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How Stakes in Restructuring put Restructuring at Stake

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Abstract: In a model where privatisation of inefficient SOE's is performed by allocating shares to different types of agents in society we analyse the conflict between shareholder and stakeholder interests. In particular, some of those that receive shares in a firm, that suffers from inefficiency, do have a stakeholder interest in the same inefficiency. Additionally, we introduce a dependence of agent (and hence firm) decisions on the entire privatisation program: for one type of share/stakeholder the effect with which inefficiency enters his stakeholder interest can switch sign depending on the overall economic structure that results from privatisation.
The paper determines the effects on restructuring (elimination of the inefficiency) in a general share/stakeholder conflict setup. It is found that for sensible specifications of the conflict restructuring will fall short of complete efficiency. The dependence of one agents stakeholder function on the overall privatisation structure, can amplify this effect. Further we introduce a privatising government that in this setup maximises an objective function, taking into account the overall restructuring level and political support from the distribution of shares.

Key words: Privatisation, Restructuring, Shareholder/Stakeholder conflict, Insider Shares, Corporate Control, Transition.

JEL classification: D23, J50, L20

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1. Introduction

Restructuring is too slow

While, by now, privatisation programs have emerged in almost all transition economies, restructuring - the elimination of inefficiencies - is lacking behind.[2] We observe that employment is falling by less than output. Overmanning prevails in many firms (McMillan, 1995), (Aghion and Carlin, 1996), (Commander, Dhar and Yemtsov, 1996). Enterprises continue to provide a host of social services and assets for the benefits of their workers (Freinkman and Starodubrovskaya, 1996), (Commander and Schankerman, 1997). The extensive use of inter-enterprise arrears and wage-arrears hinders smooth transactions and supplies. Firms remain in inefficient channels of old suppliers and distributors. Large scale asset stripping wrecks firms (Carlin et al, 1994). Overall it appears that - contrary to common belief - privatisation by itself does not warrant restructuring. This paper endeavours to contribute to an explanation of this phenomenon, and indeed claims that privatisation programs might have inherent designed faults, such that they do result in incomplete restructuring.

Stake holdings matter

The argument commences by the observation, that frequently new owners of privatised SOE not only hold shares but also stakes in the same firm. This diatonic role of an agent as both a shareholder and a stakeholder gives rise to potential conflict. Stakes in firms and in firms' inefficiencies can be of various kinds. Agents might be suppliers of labour or other inputs, debtors or creditors,[3] beneficiaries of firm social assets, distributors of firm output, leaseholders of firm assets, etc. That stakeholder issues are a problem in privatisation is for example pointed out by Aghion and Burgess (1994). A decisive but informal description of share/stakeholder conflicts is given by Nuti (1996a+b). He points out that share/stakeholder setups turn into a problem once an individual holds a smaller share in equity than in the total input supplied (benefits received, assets stripped, etc.), implying that their stakeholder interests override their

2. Privatisation of firms redirects the ownership rights from the public domain into the private domain. Restructuring addresses the efficiency of companies - governed by a profitability objective. For an extended overview on the issues of privatisation see Bolton and Roland (1992) who compare strategies in Poland, Hungary, Czechoslovakia and East Germany or Hare (1994) who identifies the core methods, constraints and costs of privatisation. For an extensive overview of privatisation programs and restructuring outcomes in transition economies see the World Development Report 1996 (World Bank, 1996).

3. A good example of this is the Czech privatisation program, where banks both appear as managers of investment funds (thus have a role in corporate control), and as providers of credit to the privatised firms.

shareholder interests.[4] However, since a small share in equity reduce the individuals influence on corporate control, it is not entirely obvious how the stakeholder interests can actually hinder restructuring. In a general framework, the present paper analyses how - and under what conditions - conflicts between shareholder interests and stakeholder interests can cause failures in restructuring. In what follows we distinguish between positive and negative stakeholder interests, circumscribing an agent's perception of inefficiency as good or bad in terms of their stakes in it.

Stakes depend on the overall privatisation

Our model allows the sign of stakeholder interests in inefficiency (and hence restructuring) to depend on the overall structure of the economy and hence the privatisation program. For example managers might want to appear hard or soft on excess labour (or firm social assets) depending on the job opportunities that either behaviour gives in the future - job opportunities again depend on the relative number of worker controlled firms in the economy (Carlin et al, 1994, p.428), (Schröder, 1997). The use of inter-enterprise debt (IOUs) might be favourable if everybody else uses them but harmful if only few other firm accepts them. Switching to new and efficient suppliers and distributors is only an advantage if sufficiently many of those suppliers and distributors have emerged under privatisation, etc. These types of interdependencies are a particular feature of transition economies, since we do not just privatise a single firm operating in an else efficient and market economic environment, but we privatise the entire economy at once.

Government choosing a program

The model examines how a government - maximising it's objective function - will behave under such conditions. In the general framework with two different types of share/stakeholders we introduce a government that decides on the privatisation program, i.e. the policy that determines the distribution of shares to agents in society. The government is assumed to be interested in restructuring and political support which can be obtained by giving shares to certain socioeconomic groups. The model shows that the allocation of shares ends in the extremes, favouring either group of agents depending on the governments preferences. However, enough dependence of one group's restructuring decision on the overall privatisation program can moderate the government's extreme policy choice.

4. One extreme example might be a firms work force. The workers might only hold part of the equity shares in their firm, but receives all wages expenditure of the firm, hence workers will - ceteris paribus - in a share holder meeting vote for wage rises.

Application to insider privatisation

Finally, we examine the specific case of insider privatisation. The inefficiency of firms consist of excess labour. The usual claim for this type of situation is that the allocation of control rights to managers will ensure fast and complete restructuring, as opposed to worker controlled companies (Brada, 1996), (McMillan, 1995) and (Aghion, Blanchard and Burgess, 1993). However, once managers hold stakes in the form of future career opportunities, they might fail to restructure rigorously given that a lot of job opportunities are with worker controlled firms (Schröder, 1997). The present model shows, that the governments decision on a privatisation program can again be dragged from the extremes to a moderate ownership mix in the economy.

Results

The main findings of the paper are: 1) Allocation of shares to stakeholders will either promote or hinder restructuring dependent on the sign of their stakeholder interests. 2) Soft budgets will increase the inefficiency of a firm if the controlling group has a sufficiently positive stakeholder interest in inefficiency. 3) Shares held by outsiders (i.e. private citizens or foreigners) i.e. non-stakeholders rather than by stakeholders increase the restructuring incentives of pro-restructuring owners.[5] 4) If the stakeholder interest of one type of agent (g) depends on the structure of the economy and is such that his restructuring willingness increases as the economy features more of his own kind, then it is important to privatise a big chunk of SOEs into the same agent type (g) controlled companies in one stroke. 5) If a government needs to obtain support for reforms by allocating shares to groups that hold positive stakes in inefficiency, then this may hinder restructuring. But with a strong enough dependence of the stakeholder function of the pro-restructuring socioeconomic group, the government's choice can be a 'middle of the road' privatisation program, favouring neither group in particular. Hence the model mirrors part of the experience in transition economies: lack of restructuring, 'half-hearted' privatisation programs, dominance of insiders.

Further case study evidence and stylized facts

Additionally to the central observation that restructuring is lacking behind, and that shareholders often are stakeholders in the firms they own, we have a number of additional stylized facts, that feature in our model. Due to low (and skewed) private wealth in transition economies, firms are seldomly actually sold when privatised. Voucher privatisation, and steep discounts have been the rule. Further we observe obstacles to the trading of shares: the absents of a stock market, share ownership is conditioned on continued 'membership' in the firm, share registries are often

5. A similar importance of outsider share owners for restructuring is found in Aghion and Carlin (1996) and Aghion and Blanchard (1996).

maintained by the firm it self. That for insiders (an extreme form of stakeholders) the resale of shares might be unattractive is examined in Aghion and Blanchard (1995). The widespread emergence of insider owned firms and sluggish restructuring (World Bank, 1996) is an example of governments trying to induce support for reforms at the cost of prevailing inefficiencies. Carlin et al (1994) found that deep restructuring was missing in transition firms. This was the case, even though managers where paid according to profit, hence would have been efficient managers in a market economic setting. In a case study on Russia it is observed that continued overmanning and excessive social assets of firms are independent of the ownership form (Commander, Dhar and Yemtsov, 1996), (Commander, Lee and Tolstopiatenko, 1996). There is a definite positive impact of outside and foreign shareholders on restructuring (Aghion and Carlin, 1996), (Aghion and Blanchard, 1996).

Structure of the paper

The paper proceeds as follows: section 2 introduces the model. Section 3 analysis the restructuring decision of individual firms, given a privatisation program. These decisions depend crucially on the stakeholder functions of its majority shareholders. In section 4 we take one step back and introduce a government that faces the model of section 2 and 3 and has to pick a privatisation program where shares are allocated to stakeholders. Section 5 applies the model to the case of pure insider privatisation. Finally, section 6 concludes the paper.

2. The Model

In this section we start by describing firms after privatisation, later in section 4 we introduce a government - understanding firms behaviour - that picks a privatisation program.

