

**THE ECONOMICS OF MASS PRIVATIZATION:
Czechoslovakia, East Germany, Hungary and Poland**

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ABSTRACT.

This paper addresses the economics of mass privatization in Germany, Czechoslovakia, Hungary and Poland; it provides a summary description of the privatization plans in these four countries, assesses the extent of privatization to date and it proposes an analytical framework within which the costs and benefits of the different policies adopted in the four countries can be evaluated. A central concern in this paper is that, in view of the fiscal crisis facing these economies in transition, it is crucial for governments to try and maximise the proceeds from the sale of state assets. Because of the low initial level of private wealth, it is important, in this respect, to let potential buyers borrow from the state or issue claims on future revenues (obtained with the privatized assets) to the state in order to pay for the privatized firms. Allowing for such non-cash bids removes the government's incentive to delay privatization for fiscal reasons, reduces the governments ability to squander immediately the proceeds from privatization and improves the decentralisation of control by allowing less wealthy but more able bidders to buy the firms they are best suited to run .

JEL classification: D62, E61, L59, P50

Keywords: privatization, Eastern Europe, stock-flow constraint, auctions, non-cash bids, incentives, debt, equity.

1. INTRODUCTION.

The transformation process of the previously centrally planned economies of Eastern Europe has now been under way for over two years. In Czechoslovakia, East Germany, Hungary and Poland most prices have been freed and reforms aimed at achieving macroeconomic stability have been implemented. While these four countries have rapidly converged towards similar macromanagement, some of them have taken longer to design their privatization plans and all of them have devised radically different strategies. During this gestation period, a voluminous literature has appeared, aiming to advise the new governments on how to proceed with the unprecedented challenge of privatizing most of the nation's wealth.

Because of the sheer size of the privatization programs these new governments could not rely solely on the privatization experience of the West.¹ The plans that are now crystalized have therefore also adopted recommendations of this literature. With the benefit of recent writing, as well as knowledge of the blueprints of these plans and early privatization experience, our paper addresses the economics of mass privatization in these four countries. Although our analysis has many features in common with the more influential studies to date, our conclusions are at odds with their recommendations.

A central concern of many early studies has been to accelerate the pace of privatization and their main recommendation has been to organise mass give-away schemes of state firms as a means to transfer property most rapidly (see Lipton and Sachs (1990) and Blanchard *et al.* (1991), among others). Our analysis leads us to suggest another solution. In a recent examination of the Czechoslovak reform process, Begg (1991) notes that a thorough analysis of the macroeconomic aspects of transition must take into account the important microeconomic dimension of the structural reforms. Conversely, we shall argue that the microeconomics of privatization should not overshadow its macroeconomic aspects. Accordingly, we recommend (for both microeconomic and macroeconomic reasons) that state assets not be given away, but sold -- possibly through auctions.

Auctions achieve an efficient resource allocation in situations where the seller (of a state asset) does not know which buyer has the best use for it. In addition, individual bids provide information about the underlying value of a firm to be privatized, which can be of great use to future potential private investors in those firms. Perhaps more importantly, sales of state assets provide the government with revenues at a time when -- as a result of privatization -- it has major difficulties raising revenues through taxes. Auctions have already been used successfully in privatizing a few small firms. We argue that privatization through auctions ought to be expanded and even applied to large firms.

Even if the government tries to maximise the cash proceeds from the sale of state assets there will be a serious revenue shortfall problem, since the flow of savings cannot quickly absorb the massive stock of state assets. Therefore we recommend that both cash and non-cash bids (such as debt and equity) be allowed in the auctions for state assets. When non-cash bids are allowed the constraint imposed by the small flow of savings can be removed; as a result, the privatization effort need not be slowed down in order to increase the revenues from sales. Also, if buyers can borrow from the government on the basis of the future revenues generated by the newly privatized assets, then even wealth constrained buyers can participate in those auctions. Thus, state assets will not end up entirely in the hands of the wealthy happy few; cash and non-cash bids are then more likely to reflect bidders' *willingness* rather than merely their *ability to pay*. In short, greater productive efficiency is achieved with the introduction of non-cash bids, since the willingness to pay of bidders reflects their ability to run a newly acquired firm profitably. Moreover, non-cash bids reduce the problem of flooding the government with cash in the very short run following the sale of a large fraction of state assets; it is always tempting to spend this cash right away instead of saving it to meet future government expenditures, so that, once again, future budgetary problems are likely to arise.

In the case of large firms, the winning bidder (who typically has limited wealth) is likely to obtain control over the firm without owning a very large fraction of its future cash flow. Most of the claims on future cash flows are likely to remain in the hands of the state for some time, since the government would excessively drive down the price at which it can sell if it sold too large a fraction of those claims too quickly. Whether these claims remain in state

hands or not, there will be separation of ownership and control in those firms. In the absence of well functioning capital markets, it may then be necessary to provide for some form of supervision of the activities of managers in those firms. Just what kind of supervision should managers be subjected to is discussed in this paper.

The analysis that led us to these broad recommendations is outlined in detail below. Section 2 provides an overview of the current situation in the four countries. Section 3, which is based on a formal model described in appendix 1, spells out the objectives of privatization and the constraints faced by the privatization authorities; it then assesses how the existing privatization plans deal with those constraints and how close they get to the long-term objectives of building a market economy based on private property. Section 4 discusses auctions with cash and non-cash bids. Section 5 deals with important related issues such as demonopolisation and the sequencing of reforms, the financial restructuring of state firms and the issue of debt write-offs, the role of financial intermediaries, and finally the necessary reforms in the remaining state sector. Section 6 offers concluding remarks.

2. BACKGROUND.

As we are dealing with economies in transition, the picture of the economies of the four countries drawn here can only be seen as a snapshot at the time of writing. Undoubtedly, many aspects may have changed by the time this paper is put into press. In addition, as data collection in those countries is itself in transition, some of the figures reported here should be taken with a grain of salt.

2.1. WHAT HAS BEEN ACHIEVED?

In this section, we briefly describe how far East Germany, Hungary, Czechoslovakia, and Poland have gone in privatizing their economies. We also provide summary data concerning the development of the private sector since 1989. For a detailed account of privatization in Germany see Carlin and Mayer (1992); for privatization in Poland, Hungary, and Czechoslovakia, see Grosfeld and Hare (1991)

2.1.1. East Germany.

Compared to the other post-socialist countries, the pace of privatization in East Germany has been very rapid. Table 1 summarizes the recent data provided by Treuhandanstalt, the East German privatization agency.

TABLE 1.
THE PRIVATIZATION PROCESS IN EAST GERMANY (30-09-91)

	in 1990	in 1991	total Sept. 1991
Number of privatized enterprises	408	3,380	3,788
- by Treuhand central offices	180	1,069	1,249
- by Treuhand regional offices	228	2,311	2,539
Privatization, as a % of total employment	13	n.a.	n.a.
Revenues	2,930	10,934	13,864
- by Treuhand central offices	2,751	8,502	11,253
- by Treuhand regional offices	179	2,432	2,611
Promised jobs	201,425	518,332	719,757
Promised investment (billions DM)	42,9	42,2	85,1

Source: Treuhandanstalt, DIW

Measuring privatization by the number of privatized enterprises is of course a very inaccurate way to measure the extent of privatization, since it does not take into account the size of firms. The Deutsches Institut für Wirtschaftsforschung (DIW) has calculated that by the end of 1990, sale or partial sale of Treuhand enterprises represented 9% of total employment, and reprivatization 4%, thus amounting to a total of 13%². More recent calculations are unfortunately not available.

At the end of September 1991, there had been 653 management buy-outs, representing 26% of sales by local Treuhandanstalt agencies. 58.5% of management buy-outs were in enterprises with less than 50 workers and 73% in enterprises with less than 100 workers. Only 176 sales were made to foreign investors, representing 7.8% of promised jobs and 7.6 % of promised investment.

Figure 1 shows that it is much more difficult to privatize big enterprises. The answers of this DIW survey among Treuhandenterprises at the end of June 1991 reveal indeed that less than 10% of Treuhand enterprises with more than 1,000 employees were to be privatized shortly, and that 30% had found no candidate for purchase. More than 30% of enterprises with less than 100 employees were ready for privatization, and only about 20% found potential buyers.

The 14 billion DM of revenues generated from privatization are very low, compared with initial expectations. The late Treuhand president Rohwedder declared in October 1990, that sales would generate revenues of 600 billion DM (Sinn and Sinn, 1991, p. 84). On the other hand, Treuhand spending is expected to increase from 25 bn DM to 30 bn DM in 1992. These large expenditures are mainly due to a reluctance to close down firms; indeed, only 700 companies have been closed so far³.

Treuhandanstalt has been founded by the Modrow government of the former Democratic Republic of Germany in December 1989 and has existed in its present form since June 1990. Treuhand took over the ownership of state enterprises with the objective of immediately privatizing the best firms, of restructuring the others before privatizing them and of liquidating the unviable firms. Before privatization, firms have to produce an opening balance sheet and their existing debts are restructured: enterprises with above average debt receive debt relief, whereas enterprises with debt below average are imputed debt, in order to alleviate the cost of debt relief for the budget (Sinn and Sinn, 1991, p. 100).

Treuhand opted from the beginning for selling public assets rather than giving them away, but many assets are sold for a symbolic price. At the start, Treuhand played a rather passive role, waiting for potential offers. Given the disappointing results, a more active information campaign has been set up to advertise the assets for sale. Sales are mostly the result of bilateral negotiations with an interested buyer. Auctions are rare, except for smaller enterprises. The decision to sell depends not only on the price offered (or the highest cash bid in an auction), but also on restructuring plans, and especially on promises of investment and job creation which play an important role in the selection of the acquirer. One drawback of these restructuring plans is the significant rigidities they may impose on future management. Treuhand generally favors sales for cash

and is unwilling to accept deferred credit payments. It also opposes selling to buyer consortia (Sinn and Sinn, 1991, p. 98).

A law authorizing restitution to former owners of property nationalized since 1949 considerably slowed down the process in the beginning, creating confusion concerning claims to ownership. Luckily, in March 1991, a law has been passed giving potential acquirers priority claims over former owners and decoupling the restitution of property issue from that of financial compensation for lost property⁴.

2.1.2. Hungary

Table 2 gives a quick overview of what has been achieved so far. These figures should be treated with even greater caution as they are based on asset values which, though better than the number of enterprises, are likely to be highly inaccurate given the absence of a capital market which might generate an estimate of these values.

TABLE 2.
THE PRIVATIZATION PROCESS IN HUNGARY.
(% shares of the book value of state assets)

	May 1990	March 1991
Commercialized firms	1.7	20
Privatized state assets	0.5	2.5
foreign capital ^a	1.1	5
Hungarian private assets	22.2	25

Source: *Barometer of Privatization*, October 91.

^a Counted at investment value.

Commercialization, giving the enterprise a legal status like that of a joint stock company before privatizing it, has been rapid since mid-1990. The share of fully privatized state assets, however, remains very small. But unlike the other East European countries (with the exception of Poland whose agriculture is mostly in private hands), Hungary started the post-communist era with a reasonably large and active private sector, including an embryonic private financial sector. This explains in part why foreign capital is playing an increasingly important role: Hungary has received over 50% of the total foreign direct investment in the whole of Eastern Europe in

1991. Admittedly, though this total inflow of capital is not very large.

The current privatization program has been initiated in 1990, following the widespread denunciation of the so called spontaneous privatizations that had been taking place under the previous communist government. It is estimated that at least 250 state companies have been transferred into private hands in this manner, which is seen by many as fraudulent (Barometer of privatization, 91-1, p. 9). The State Privatization Agency (SPA) has been created in February 1990; it was later put under direct government control (July 1990). Unlike Treuhand, the SPA did not take over the ownership of enterprises, which is still vested in ministries and local authorities. As a result, its main function is one of supervision of the process of ownership transformation.

The initial goal of the privatization programme was the privatization of 50-60% of state assets within 3 to 5 years. But mass give-away schemes have been rejected at the outset. Some free distribution has taken place in the form of distribution of shares to the Social Security fund. In addition, 10% of company shares have been made available to workers at a preferential rate. But the Hungarian authorities have been reluctant to pursue further a policy of mass distribution of shares.

A useful distinction in the Hungarian approach to privatization is between privatization from below, initiated by the enterprises themselves or by a potential acquirer, and privatization from above, called "active privatization", initiated by the SPA. The latter includes the SPA's "privatization programs" as well as "preprivatization", the privatization of small scale family businesses and shops. Privatization from below includes the company-initiated transformation of state-owned firms into joint stock companies, associations with private partners and sales. Transformation requires prior approval of the SPA which also supervises sales, in accordance with the Law on the protection of State Property. Table 3 gives an overview of the activities of the SPA.

TABLE 3.
THE ACTION OF THE HUNGARIAN STATE PRIVATIZATION
AGENCY
(march 1991).

