{1-2G_0+G_1}$	$\dfrac{1-4G_0-\theta+G_1(3(1+\theta)+4(G_0-G_1)-2\theta G_1)}{1-2G_0+G_1}$
2	$\dfrac{\theta+2G_1}{1-2G_1}$	$\dfrac{1-4G_1-\theta}{1-2G_1}$
3	θ	$(1-\theta)$

Table 2: Timeline for the reform process

Period:	variable:	determined via:
history	r_0, K_0, G_0, X_0	given by history
0 start	G_1^A, G_2^A	reform announcement
0 middle	r_1, K_1	savings
0 end	G_1, G_2	vote
1	X_1, r_2, K_2	production and savings
2	X_2, r_3, K_3	production and savings
3	X_3, r_4, K_4	production and savings

Table 3: Transition paths for interest rate and wage in cancelled reform

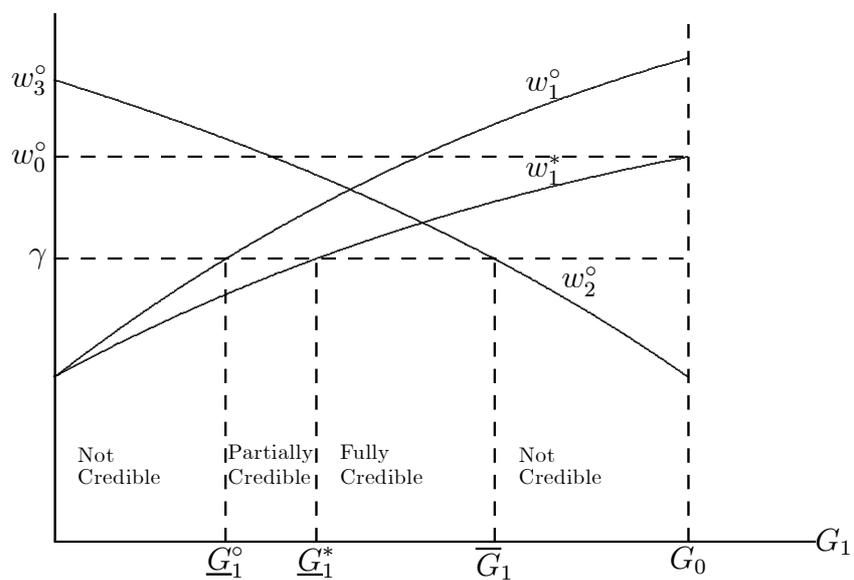| Period	r_t^*	w_t^*
0	r_0°	w_0°
1	$r_1^\circ + G_1 \dfrac{(1+\theta)}{1-2G_0+G_1}$	$w_1^\circ - G_1 \dfrac{(1+\theta)(1-G_1)}{1-2G_0+G_1}$
2	$r_2^\circ - 2G_1 \dfrac{(1+\theta)}{1-2G_1}$	$w_2^\circ + G_1 \dfrac{2(1-\theta)G_1+1+3\theta}{1-2G_1}$
3	r_3°	$w_3^\circ - (1-\theta)G_1$

Figure 3: Wages following completed and cancelled reform

Figure 4: Equilibria following reform announcements