A government has imposed a 'give away' privatisation program. Each firm i (i = 1...N) is privatized such that all shares are allocated between three types of agents. Shares are given either to two different types of stakeholders g_i and h_i or to a third type of agent, namely non-stakeholders o_i. Stakes are only in the inefficiency, and payoff from the inefficiency can be either positive or negative, depending on the stakeholder preferences as separated by their behavioural functions $g(\cdot)$ and $h(\cdot)$ respectively. Ownership of shares is modelled by splitting the profits of firm i between representative agents of the three shareholder groups. With regard to corporate control we assume that control rights and hence the decision whether to restructure or not follows directly from the property rights.

Firms vary as to the allocation of shares. The agent g_i of firm i holds a proportion α_i of all the

shares in his firm, while agent h_i holds $1-\alpha_i$, ($\alpha_i \in [0,1]$). We assume that the distribution of shares in the economy (to be held by stakeholders) may be represented by a finite sample (= number of firms: N) of α_i's drawn from a density function $f(\alpha)$ with a distribution function $F(\alpha)$. Hence, the function $f(\alpha)$ represents the outcome and type of the privatisation program that has been administered by the government. This tool allows us to assess the behavioural effect of the overall privatisation environment on the agents in the individual firms. That the density function $f(\alpha)$ can be controlled by the government and does not change due to resale of shares, can either represent the absence of a stock market, or that the government understands all resale motivations and has administered the original share issue such that it results - after all resale has taken place - in the function $f(\alpha)$.

Further, the privatisation program administered by the government features outside owners. A portion $(1-2\theta)$ of all shares in each firm is given to outsiders o_i who hold no stakes in the inefficiency ($\theta \in [0,½]$)[6]. The total amount of shares in firm i is thus given by $\alpha_i + (1-\alpha_i) + (1-2\theta) = 2 - 2\theta$. Note that we implicitly assume that at least half of all the shares in a firm are with stakeholders, thus as long as the two stakeholders agree on a course of action it will be implemented. Additionally we assume that outsiders always and passively vote and agree with the decisions of the g agent.[7] Hence the g agent of firm i effectively assumes corporate control once $\alpha_i > \theta$, i.e. at least a fraction θ of all shares in firm i is controlled by the g agent, else the h agent is in charge.[8] A useful reference case will be $\theta = ½$, i.e. no outside owners $(1-2\theta)=0$ and hence 0.5 of the shares give complete control rights to group g.

Assuming that there are no deficiency of demand issues and that capital is fixed, firms have an potential gross profit $\Pi_i + b_i$. Where Π_i is the profit from fully efficient production and b_i is a transfer payment from the government. The transfer represents soft budget constraints, and is activated in case of illiquidity: or - in a slight abuse of terminology[9] - called bankruptcy. The

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6. This somewhat cumbersome way of introducing outside (non-stakeholder) shares is designed such that we receive a tractable control parameter θ, which turns out to be the threshold share size for agent g_i to assume corporate control in firm i. Formally also values of $\theta > ½$ are possible, however - in terms of interpretation - we would have to assume a regime different from majority decision making within the firm.

7. Given the utility function introduced below the o_i agent will be pro-restructuring. Hence this assumption is acceptable only as long as we interpret θ in cases where the g agent is pro-restructuring.

8. To see why this holds, realise that the necessary amount of shares to assume corporate control must be greater than $\frac{(2-2\theta)}{2} = 1-\theta$, i.e. half of all the shares in firm i. Hence, to determine when agent g will be in charge we solve $\alpha_i + (1-2\theta) > 1-\theta$ which turns out as $\alpha_i > \theta$. For the h group to assume control a similar argument holds.

9. In a static model we can not really discriminate between flow (liquidity) and stock (bankruptcy) variables.

joined gross profit to agent g_i and h_i is given by $\pi_i = \frac{(\Pi_i + b_i)}{2-2\theta}$.

Firms start out with some inefficiency. In particular firm i has an amount of inefficiency Λ_i at a cost w. The inefficiency is covered out of ($\Pi_i + b_i$), and the gross loss due to inefficiency for group g and h in firm i is given by $wL_i = \frac{w\Lambda_i}{2-2\theta}$. Accordingly overall net profits of firm i are given by ($\Pi_i + b_i - w\Lambda_i$), while net profits to the agents of group g and h are given by ($\pi_i - wL_i$). To simplify the analysis and without loosing generality we assume that a fraction $\frac{1-2\theta}{2-2\theta}$ of the total inefficiency Λ_i is pure waste, which does not enter the stakeholder functions, hence we get stakeholder functions $g(L_i,...)$ and $h(L_i,...)$. The specification of inefficiency relates to Shleifer and Vishny (1994); in their model, where politicians bribe managers to take on extra labour in order to reduce politically unpopular unemployment, L_i is the number of extra (idle) workers. In the present model we take L_i to represent any form of inefficiency that reduces company profits: the number of idle worker hours, units of social benefits, amount of asset stripping, suboptimal leasehold contracts, extension of inter enterprise arrears in firm i, etc. Thus restructuring means to cut down Λ_i or equivalently L_i.

It is possible to define the soft budget as:

$$b_i = \begin{cases} 0 & if \quad \Pi_i - w\Lambda_i > 0 \\ Min\{w\Lambda_i - \Pi_i, b^{\max}\} & if \quad \Pi_i - w\Lambda_i < 0 \end{cases}$$

We proceed to postulate an agent g type utility function, which in its open version will be of the form $U_{g_i} = G(\alpha_i, \pi_i, L_i, F(\theta), \Psi)$, implying that agent g is the type whose stakeholder interest depends on the overall privatisation program. In particular we define Ψ as the relative share of h type controlled firms in the economy that makes the g type stakeholder interest switch sign, i.e. whether inefficiency enters as a good or bad in the agent g's stakeholder function. Our general form of U_{g_i} is specified as:

$$U_{g_i} = \alpha_i(\pi_i - wL_i) + g((F(\theta) - \Psi)L_i) \qquad (1)$$

The g type cares about the dividend on his shares, paid out of net profits. This is his shareholder interests. The function $g(\cdot)$ represents his stakeholder interest in the inefficiency L_i. The sign with which L_i enters the stakeholder function depends on the term $(F(\theta)-\Psi)$. The distribution function at θ tells us what share of all privatised firms in the economy is controlled by the h group, while

Ψ tells us how many h controlled firms are acceptable for the g type before the effect of inefficiency on his stakeholder interest changes sign. It should be obvious by now, that much of the following analysis is concerned with the resulting sign of $\frac{dU_{g_i}}{dL_i}$ (and $\frac{dU_{h_i}}{dL_i}$ respectively).

The sign switch of the stakeholder function for group g captures effects of the overall privatisation program on the individual's stakeholder interest; modelling that stakeholder interests - opposed to shareholder interests - are not independent of the economic environment. For instance managers (g) that hold stakes in restructuring in the form of career opportunities will want to appear hard or soft on excess labour (firm social assets) depending on the job opportunities that either behaviour gives in the future. Job opportunities again might depend on the relative number of worker (h) controlled firms in the economy. For a different example, say that h controlled firms never accept IOUs, but that the use of inter-enterprise arrears is an advantage to g type controlled firms -- if there are many firms accepting them. As soon as there is a share Ψ of h controlled firms, g agents stop to perceive IOUs as beneficial. Similarly, decisions of switching to new and efficient suppliers, distributors, production methods and standards can feature this type of dependence on the overall structure. Such inter-dependencies are typical to transition economies, since we do not just privatise one single firm operating in an efficient economic environment, but we aim to privatise the entire economy at once.

The utility function of the representative h shareholder in firm i is given by:

$$U_{h_i} = (1-\alpha_i)(\pi_i - wL_i) + h(L_i) \qquad (2)$$

The h agent cares about the dividend on his shares ($1-\alpha_i$) and has the stakeholder function $h(L_i)$, where the sign with which inefficiency enters is independent of the economy's structure, i.e. the function $h(L_i)$ does not depend on $f(\cdot)$ or $F(\cdot)$.

For completeness we can also define the utility function of outsiders as $U_{o_i} = (1-2\theta)\frac{(\Pi_i + b_i - w\Lambda_i)}{(2-2\theta)}$, maximising their utility they will always vote for $\Lambda_i=0$ or equivalently $L_i=0$, i.e. pure profit maximisation.

Further we require that the companies' net profits are semi positive and that efficiency can only be obtained to the degree of $\Lambda_i=0$ and not beyond. Hence:

$$(\pi_i - wL_i) \geq 0 \qquad (3)$$

$$L_i \geq 0 \qquad (4)$$

Henceforth we call (3) for the liquidity constraint.[10] We are now able to state our first result.

> *Result 1:*
> The inefficiency level in firm i is restricted by $L_i \in [0, \frac{\pi_i}{w}]$. The maximum degree of inefficiency for firm i rises in b_i.

Result 1 follows from (3) and (4) and the fact that π_i rises in b_i. Hence, the possible inefficiency found in a firm i is bounded by the liquidity constraint and the non-negativity constraint; further, soft budgets increase the maximum possible inefficiency level in a firm.