	Number of enter- prises	Value of assets (bln for.)	In % of book value of existing state assets	SPA parti- cipation	Foreign partici- pation
- Approved transfor- mations	45	68.7	3,6	64.5%	19%
- Approved asociations with foreign participation	40	37.9	2	-	45.3
- Approved associations with domestic partners	35	34.7	1.8	-	-
- Sales under property protection	54	6	0.3		
- First privatization program ^a	20	90.4	4,7	36	42
- Preprivatization	95	0.8			

Source: State Property Agency, *Annual Report*, August 1991.

^a This program is yet in the implementation stage.

Privatization from below has until now primarily involved small and medium-sized companies in processing industries (sugar refining, brewing, tobacco, road building). It usually occurs when a strategic foreign investor appears. At the end of September 91, 104 transformations had already been approved, concerning assets valued at 267 billion forint. There has thus been a noticeable acceleration between March and September⁵. At the time of writing, 616 cases of transformation were still in progress. Direct sales are rarer than associations with a foreign or a domestic partner. Until september 91, 43% of the sales contracts approved by SPA involved contributions in kind, the rest being sales contracts.

"Preprivatization" of small businesses takes place through auctions, and bidders have the possibility of receiving a "livelihood loan" for the purchase of assets. This program has, however, not been well prepared and its implementation has been constantly

delayed: it is not clear how many shops are to be included in the auctions, no credit structure has been set up, and initially only leasing rights were to be auctioned off. By June 15, 1991 only 203 shops had been sold for 800 million forints (less than 11 million dollars).

As for privatization from above, the first programme initiated by the SPA included 20 enterprises. Additional programs are under way. However, in September 91 – one year after the announcement of the first program – not one of the 20 enterprises of SPA's first package of privatization had been fully privatized. Auditing of these firms started only early 91, and bidding only at the end of the year. SPA revenues from sales and rental fees amounted to 9.4 billion forint in September 91, sharply below the 40 or 50 billion initially projected. This method of privatization thus does not appear to have been as successful as initially anticipated.

There is no consensus on the way privatization should proceed from here. Six drafts of new privatization programs have been presented to parliament since early 1991, and only in October has a compromise version been voted. It took 18 months to prepare privatization guidelines (Okoliczanyi, 1991). An important issue in the debates – that of property restitution – has been resolved by making expropriated owners entitled to compensation only.

Given the dissatisfaction with the pace of "active" privatization new methods have been designed to accelerate privatization from below. Two new categories introduced by the SPA, respectively since February and June 1991, are investor-initiated privatization and self-privatization.⁶ In the former, state enterprises that have not yet been commercialised can be proposed to the SPA for privatization; these firms may be privatized through leasing arrangements or partial private shareholdings. In the latter, a sale can take place without state involvement. Prior to the sale, the companies must only choose an SPA-approved consultant to evaluate the value of the assets. When this is done, the SPA cannot veto the sale. However, consulting companies can be excluded from further participation in the evaluation process or have sanctions imposed if they are found violating legal requirements, or if the SPA is dissatisfied with the outcome. This privatization method has initially been tested with companies with less than 300 workers. Also, two special credit institutions have been set up to provide credit for privatization: the Privatization Fund and the Subsistence

Fund. There is a maximum of 50 million forint per loan, with a substantial downpayment required. But loans are given at preferential rates⁷.

However, an important remaining obstacle to the acceleration of privatization is the behaviour of local authorities. They have often attempted to block sales when they were involved as owners. Because they do not yet have specific fiscal revenues, they tend to artificially raise the purchase price, thereby slowing down privatization (Okoliczanyi, 1991).

2.1.3.. Czechoslovakia.

Privatization in Czechoslovakia has taken place along two tracks: "small" privatization, according to the law passed in October 1990 and "large" privatization, according to a law of March 1991. Small privatization is run by local committees through auctions. Foreigners are excluded from the first round. Roughly 10 percent of all small firms have been sold through this method in 1991, generating revenues of about 10 bn Kcs in Czech lands and 5 bn Kcs in Slovakia. These funds are transferred to the National Property Fund, the agency responsible for privatization⁸.

A law on restitution has been passed in March 1991, allowing property nationalized after February 1948 to be returned to its previous owners. Compensation for confiscated property is provided, but return of control is not excluded. As in East Germany, this may become a major obstacle to accelerating of the pace of privatization⁹.

The Law of April 1991 on large privatizations specifies two methods: direct sales and the voucher system. The latter system has attracted most attention so far. These two schemes are roughly organised as follows: In a first stage, 1,700 Czech and 700 Slovak firms had to prepare privatization plans, submitted to their ministry. In the next stage, the assets of these enterprises are transferred to the Czech and Slovak National Property Funds. Direct sales are allowed if there is an offer for purchase of equity. Foreign investors are not excluded. All equity not sold is to be included in the voucher programme. For a flat fee of 1,000 Kcs, any citizen over 18 can purchase a booklet of vouchers worth 1,000 points, with which he can bid for shares of firms being privatized. The book value of the counterpart of a booklet of vouchers has been evaluated at over

80,000 Kcs. The Czech scheme is thus essentially one of free distribution. Before bidding starts all voucher holders are given basic information about the firms to be privatized. Individuals can then bid either directly -- through one of the many computer terminals to be set up across the country -- or indirectly through a financial intermediary. The actual bidding game is rather elaborate; up to six rounds of bidding are planned and complicated price updating rules are specified. It is not clear that these pricing rules cannot be manipulated through strategic bidding. Indeed, one rule is that if one firm's issue of shares is oversubscribed by more than 25% then the auction is cancelled and the price is revised upwards; on the other hand, if the issue is undersubscribed then all bidders are allocated the shares they have bid for. Only the remaining shares are left for sale at a price that has been adjusted downwards. In other words, bidders are forced to take on capital losses but are not necessarily allowed to make a capital gain. This may create an incentive for an individual not to bid in early rounds so as to gain information about the underlying value of shares through the early bids of others. Perhaps as a result of these complications as well as a total lack of information about the values of these firms many individual buyers have indicated that they prefer to let financial intermediaries do the bidding for them.

Finally, it is worth noting that the government is opposed to debt write-offs for public enterprises, but banks will be allowed to exchange bad debts for equity in the privatized enterprises.

2.1.4. Poland.

Following several months of parliamentary debate the first Privatization Bill has finally been voted by Parliament in July 1990. Workers organized in Solidarity -- whose power in enterprises strongly increased with the end of the communist regime -- strongly resisted attempts to reassert state ownership of enterprises through their transformation into joint stock companies. The law of 1990 represented a compromise between conflicting groups; it simply provides a legal framework for privatization, without favouring any particular method. The transformation of state enterprises into joint stock companies is not a necessary step towards privatization. The Polish authorities have also undertaken so called privatizations through liquidation, which by-pass the commercialization stage.

TABLE 4.
THE PRIVATIZATION PROCESS IN POLAND (end of August 1991)

	changed into state treasury companies	privatized through liquidation	individual sales
number of enterprises:	183	556	17
- less than 200 workers	7	316	
- between 200 and 500 workers	38	151	
- more than 500 workers	138	89	
total (as a % of the number of state enterprises)	2.2	6.6	0,2

Source: *Dynamika Prywatyzacji*, n°1 1991.

Only a small fraction of state-owned enterprises have been commercialized to date. In contrast, privatization through liquidation seems to work fairly well. This procedure has been adopted mostly by smaller enterprises. Of the 556 privatizations through liquidation, 241 involved assets that have been sold, 12 have been included in joint stock companies, 278 are firms that have been leased; the remaining 81 have adopted a mix of the three procedures. Most of the sales (175) concerned enterprises with less than 200 employees. Most of the leasing contracts have been signed with worker collectives.

Concerning individual sales, 10 have been sold through public offers, 2 of them with worker participation, 5 have been sold to targeted investors and 2 have been privatized through leveraged buy-outs. The total value of these sales is 1,387 billion zloty.

Small privatization (shops, restaurants and small businesses) handled by the municipal authorities through auctions or sales and leasing to employees have been a success. About 75% of shops have been privatized in this way¹⁰. However, State revenues from sales are much lower than expected. In August 1991, the Bielecki government had a deficit of 20 trillion zloty; this deficit has been

attributed partly to the shortfall of 14 trillion zlotys expected from the sale of state assets (Slay, 1991).

The firm-by-firm sales method initially followed by the Polish authorities had been inspired by the British privatizations. Dissatisfaction, however, grew rapidly with the slow pace of privatization. Mazowiecki announced a goal of privatizing half the state sector by 1993, but the privatization of the first 5 large enterprises (Exbud, Tonsil, Prochnik, Krosno and Kable) took much more time and energy than initially expected. More radical ideas were then formulated leading to the mass privatization program currently favoured.

Prepared for June 1991, the Mass privatization program of Minister of Ownership Lewandowski involves 400 enterprises (25% of industrial output and 12% of the labor force). The plan provides for 5 to 20 "national wealth management funds", which would receive 60% of the enterprises' shares, with 33% of the shares in any given firm going to a single fund; this fund would then have a controlling interest in the firm. In addition, 10% of the shares would go to the workers and 30% to the state treasury. The directors of the funds are appointed by the President, and the funds will be managed by Western managers. Many of the important details of the plan have not yet been finalised, in particular the important question of how the controlling blocks in the firms ought to be allocated to the various funds.

Small privatization have taken place mostly through auctions at the municipal level. In some cases, employees received preemptive rights and preferential rates for leasing. This part of the privatization package has been successful. More than 75% of shops have been privatized this way, amounting to about 100,000 small and medium retail and wholesale shops (Grosfeld, 1991).

The mass privatization plan, however, has met important difficulties. When proposed in Parliament in August 1991, the plan was halted. Many criticisms were formulated, the most important being : a) concerns about budgetary revenues, b) the dangers of concentrating economic power c) administrative complexity of the scheme (Slay, 1991).

Following these criticisms, Lewandowski announced a more gradual approach, delaying free distribution of shares in the

"national wealth management funds" until mid 1993. Also, the initial list of 400 enterprises has been reduced to 200 in October 1991. The Polish Parliament, however, recommended abandoning the free distribution scheme altogether. The new government that emerged from the November 1991 elections seems determined not to abandon the mass privatization program, and to revitalize it.

In contrast to the pace of privatization, which is much slower than expected, the growth of the private sector through the creation of new private enterprises has been very impressive. Private activity accounted for roughly 40 % of GDP in 1991, and 45% of employment¹¹. One should recall that in Poland, about 85% of agricultural production was kept private. But even outside the agriculture sector, private employment in 1991 had risen to an estimated 2 million people. Data from March 1991 show that private activity accounted for 22.1% of industrial output, 43.9 of construction, 16.3% of transport. At the same time, joint ventures grew rapidly, from 1,645 at the end of 1990 to 3,512 in September 1991. Foreign investment is around 700 million dollars.

2.2. WHAT REMAINS TO BE DONE?

Except for East Germany, the pace of privatization in Eastern Europe appears to be much slower than expected. In contrast to the important successes in the privatization of shops and small businesses, privatization of bigger enterprises appears to be still in an initial phase, more than two years after the demise of communism. Early expectations, however, were that privatization would be completed within three years.

This slow pace of privatization must, however, be set against the rapid development of the new private sector. If one takes into account this growth of the private sector, then the extent of the task of mass privatization in Eastern Europe appears less formidable. A common reasoning is that, in an economy with 90% public ownership, reducing the state's share to, say 25%, requires the privatization of 65% of public assets. This view, however, overestimates the size of privatization, since it does not take into account the parallel creation of new private firms and the closure of inefficient public firms. Accordingly, Kornai (1990), Murrell (1990) and others have emphasized the important role of "organic"

spontaneous growth of the private sector in completing the massive reallocation of labour and investment to the private sector.

It is not possible to give a precise estimate of the eventual composition of the private sector between privatized and newly created assets. However, some simple back-of-the-envelope calculations may give a better idea of the fraction of state assets to be privatized once one takes into account the parallel growth of the private sector. We put forward one plausible scenario showing that privatization may involve only about half as many state assets as was initially estimated, when the independent growth of the private sector was not taken into account.

Centrally planned economies have been characterized, among other things, by two important biases: first, a bias in favour of heavy industry, and second a bias in favour of large firms. As a consequence, the service sector has been seriously underdeveloped and there hardly exists a network of small and medium enterprises. This is clear from Tables 5 and 6, below.

TABLE 5.
SECTORAL ALLOCATION OF LABOUR IN OECD AND CPE'S
(percentage shares).

	Agriculture	Industry	Services
(1) OECD (1991)			
8 richest countries	5.5	29.8	64.7
8 middle countries	5.8	30.4	63.9
8 poorer countries	17.9	29.5	52.6
(2) CPE'S (1989)			
GDR	10	44.1	45.9
Czechoslovakia	11.6	46.8	41.6
Hungary	17.5	36.1	46.4
Poland	27.2	36.3	36.4

Source: OECD.

TABLE 6.
DISTRIBUTION OF EMPLOYMENT IN INDUSTRY BY SIZE OF
FIRMS
(percentage shares).

	0-100	100-500	500 and more
FRG	14.1	23.9	62
France	22.5	24.9	52.6
Italy	32.3	27.3	40.4
GDR	1	11.1	87.9
Czechoslovakia	0.1	3.4	96.5
Hungary	4.5	16.3	79.3
Poland	1.4	18.2	80.4

Source: OECD. Data for FRG, France and Italy are from 1987, for the GDR from 1988 and data for the other countries are from 1989.

From Table 5, it appears that the sectoral bias is relatively independent of the level of development measured in terms of income per capita, since the same conclusion obtains if one compares East European countries with richer or relatively poorer OECD countries. From Table 6, one sees that German industry tends to be more concentrated than French and Italian industry, but the comparison between East and West shows clearly a bias towards large firms in the East.

The introduction of the market and the opening up to the world economy is thus likely to lead to an important economic restructuring that corrects these biases. To take this into account, we made the following simple calculation: we looked at the actual distribution of labour across sectors, and across firms of different sizes in industry, and compared this with the distribution of labour in comparable Western economies. In the absence of meaningful prices for capital and for their marginal productivity, and because of the uncertainties surrounding value added statistics, labour is a meaningful indicator of economic activity. The added advantage of focusing on labour is that we get a picture of the extent of labour redeployment in the economy. Assuming that economic restructuring will lead to the adoption of a Western sectoral and size distribution, and assuming full employment, one calculates the part

of the labour force that will leave industry for the service sector and the part which will move towards smaller firms. In our scenario we make the extreme assumption that most of the labour redeployment from manufacturing to services and from large firms to small firms will take place through the spontaneous emergence of a private sector with smaller firms, mostly in the service sector but also in manufacturing. This part of the labour force will therefore not be affected directly by privatization.

The basis of comparison chosen for the size effect in industry is the Federal Republic of Germany. We assume that only the structurally "excessive" part of bigger enterprises will be closed down; this tends to slightly exaggerate the extent of required privatizations. The basis of comparison chosen for the sectoral effect is the average of the 8 poorer OECD countries where the secondary sector and the service sector represent respectively 29.5 and 52.6% of the labor force, with 27.5% of industrial labour in public industries and 45.6% of service labour in public services¹². We have left out agriculture because cross-country variations in its share are too large, and concentrated on the labour force in industry and services that is potentially concerned with privatization of their enterprise. The results are shown in Table 7.

TABLE 7.
THE POTENTIAL EXTENT OF PRIVATIZATION IN INDUSTRY
AND SERVICES

% of labour force potentially concerned by privatization decomposed as:	GDR	Czechoslovakia	Hungary	Poland
% of industrial labour (as a share of total labour)	31.1	23.9	45	44
(same, but excluding the size effect)	(13.7)	(11.2)	(16.3)	(15.9)
	(21.4)	(21.4)	(21.4)	(21.4)
% of labour in service sector (as a share of total labour)	47.7	42.3	48.3	34.2
	(21.9)	(17.6)	(22.4)	(12.5)
% of total labour, excluding agriculture (excluding the size effect)	35.7	28.8	38.7	28.4
	(43.3)	(39)	(43.7)	(33.8)

This simple calculation reduces the importance of privatization in industry and services to slightly more than 32% of the labour force. This means that all the rest of the growth of the private sector happens through direct redeployment of labour from state-owned firms to newly founded private firms. Table 3 also tends to suggest that privatization in the service sector is likely to be more important than in industry, except for Poland. Of course, our calculations reflect our assumption that labour redeployment will mostly take the form of closures of old firms and creation of new firms. We believe that this is a plausible assumption.

If the real extent of privatization is to be smaller than initially thought, because of the closure of many state firms, then the concerns about the slow speed of privatization appear somewhat misplaced. An equally important concern seems to be the creation of well functioning labour and capital markets that facilitates the movement of labour from the state sector to the private sector, as the preceding figures tend to show us that roughly half of the working population is likely to change jobs during the transition period. Taking these calculations at face value would imply that direct redeployment of labour will account for a bigger part of the private sector after transition than privatization itself.

3. WHAT PRIVATIZATION PROCESS ?

The previous section reveals that each country is adopting a different privatization programme. Two countries have opted for a strategy of piece-meal sale of state assets (Germany and Hungary) while the two other countries favour mass privatization programmes with give-away schemes. This is only one among many distinctions one can draw between the four programmes. Naturally this diversity in the solutions to the privatization problem raises the question of which program is likely to perform best, and more generally whether there exist more suitable programs than the four described above. To some extent the answer to this question depends on country-specific factors; the important differences between the German experience and the experiences of the other three countries are obvious. It is, however, less clear that the economies of Poland, Czechoslovakia and Hungary differ enough from each other so as to call for such radically different privatization programmes.

We begin our assessment of the existing privatization programs with a definition of what we consider the ultimate goals of privatization. We then spell out the main constraints facing the privatization ministries and agencies. Once the objectives and constraints are determined, we can evaluate the efficiency of the various programs. The task at hand is so complex, touching on difficult institutional, financial, informational and administrative problems, that we shall confine ourselves to an analysis of the first-order economy-wide effects of mass privatization, leaving the more technical implementation problems in the far more competent hands of the practitioners. Our analysis is based on a simple national accounts type model of a centrally planned economy being transformed into a private ownership market economy. This model is outlined in Appendix 1.

3.1. The long-run objectives of privatization.

The ultimate goal of privatization is, of course, to move to a well functioning market economy based on private property which is widely perceived to be the most efficient existing form of economic organisation. The fundamental sources of the greater efficiency of market economies are generally believed to be the greater ability of

such decentralised systems to achieve *efficient resource allocation* and the better *economic incentives* these economies provide to individual agents.

The basic problem of resource allocation has many dimensions; it involves in particular the problem of allocating managers and workers to the productive assets for which they have the most efficient use. This problem of *matching* managerial and worker skills with specific assets is one of the most basic problems to be solved through privatization. In the previously centrally planned economies there was no market for managers (or workers) and the allocation of managers to firms was not necessarily done on the basis of productive efficiency. Therefore, one of the reasons for the observed low levels of productivity in the state sector may simply be the misallocations of managers and workers to productive assets. The rapid expansion of the private sector in the coming years may itself require an important reallocation of managerial jobs (and labour more generally), as new managerial skills will be required. The incumbent managers' ability to obtain subsidies and negotiate favourable production requirements with the ministries will be less and less useful while marketing, accounting, capital budgeting, fund-raising skills and a good knowledge of Western markets will be increasingly important. A major objective of privatization is thus to achieve a better *match* between managerial skills and specific assets.

Towards this goal it may be unwise to exclude the old nomenclatura from the privatization process, since many of its members are likely to be the best informed and the most able managers of the particular state-owned enterprises they are running. It may also be useful to attract Western managerial talent. This latter point has not escaped the Polish authorities who have encouraged a greater involvement of Western managers.

Perhaps a more important source of efficiency than the adequate allocation of managers to assets is the provision of economic incentives to investors, managers, workers and households. In the previously centrally planned economies the (marginal) return from individual investment and hard work typically was not appropriated by those engaging in investment activities. The absence of monetary and non-monetary incentives, combined with a centralised allocation of capital and other inputs, is often mentioned

as the main cause of the observed inefficiency of the former socialist economies.

Private ownership confers on the owner of a productive asset substantial monetary incentives for investment and hard work; the owner retains all the residual returns generated by the asset so that any marginal increment in those returns due to higher investment or harder work is appropriated by the owner. Thus for example, a risk-neutral owner is willing to invest or work up to the point where the marginal costs of investment or effort are equal to the increment in residual returns. This level of investment or work is likely to be much higher than that performed by an employee with a fixed wage remuneration; this is not to say that it is the most efficient level attainable, for (marginal) residual returns often turn out to be less than total (marginal) returns. Briefly, there are two broad reasons why residual returns may differ from total returns.

First, the owner of a productive asset may not necessarily own all the assets necessary to the production activity (this is particularly true if the human capital of several agents is required for production) so that he must rely on other owners to realize the full returns of his investments. But in the process of seeking the collaboration of other owners he must typically forego some of the (marginal) returns generated by his investments to the other owners. Generally, the more an individual owns assets necessary for production the easier it is for that individual to appropriate the full marginal returns from investment, and thus the greater are his incentives to invest or work hard. But giving more assets to one agent means leaving less assets to others. The allocation of ownership titles to the working population thus has important implications for incentives. These incentive issues are directly relevant to the difficult question of restructuring and demonopolisation which we address in Section 5.¹³

The second broad reason why it is generally not possible to let every agent keep the full (marginal) returns from his investments or work is related to initial wealth constraints. Most industrial production requires major initial investments which (almost) no individual can or wants to fund entirely from his initial wealth.¹⁴ The initial investments are shared among several investors, most of whom are not directly involved in production. These outside investors share the (marginal) returns generated by the combination of their physical investment and the work of managers and

workers, so that the latter do not appropriate the full (marginal) returns from their work.¹⁵ Managers and workers in these firms thus face a major incentive problem even if they own a non-negligible fraction of the firm's assets. This is a well known and well documented problem which since Berle and Means (1932) is referred to as the problem of *the separation of ownership and control*.

This incentive problem can be and has been mitigated in most market economies through the discipline of competition in respectively the product market (Hart (1983)), the market for managers (Fama (1980), Holmström (1982)), and the capital market, through either takeovers (Manne (1966), Grossman and Hart (1980), Scharfstein (1988)) or through bank monitoring (Mayer (1988) and Hellwig (1991)). The recent literature in corporate finance has also stressed the important role of debt in providing incentives to managers (Grossman and Hart (1982), Aghion and Bolton (1992) and Hart and Moore (1991)).

The various privatization plans that have been proposed must be assessed according to how well they solve the *matching* and *incentive problems* referred to briefly here. Surprisingly, much of the recent debate has not focused on these two obvious dimensions (among the exceptions, see Blanchard *et alii.* (1991) and Tirole (1991)). Instead, a major concern has been *speed* and *fairness*. Equity considerations are obviously important and we address them in the next subsection, but one should not lose sight of the initial motivation for privatization which is to enhance the productive efficiency of previously centrally planned economies. As for speed, it is clearly desirable to move towards a private ownership economy as rapidly as possible so as to shorten the transition towards the new steady state. However, it would be counterproductive to privatize hastily if the effect is to push the economy further away initially from the new steady state. The issue of speed cannot be fully addressed without reference to the constraints faced by the privatization ministries or agencies. We now turn to a discussion of these constraints.

3.2 The constraints

The sale or transfer of ownership titles on productive assets is by no means an easy transaction. Even in the relatively well organised Western economies whole teams of investment bankers and corporate lawyers are required to carry through a simple merger

operation or the acquisition of a new subsidiary. When selling an asset in a market economy, a conglomerate faces essentially informational constraints. The actions of the privatization authorities are limited by some of the same informational constraints; but, in addition they are limited by macroeconomic, political and administrative constraints. We now discuss these four types of constraints.

3.2.1 Informational constraints.

The main informational constraint for a firm contemplating the sale of a subsidiary is to determine how much potential buyers are willing to pay for the asset. The maximisation of the proceeds of a sale seems to be of lesser concern to a privatization agency since the ultimate objective of the agency ought to be the maximisation of social welfare. Thus finding out the potential buyers' willingness to pay seems to be less important here. However, the agency must deal with the problem of how best to allocate state assets to private owners and owner-managers. It cannot avoid the question of whether the first buyer interested in the purchase of the asset is the one with the best use of the asset or whether some other interested buyer is not more suitable. This problem is all the more relevant since the emerging market economies will not have available efficient ownership and control reallocation mechanisms like, say, takeovers or other market mechanisms, so that the initial allocation of ownership and control is likely to remain more or less unchanged for many years to come.

When all potential buyers show up simultaneously, there is a natural way of solving this problem which is to sell the asset to the highest bidder; but when buyers appear sequentially the agency like the conglomerate must decide what the minimum price for the asset should be if it does not want the *matching* of managers to assets to be solved on a first-come-first-serve basis.

Most importantly, a policy of maximising the proceeds from the sale of state assets is likely to be consistent with a policy of maximizing social surplus since the proceeds from the sale can be used to subsidize employment, investment, a social safety net and other public goods. Accordingly, a privatization agency seeking to maximize social welfare would need to maximize revenues by at least setting minimum price rules, for it is clearly not revenue maximizing to implement a policy of selling to the first comer.

Other measures besides minimum price rules are called for which are discussed in Section 4. To sum up, the privatization agency is likely to face the same informational constraints as a conglomerate contemplating a sale of a subsidiary.

What is worse, these informational constraints are tighter for the privatization agencies in Eastern Europe for several reasons. First, the past performance of the state-owned firms is of little guidance in determining the value of these firms, since production and sales were taking place at highly distorted prices (neither wages, input and output prices, nor interest rates were set at market-clearing levels). Second, most of these firms have inherited nominal liabilities which bear little relation with the value of the firm, so that financial restructurings may be called for before the firms can be privatized. Third, all four countries have a size distribution of state-owned firms which cannot be rationalized on the basis of economic efficiency. A buyer of one of these large firms is in fact likely to acquire a bundle of disparate assets, most of which he has no use for. This bundling of assets, of course, complicates the valuation problem even further. A major issue in this respect, which is taken up in Section 5, is whether the larger firms ought to be broken up and restructured before or after being privatized.¹⁶ Finally, the accounting practices in the previously centrally planned economies were such that it is very difficult to determine the replacement value of the assets in place and the amount of new investment required to make these firms profitable.