In both utility functions (1) and (2) the choice variable is L_i, i.e. the amount of inefficiency (excess labour or social assets, use of inter enterprise arrears, asset stripping etc.) accepted in a particular firm i. Our model boils down to a nonlinear programming problem. The maximand and the constraints of our problem change for different firms, depending on α_i, since the control rights change with α_i being greater or less than θ. In particular, if $\alpha_i > \theta$, then we maximise U_{gi} subject to $U_{hi} \geq 0$ and (3) and (4); while for a company $\alpha_i < \theta$ we maximise U_{hi} subject to $U_{gi} \geq 0$ and (3) and (4). Demanding that the utility of the opposing part is non-negative represents a participation constraint, saying that their outside option has zero utility.

The present model is of a simple static form. However it allows a detailed analysis of the effect of the shareholder/stakeholder conflict on the amount of inefficiency chosen by different owner groups and hence the level of restructuring in the economy. The model takes a snapshot of the restructuring incentives of different shareholders after a privatisation program is administered. Hereby we are able to isolate the role of the overall privatisation program for the individual firm and the peculiar effect that stakeholder interests and their dependence on the overall economic structure might have in a transition country. The tractability of this setup allows us to introduce a government that chooses the $f(\alpha)$-privatisation function, such as to maximise its political objective function, to be introduced in section 4.

3. Restructuring decisions in individual firms

We can now start to analyse the restructuring behaviour of different firms in the economy. We distinguish between two different cases, depending on whether agent g or h assumes corporate control. However, the entire economy will be composed of both cases - types of firms - as a result

10. We use the name even though (3) is defined in terms of liquidity, implicitly assuming that there are no capital markets where firms can loan in case of illiquidity.

of the privatisation program described by the density function f(α) and the o_i shares (1-2θ).

CASE 1: Agent g Controlled Firm

Here we show what should be intuitively straight forward, namely that the g agent opts for restructuring if he dislikes inefficiency as a stakeholder, and opts for no-restructuring if he holds sufficiently positive stakes in the inefficiency. The analysis is refined by the fact that his perception of inefficiency depends on the ratio of h controlled firms in the economy. Formally we consider the case of a firm where $\alpha_i > \theta$. Using equation (1) to (4) we find our problem to be given by:

$$\max_{L_i} U_{gi} = \alpha_i(\pi_i - wL_i) + g((F(\theta) - \Psi)L_i)$$

$$s.t.$$

$$U_{hi} = (1-\alpha_i)(\pi_i - wL_i) + h(L_i) \geq 0$$

$$(\pi_i - wL_i) \geq 0$$

And the non-negativity constraint $L_i \geq 0$. To solve the nonlinear program we compose the Lagrangian Z_g to be maximised:

$$Z_g = \alpha_i(\pi_i - wL_i) + g((F(\theta) - \Psi)L_i) + \lambda_1((1-\alpha_i)(\pi_i - wL_i) + h(L_i)) + \lambda_2(\pi_i - wL_i)$$

Appendix 1 derives the Kuhn-Tucker conditions for Z_g. The Kuhn-Tucker conditions describe the general and complete solution of our problem. But, in order to be more explicit about the solution we need the following assumption:

Assumption:

Assume both U_g and U_h to be monotonic functions in L_i for the range $[0, \frac{\pi_i}{w}]$.

That range $[0, \frac{\pi_i}{w}]$ is the only relevant range follows from result 1. One the one hand does the assumption of monotonicity restrict our problem to corner solutions, on the other hand we can explicitly solve for individual firms and aggregate them in a later stage, because monotonicity ensures that there is a finite number of possible firm decisions. In particular, there are only three possible levels of inefficiency - L_i^a, L_i^b and L_i^c - that can be a solution to the agent g maximisation problem. Two of the points are $L_i^a = 0$ and $L_i^b = \frac{\pi_i}{w}$. The third possible solution point derives from the first constraint. In order to find an explicit expression we use the first order Taylor approximation to (2)

$$U_{h_i} = (1-\alpha_i)\pi_i - (1-\alpha_i)wL_i + h(0) + h'(0)L_i \geq 0 \qquad (2')$$

Replacing the inequality sign by an equality we can solve for the third possible L_i level L_i^c:

$$L_i^c = \frac{\pi_i + \frac{h(0)}{(1-\alpha_i)}}{w - \frac{h'(0)}{(1-\alpha_i)}} \qquad (5)$$

To understand the intuition of (5) assume for a moment that h(0)=0. For an h'(0)>0 that is the h group holds a positive stake in the inefficiency, $L_i^c > L_i^b$ and hence only L_i^a and L_i^b are possible maxima of the program. This is intuitively compelling, since the stakeholder function of the agent h type prefers inefficiency. Hence the upper bound on inefficiency is given by the liquidity constraint. However, if h'(0)<0 that is the h group holds a negative stake in the inefficiency, $L_i^c < L_i^b$. Now, the dislike for inefficiency by the h group reduces the upper possible inefficiency level away from $\frac{\pi_i}{w}$.

In order to restrict our search for solutions to the program to a comparison between L_i^b and L_i^c we assume $h(0) \geq 0$.[11] What inefficiency level is chosen by agent g depends now on (1), in particular it depends on the slope of the utility function:

$$L_i = \begin{cases} 0 & \text{if} \quad U_{g_i}' < 0 \\ Min\left\{ \frac{\pi_i + \frac{h(0)}{(1-\alpha_i)}}{w - \frac{h'(0)}{(1-\alpha_i)}} \, , \, \frac{\pi_i}{w} \right\} & \text{if} \quad U_{g_i}' > 0 \end{cases} \qquad (6)$$

Since we assumed monotonicity for U_{gi} we just need to evaluate the slope of (1) at zero, again using a first order Taylor approximation:

$$U_{g_i} = \alpha_i(\pi_i - wL_i) + g(0) + g'(0)(F(\theta) - \Psi)L_i \qquad (1')$$

Differentiating (1') with respect to L_i:

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11. This assumption suffices to ensure that the function U_{hi} cannot cross the L_i dimension from below in $[0, \frac{\pi_i}{w}]$. If the opposite was the case we would need to compare L_i^a and L_i^c in order to determine the effective lower possible solution. Appendix 3 derives conditions that guarantee that only L_i^a and L_i^b can be solutions to the problem.

$$U_{g_i'} = -\alpha_i w + g'(0)(F(\theta) - \Psi) \tag{7}$$

Now we distinguish between two different types of g agents.

Definition:
The g agents are **type 1** if g'(0)>0. The g agents are **type 2** if g'(0)<0.

This says, that the g agents in our economy are type 1 if they perceive inefficiency as a good - in their stakeholder function - once there are many h agent controlled firms around, namely ($F(\theta)$-Ψ)>0. Accordingly type 1 starts to dislike inefficiency once there are too few h controlled firms, namely ($F(\theta)$-Ψ)<0. Similarly type 2 perceives L_i as a bad (in his stakeholder function) if there are many h controlled firms, and as a good if there are few h controlled firms.

It is now possible to define the restructuring decision in case 1.

Result 2a:
Agent g in firm i has solution L_i^a - complete restructuring - as his maximising choice if his individual

$$\alpha_i > \alpha^* = (F(\theta) - \Psi)\frac{g'(0)}{w}. \tag{8}$$

The result follows from (6) and (7). The value α^* is that value which exactly suffices to induce the g agent, who is in control of his firm,[12] to opt for complete restructuring, i.e. reducing inefficiency to zero. In order to interpret result 2a, say the g agents are of type 1. Then they will always restructure if there are few h controlled firms ($F(\theta)$-Ψ)<0, since now the right hand side of (8) is negative. However, once there are many h controlled firms, type 1 g agents will stop to restructure, if their individual $\alpha_i<\alpha^*$. The critical α^* falls if the cost of the inefficiency rises. This is intuitively appealing, since the cost of the inefficiency (w) enters only the shareholder interests but not the stakeholder interests. To see why, note that the conflict between both interests arrises once the stakeholder interests in the inefficiency are positive (type 1 and ($F(\theta)$-Ψ)>0). Starting from an initial situation, where the stakeholder interest dominated the shareholder interest, that is $\alpha_i<\alpha^*$, a sufficient rise in the cost of the inefficiency can ensure that condition (8) is fulfilled.

12. Control of firm i is assumed by agent g if $\alpha_i>\theta$, i.e. we are still in case 1.

Also, for type 1 g agents if $(F(\theta)-\Psi)>0$, then for a large enough $g'(0)$ it will be the case that $\alpha^*>1$. Hence, none of the g controlled firms are restructured.[13] If the g agents are of type 2 ($g'(0)<0$) the analysis is different. In particular, if there are many h controlled firms, L_i is a bad and $\alpha^*<0$, hence any α_i suffices to induce the g agent to restructure. However, if there are only few h controlled firms, then there can be some α_i that does not suffice to induce restructuring.