It is well known that even seasoned Western accounting firms have had major valuation difficulties. In Poland, the valuation of the first 5 privatized enterprises by specialized Western consultants has cost about 20% of the value of these firms. Subsequent flotation on the stockmarket led to wild price fluctuations. The quoted price of Tonsil, Prochnik and Krosno was nearly halved after 21 stockmarket sessions, whereas that of Exbud rose by 43%.¹⁷ In the case of East Germany, Treuhandanstalt initially required that the opening balance sheets be audited by independent consultants, but their valuations appeared to be much too low. Consequently, a team of 80 top managers from West German firms were hired in order to produce opening balance sheets and assess the viability of firms (see Carlin and Mayer (1992), this issue). This experience suggests that the standard Western practice of getting a valuation before privatization is not suitable for most firms. Unfortunately, the question of what alternative methods are appropriate does not have

an obvious answer; perhaps, the valuation methods developed by Treuhand so far can be usefully applied elsewhere.

Several analysts have suggested that these valuation problems can be by-passed if the state assets are distributed for free to the population at large (see for example Estrin (1991) and Blanchard *et alii* (1991)). It is important to note, however, that while the valuation stage can perhaps be jumped in this way, it is still necessary to take an inventory of what is given away, for otherwise property rights will not be well defined. The initial stage of taking stock is usually referred to as *commercialisation*. All the countries initiating a mass privatization program have now acknowledged that this stage is a necessary prerequisite for privatization. Unfortunately, commercialisation is a very time-consuming process. Partly because of the delays in the process of commercialization, the scheduled mass give-away schemes of Poland and Czechoslovakia had to be postponed several times.

Besides commercialisation, other steps can be taken which lower the uncertainty about the underlying value of the privatized assets. First and foremost, existing debts can be restructured. Section 5 deals with this issue in some detail. Second, the allocation of other important future potential liabilities between the state and the newly privatized firms – such as environmental liabilities – can and should ideally be determined before privatization. If none of the above steps are taken, the uncertainty about the value of state assets may be such that even if the state is willing to give away these assets it may only find a handful of serious acquirors. It may well be that once inventory has been taken, debts have been restructured and other liabilities have been determined, some form of valuation can be done rather quickly so that the benefits of give-away schemes in terms of time saved may not be as large as was thought initially.

3.2.2 Macroeconomic constraints

In at least one important respect the previously centrally planned economies cannot find much guidance in the past privatization experiences of, say, the UK or France. The sheer size of the endeavour means that one has to pay careful attention to the macroeconomic effects of the change in ownership of such a large fraction of assets. These effects were small in the case of the UK and France; although the government's balance sheet in those countries has clearly been modified by the sale of state assets the

macroeconomic effects of privatization, through its effects on the state budget, have received almost no attention in those countries¹⁸.

The main macroeconomic constraint faced by the Eastern European countries is a *stock-flow constraint*. This constraint can be easily illustrated in the context of a simple one-commodity closed-economy example. Thus, consider a one-commodity-one-asset economy with say, wheat and land. Initially, all the land is owned by the state. Now, if the state wants to privatize the entire *stock* of land within one year, say, by selling land in exchange for wheat, then the most the state can obtain from selling all the land is that year's *flow* production of wheat. This flow of wheat is likely to be much smaller than the aggregate Net Present Value of land which is given by the infinite discounted sum of yearly crops. In other words, the rapid mass privatization of land can only take place at an equilibrium price (in terms of wheat) substantially below the Net Present Value of land. Moreover, the larger the stock of land sold in any given period the lower the equilibrium price, other things being equal. This constraint is the consequence of an incomplete asset market structure. If instead of selling land in exchange for wheat only, the government was selling land in exchange for shares in future crops this constraint would disappear. Section 4 deals extensively with the question of how best to break the stock-flow constraint in this manner.

This *stock-flow constraint* is likely to be important in Poland, Czechoslovakia and Hungary; it is clearly less severe for East Germany as the East German economy has been opened up and absorbed in the West German economy. Several analysts of East European privatization have pointed out that as a result of this constraint the revenues the government can expect to obtain from the sale of state assets are likely to be substantially lower than was initially foreseen. To quote:

In order to sell a capital stock in exchange for a flow of savings, time must lapse so that the savings-flow can be accumulated. If the sale of the entire stock is not spread out over time, no substantial revenues can be raised. The attempt to sell the entire East German capital stock (or 70 % thereof) within months in exchange for West German savings is bound to fail as would the attempt to fill an artificial lake overnight by setting up a dam. [Sinn and Sinn (1991) translated from German, pp. 126]

In their current shape, firms are likely to sell at very low prices. One reason is that unless foreigners are allowed free bidding, private savings are not large enough [Blanchard *et al.* (1991) pp. 36-37]

Note that if a substantial fraction of the country's wealth was in private hands this stock-flow constraint would be less severe and may even disappear completely. However, in most of the East European countries the share of wealth in private hands is very small. More concretely, Estrin (1991) has estimated that:

In Czechoslovakia the historic cost value of the industrial capital stock is approximately 3,300 billion koruny; the stock of savings is perhaps 330 billion and the annual flow of savings is perhaps 20 billion... In Poland the capital stock at historic cost was valued at 64,971.3 billion zloty (productive and non-productive industry) at the end of 1989. The stock of savings was estimated to be 78,007 million zloty in 1990. [Estrin, *op.cit.* pp 16]

This means that even if all of the wealth in private hands, as measured by the entire stock of savings, is used to purchase the stock of state assets the state would only recover approximately 10% of the historic cost of state assets in the case of Czechoslovakia and 1% in the case of Poland.

It is worth emphasizing that the introduction of more money into the economy does not help in eliminating the stock-flow constraint. When the government is selling state assets in exchange for cash, it can potentially tap most of the stock of nominal assets (in particular the stock of fiat money and treasury bills) but if the government wants to avoid fueling inflation it cannot in turn use this stock of nominal assets to finance its expenditures. The most the government can achieve by selling rapidly the stock of productive assets in return for nominal assets is to mop up the *money overhang*. But it cannot relax or eliminate the stock-flow constraint in this manner.

As has been pointed out by Blanchard *et alii.* among others, this stock-flow constraint can be relaxed by letting foreigners purchase the state assets that are up for sale. It is, however, unlikely that it can be completely eliminated even when there is completely free capital mobility. Only in the extreme case, where the total stock of

assets to be privatized is very small relative to the worldwide flow of investment, will the increase in the world demand for savings resulting from the privatization effort have a negligible impact on real interest rates. The recent evidence on German real interest rates suggests, however, that the German privatization effort alone has had a sizeable effect on real interest rates¹⁹.

In addition, there are important capital market imperfections which reduce the actual flow of capital into the East European countries. Foreigners are often less well informed than domestic residents about the potential value of the state firms to be privatized; they also face exchange rate risks which are enhanced by the political uncertainties surrounding these countries. All in all, these additional risks imposed on foreign investors can substantially reduce the flow of capital into Eastern Europe. Indeed, the evidence so far suggests that only small amounts of foreign capital have flowed into the Central and East European countries.

Finally, massive inflows of capital may have countervailing effects. Other things being equal, the direct effect of such inflows is to induce an appreciation in the exchange rate which in turn erodes the competitiveness of exporting firms, unless the government instantaneously offsets the net inflow of capital by increasing its expenditure. This loss in competitiveness will then be reflected in the value of the firms to be privatized whose profitability relies on exports²⁰.

One of the consequences of privatization is that the government gives up the right to the residual returns generated by the privatized asset. As the price at which the asset is sold to private owners is likely to be substantially below the Net Present Value of the asset (unless this value is close to zero) privatization implies a *net* intertemporal revenue shortfall for the government on all assets which have a strictly positive value. Indeed, even if the government can cut subsidies to the newly privatized firm, the Net Present Value of the firm -- and therefore the price at which the firm is sold -- will be lowered commensurately with the cut in subsidies to that firm²¹. Moreover, the assets that are most likely to find a buyer are those that generate a net return to the government before privatization. Despite reduced revenues, the government is likely to be unable to substantially reduce total subsidies to the remaining state-owned sector and to cut its other expenditures on public goods. Because of this expected net revenue shortfall, which cannot

be easily matched with equal cuts in government expenditure²², the governments of Eastern Europe must deal with the tax reform question in conjunction with the privatization question. The government must find alternative revenues to replace the taxes earned in the previously state-owned firms.

All four countries are in the process of reforming their tax structures. Naturally, East Germany has gone furthest in this process since it has simply adopted the West German tax structure. Also, the public finance problem referred to above is of lesser concern to East Germany which can rely on the tax revenues of West Germany. Hungary, Czechoslovakia and Poland, have made progress to various degrees in this direction. Hungary seems to be furthest ahead; it has introduced a profit tax in January 1989 (allowing state owned firms to retain after-tax profits) as well as Personal Income Tax and VAT (see table 8 for a breakdown of the main sources of government revenue over the past three years).

TABLE 8.
SOURCES OF GOVERNMENT REVENUE IN HUNGARY.
(share of total expenditures)

	1985	1989	1991 (prelim.)
Payments by enterprises	63	40	38.2
Payments by budget supported organizations	7.9	12.5	5.2
Taxes related to consumption	14.3	20.7	23.8
Household taxes	9.5	18.8	18.85
International and other income	3.2	3.7	7.5
Deficit	2.1	4.4	6.35

Source: Hare, Revesz (1991), Ministry of Finance, Budapest.

As table 8 indicates, the effect of these reforms has been to increase the share of tax revenues from households and to reduce the share of revenues from enterprises. To some extent, the breakdown of revenue sources between households and firms remains mostly an

accounting convention, as the bulk of firms are state-owned; indeed, from the point of view of the state what matters is total revenue minus the total after tax wage bill. It is only because firms are allowed to retain part of their net earnings that a difference may exist from the point of view of the government between taxes on wage income and taxes on state owned firm profits. Hence, household taxes should really be added to payments by enterprises to obtain an estimate of the total source of revenue from the state sector, which in 1991 amounted to roughly 60%.

The budget deficit has been growing steadily over the past six years, as can be seen in table 8. This is mostly due to a shortfall in revenues, whether from VAT proceeds, or other sources. To a large extent this shortfall is the result of the severe contraction in economic activity resulting from the breakdown in trade with other East European countries. But partly the revenue shortfall is also due to greater tax evasion. As the private sector grows larger it is likely that tax evasion will become easier; indeed the tax administrations are at present not geared up to face the problem of tax enforcement in the private sector. It is therefore plausible that as the private sector is growing the share of total revenues from enterprises may be shrinking. The consequences of such a shortfall for the budget may be very severe indeed. For example, a 10% shortfall in revenues from enterprises may double the current deficit, if no cuts in expenditure take place. For reasons discussed elsewhere in the paper (see section 3.3) it may be difficult to reduce expenditures substantially, so that the main effect of a revenue shortfall is likely to be an increase in the deficit and the rate of inflation.

This budget problem seems to be even worse in Poland where fiscal reform is lagging behind Hungary. As can be seen from table 9, an even larger fraction of tax revenues comes from the enterprise sector.

TABLE 9.
GOVERNMENT REVENUE AND EXPENDITURES IN
POLAND
(% of share of expenditures)

	1991 (planned)	1991 (actual)
Turnover tax	26.6	23.5
Corporate taxes and revenue (among which)	57	53.6
- excess wage tax	0.9	8.7
- "Dividend"	8.1	4.7
Taxes and levies on households	0.3	2.1
Import duties	3.1	6.1
Other	1.2	4.7
Deficit	1.5	16.3
Expenditure:		
Social welfare and insurance transfers	17.9	23.2
Subsidies	10.3	8.7
Others	71.8	68.1

Source: Ministry of Finance, Warsaw

The 1990 Balcerowicz stabilization plan produced a budget surplus in the first half of the year. It now appears, however, that this positive result may have been only a temporary improvement. Indeed, following the price liberalisation and the sharp increase in prices many firms realized nominal capital gains (in particular on inventories and on foreign exchange deposits) which were taxed away (see M. Schaffer, 1992 for an analysis of this phenomenon). As a result taxes levied on public enterprises increased sharply that year. When the price level stabilized, however, the budgetary situation started deteriorating again. The budget deficit for 1991 is estimated at 6% of GDP and it may reach 10 to 12% of GDP if the structure of public finances remains unchanged. The main cause of the 1991 budget deficit is once again a shortfall in revenues (again due to the breakdown in trade); total revenues were 26% lower than expected for that year. At the same time, expenditures were 13% higher than expected. Finally, note that the wage tax has yielded a substantial fraction of revenue. In principle, this tax should not yield any revenues at all since it was designed to discourage enterprises from increasing wages above a certain threshold.

As in the case of Hungary some of the revenue shortfall is due to less effective tax collection. It is well known that all businesses with less than 5 employees escape any statistical scrutiny. The understaffed Polish tax authorities have had great difficulties in enforcing tax compliance, especially in the booming private sector. Despite the technical assistance of the Internal Revenue Service of the United States, the difficulties faced by the Polish tax administration in obtaining information about income and profits are such that they have to rely on secret accusations by neighbours or employees²³.