We can rewrite result 2a as conditions for the two possible types of g agents, this time by (6) stating them in terms of <u>not</u> restructuring:

Result 2b:

The choice of a g agent in charge of firm i is given by

$$\begin{aligned} &\textit{Type}1\ (g'(0)>0): \quad L_i=\textit{Min}\{L_i^{\,b},L_i^{\,c}\} \quad \textit{if} \quad F(\theta)>\frac{\alpha_i w}{g'(0)}+\Psi \\ &\textit{Type}2\ (g'(0)<0): \quad L_i=\textit{Min}\{L_i^{\,b},L_i^{\,c}\} \quad \textit{if} \quad F(\theta)<\frac{\alpha_i w}{g'(0)}+\Psi. \end{aligned} \tag{9}$$

Result 2b say's for type 1, that if there are sufficiently many of the h controlled firms as an outcome of the privatisation program, than the g types will continue with the inefficiency in their firm. But rising cost of inefficiency, a larger share in their own firm, or a reduced 'like' for inefficiency in their stakeholder function ($g'(0)$ smaller), will make this situation less likely, until the right hand side becomes bigger than one. Now all g agents restructure. On the other hand if the g agents are type 2 instead, then a small portion of h controlled firms induces continued inefficiency in the g controlled firms. To see the role of outside owners assume the g agents are type 1. The share of h controlled firms falls as θ falls, since $F'(\alpha)=f(\alpha)\geq 0$. Hence an increased share of outside owners $(1-2\theta)$ will ensure more firms to be restructured. Note that in this situation the decision of the g agents will be in the best interests of the passive outside shareholders.

Result 3:

a) Given that for some firm i the conditions in (9) are fulfilled, then, ceteris paribus, soft budget constraints b_i will increase the overall inefficiency of the economy.
b) Given that g agents are type 1, and for some firm the condition in (9) is fulfilled, then, ceteris paribus, a sufficient rise in the share to outside

13. In fact this case occurs once $w=(F(\theta)-\Psi)g'(0)$, i.e. the marginal benefit (for $\alpha_i=1$) of restructuring equals the marginal cost.

owners o_i will increase overall efficiency of the economy.

Result 3a extends result 1 and follows from the specification of L_i^b and L_i^c (5). Note that in both π_i enters with a positive sign, and remember that $\pi_i = \frac{(\Pi_i + b_i)}{2-2\theta}$. Result 3b - which corresponds nicely to the stylized facts for transition economies - follows from the definition of outsider shares $o_i=(1-2\theta)$, i.e. a rise in the outsider share is defined as a fall in θ. Given that the distribution function $F(\cdot)$ must be monotone and positively sloped, result 3b is derived.

The above analysis exhausts the possible effects in case 1, where the stakeholder function of the agent who assumes corporate control, depends on the overall composition of the economy.

CASE 2: Agent h Controlled Firm

Here we analyse the, in fact simpler, case of the h agents who do not have dependence of their stakeholder interests. What should be intuitively clear, is that the h agents decision on inefficiency depends solely on the sign of his stakeholder function $h(L_i)$; only if he holds sufficiently positive stakes in inefficiency can his stakeholder interests override the loss that L_i imposes on him as a shareholder.

Formally we analyse the case where $\alpha_i<\theta$. Parallel to case 1 we use equation (1) to (4). Our problem is given by:

$$\max_{L_i} U_{h_i} = (1-\alpha_i)(\pi_i - wL_i) + h(L_i)$$

$$s.t.$$

$$U_{g_i} = \alpha_i(\pi_i - wL_i) + g((F(\theta)-\Psi)L_i) \geq 0$$

$$(\pi_i - wL_i) \geq 0$$

And the non-negativity constraint $L_i \geq 0$. The Lagrangian and the Kuhn-Tucker conditions are derived in appendix 2. To find an explicit solution we invoke again the monotonicity assumption, thus restricting our search again to corner solutions. Again, two of the three possible maximising points are $L_i^a=0$ and $L_i^b= \frac{\pi_i}{w}$. The third possible solution point derives from the first constraint - the utility function of the g group. In order to find an explicit expression we use the first order Taylor approximation to U_{gi} (1') and solve for the third possible L_i level L_i^c:

$$L_i^c = \frac{\pi_i + \frac{g(0)}{\alpha_i}}{w - \frac{g'(0)(F(\theta)-\Psi)}{\alpha_i}} \qquad (10)$$

For an interpretation of (10) assume for a moment that g(0)=0. If the g agents are of type 1 (g'(0)>0), then L_i^c becomes the binding upper constraint for an h controlled firm if there are few h controlled firms around $(F(\theta)-\Psi)<0$, i.e. via the dislike and dependence of the stakeholder function of the g agent - who is not in charge - the maximum inefficiency in the firm can be reduced. If there are many h controlled firms, than the liquidity constraint determines the maximum inefficiency. On the other hand if the g agents are of type 2, then the many h controlled firms of the economy will make L_i^c the binding upper constraint. Parallel to case 1 we assume $g(0)\geq 0$, in order to restrict our selves to a comparison between L_i^b and L_i^c.[14]

Whether the upper or the lower corner solution is the maximising inefficiency level for agent h depends on the derivative of (2). Via our first order Taylor approximation (2') we get:

$$U_{hi}' = (\alpha_i - 1)w + h'(0) \qquad (11)$$

From (10) and (11) we can determine the restructuring behaviour of an h controlled firm i:

Result 4:
The inefficiency choice of an agent h controlled firm i is given by:

$$L_i = \begin{cases} 0 & if \quad (1-\alpha_i) > \frac{h'(0)}{w} \\ Min\left\{ \frac{\pi_i + \frac{g(0)}{\alpha_i}}{w - \frac{g'(0)(F(\theta)-\Psi)}{\alpha_i}} \; , \; \frac{\pi_i}{w} \right\} & if \quad (1-\alpha_i) < \frac{h'(0)}{w} \end{cases} \qquad (12)$$

The result say's that for h'(0)<0 any amount of shares to the h agent will ensure complete restructuring, since both his shareholder interests and his stakeholder interest are negative in inefficiency. But if his stakeholder interests in the inefficiency are sufficiently positive, then the

14 As is shown in appendix 3 it is also possible to derive conditions on g(·) and h(·) such that the two possible solutions are always $L_i^a=0$ and $L_i^b=\frac{\pi_i}{w}$.

share to the h agent might be too small to warrant restructuring and the agent opts for the upper inefficiency level. But a larger share in his own company can suffice to ensure restructuring again. For a fall in w - the cost of inefficiency- the no-restructuring outcome is more likely to be the agents maximising choice. Result 4 is the general statement of the shareholder stakeholder conflict for economic agents. The analysis of Nuti (1996b) turns out to be a special case of (12).

Case 1 and 2 consider the restructuring decision of those in control of individual firms. There are several combinations of restrictions on g'(.) and h'(.). However, there are only two interesting situations in a transition context, namely the self-enforcing situations. That is, combinations where the dependence of the g groups perception of the inefficiency makes their behaviour switch to h type behaviour, once there are many h types. Or put differently, sufficient presence of the h group makes the g group mirror the h groups decision.

Definition:
We call an economy as: **Situation 1** if the h agents are such that $h'(0)>(1-\alpha_i)w$ and the g agents are of type 1. **Situation 2** if the h agents are such that $h'(0)<(1-\alpha_i)w$ and the g agents are of type 2.

To sum up our findings consider table 1, which utilises results 2 and 4. The shaded areas are the situation 1 and 2 settings. By full and no-restructuring we mean an $L_i^a=0$ and a $\text{Min}\{L_i^b, L_i^c\}$ outcome respectively.

TABLE 1: Restructuring outcome in firms, depending on the owner agents

Agent	**g:** if $\alpha_i>\alpha^*=(F(\theta)-\Psi)\frac{g'(0)}{w}$ do restructure	TYPE 1: $g'(0)>0$ Basic dislike for L_i		TYPE 2: $g'(0)<0$ Basic like for L_i	
h	Economy Firm	Many h agents $F(\theta)>\frac{\alpha_i w}{g'(0)}+\Psi$	Few h agents $F(\theta)<\frac{\alpha_i w}{g'(0)}+\Psi$	Many h agents $F(\theta)>\frac{\alpha_i w}{g'(0)}+\Psi$	Few h agents $F(\theta)<\frac{\alpha_i w}{g'(0)}+\Psi$
Dislike for L_i: $(1-\alpha_i)>\frac{h'(0)}{w}$	Case 1: $\alpha_i>\theta$ g in control	NO restructuring	FULL restructuring	Situation 2 FULL restructuring	NO restructuring
	Case 2: $\alpha_i<\theta$ h in control	FULL restructuring	FULL restructuring	FULL restructuring	FULL restructuring

Like for L_i: $(1-\alpha_i) < \frac{h'(0)}{w}$	Case 1: $\alpha_i > \theta$ g in control	Situation 1 NO restructuring	FULL restructuring	FULL restructuring	NO restructuring
	Case 2: $\alpha_i < \theta$ h in control	NO restructuring	NO restructuring	NO restructuring	NO restructuring

4. Choosing a privatisation program

So far we considered the restructuring incentives of different agents - and the resulting restructuring outcome for their firms - right after privatisation of SOEs has taken place. Now we go one step back and analyse what sort of privatisation program, that is the $f(\alpha)$ density function, a government - maximising its objective function - would choose. Given that the preferences of the government are between the support from group g and h and the amount of restructuring in the economy, their choice of $f(\alpha)$ should in a straight forward fashion depend on those preferences. However, since h controlled firms create an externality by influencing behaviour of g agents, the governments choice becomes more complex and deserves to be examined in detail.