In Czechoslovakia no major fiscal reform has yet been implemented, but the introduction of a VAT and an income tax is expected soon. As in Poland, the size of the budget deficit of 1991 has been partly reduced as a result of the capital gains on inventories following the price liberalization (see table 10 for a breakdown of the main sources of income). It appears from table 10 that close to 90% of government revenues come from the state sector.

TABLE 10
GOVERNMENT REVENUE AND EXPENDITURES IN
CZECHOSLOVAKIA
(% SHARES OF TOTAL EXPENDITURES).

	1989	1990	1991
Revenues			
- Turnover Tax	23.9	32	25.5
- Income & Profit Tax	23.7	23.3	26.7
- Payroll Taxes	25	23.5	31.1
- Other Revenue	25.5	21.4	12
- Deficit	1.7	-0.2	4.6
Expenditures			
- Subsidies to enterprises	16.5	14.4	12.3
- Social Security	29.3	28.2	25.6
- Subsidies to Local Budgets	16.8	17.1	16.1
- Other expenditures	37.3	40	47.1

Source: Ministry of Finance, Prague

Finally, one other important macroeconomic variable is wages. The higher the wages, the lower the value of the firms to be privatized. As Akerlof *et alii.* (1991) have strikingly illustrated, the sharp increase in East German real wages has had a dramatic effect

on the viability of most East German firms. The immediate effect of this wage increase has been to lower substantially the price at which the Treuhand could hope to sell state firms and to accelerate the closure of many existing plants. Undoubtedly, many of these plants would have remained economically viable at pre-unification wages; with lower wages the prices of the goods manufactured in those plants could be lowered to compensate for the often referred to quality differential of these goods with western goods. A case in point is the automobile industry. Thus, A. Leysen, manager of Agfa-Gevaert and one of the two non-Germans on the administrative board of Treuhandanstalt (Verwaltungsrat) has pointed out:

As a rule, the degree of social equalization determines the degree of industrial destruction. All three car companies investing in East Germany are building new factories. But in Poland and Czechoslovakia, the same car companies are taking over existing factories because there is some degree of certainty of working with low wages in the next ten or fifteen years [*Die Zeit* 1-11-91, translated from German].

Even though Poland, Czechoslovakia and Hungary have not seen such sharp wage increases, current wages are not set at market-clearing levels, and unemployment is rising sharply. As in Germany, successful privatization in these countries may depend critically on the expected evolution of wages in the state sector.

3. Political constraints.

From the very beginning political motives have been at the forefront of the debate on privatization and many recommendations about the privatization process have been derived from essentially political considerations. Two prominent examples are Lipton and Sachs, who write:

...But our reasons go beyond that, to the politics of privatization. In our opinion, the real risk in Eastern Europe is not that the privatization process will be less than optimal, but that it will be paralysed entirely. We believe that unless hundreds of large firms in each country are brought quickly into the privatization process, the political battle over privatization will soon lead to stalemate in the entire process, with the devastating long-term result that little privatization takes place at all. [Lipton and Sachs, 1990, pp 297-298]

and Blanchard *et al.* who argue that large-scale sales of productive assets are unappealing politically since:

...the two domestic groups that are in a position to acquire a disproportionate fraction of the capital are the *nomenklatura* and those who have become rich from black-market activities.....There is unlikely to be broad political support for such a privatization, especially if the sales look, ex-post, like bargains. [Blanchard et alii., (1991) p. 36]

One can distinguish between two types of political constraint: the first and most important constraint concerns the distributional effects of privatization. Not everyone stands to benefit from the planned mass privatization; in the short run, many workers and employees may lose their jobs following the inevitable closure of a substantial fraction of existing firms; moreover, wages may be adjusted downwards. In the medium run, the newly formed market economies will generate a distribution of income and wealth which is much less egalitarian than what most East Europeans have been accustomed to in the past four decades (see Phelps-Brown (1988) for a careful analysis of how market economies tend to generate systematic and stable patterns of wealth and income distribution). Inevitably, the losers in this transformation process will form a constituency opposed to the reform process. Lipton and Sachs already point to worker resistance to privatization in Poland. Also, the outcome of the 1991 elections in Poland has revealed that the constituency against the radical transformation plan of the Bielecki government (including the Lewandowski mass privatization plan) had grown to form a majority.

Given that the reform process is undertaken by democratically elected governments, a first political constraint on the elected government is to soften the distributional effects of privatization so as to maintain a large enough constituency in favour of the privatization process. This may involve setting up schemes to compensate the losers (at least partially) for their losses of income and employment. Such schemes may, however, strain the government budget as the recent German experience indicates. Therefore alternative solutions such as slowing the pace of economic reform in order to spread the costs of adjustment over time may have to be considered (see Dewatripont and Roland (1992) for an analysis of this point).

Another way of compensating the losers is to distribute state assets equally among the population. This is an important motive behind the Czechoslovak attempt to introduce *shareholder democracy* by selling shares in exchange for vouchers. The idea is that if everybody owns an equal fraction of the dividends generated by the newly privatized assets, every voter would be equally concerned about achieving productive efficiency by maintaining private property (see Roland and Verdier (1991) for a discussion of this point).

The second type of political constraint is related to rent-seeking activities. A pessimistic view of the process of mass privatization is that it is mostly a problem of division of the spoils of the communist state. Accordingly, considerations of efficiency are superseded by questions like: who is entitled to what? Previous owners who have been expropriated by the communists would answer that they are entitled to restitution. On the other side, those who have enjoyed protected rents will seek to preserve them; thus, the workers will favour the transfer of ownership to them and/or oppose the privatization of their firm. Such an outcome, of course will be opposed by yet other interest groups which will lobby for other solutions. In short, various more or less well organised interests groups may try to get as big a share of the spoils as possible; the only remaining common denominator between these groups, then is to agree on serving the *nomenklatura* and other collaborators of the old regime last. The risk that the reform process may end up resembling this picture is real; this tendency is exacerbated when the transfer of ownership is decided on the basis of "fairness" and takes the form of free distribution, for then each interest group will fight to get a bigger share. The following excerpt from a speech by the Polish minister of industry Tadeusz Syryjczyk under the Mazowiecki government is particularly symptomatic:

What can be said to the argument that an enterprise belongs to its worker? That farmers who through a long period carried the burden of industrialisation now do not have any right to national capital? And teachers and doctors? That a young man who has worked in a factory for only one year has a greater right on shares than a pensioner who had worked there for 30 years? If this idea were put in practice workers of rich enterprises would acquire huge capital, and others nothing. [In J. Baczynski (March 1990), *Dla ubogich*, Polityka, PP.4]

The simple transfer of ownership to the workers (which is perhaps the fastest form of privatization) is rejected not on grounds of economic efficiency but on grounds of fairness.²⁴ The problem, of course, is that there is no unique concept of fairness, and that a different notion of fairness is invoked by every different interest group, to suit its rent-seeking interests. Note, incidentally, that the conclusion reached by many politicians that giving assets away is more equitable than selling state assets is not at all well founded. First, the sale of state assets may allow the government to finance public goods such as education, health care and social security, thereby ensuring a more equal access to those goods than would prevail in a market economy without such state support for those services. Second, by giving away assets, the government is likely to favour intragenerational equity at the expense of intergenerational equity. Today's poor may benefit from such a redistribution of state assets but not necessarily tomorrow's poor who may not obtain basic state support like social security, since the government may not have the resources to fund such schemes following a mass give-away of state assets.

Rent-seeking can take the extreme form of rent-grabbing. The so called spontaneous privatizations in Poland and Hungary were just that. Fortunately this movement has been checked quickly with the implementation of the commercialisation programs.

One form of rent dissipation arising in rent-seeking games is delay in decision making. Then, the larger the potential rents to be obtained the longer the delay, as each interest group tries harder to prevent other groups from obtaining those rents. The organisation of mass give-away schemes has the effect of increasing the size of the rents to be shared in the short run, so that the political fight for those rents may become fiercer; so much so that a stalemate may result. This is one interpretation of the recent political events in Poland.

4. Administrative constraints

All of the constraints we have emphasized so far can considerably slow down the pace of privatization. But the most important constraint in this respect may well be administrative. Defining ownership titles on state assets and registering the transfer of these assets to private individuals, let alone valuing the assets to be privatized and finding potential buyers is a very time consuming

process. Germany, which has privatized the largest fraction of state assets to date, is currently employing a staff of 3,000 employees at the Treuhandanstalt alone. The total number of employees currently working on privatization is likely to be much larger (closer to 50,000 than 3,000), if one includes the staff at the local councils, the Länder administrations and the ministries, the directors who have been appointed to the supervisory boards of the 8,000 to 10,000 state owned companies, and the representatives of banks. Despite this effort only 10 to 15% of state assets (measured in terms of employment) have been privatized so far. Although the organisation of Treuhand may be such that there are some built-in incentives towards slowing down the process (see Sinn and Sinn (1991)) there is little evidence to suggest that beyond the administrative bottleneck there have been systematic attempts at reducing the pace of privatizations.

The Polish, Hungarian and Czechoslovak administrative efforts towards privatization are much smaller in comparison; Poland's Ministry for Ownership Changes only has 200 employees, Hungary's SPA only 140 and the Czech Republic's Ministry of Privatization only 60. Worse, Hungary's SPA did not have the financial means to pay the consultants for auditing the first 20 enterprises to be privatized (Okoliczanyi, 1991). Even if these three countries find ways of privatizing state assets that take less time to administer than the Treuhand approach, they may need to increase substantially their privatization staffs if they want to reduce the stock of state assets at the same pace as Germany.

3.3 The expected effects of the various privatization plans

Having spelled out the main objectives of privatization and the most important constraints, we can now turn to an evaluation of the existing privatization programs. The discussion in this section is guided by the model formulated in Appendix 1, incorporating the informational and macroeconomic constraints described in the previous subsections. We shall distinguish between two types of privatization plan: those based on the principle of free distribution and those based on firm-by-firm sales in exchange for cash. The Polish and Czechoslovak plans rely mostly on free distribution. In other respects, however, these two plans are very different and we take up some of these differences here. The German and Hungarian plans have so far mostly relied on firm-by-firm sales.

The proponents of free distribution have emphasized in particular that the superiority of this method of privatization, over the more standard firm-by-firm sales method as one of *speed*. Thus, Lipton and Sachs and Blanchard *et alii.*, among others have argued implicitly or explicitly that the sale of state-owned firms is necessarily slow and that the only way to privatize a large fraction of assets quickly is to distribute ownership titles on those assets to the population at large, for free. Blanchard *et al.* go further and argue that even if the sale of assets could be performed quickly, the price at which these assets would sell is too low to make it worth the effort; moreover, as the above quotation indicates, they foresee major political obstacles to sales at bargain prices. It is too early to say whether privatization through free distribution is indeed faster. At the time of writing there is no clear indication that this is the case. We shall briefly take up the issue of the pace of privatizations at the end of this section. In the remainder of this subsection we mostly highlight the other effects that distinguish the two types of methods.

In terms of dealing with the informational constraints described in Section 3.2.1, the method of free distribution is clearly inefficient. The objective of achieving efficient allocation of managers and workers to firms will be difficult to reach with this method.

The Czechoslovak plan of distributing shares in exchange of vouchers, for example, does not address the problem of *mismatching* of managers and workers with assets. The firms to be privatized maintain incumbent management and if shareholders remain dispersed there will be no effective mechanism for displacing inefficient management. In addition, given that the bulk of shares will be distributed to the public, there is no guarantee that the managers of the newly privatized firms will have adequate incentives to maximise the value of the shares outstanding. Recent events, however, seem to suggest that eventually most vouchers will be concentrated in the hands of a few investment funds like *Provní Investicni* or *Harvard Capital Consulting*, (which had accumulated more than 200,000 voucher-booklets by the end of January 1992). According to a recent poll 49% of all voucher-booklet owners prefer delegating investment decisions to investment funds rather than buying shares directly (*Liberation* 23-1-1992). These investment funds could play an important role monitoring the recently privatized firms. Thus, one of the main differences between the Czechoslovak mass privatization plan and the Polish plan is likely to disappear. The Polish plan has been designed specifically to meet

the problem of the separation of ownership and control. One of the main purposes of the Polish holding companies is to monitor the activities of the newly privatized firms (the other important function of these companies is to act as interim privatization companies by gradually divesting most of the firms in their portfolio). It is ironic that an important unresolved issue in the Polish plan -- namely the problem of allocating firms to holding companies (see Frydman and Rapaczynski (1991)) has found an unexpected solution in Czechoslovakia.

Investment funds or holding companies, however, are not a panacea for all the informational and incentive problems arising from privatization. The question remains of who will monitor the monitors. Little attention has been devoted to this problem. Tirole (1991) suggests that besides monetary incentives based on relative performance evaluation, the managers of the holding companies could be monitored by foreign institutions and by independent public supervisory bodies. This would, of course, introduce yet another layer of monitoring, and it raises the question of who monitors the monitors of the monitors...²⁵. The more concentrated is ownership and/or control the easier it is to influence government and thus the easier it is to collude with the supervisory authorities.²⁶ This form of *regulatory capture* is a well known concern in the US (see Laffont and Tirole (1992) for the most thorough analysis to date of the implications for regulatory institutions of regulatory capture). Now, the competition for voucher-holders by investment funds in Czechoslovakia is likely to lead to an excessive concentration of shares in a few investment funds, since these funds will be able to offer better and better terms to voucher holders as they increase their customer base²⁷. Similarly, the number of holding companies in the Polish plan seems to imply a substantial concentration of control in a few hands. In addition to the potential risks of regulatory capture, such a high concentration of control can put the government in a position where it is forced to bail out the financial intermediaries experiencing important financial losses in the future. The recent privatization experience in Chile has demonstrated that such a risk is a real possibility. Indeed, as a result of the 1982 recession the Chilean government was forced to bail out the few banking groups owning and controlling most of the recently privatized assets so that they were basically renationalised. To quote Hernan Buchi the Chilean minister of finance from 1985 to 1989:

Unfortunately, an important part of the privatization process collapsed in 1982 and the government intervened in the majority of the banking sector. Because of the process of privatization in which banks had used the monetization of the economy to buy companies, three or four big groups had been created. When those groups collapsed and the banks were back in the hands of the government, the government had the companies which had been privatized in its hands, and new companies which had been created by those groups in that time were also in the hands of the government. [Hernan Buchi (1991), pp 19]

Clearly, this kind of renationalisation or bail-out will not help in credibly enforcing a *hard budget constraint*. Thus, one of the announced objectives of privatization which is the eradication of soft budget constraints (see Kornai (1990)) may not be attained if as a result of privatization control and/or ownership is too concentrated.

The other major dimension of mass privatization is its impact on the government budget. In this respect, Poland and Czechoslovakia have opted for an extreme solution. The important shortfall in revenues resulting from privatization will be essentially set off, if at all, by tax revenues coming from the future personal income and profit taxes that these countries have or plan to set up (some revenues will come from the fraction of shares (less than 30%) that the government plans to keep). At this writing, it is not clear that the governments of these two countries will be able to establish a new tax base rapidly enough and that they will be able to enforce payment on the new taxes. First, the citizens of these countries are not used to paying taxes on personal income. How well the new tax-payers will assess their income can be questioned. In addition the tax administrations are not organised to collect payments and to survey income assessments from individuals. Moreover, even though it may be simpler to set up a VAT system, there are still important new administrative costs involved. Too high VAT rates would also increase the incentive to underreport, thereby increasing the monitoring costs for the tax authorities. Finally, one should note that the latter have so far relied on information provided by the managers in state-owned firms over which they had considerable control. But once these firms are privatized it will be harder for the tax authorities to persuade these managers to provide the relevant information. In short, it is unfortunately quite possible that with the change in ownership structure there will be a dramatic increase in tax evasion. It is therefore to be expected that a serious budgetary

crisis may follow the mass privatizations. Large government deficits financed by increases in the money supply may then lead to inflationary pressures which can jeopardize the entire reform process, the costs of inflation eating up the efficiency gains achieved by privatization.

Appendix 1 describes formally the trade-off in accelerating or slowing down the pace of privatization: on the one hand there are negative effects in accelerating the pace of privatization on the fiscal base (the fall in tax revenue may force governments to resort to the inflation tax²⁸), and on the other hand there are positive productive efficiency effects. An important conclusion emerging from the formal analysis is that it is preferable to first privatize the lame ducks and only later to privatize the jewels in the crown. This simple recommendation goes against the current practice in all four countries.

The budget problem is all the more important that political constraints may prevent the government from substantially cutting expenditures. With the rise in unemployment, an increasingly important component of expenditure will be unemployment benefits. In addition, subsidies to the state sector cannot be cut dramatically for fear of having too large a fraction of the population be unemployed. Some of the concerns about the fiscal situation in Poland and Czechoslovakia are currently reflected in the poor credit ratings of these governments on international financial markets. Thus, for example, Czechoslovakia had to pay 200 to 300 basis points above other benchmark government bonds for its public bonds issue on these markets²⁹.

By opting for massive free distribution these countries have not only exacerbated the budgetary problem but also provided an unnecessary windfall gain to opportunistic and wealthy investors. This is illustrated by the recent experience of the Czechoslovak investment funds. In an interview with *Liberation*, the manager of *Harvard Capital Consulting* Viktor Kozeny explains the economics behind his fund's offer to buy back the voucher booklets of individual investors at ten times the initial price: he calculates that the aggregate value of the vouchers is a hundred times the purchase price, so that even taking account of the risk of his investment the investors he represents stand to make a substantial expected profit from buying up the voucher booklets at ten times their original price

(see *Liberation* 23-1-1992). Interestingly the Czechoslovak government is partially the hostage of these funds, since without them a majority of voucher booklets could have been left unsold (as of December 1991 less than 100,000 booklets out of 6 million had been sold and the rush on the vouchers only started once the investment funds introduced their repurchase offers). Thus, by privatizing a substantial fraction of state assets essentially for free, the government is basically giving a subsidy per individual of roughly 10,000 koruny -- which is equivalent to two months of average wages -- (this is the amount offered by the investment funds in exchange for the voucher booklets) and giving a potentially huge windfall gain to the investment funds, several of which are backed by foreign investors. Most of this money could have been raised by the government if it had followed a strategy of selling rather than giving state assets. The same budgetary problems can arise in Poland if the current mass privatization plan is implemented³⁰. Note that the extent to which opportunistic investors can take advantage of such a scheme can be limited by imposing a temporary freeze on the transfer of shares. Czechoslovakia has imposed a one-year freeze which was clearly not long enough. The main problem, however, of extending the freeze to a longer period is that the value of the shares is reduced the less liquid these shares are.

It is worth pointing out that the evidence from the main example to date of reform of a planned economy -The Peoples Republic of China- indicates that major budgetary problems may arise as state firms gain more and more autonomy and as the private sector grows bigger.³¹ In a highly instructive study of a sample of roughly 500 Chinese state-enterprises, Groves *et al.* (1991) have shown that as a result of the reforms undertaken in the early eighties -- letting state firms retain a higher fraction of their profits and shifting control to the managers -- real output per employee rose by 67% between 1980 and 1989 for the firms in the sample but that at the same time "the amount of profit remitted to the state declined with autonomy" [Groves *et alii.* pp 14]. In another recent study of the effects of Chinese reforms, Hussein and Stern (1991) have also highlighted the sharp decline in revenues from state firms following the introduction of the reforms granting greater autonomy to firms (see Table 11). The direct effect of this revenue shortfall was a sharp increase in the deficit (which was made worse by the inability of the government to cut subsidies to the state sector). The resulting inflation soon became uncontrollable, so much so that

the government was forced to check the growth in economic activity and drive the economy into a severe recession, which partially reversed the gains from eight years of uninterrupted expansion. If granting partial autonomy to firms and allowing firms to retain up to 30% of their profits has such a dramatic effect on public finances, one may be concerned about the public finance consequences of mass privatization which gives greater autonomy to firms and allows them to retain a greater fraction of their profits. Undoubtedly, other tax revenues have to be found; but transforming the tax system takes time and in the mean time revenues from the sale of state assets may be the easiest way of generating revenues for the government.

Some analysts -- in particular Sinn and Sinn (1991) and Blanchard *et alii.* (1991) -- have been aware of the adverse public finance consequences of free distribution plans. However, they also point out that firm-by-firm sales would raise very little revenue unless the pace of privatization is considerably slowed down. The financial performance of the Treuhandanstalt to date corroborates this prediction. After having sold close to 15% of East German state assets Treuhand ends up with a deficit of over 25 billion DM at the end of 1991. The total revenues from sales, as of September 1991 amounted to only 14 Billion DM (see Table 1). This figure should be contrasted with initial expectations, as stated by Rohwedder, of a total expected revenue from sales of 600 billion DM. In other words, there has been so far a revenue shortfall relative to initial expectations of close to 500 Billion DM. Much of this shortfall can be attributed to the unexpectedly large increase in East German wages (see Siebert (1991)). Clearly, the difference between raising no revenues from privatization and raising 14 billion DM in this particular instance is small, so that the German privatization plan has not, as yet, fared much better than the Polish and Czechoslovak plans in this respect. Similarly, although the Hungarian SPA has not yet gone as far as the Treuhand in its privatization drive, the figures on the revenues raised from sales of state assets are not much better than those of the Treuhand (see section 2).

However, as Carlin and Mayer (this issue) explain, the German (and Hungarian) strategy of piece-meal sales has the advantage of achieving better *matching* of managerial teams with productive assets. The Treuhandanstalt takes great care in evaluating the plans of the new acquirers and attempts to favour those buyers which are best able to ensure the long-run viability of the newly privatized

firms. In addition, the Treuhand undertakes a major advertising and marketing effort to find suitable buyers and new managerial teams for its assets. As for the Hungarian SPA, while it takes much more of a "hands off" approach compared to the Treuhand, it nevertheless promotes better matching since by selling rather than giving away firms it screens out unsuitable (potential) acquirors (who would not want to pay the price for the firm) from suitable ones (who are prepared to put up money to buy the firm). In this respect a strategy based on sales clearly dominates a strategy of free distribution, which essentially leaves old managerial teams in place.

To sum up this section, it seems that from the point of view of economic efficiency a privatization strategy based on firm-by-firm sales dominates the strategy of free distribution. However, in one important respect all four privatization programs have a major weakness: they all involve a serious revenue shortfall for the government. In the case of Germany, this means that the Western part of Germany has to face a higher tax burden to cover the government's expenditures in East Germany. In the case of Poland, Czechoslovakia and Hungary the consequences may be much worse; mass privatization may force the government into larger and larger deficit spending. This in turn may trigger a wage-price inflationary spiral which could annihilate most of the benefits from privatization. We shall argue in the next section that alternative selling strategies can be devised - allowing for cash and non-cash bids - which circumvent the *stock-flow constraint*. These strategies would not only solve the revenue shortfall problem but also bring about better matching. Before turning to the analysis of these questions we close this section with a discussion of the optimal pace of privatization.

For efficiency reasons, it is desirable not to artificially delay privatization, provided one has taken care of the matching problem and that administrative and legal preparation have been correctly handled. However, because there is a trade-off between the fiscal and efficiency consequences of privatization, the stock-flow constraint gives the government an incentive to delay part of the privatization program, as we show in appendix 1. By delaying privatization, the government can obtain a higher revenue per asset sold since the total revenue that can be raised each period must come from the yearly flow of savings. By delaying privatization, the government can intertemporally reduce the deterioration of its tax base and economize on tax collection and inflation costs. However,

this involves efficiency costs: delayed privatization lowers total current profits and output, thereby negatively affecting the level of efficiency-enhancing investment, and thus future profits and output. By finding ways of relaxing the stock-flow constraint, one may remove the incentive to delay privatization, and improve efficiency, whilst preserving sources of government revenue.

4. BREAKING THE STOCK-FLOW CONSTRAINT

In principle it is straightforward to eliminate the stock-flow constraint. It suffices to introduce securities which allow the government to sell state assets in exchange for claims on future cash-flows generated by the asset. This would work as follows in the one-asset-one-commodity closed economy example described above: suppose that every year the total stock of land produces 100 million bushels of wheat and that the discount rate in the economy is 10%, so that the net present value of the aggregate stock of land in terms of wheat is 1,000 million bushels. As we pointed out above, if the government sells the entire stock of land within one year in return for wheat the most it can get is 100 million bushels and taking into account minimum consumption and investment constraints probably much less than that. But if the government can sell the stock of land in exchange for a claim on future yearly production of, say, 50% then it can get a return from the sale of the entire stock of land of 500 million bushels in net present value. An important added benefit of this privatization method is that the government can in principle accelerate the pace of privatization without substantially reducing the total proceeds to be obtained from the sale of state assets. This solution has been identified by the Chilean authorities when they faced a similar mass privatization problem. To quote again Hernan Buchi:

Especially, from our experience, it was very clear that if you want to privatize, you have to realize that all the assets are currently in the hands of the government. If you want some of those assets, or a large proportion of those assets, to be in the private sector, you have to realize that you have to transfer those assets. If you sell those assets, then you are not transferring net property, you are transferring an asset, normally, plus a debt. The private sector has to incur debts in order to pay for assets, because the wealth is not in the private sector, the wealth is in the public sector. You have to be conscious that to do something like this, you have to make a transfer

of assets, and you can do it in a stock way, or in a flow way, and probably you have to do it in both ways. What we did was both ways – stocks, plus designing our macroeconomic policies in such a way that there was a permanent flow in the way we changed our taxes and in the way we changed our pension schemes, that allowed year by year, an increase in the capital base of the private sector. [Hernan Buchi (1991) op. Cit. pp 11]

Another standard type of security besides debt that could be used for this purpose is equity. Several analysts of the East European privatization process have also emphasized variants of this basic method. Most notably, Sinn and Sinn (1991) have suggested that Treuhand ought to sell only a fraction of a firm to be privatized, commensurate with the size of the pledged investments by the new acquirer, instead of selling the entire unit in exchange for cash. The remaining fraction of equity would then provide the Treuhand or government with future revenues. They also suggest that the recent deal between Volkswagen and Skoda - where the German acquirer receives a larger and larger fraction of equity in the Czechoslovak firm as it commits higher and higher investments - could be seen as a model for other privatizations. Similarly, Blanchard et alii. (1991), Bauer (1991), Borensztein and Kumar (1991) and Bös (1991) have suggested that in order to guarantee a minimum source of income to the government in the future, some fraction of equity (in the form of preferred or common stock) ought to be retained by the state.