For the reminder of the paper we will focus on situation 1 problems, where the h group has a sufficiently positive stake in inefficiency, i.e. prefers not to restructure, while the g group has a negative stake in inefficiency (i.e. prefers to restructure) unless there are many h agent controlled firms in the economy. Further, we set $\theta = \frac{1}{2}$, such that the outside owner shares $(1-2\theta)=0$. The positive effect of o_i shares on restructuring is shown in result 3b, also note that in a situation 1 setup it follows from result 2a and 2b that a fall in θ induced more g agents to restructure. This tool of designing a privatisation program is neglected in what follows. At this stage it is also worth noting, that the government could of course ensure restructuring in a firm i by giving outsiders a majority of shares in that firm, these types of firms are neglected in the present model - since the combined stakeholder share $(\alpha_i + (1-\alpha_i))$ always adds up to 1, while the outsider share $(1-2\theta)$ is always below 1.

We assume that the government cares about the shares allocated to the two active groups in society, since this buys political support. We denote the respective total amount of shares to the two groups by v_g and v_h.[15] Additionally the government cares about restructuring, either positively, because it promotes economic upswing, or negatively, because restructuring causes short term unemployment - assuming that the inefficiency consists of excess labour. The total

15. While α_i - drawn from $f(\alpha)$ - is a particular share size held by the representative g agent in firm i, v_g denotes the total amount of shares held by all the g agents in the economy.

share of completely restructured firms in the economy is denoted R. We assume that the conditions of appendix 3 are fulfilled, i.e. there are only two types of inefficiency levels possible for the individual firms. Further, we set $\pi_i=\pi$ for i=1,...,N. Thus all firms have identical gross profits. We postulate the governments utility function to be:

$$U_G = (1-\gamma-\eta)R + \gamma v_g + \eta v_h \tag{13}$$

Where $\gamma, \eta \in [0,1]$. The For $\gamma+\eta \in [0,1[$ restructuring is perceived as a good by the government, while for $\gamma+\eta \in]1,2]$ restructuring is a bad. If $\gamma+\eta=1$ the government only cares about the share holdings of the two socioeconomic groups in society. Note that (13) is not a social welfare function build on the utility of agents in society, but mirrors some re-election strategy of the government in an ad hoc fashion.

The total shares to the g and h group are given by integrating the density function times the individual firm shares for g and h over α from 0 to 1. Using integration by parts and defining (α) by $'(\alpha)=F(\alpha)$, we can write v_g and v_h:

$$\begin{aligned} v_g &= \int_0^1 \alpha f(\alpha,\phi)\, d\alpha = [F(\alpha,\phi)\alpha]_0^1 - \int_0^1 F(\alpha,\phi)\, d\alpha = 1 - \quad (1,\phi) \\ v_h &= \int_0^1 (1-\alpha) f(\alpha,\phi)\, d\alpha = [F(\alpha,\phi)(1-\alpha)]_0^1 + \int_0^1 F(\alpha,\phi)\, d\alpha = \quad (1,\phi) \end{aligned} \tag{14}$$

In the above we have redefined the density function by $f(\alpha,\phi)$ where ϕ is a general policy variable chosen by the government to manipulate the shape of the density function. Hence, $F(0,\phi)=0$, $F(1,\phi)=1$ and it follows that $(0,\phi)=0$. The government is determining the privatisation program by altering the shape of the density function. However, since we only got one policy variable ϕ the types of privatisation programs at the governments disposal are very limited. From (14) we can see that v_g and v_h depend on the area under the distribution function. As assumed above, privatisation has allocated all the shares in the economy to the two socioeconomic groups, hence $v_g+v_h=1$.

Now we turn to the amount of restructuring that a privatisation program will trigger, in the presence of a situation 1 type share/stakeholder conflict. As established in section 3 none of the firms controlled by an h agent will be restructured in a situation 1 problem. However, the g agent controlled firms will be restructured unless there are many h controlled firms in the total

economy. The critical α^* as defined by (8) determines the trigger value. Hence, in the general form R is defined by:

$$R = 1 - Max\{F(\theta), F(\alpha^*)\} = 1 - Max\left\{F(\theta), F((F(\theta) - \Psi)\frac{g'(0)}{w})\right\} \qquad (15)$$

Where $F(\theta)$ is the share of h controlled firms - and hence not restructured firms - in the economy, and $F(\alpha^*)$ is the share of h controlled firms plus those g controlled firms that do not restructure. Recall, that in the case where $\alpha^* < \theta (=½)$ condition (8) is dominated by the fact that those firms where $\alpha_i < \theta$ are h controlled, and hence do not restructure in the first place.

Explicit specification of the governments choice

To find an explicit solution for the governments maximisation problem we assume g'(0)=4w, and $\Psi = \frac{1}{2}$. Also we have to define a specific density function;[16] one function with the required features is:

$$\begin{aligned} f(\alpha,\phi) &= (2-\phi) - 2\alpha(1-\phi) \\ \textit{hence,} & \\ F(\alpha,\phi) &= \alpha(2-\phi) - \alpha^2(1-\phi), \\ (\alpha,\phi) &= \frac{\alpha^2}{2}(2-\phi) - \frac{3\alpha^3}{3}(1-\phi). \end{aligned} \qquad (16)$$

Where $\phi \in [0,2]$. The function $f(\alpha,\phi)$ favours h controlled firms for $\phi<1$ and g controlled firms for $\phi>1$, a $\phi=1$ value results in a uniform density function. With functions (16) and the above parameter restrictions we get $F(\theta,\phi)=F(½,\phi)=\frac{3-\phi}{4}$, $\alpha^* = Max\{0, 1-\phi\}$ and $(1, \phi) = \frac{4-\phi}{6}$. Using (14) and (15) we find the governments utility function (13) to be given by:

$$U_G = (1-\gamma-\eta)\left(1 - Max\left\{\frac{3-\phi}{4}, (2-\phi)Max\{0,1-\phi\} - (1-\phi)Max\{0,1-\phi\}^2\right\}\right) + \gamma\left(\frac{2+\phi}{6}\right) + \eta\left(\frac{4-\phi}{6}\right)$$

16. The model restricts the choice of a privatisation program to a simple $f(\alpha,\phi)$ function, which only allows for one dimensional manipulation. In practice privatisation programs can feature a host of further specifications: who governs the new firms, what are the investment plans, clauses stopping asset stripping etc. Also the interdependence of the g agents stakeholder function will typically depend on the structure in a particular industry. The model abstracts from such generalisations.

In order to maximise U_G we have to split the Max functions into their components. The outer, namely Max{F(½,ϕ), F(α*,ϕ)} can be decomposed by setting F(½,ϕ)=F(α*,ϕ). It turns out that this equality is fulfilled for $\phi=\frac{1}{2}$. In particular F(½,ϕ)>F(α*,ϕ) for $\phi>\frac{1}{2}$.[17] Hence, the inner $\text{Max}\{0,1-\phi\}$ can be ignored and the value 1-ϕ be substituted. The reason is that the inner Max function is activated only for values of $\phi<\frac{1}{2}$, where (1-ϕ)>0. Thus we can deal with the maximisation problem of the government in two separate steps. Step 1 for the lower part of the policy variable spectrum, ϕ∈[0,½]. Here the dependence of the g agent's stakeholder function on the overall privatisation program matters. Namely, only for low values of ϕ (many h agents) do some of the pro-restructuring g agents switch behaviour.

Step 2: For the upper part of the government's choice spectrum. Here ϕ∈]½,2], the amount of restructured firms in the economy is not affected by the dependence of the g agents stakeholder function on the economic environment. For ϕ>½, all firms where the g agent assumes corporate control do get restructured, while all firms where the h agent assumes corporate control do not get restructured. Hence, in this range of ϕ, the mix of restructured and not restructured firms depends directly on the amount of h controlled firms: F(θ,ϕ)=F(½,ϕ).

STEP 1:

First we solve the governments problem in ϕ∈[0,½], here $R=2\phi^2-\phi^3$. Now the government chooses ϕ within the range to maximise utility:

$$Max_{\phi}U_G = (1-\gamma-\eta)(2-\phi)\phi^2 + \gamma\left(\frac{2+\phi}{6}\right) + \eta\left(\frac{4-\phi}{6}\right) \qquad (17)$$

From the second derivative $U_G^{//}=(4-6\phi)(1-\gamma-\eta)$ it can be seen that, if γ+η>1, then for ϕ<½, the maximand will be concave, i.e. possibly produce interior solutions. But for γ+η<1 the function is convex and only corner solutions can occur. Even though it is possible to find the explicit interior solution for γ+η>1, the result is not pursued further but deferred to appendix 4. For the remainder of the section we assume that γ+η∈[0,1]. Restructuring is perceived as a good by the government, and either ϕ=0 or ϕ=½ is chosen. Evaluating the governments utility (17) for the two ϕ values we get:

$$U_G(\phi=0) = \frac{2\eta+\gamma}{3} \quad , \quad U_G(\phi=½) = \frac{9+5\eta+\gamma}{24}$$

When will the two utility levels be identical, i.e. when is the government indifferent between a

17. Note that this is the same as asking our selves, when α* will be less than θ.

privatisation program ϕ=0 and ϕ=½? For $\eta = \frac{9-7\gamma}{11}$ the two utility levels are the same. Since the utility at ϕ=0 rises faster in η than the utility at ϕ=½, we can deduce that the ϕ=0 privatisation program is preferred if:

$$\eta > \frac{9-7\gamma}{11} . \qquad (18)$$

However, given the condition that $\gamma+\eta<1$ it can be shown that only for values of $\gamma<½$ inequality (18) can hold. This is intuitively correct. Since once $\gamma>½$, the government cares more about political support from the g agents than the h agents. Since the government also perceives restructuring as good, and only the g agent controlled firms eliminate inefficiency, the privatisation program should favour g agents, hence ϕ should be large. Parallel full inefficiency in the economy (via a ϕ=0 privatisation program) is only the maximising strategy for the government if the support of group h is of major importance - i.e. the weight η fulfills (18).