In this section we go further and propose that the government or privatization agency ought to organise auctions where (potential) buyers could submit both cash and non-cash bids. Such auctions would not only resolve the revenue shortfall problem but also achieve better matching between firms and managerial teams. Note that this scheme differs significantly from the above proposals that privatization should be in stages (that is, the government distributes only a small fraction of the shares in the state-owned firm at a time). First, the latter scheme does not allow for the creation of a market for managers: only cash-flow claims are privatized, not control (under the staged privatization scheme, incumbent managers remain in place). Second, the staged privatization process does not allow for a system whereby the share of the claims in state hands varies from firm to firm, the state maintaining a bigger share in the more efficient firms. This has adverse effects both on the government budget and on the government's ability to insure potential acquirors against the

uncertainty about the underlying value of the firm. It is useful to distinguish between two phases in the privatization of state firms: the phase of transfer of control (which can be achieved by auctioning state assets in exchange for non-cash bids) and the phase of transfer of claims (which can take place in stages). This section deals mostly with the first phase.

We focus here on the microeconomic issues raised by the organisation of auctions with non-cash bids. Before turning to a discussion of these questions, it is worth mentioning briefly an important macroeconomic property of this scheme. The use of non-cash bids implies that the government transfers productive assets to the private sector in exchange for, say, nominal debt or equity claims. This introduces an anti-inflation bias into the economy, since inflationary policies would erode the real value of the claims on the private sector held by the government (see Lucas and Stokey (1983); Persson, Persson and Svensson (1987) and Obstfeld (1990)). In addition, if the government receives rights to future revenues rather than cash it will not be able to dissipate immediately the proceeds from privatization.

An important aspect in the evaluation of the bids concerns the effects on the new acquirors' incentives of pledging a fraction of future revenues to the government. Basically, by allowing buyers to submit non-cash bids one allows them to design their post-privatization capital structure. Therefore one has to address the question of how the capital structure affects the (new) managers' incentives.

4.1 Sales with non-cash bids.

To simplify matters we shall only consider three types of non-cash bids: standard debt, voting shares (or common stock) and non-voting shares (or preferred stock). Other related types of non-cash bids that have been suggested are leasing contracts and management buyouts (see Sinn and Sinn (1991)). While it is straightforward to see how the introduction of debt or equity can increase the government's revenues from the sale of state assets, it is less obvious how these non-cash bids affect the future owner's incentives and how these bids allow the privatization agency to screen between the buyers who can make efficient use of the asset and the other (potential) buyers. Accordingly, this section discusses

mostly the incentives and informational issues related to privatization.

One important improvement that non-cash bids may bring about is that many (potential) buyers with little current wealth are now able to bid for state assets by committing to either sharing future revenues with the state or to fixed future debt repayments to the state. In this way, a team of managers or workers with little initial wealth but with the expertise to efficiently run a given firm may be able to outbid a wealthier but less efficient bidder. To put it slightly differently, a privatization method based on sales in exchange for cash only may produce bids that mostly reveal the *ability to pay* of the bidder. This is likely to be the case when the expected price to pay for the asset is substantially below the net present value of the asset in its most efficient use. In that case, even an inefficient but wealthy management team can make a profit from the acquisition. Now, because of the stock-flow constraint, sales in exchange for cash are going to take place at much lower prices than the value of the asset in its best use. In contrast, when non-cash bids are allowed the winning bid reveals the *willingness to pay* of the bidder; that is to say, the bidder's ability to run the business efficiently. Thus, with non-cash bids better matching can be achieved. In addition, incompetent but wealthy *nomenklatura* members will be in a less favourable position to outbid other less wealthy buyers. An additional advantage of non-cash bids is that better insurance can be provided, as well as better screening between inefficient and efficient acquirers (see McAfee and McMillan (1987)).

An important potential risk of allowing non-cash bids, however, is to encourage frivolous bids: some bidders may offer very high future payments to the state which they will not be able to meet but before they are called to honour their commitments they will be able to enjoy the private benefits of running the firm. To the extent that frivolous bids are made the introduction of non-cash bids could potentially induce worse matching than if they were not allowed. In order to discourage such bids, the government has to impose either minimum cash payments or severe penal sanctions on the new owners in case they fail to make the promised payments. Failing that, the privatization authorities may have to carefully monitor the seriousness of each bid. This will then introduce additional delays in the process.

Besides minimum cash payments, the question remains of what kind of non-cash bids should be favoured? Given that one of the purposes of privatization is to decentralise control, bids of common stock such that the government retains a majority (or the biggest block) of shares should be discouraged; if possible, the government should only retain non-voting shares. However, the government - just as any investor - must have some minimum protection against the firm's new owners never making the promised dividend payments. One of the weakest protections is to retain cumulative preferred stock, which does not prevent the firm from missing dividend payments but requires it to pay the cumulated dividend payments that have been missed in the past before it can pay dividends on the voting shares. Thus, if the firm tries to expropriate the state by repeatedly missing dividend payments on non-voting shares it will have greater and greater difficulties in raising new equity.

However, the firm will not necessarily have greater difficulty in raising new debt, since in case of financial distress debt has priority over equity (or at least we expect that the new bankruptcy laws will incorporate this feature common to all bankruptcy laws in industrialised nations). Therefore, in order to give the state minimum protection it may be necessary to let some fraction of the non-cash bids be in the form of debt. Debt gives the government some leeway to extract payments out of the firm by threatening to close the firm in case of default (see Bolton and Scharfstein (1990) and Hart and Moore (1991)). Another potential advantage of letting the government hold debt is that it may induce the new managerial team to run the firm as efficiently as possible in order to reduce the risk of financial distress (see Grossman and Hart (1982)). All in all, it may be a good compromise to have a combination of debt and (non-voting) equity in the non-cash bids. Of course, the exact proportion cannot be determined at this level of generality. In fact the right mix between debt and equity has to be determined firm by firm³². Moreover, the current state of corporate finance does not enable us to make firm recommendations about the right mix between debt and equity.

A difficult question which needs to be resolved then is how the government or privatization agency determines the winning bid when several bidders make different non-cash bids - some pledging higher debt repayments, others higher cash payments and yet others a higher fraction of shares? There is no general fool-proof rule that

can be determined to rank the various bids and it may be necessary to delegate the choice of the winner to a committee of independent experts when such cases arise. Note, however, that such difficulties are commonly encountered by Western administrations dealing with procurement auctions for, say, public works or defence contracts. Despite these ranking problems and other potential inefficiencies, such auctions are perceived to be the best method of determining the best deal the public authorities can get from private contractors.

Yet another potential difficulty with non-cash bids is how to evaluate extreme bids such as a bid offering 100% (non-voting) equity to the government? Even if the new acquirer seems serious, the government may legitimately wonder what incentives the new owner will have to manage the company efficiently, when he gets none of the residual returns. In fact, because of the effect on incentives, the government may end up obtaining higher expected proceeds from the sale if it sells the firm to a bidder offering only 80% of equity to the government. Here again the determination of the winning bid may have to be left to a committee of experts -- despite the obvious drawbacks of such a solution --, or else the privatization agency may have to set ceilings above which (potential) buyers are not allowed to bid such as, say, a rule that a maximum of 90% of equity can stay in state hands. Then if several bidders make the same maximum bid the privatization agency can select the most suitable buyer.

For the sake of concreteness, consider the following sketch for the implementation of auctions with non-cash bids on a vast scale. In the initial stages it is easiest to simply follow in the steps of the Treuhandanstalt. Thus, firms should first be commercialized; in a second stage a set of firms to be auctioned off should be advertised. A deadline should be specified for the submission of sealed bids to the privatization agency in charge of the auction. The rules of the auction should be clearly spelled out and basic information about what exactly is being privatized should be made available to the bidders. As for the bids, they should comprise a minimum cash bid (this is to discourage frivolous bidders) together with non-cash bids. The minimum cash bid may be determined on a case by case basis by the privatization agency.

The main difficulty in setting up an auction mechanism with non-cash bids is in establishing a ranking in the bids. Towards this end each bidder must submit a more or less complete business plan with

an estimate of future cash flows. Then part of those cash flows can be pledged to the privatization agency in the form of non-voting shares or in the form of nominal debt repayments. In order to preserve the incentives of the winner, a ceiling of say 90% to 95% (depending on the size of the firm) of non-voting shares that can be pledged may be imposed. Similarly, a maximum debt-equity ratio may be specified so as to reduce the risk of default.

The ranking of the bids would be made on the basis of the estimates of future cash flows derived from the business plan. If the selection committee disagrees with the estimates provided by the bidders, they may modify these estimates, but their decision must be backed by numbers. At this stage the committee could request additional information from bidders; one can also envisage some direct negotiations between the winner of the auction and the committee. If one is concerned with the committee favouring some candidates on other grounds than the maximisation of the proceeds from the sale, then bidders should be given the right to appeal the committee's decision. The appeal's court could then be composed of independent financial analysts possibly from the West.

This very brief sketch indicates that the committees' job is basically the job of an investment bank. It has to evaluate the future stream of cash flows in order to determine both the value of the non-voting shares pledged to the privatization agency and the credit rating of the debt incurred with the agency. Moreover, once the auction is over, the agency may have to monitor the firms in order to preserve the value of its portfolio of securities. Given the nature of their task it is then conceivable to eventually transform the privatization agencies into full fledged financial intermediaries. This point is discussed at greater length in section 5. The proposal described very briefly here obviously must be given more body especially concerning the operational aspects. A complete description of how to set up a programme of auctions of state firms is beyond the scope of this paper. The above sketch should be seen more as an indication that such a programme is feasible than as the skeleton of a precise auction scheme.

The difficulties with the implementation of a privatization plan based on sales of assets in exchange for both cash and non-cash bids are not insurmountable. In fact such schemes have been used in the past in Chile, as is explained in Buchi (1991). Another noteworthy example is the case of auctions for television rights at the Seoul 1988

olympics, where NBC won the broadcasting rights in exchange for a bid comprising a cash payment of \$300 million and a non-cash bid specifying a revenue sharing provision of two-thirds of any revenues in excess of \$600 million to the Games' organisers (see McMillan (1991)).

Perhaps such auctions are slightly easier to organise for small or medium sized firms, where it makes sense to have manager-owners and otherwise a reasonably concentrated ownership structure. Although in principle there is no major added difficulty in organising such auctions for even the largest firms, greater attention must obviously be paid to these firms as the stakes are so much higher. Thus the identity and intentions of the (new) management teams as well as their ability to run their firms efficiently must be carefully checked. As Carlin and Mayer (1992) point out, this monitoring activity is in fact an important part of Treuhand's sales strategy. For the very large firms it is likely that the managers will hold only a small fraction of the equity, so that these auctions will resemble more auctions for managerial positions than auctions of ownership titles of the firm. As mentioned above, the privatization of large firms can be divided into two separate auctions. In a first step, managerial positions are auctioned off, bringing about an efficient matching of managers and assets. In a second step, shares of the enterprises are auctioned off to the public. In that case, sales of the (non-voting) shares owned by the state can be made gradually since this would have little effect on productive efficiency once control has already been handed over to a new managerial team³³. Interestingly, China has introduced reforms allowing for auctions for managerial positions in state-owned firms, but not for auctions of shares (see McMillan and Naughton, 1991).

4.2 Auctions versus bilateral negotiations

So far auctions have only been used to privatize small businesses and shops. For industrial firms the preferred method has been to sell these on a firm-by-firm basis while negotiating with a single buyer at a time. Naturally, if firms are sold in exchange for cash there are likely to be few buyers wealthy enough to put up the cash for the larger firms, so that the privatization agency is likely to deal with only one potential buyer (or consortium of buyers) per firm. But if non-cash bids are allowed there is likely to be more competition and one may wonder whether the auction method should not then be extended to industrial firms as well,

irrespectively of their size. In a recent paper Maskin (1991) has shown that in the absence of wealth constraints, sales through auctions (with cash bids only) are not only efficient in terms of revenue maximisation but also in terms of achieving the best possible matching between owner-managers and productive assets. He also suggests that even in the presence of wealth constraints they are likely to perform well in terms of matching. Moreover, auctions reveal useful information about the underlying common value of firms through the bids of all the participants (see Milgrom and Weber (1982)); this information is particularly useful in facilitating the emergence of new capital markets as it informs future private investors about the value of the newly privatized firms.