STEP 2:

Here we solve the governments problem for $\phi \in]½,2]$, here F(½) is larger than F(α^*) and consequently $R = \frac{1+\phi}{4}$. Now the government chooses ϕ within the range such as to maximise utility. Plugging r, v_h and v_g into (13) we get:

$$Max_{\phi} U_G = (3\phi - 5\eta\phi - \gamma\phi + 5\eta + \gamma + 3)12^{-1} \qquad (19)$$

Obviously the utility in the upper policy space is linear in ϕ. Setting the first derivative of (19) equal to zero, we can determine that η for which the government is indifferent between ϕ=½ and ϕ=2: i.e. $\eta = \frac{3-\gamma}{5}$. These are combinations of η and γ where the utility level is constant for all $\phi \in]½,2]$. Also we know that for a smaller η the government prefers the upper ϕ value, since here the first derivative of (19) is greater than zero. Hence we can state, that the government prefers the ϕ=2 privatisation program if:

$$\eta < \frac{3-\gamma}{5} . \qquad (20)$$

Else it maximises its utility at ϕ=½. Recalling that $\gamma+\eta<1$ it can be shown that the case where ϕ=½ is the government's preferred privatisation function, will only occur for values of $\gamma<½$. The intuition is the same as above.

Using conditions (18) and (20) and our definition of R we can formulate the possible privatisation decisions of the government into the following result.

Result 5:

Consider a government,

having a convex utility function, with preferences over share allocation and restructuring,

in a situation 1 economy, where one group of share/stakeholders has a stakeholder interest dependent on the economy's structure.

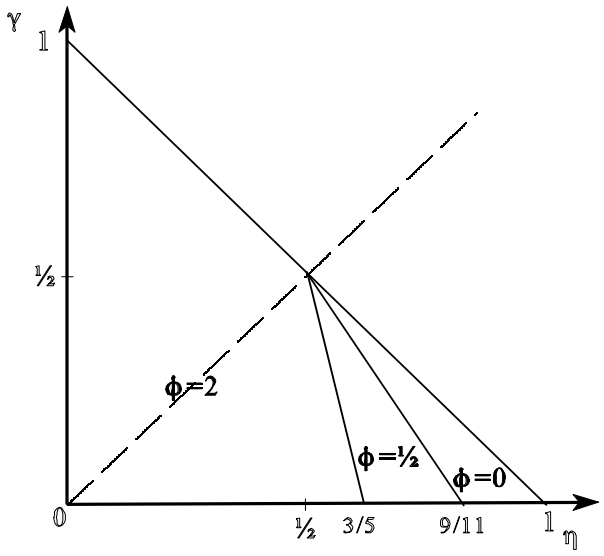
Then the government will,

a. for some parameter values of its utility function, choose a privatisation policy that lies between the two potential policies (corner solutions) of the same problem without the dependence.

b. given that it favours the anti restructuring h agent sufficiently, choose a privatisation policy under which - due to the dependence - there are more firms remaining un-restructured than are controlled by the h agent.

Result 5a is illustrates by figure 1 using parameter space η γ. Table 2 deals with result 5b.

FIGURE 1



In figure 1 only parameter combinations below the solid diagonal are considered in the analysis, since we excluded cases where restructuring is perceived as a bad by the government. To read the figure start by considering a government that does not care about restructuring, i.e. $\eta+\gamma=1$,

these are the points on the solid diagonal. Here the privatisation program favours either the h group (ϕ=0) or the g group (ϕ=2). The allocation of shares in firms depends solely on which of the two parameters η or γ is greater, i.e. whether we are in the zone below the dashed line, where the h agent is preferred, or above, where the g agent is preferred. For parameter combinations below the solid diagonal the government does care about restructuring in the economy. We find an area where the utility maximising ϕ equals 0, here the weight on the socioeconomic group h, i.e. that group which in a situation 1 does not restructure is so large compared to γ, that still the inefficient privatisation program is chosen. For a more moderate mix, of γ and η, i.e. more weight on R and the g agents, the government's maximising choice is ϕ=½. Here, the dependence of the g groups restructuring decision, on the ownership mix of the economy, has dragged the government towards a moderately pro-restructuring privatisation. If the g agents stakeholder function was not affected by what other firms do, than the ϕ=½ area in figure 1 would collapse and be replaced by ϕ=0. Finally, we got the area ϕ=2, where the benefits from restructuring and the interest in political support from the g group is so large, that it outweighs the governments interest in the h agents. Hence, that privatisation program which favours the restructuring g agents the most, is chosen.[18]

To turn to result 5b, we take the current specification and describe the possible privatisation programs. The share distribution values, and restructuring level for the above parameters are given in table 2, and feature again the effect of dependence in the g groups stakeholder function.

Table 2: Share distribution and restructuring level for three privatisation programs

	ϕ=0	ϕ=½	ϕ=2
v_g	4/12	5/12	8/12
v_h	8/12	7/12	4/12
R	0	3/8	6/8

While by the ϕ=2 privatisation program, which favours the pro-restructuring g agents the most, there are still 25% of firms that are not restructured, namely those firms that are controlled by h agents, the opposite is not the case for the ϕ=0 program. In particular none of the 25% g controlled firms do restructure. The g agents stakes in the inefficiency became positive, since there are many h agent controlled firms in the economy.

18. In fact, if we are exactly on the lines separating the three areas, we are in a situation of multiple solutions to the governments maximisation problem, i.e. all values of ϕ yield the same utility.

Summarising our analysis we find that our model features an economy, where the stakes in inefficiency hinder restructuring. Note that the g agents would appear pro-restructuring if we observed them in an else efficient environment, but can switch behaviour under certain privatisation programs. This dependence of stakeholder interests, as mentioned above is a feature that emerges in transition economies. Such situation can explain the resistance towards restructuring, even in firms that are controlled by 'assumed to be' pro-restructuring agents. Thus, the failure of common sense privatisation recommendations. Further the specified model shows, that for certain parameter values, a government might choose to opt for a 'moderate' privatisation program. In particular when favouring an anti-restructuring agent group as share holders - the government will be moderated to give them only so many shares as not to influence the restructuring decision of the pro-restructuring firm owners. That the ϕ=½ privatisation program turned out as the 'moderate' decision, is solely a result of our assumption that g'(0)=4w. If we do not restrict the g agents stakeholder function, any ϕ value $\in$[0,1] can be the moderate program, as will be illustrated in the next section.

We will now proceed by applying the above model in an explicit interpretation. We analyse the case of a country that privatises state owned enterprises to the insiders: workers and managers.

5. The case of insider privatisation

In this section, we apply the model to a situation of insider privatisation.[19] In fact the specific model is an extension to Schröder (1997), in so far as the analysis introduces a government selecting a privatisation program. We want to analyse what privatisation program a government in a political economy setup will choose. Managers and workers of firms i receive shares in their firms. We assume the inefficiency of firms to stem from excess labour (idle work hours) and excess firm social assets, solely to the benefit of its workers. For the extension of these types of inefficiencies in transition economies, see McMillan (1995), Freinkman and Starodubrovskaya (1996), Carlin et al (1994). Thus workers' stakeholder interests are straight forward. The manager stakes in inefficiency are more complex. It is assumed that managers care for the job opportunities that today's behaviour opens in the future. Further it is assumed that worker controlled firms will not hire tough (full restructuring) managers, while manager controlled firms do not hire soft (inefficiency prevails) managers.

19. Privatisation programs where insider privatisation was a main element (at least as an outcome, even though not always intended) did take place in Romania, Slovenia, Croatia, Poland, Lithuania, Mongolia, Georgia and Russia (World Bank, 1996, ch.3).

Hence, the managers stake holdings feature the dependence on the overall privatisation program, that type g agents in the above model feature. The manager stakes i.e. career opportunities for managers following Schröder (1997, p. 6) are:

$$c(C(L_i, F(\theta), N)) = c\left(\left(1-\frac{L_i}{\pi_i/w}\right)(1-F(\theta))N + \frac{L_i}{\pi_i/w}F(\theta)N\right)$$

Where c is the (expected) money value of a future job opportunity, and C(.) simply counts the number of firms that would potentially employ a manager with a restructuring history L_i. Else the above notation applies. When we rewrite this expression into the form of the stakeholder function $g((F(\theta)-\Psi)L_i)$ it turns out that $\Psi=½$, and the final expression reads:

$$g((F(\theta)-\Psi)L_i) = cN(1-F(\theta)) + \frac{2cN}{\pi_i/w}((F(\theta)-\tfrac{1}{2})L_i) \qquad (21)$$

On the other hand the workers are the socioeconomic group called h, and their stakes in inefficiency are their benefit from idle work hours (receiving pay for no work) and from the social assets (assuming that the value of social assets is given by their costs). Thus the stakeholder function for the workers must be given by $h(L_i)=wL_i$.

Since both utility functions are specified in linear form, and hence fulfil monotonicity, all results from section 3 and 4 apply. Immediately we see that $g'(0)>0$ and that $h'(0)>(1-\alpha_i)w$ for all α_i. Hence the managers are type 1 g agents and we are in a situation 1 setup. Workers never restructure, while managers restructure unless there are many worker controlled firms in the economy, in particular condition (8) reads:

$$\alpha_i > \alpha^* = (F(\theta)-\tfrac{1}{2})\frac{2cN}{\pi_i} \; . \qquad (22)$$

The more important the career concerns are (greater c) the less likely it is that a manager's individual α_i falls into the pro-restructuring category. However, for a rising share in his own company ($\alpha_i>\alpha^*$) a manager will avoid an overmanning policy, since the induced loss to his own dividend is not as easily outweighed by the improved job opportunities. Also, the more profitable a company is the more likely is its manager to restructure despite his disadvantage in job prospects. This is so since the potential dividend in such a company is a lot higher; the reward

of restructuring is accordingly increased.

The assumption of section 5, that g'(0)=4w no longer holds. Instead we will keep the restrictions on manager's stakeholder interest open in respect to c. Thus, we conduct the analysis, for an unspecified but positive weight on career opportunities. This allows us to consider the government's maximising choice (again using (16)) for different degrees of stakeholder interests. On the other hand we simplify the example by setting $\gamma=0$, hence: $U_G=(1-\eta)r+\eta v_h$. The votes of the 'many' workers are the only thing that matters for reelection, while the few manager votes cannot be bought via shares, or do not matter to the government. In terms of figure 1 we are now on the horizontal axis. Thus we expect to find three possible privatisation programs, chosen depending on η.

While the mechanics of v_h do not differ from section 4, the share of restructured firms in the economy now depends not only on ϕ, but also on c. If the managers are such that they do not care about future employment chances (c=0), then (22) shows that any manager in control of his firm will restructure completely. While for a large enough c, there will be no managers restructuring as soon as the majority of firms in the economy are privatised such that h agents assume corporate control. In particular, setting $\pi_i=\pi=\frac{1}{2}N$, we arrive at the new R given by:

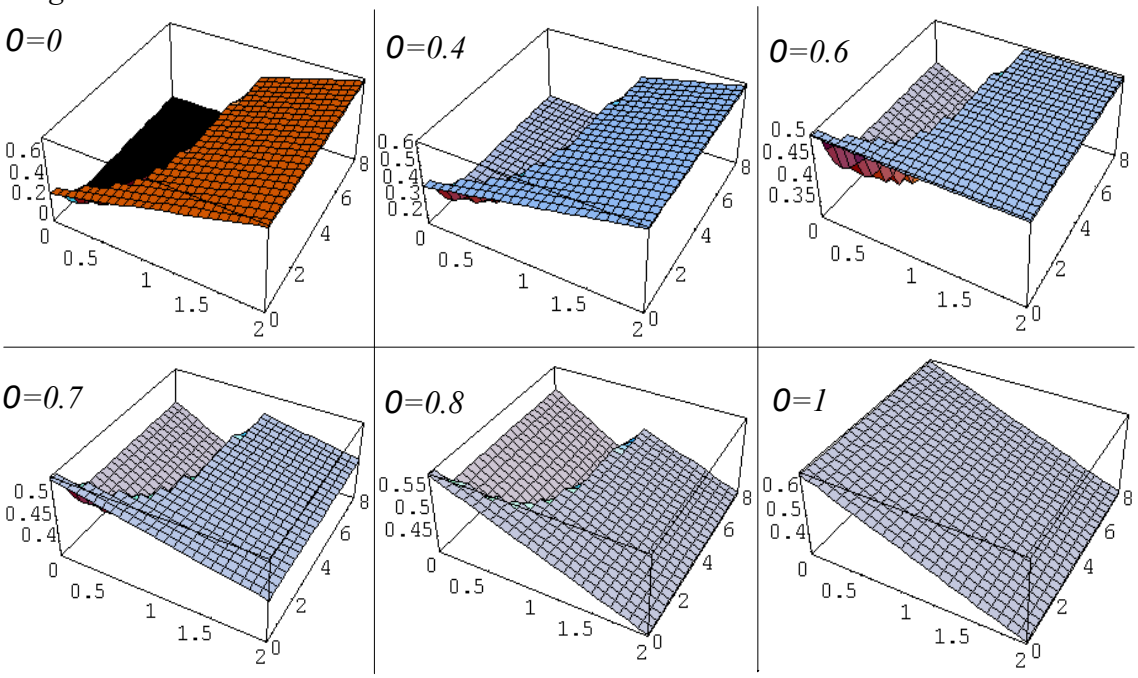
$$R = 1-Max\left\{\frac{3-\phi}{4},(2-\phi)Max\{0,Min\{1,c(1-\phi)\}\}-(1-\phi)Max\{0,Min\{1,c(1-\phi)\}\}^2\right\}$$

The new Min function in α^* stems from the fact, that a large c value could create values of $\alpha^*>1$ for $\phi>1$. In practice this is of no concern, since a $\phi>1$ privatisation program has a majority of manager (g) controlled firms. Our restriction of $\Psi=\frac{1}{2}$, says, that for a majority of manager (g) controlled firms the dependence of the g agents stakeholder function is such that their stakes in the inefficiency are pro -restructuring anyway. However, due to the Max Min functions we have no straight-forward solution. Instead we characterise the solution to the problem by a series of plots shown in figure 2.

In particular we show government utility in (ϕ, c) space. The horizontal axis displays $\phi\in[0,2]$, the depth axis shows c from 0 (no career concerns) to 8. On the vertical axis the resulting U_G is plotted. Each figure features a different η value - changing weights on R and v_h.

Starting with an η value of zero, we have a one-to-one correspondence between U_G and R. For c=0 the number of restructured firms corresponds exactly to the number of g controlled firms and is maximised at ϕ=2. As c grows a slump emerges in restructured firms as the total number of

Figure 2



h controlled firms in the economy rises, namely as ϕ is low. For large enough c values, there is already for a ϕ value slightly less than 1 (the uniform distribution) no g agent left that will restructure his firm, because the career opportunities with the 'many' worker controlled firms matter so much. Note that a government with η=0 (no weight on vote buying via shares to workers) will always choose a privatisation program ϕ=2 - favouring the managers as insider shareholders. At an η=0.4 value, the bottom of the slump in restructured firms is partly outweighed by the fact that workers hold a lot of shares - which matters in terms of reelection. However, the government will still opt for a manager favouring privatisation program, in order to maximise its utility. For $\eta=0.6=\frac{3}{5}$, we have exactly the 'indifference' value of (20), given that γ=0. The government is indifferent between pro manager or pro worker insider privatisation, as long as the presence of worker controlled firms in the economy has not yet hindered restructuring in the manager controlled firms. The case where a 'moderate' privatisation program is the government's maximising choice, is illustrated by η=0.7. Here the 'middle of the road' privatisation, where worker control of firms is promoted just up to the point, where the manager controlled firms still aim for full efficiency is chosen. However, for a growing c the extent to

which the government can follow its interest in favouring worker shares is reduced, since managers get more sensitive to the economic environment. While for a c=0, i.e. the managers hold no stakes in the inefficiency, hence they will restructure in any case - here the ϕ=0 is the maximising choice.
The η=0.8 plot shows, the case where the allocation of shares to workers matters so much, that the government is dragged away from the moderate privatisation towards a ϕ=0 privatisation, for all values of c. Finally in the η=1 case the number of restructured firms does not matter at all, and the government aims to maximise share holdings among workers.

The above example illustrates the - intuitively obvious - issue of the share/stakeholder conflict.

> *Result 6:*
> If the government aims/needs to buy support for its actions - also support for the reform/privatisation program it self - from a group in society that via its stakeholder interests is anti-restructuring, then privatisation will be potentially sub-optimal in terms if restructuring.

What program actually gets selected, depends on the degree to which the government favours voter support over restructuring, i.e. myopic versus long term interests.

Taking the dependencies of the pro-restructuring share/stakeholders in the insider privatisation example into account, we have shown that a moderate privatisation program might be the governments maximising choice (result 5a). The reason is that the privatisation program not only has consequences at the individual firm level, but also creates an entire economic environment - which influences the decision of agents. On the other hand, the bad news (transferring from result 5b) is, that the dependence of the g agents/managers can result in a zero restructuring outcome for all firms. Even though, the effects and influences from the economic environment (created by the privatisation) on restructuring, have been frequently called up on, their mechanics, and the individual rationality of non-restructuring have hardly been theoretically underpinned.

We can obtain some clear policy recommendations for the insider privatisation case corresponding to Schröder (1997): 1) Privatise a big chunk of SOEs into manager controlled companies at once, such that an attractive managerial labour market emerges. 2) If for some reason a majority of worker owned companies is desired, then give the managers in the few manager controlled firms full property rights. 3) Managers of more profitable enterprises might still be prone to rigorous restructuring, even so a majority of job opportunities is with worker

controlled firms. 4) If there are many non-privatized SOEs, in which the old ways of inefficiency prevail - and there is for some reason large workers influence in these enterprises[20] -, then the bias would work against restructuring for managers with career concerns. This latter point shows that piecemeal privatisation can hamper restructuring.

6. Conclusion

The paper features a model where privatisation of inefficient SOE's consists of the allocation of shares to different types of agents in society. The conflict between shareholder interests and stakeholder interests stands in the centre of the analysis. It is found that for sensible versions of the shareholder/stakeholder conflict restructuring will fall short of complete efficiency. The dependence of the g agent's stakes on the overall privatisation structure can amplify this effect. Further, we introduce a government that in this setup maximises its objective function. While without dependence the allocation ends in the extreme privatisation programs, we do find that with the g agents dependence a moderate privatisation program might be the optimal governments choice. This result carries over to our application in the pure insider privatisation case.

To summarize our other results: Soft budget constraints increase the inefficiency level in firms, but if the agents in charge hold negative (or zero) stakes in the inefficiency, the soft budgets have no effect on the actual restructuring decision. Shares to outsiders - who by definition do not hold any stakes in the firms inefficiency - promote restructuring, by voting along with the pro-restructuring agent. If the interdependence of the g groups stakeholder function is a type 1, in a situation 1 set up, then a sufficient amount of h controlled firms in the economy might hinder g agents in restructuring his own firm. If the government uses share issues as a means of buying political support, and favours that socioeconomic group which is pro-restructuring, then there is no conflict. However, if the government needs to buy 'goodwill' for its reform from a group of agents that has sufficiently positive stakes in inefficiency - namely the inefficiency of the firms that they (the agents) become the new owners of - then restructuring is at stake.

The model and its results correspond to the case study evidence and observations from transition economies, presented at the outset of our analysis: Privatisation often end up allocating part of the shares in firms to stakeholder. Even though privatisation programs are administered in most

20. Carlin and Aghion (1996) emphasis that the collapse of central planning in the late '80's early '90's has resulted in a power vacuum for SOEs. Typically insiders have assumed effective control of these enterprises - until privatisation alters the ownership form radically.

transition economies, restructuring is lacking behind. Thus the paper contributes to explaining why restructuring proceeds slower than expected. Overall, the model exemplifies how privatisation programs may fail to trigger rigorous restructuring, even though they would do so in an else efficient environment. Taking the dependence of the pro-restructuring share/stakeholders into account, we have shown that a moderate privatisation program might be the governments maximising choice. The reason is that the privatisation program not only has consequences on the individual firm level, but also creates an entire economic environment - which influences the decisions of agents. This dependence of the g agents can result in a zero restructuring outcome for all firms. Even though, this influence of privatisation towards restructuring, has been frequently called up on, its mechanics have been little understood. The present model features a general setup for such dependence and the share/stakeholder conflict.

APPENDIX 1

The Kuhn-Tucker conditions for Z_g in Case 1 are given by:

1)

$$\frac{Z_g}{L_i} = -\alpha_i w + g'((F(\theta)-\Psi)L_i)(F(\theta)-\Psi) + \lambda_1(-(1-\alpha_i)w + h'(L_i)) + \lambda_2(-w) \quad 0$$

$$L_i \geq 0$$

$$L_i\frac{Z_g}{L_i} = -\alpha_i w L_i + g'((F(\theta)-\Psi)L_i)(F(\theta)-\Psi)L_i + \lambda_1(-(1-\alpha_i)w + h'(L_i))L_i - \lambda_2 w L_i = 0$$

2)

$$\frac{Z_g}{\lambda_1} = (1-\alpha_i)(\pi_i - wL_i) + h(L_i) \geq 0$$

$$\lambda_1 \geq 0$$

$$\lambda_1\frac{Z_g}{\lambda_1} = \lambda_1((1-\alpha_i)(\pi_i - wL_i) + h(L_i)) = 0$$

3)

$$\frac{Z_g}{\lambda_2} = (\pi_i - wL_i) \geq 0$$

$$\lambda_2 \geq 0$$

$$\lambda_2\frac{Z_g}{\lambda_2} = \lambda_1(\pi_i - wL_i) = 0$$

The nine conditions describe the complete solution. The shadow prices for the participation constraint and the liquidity constraint are given by λ_1 and λ_2 respectively.

APPENDIX 2

In order to describe the solution to the nonlinear program we write the Lagrange form:

$$Z_h = (1-\alpha_i)(\pi_i - wL_i) + h(L_i) + \lambda_1(\alpha_i(\pi_i - wL_i) + g((F(\theta)-\Psi)L_i)) + \lambda_2(\pi_i - wL_i)$$

The Kuhn-Tucker conditions describe the complete solution of our problem.

1)

$$\frac{Z_h}{L_i} = -(1-\alpha_i)w + h'(L_i) + \lambda_1(-\alpha_i w + g'((F(\theta)-\Psi)L_i)(F(\theta)-\Psi)) + \lambda_2(-w) \quad 0$$

$$L_i \geq 0$$

$$L_i\frac{Z_h}{L_i} = -(1-\alpha_i)wL_i + h'(L_i)L_i + \lambda_1(-\alpha_i w + g'((F(\theta)-\Psi)L_i)(F(\theta)-\Psi))L_i - \lambda_2 wL_i = 0$$

2)

$$\frac{Z_h}{\lambda_1} = \alpha_i(\pi_i - wL_i) + g((F(\theta)-\Psi)L_i) \geq 0$$

$$\lambda_1 \geq 0$$

$$\lambda_1\frac{Z_g}{\lambda_1} = \lambda_1(\alpha_i(\pi_i - wL_i) + g((F(\theta)-\Psi)L_i)) = 0$$

3)

$$\frac{Z_h}{\lambda_2} = (\pi_i - wL_i) \geq 0$$

$$\lambda_2 \geq 0$$

$$\lambda_2\frac{Z_g}{\lambda_2} = \lambda_1(\pi_i - wL_i) = 0$$

Again λ_1 and λ_2 are the shadow prices of constraint 1 and 2 respectively.

APPENDIX 3

To restrict the analysis of case 1 and 2 to only two possible corner solutions as defined by the non-negativity constraint $L_i^a=0$ and the liquidity constraint $L_i^b= \frac{\pi_i}{w}$, we can impose the following conditions on $g((F(\theta)-\Psi)L_i)$ and $h(L_i)$:

Firm of case 1:

In order to ensure that $L_i^c>L_i^b$ we require:

$$If \quad h'(0) \underset{>}{\overset{<}{=}} (1-\alpha_i)w \ , \quad then \quad h(0) \underset{<}{\overset{>}{=}} \frac{-\pi_i h'(0)}{w} \ .$$

Whereby the 'if' condition stems from the fact that the denominator in L_i^c can switch sign. Alternatively in order to ensure that $L_i^c<L_i^a$ we require:

$$If \quad h'(0) \underset{>}{\overset{<}{=}} (1-\alpha_i)w \ , \quad then \quad h(0) \underset{>}{\overset{<}{=}} -\pi_i(1-\alpha_i) \ .$$

Both conditions are sufficient. The L_i^c value lies outside of the two corner solutions from the non-negativity constraint L_i^a and liquidity constraint L_i^b.

Firm of case 2:
In order to ensure that $L_i^c>L_i^b$ we require:

$$If \quad g'(0)(F(\theta)-\Psi) \underset{>}{\overset{<}{=}} \alpha_i w \ , \quad then \quad g(0) \underset{<}{\overset{>}{=}} \frac{-\pi_i g'(0)(F(\theta)-\Psi)}{w} \ .$$

Alternatively in order to ensure that $L_i^c<L_i^a$ we require:

$$If \quad g'(0)(F(\theta)-\Psi) \underset{>}{\overset{<}{=}} \alpha_i w \ , \quad then \quad g(0) \underset{>}{\overset{<}{=}} -\pi_i \alpha_i \ .$$

Again both conditions are sufficient.
The economy will consist of both types of firms, hence each of the agents stakeholder functions have to fulfil any of the respective conditions.

APPENDIX 4

In order to find the explicit solution for the maximising ϕ we derive from (17) the first order condition:

$$U_G' = 4(1-\gamma-\eta)\phi - 3(1-\gamma-\eta)\phi^2 + \frac{\gamma}{6} - \frac{\eta}{6} = 0$$

Solving for ϕ yields:

$$\phi^{*} = \frac{-4(1-\gamma-\eta) \pm \sqrt{2}\,\sqrt{8-17\eta+9\eta^{2}+16\eta\gamma-15\gamma+7\gamma^{2}}}{-6(1-\gamma-\eta)} .$$

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