When bidders are wealth constrained but can make non-cash bids, auctions have two advantages over bilateral negotiations with a single buyer. First, by forcing buyers to compete for the public asset higher bids can be generated. In bilateral negotiations, if the buyer knows that the state is eager to privatize quickly he will act as if the asset is not worth much to him. As a result, the privatization agency may be forced to sell the asset at much lower prices than the buyer is likely to be willing to pay. This is an additional reason for why Treuhand sold firms at such low prices. If, however, the buyer is uncertain whether he faces competition from another buyer he is willing to make higher bids even if it is known that the privatization agency wants to privatize quickly. The second advantage of auctions is that to the extent that higher bids come from more efficient management teams better matching is achieved than if firms are sold on a first-come-first-served basis. To this one can add the potential advantage of auctions in saving time on the valuation of the assets to be privatized; if buyers compete for the acquisition of an asset the privatization company can learn more about the asset's intrinsic value from the winner's bid than from an *ex ante* valuation. True enough, *ex ante* valuations may help generate higher expected bids by reducing the uncertainty the bidders face, but the time saved may well justify the loss in expected revenue. In contrast, when the government is involved in bilateral negotiations with an acquirer the only way for the government to get the buyer to pay more may be to provide hard information about the value of the asset to be sold, so that it is costlier to by-pass the valuation stage.

It is important to note that from the point of view of *ex post* incentives auctions with non-cash bids do not distort incentives beyond what non-cash bids determined through bilateral

negotiations would. The incentive design problem can effectively be separated from the revenue extraction problem (see Laffont and Tirole (1992)). However, auctions with non-cash bids may in some circumstances induce overbidding and mismatching.

4.3 Corporation taxes and non-cash bids

Both non-cash bids and future corporation taxes are ways for the government to obtain future revenues from firms. One may therefore wonder why the government should go through all the trouble of selling state assets in exchange of debt or non-voting equity when the government can simply tax the future revenues of the privatized firms? At a general level the answer to this question is that taxing corporate profits *ex post* is not the same as committing *ex ante* to pay the government a fraction of future profits. For one thing, the government need not be concerned about the effects non-cash bids committed to the government by privatized firms may have on the future investment incentives of other firms. On the other hand, when the government sets a corporation tax affecting all firms across the board it must worry about the effects an announced increase in the tax have on investment incentives. But at a more practical level, enforcing the payment of pledged debt repayments or dividend payments is not the same as enforcing tax payments. A government with a debt claim is in a much stronger position to force the newly privatized firm to pay out than a government trying to enforce payment of corporation taxes. If the firm does not meet its debt obligations the government can force the firm into bankruptcy, whereas if the firm does not pay any corporation taxes the government must first establish whether the firm indeed had positive net revenues and only then can it impose penalties for non-payment of taxes; moreover, these penalties are likely to be softer than the threat of bankruptcy. Similarly, enforcing payment of dividends may be easier since presumably the newly privatized firms will be eager to establish a reputation for paying dividends in order to be able to make new equity issues if these are necessary.

We close this section by raising an important issue which we address in the next section. If most of the state assets are sold in exchange for debt, say, there is a risk that the government may end up quickly controlling again a substantial fraction of firms which

were not able to meet their debt obligations. As in Chile in 1982 the government may be forced to renationalise *de facto* a fraction of the newly privatized firms. More generally, if the government holds substantial fractions of debt in most of the privatized firms it may be able to exercise indirect control over these firms as the German and Japanese banks exercise control over the firms to which they lend. If this is the case there would not have been a complete privatization of the state owned sector. We argue in the next section that in order to avoid excessive concentration of power, the government could first limit its debt holdings in the privatized firms and second attempt to achieve the most widely dispersed ownership as possible. This may involve in particular the creation of financial intermediaries who would manage part of the state's portfolio of assets together with other private securities.

5. RELATED ISSUES

Throughout our discussion we have referred to the objects to be transferred from the public to the private sector as "assets" without clearly specifying what they are. In fact behind the question of what defines an "asset" that can be privatized separately lie two important policy debates which we take up briefly in this section. The first debate concerns a problem of *sequencing*, and more specifically the question of whether the larger state firms ought to be broken up into smaller units before being privatized or not. The second debate is about whether state firms ought to be *restructured financially* before privatization or not; that is to say, whether existing debts ought to be written off or not before privatization. Besides these two issues we shall also discuss the role of financial intermediaries and perhaps most importantly the question of how to improve the efficiency of the state sector awaiting privatization. With respect to the latter two questions many lessons can be learned from the German experience (see Carlin and Mayer (1992)).

5.1 Sequencing the transition: demonopolisation and privatization

The size distribution of state-owned firms in all four countries relative to the other industrialised nations is heavily biased towards large firms. In addition the larger firms tend to be vertically integrated monopolies. Several analysts have suggested that in order to improve the functioning of the market system after

privatization it is necessary to break up these large firms into smaller units and whenever possible to demonopolise the sectors of production in which there is a single state firm. The opponents of demonopolisation do not dispute the fact that such break-ups can improve the functioning of the market system but they point out that such drastic reorganisations take time and delay privatization further; moreover given the past record of the state administrations one cannot put much faith in its ability to reorganise these firms efficiently.

We shall not attempt to provide a thorough analysis of this question. Excellent treatments can be found elsewhere (see in particular Carlin and Mayer (1992), Mayhew and Seabright (1991), Newbery (1991a, 1991b) and Tirole (1991)). Instead, we shall briefly discuss demonopolisation in relation to its effects on efficient matching and incentives and in terms of its impact on the revenues raised from the sales of state assets.

When a large state-firm is like one of the East German *Konzerne* it may be composed of disparate production units with no clear production complementarities. If such a firm is sold as one piece then opportunities to improve *matching* may be missed. The new management team, if it is willing to purchase the entire conglomerate, is likely to be good at running only a few units of the conglomerate. Furthermore, it may be reluctant to immediately divest the units it has no special skills in managing since by delaying divestitures it can hope to get a better price for the subsidiary. Indeed, the same stock-flow constraint applies to private conglomerates, but the latter may not be in as good a position as the state in setting up deals like sales in return for non-cash bids, especially in an environment where the financial system is underdeveloped.³⁴ Alternatively, many potential buyers of individual units may be scared away by the prospect of taking up the huge managerial task of running such a mastodon.

Another case for breaking up large firms can be made for artificially created monopolies. By breaking up an existing state monopoly into several competing firms better incentives can be provided to the new management teams. McMillan and Naughton (1991) explain that incentives to increase productivity even in the state-owned Chinese firms have steadily increased in the past decade as a result of the introduction of product-market competition in many sectors. One should, however, bear in mind that unless the

profits of the newly competing firms increase substantially as a result of their increased efficiency, the break-up of the state monopolies may involve a revenue shortfall for the state.

Other important arguments for and against demonopolisation can be found in the studies cited above. We feel that at this level of generality the net benefits of demonopolisation are not clear cut. In the end, this is a matter that may have to be decided on a case by case basis.

5.2 Financial Restructuring

Several analysts have suggested that existing debts in state firms should be written off entirely (inter alia, Begg (1991), Frydman and Rapaczynski (1990), Newbery (1991a)). The basic reason behind this recommendation is that the allocation of credit to firms in the past has not been based on any sound financial principles so that many firms with a positive net continuation value have ended up with excessive liabilities. Instead of distorting these firms' incentives by leaving them with an excessively leveraged capital structure the suggestion is to let the newly privatized firms start their new life with a clean slate. While the debtors would clearly benefit from such a move, the creditors are going to be hurt by it. The latter are state banks, who have used individual deposits as well as government subsidies to make the loans to firms. If these loans are written off, the state banks will go bankrupt and the government, as well as individual depositors, will be hurt. The individual depositors will have to be compensated so that the ultimate loser is the government. Thus, the real cost of writing off debts is an increase in government expenditures at a time when public finances are already severely strained. As Carlin and Mayer explain, the Treuhandanstalt has opted for massive write-offs (up to 75% of the debts) despite the dramatic public finance consequences. Of course, in Germany this bill can be picked up by West German taxpayers, but in the other three countries one may wonder how the government will finance this increased expenditure.

Now, if firms are auctioned off in exchange for cash and non-cash bids, as described in Section 4, then debt write-offs will have no adverse consequences on the state budget. Any reduction in existing debt will be immediately reflected in the net present value of the firm and therefore in the bids made for the firm. The combination of debt write-offs with auctions will amount to a swap of securities, with

existing debt being exchanged for either cash or shares and debts in the newly privatized firm. This process will allow the new owners of the firms to optimally redesign their capital structure, thus implementing the desired result. Debt-write offs thus go hand in hand with auctions.³⁵

There is one important qualification to the above argument. For some firms, the size of existing debts may exceed the net present value of the assets. For those firms, debt write-offs are more than just a swap of securities: the nominal value of the debt has to be brought down to the real value of the debt. The question then is who should bear the cost of these write-offs? It seems to us that given the way in which these liabilities were allocated the government (in other words the taxpayers) should take up this cost.

5.3 The role of financial intermediaries

Except in the case of East Germany, most of the banking sector in the previously centrally planned economies remains in state hands. Obviously, much of the success of the privatization plans in Hungary, Poland and Czechoslovakia hinges on an orderly and timely privatization of state banks. The newly privatized firms need new funding to finance their investments and at least in the beginning the only external source of funding will be the banking sector; the stockmarkets that have recently been set up are not thick enough to be able to absorb several new issues in a row. Therefore, as the private sector grows it becomes more and more urgent to privatize the banking sector since state banks appear to be reluctant to lend to private firms.

While there is little dispute among economists about the importance of a private banking sector in the emerging market economies in Eastern Europe, there is disagreement about the necessity of other financial intermediaries besides banks. The Polish privatization authorities along with Lipton and Sachs (1990) and Blanchard et alii. (1991) among others take the view that other intermediaries like holding companies and/or mutual funds are necessary. These would act like large shareholders and play an important monitoring role, supervising the activities of the managers in the newly privatized firms. It is certainly true that ever since J.P. Morgan introduced the voting trusts and Du Pont de Nemours created the multidepartmental structure, holding companies and conglomerates have played an increasingly

important role in the US economy and elsewhere. However, as Williamson (1991) has pointed out, the Polish holding companies are not like those observed in the US. Their statutes are such that they must divest most of their subsidiaries within a given time period; in addition the form of oversight they are subjected to implies that the managers in the central offices do not have the same high-powered incentive schemes as their counterparts in the US. Moreover, the Polish mutual funds are not the product of evolution and market competition but are an institutional scheme designed *ex nihilo*, that will play a dominant role in an economy almost without a financial sector.

It is fair to say that the current state of economic science does not provide a firm understanding of the superior efficiency properties of holding companies over other forms of financial intermediation. However, if one takes the evolutionary view that institutions that have survived for a long time must be efficient, it may be a good idea to replicate those institutions. Indeed, many of the reforms adopted recently in Eastern Europe have been decided on that basis. But then, as Scharfstein (1991) has argued, one may have doubts about the efficiency of the new type of intermediary to be introduced in Poland if there is no precedent for such institutions in other existing market economies. Scharfstein also points out that there is little evidence to date that large shareholders are indeed effective monitors. If anything, it is the banks and credit-rating agencies that provide the most effective monitoring. He suggests that the effectiveness of bank monitoring comes from their role as routine providers of funds; this function gives them the powerful threat of cutting off funds in case the firm is run by an incompetent manager.³⁶

Besides monitoring, there is another function the newly privatized banks can usefully perform if the state goes ahead and privatizes most of the assets via auctions with non-cash bids. The result of mass privatization may be that the state ends up with a huge stock of debt and non-voting shares. In an economic downturn this may put the state in a position where it can control a substantial fraction of the economy, as more and more firms end up in or close to financial distress. The more concentrated the debt holdings are, the more tempted the government will be to postpone or forgive the debt payments, thus reintroducing the possibility of a soft budget constraint. In order to avoid both the excessive concentration of control in the state's hands and the reappearance of the soft budget

constraint, it may be necessary to delegate the management of these state assets to the banking sector, so as to introduce a buffer between the government and the firms. Delegation can take the form where the banks are responsible for the collection of dividend payments, debt repayments and liquidation proceeds in case of bankruptcy and liquidation; then for every sum collected on behalf of the government they can retain a fraction of the proceeds as fees. If the banking sector is sufficiently competitive and the governments' claims are sufficiently widely dispersed among the banks then such a delegation scheme can implement a hard budget constraint (see Dewatripont and Maskin (1990) and Qian and Xu (1991)). In addition, once the bulk of the economy has been privatized the state can gradually sell these financial claims to the banks.

5.4 Improving the efficiency of the state sector.

Even with a strong commitment towards rapid privatization, several years will be necessary to complete the privatization of the bulk of state assets. Therefore some attention has to be directed towards improving the efficiency of the state sector awaiting privatization. In this respect, several useful lessons can be drawn from the recent Chinese experience.

There is no necessary sharp discontinuity between private ownership and public ownership; it suffices to look at the examples of the British or French economy to see this. The Chinese reform process was a largely successful attempt to move state-owned firms closer towards what privately owned firms look like, without going all the way towards full blown privatization. At the same time conditions were set up for the emergence of a private sector which would eventually compete with the state sector. The way in which state-owned firms were gradually transformed into semiprivate firms, was by giving them greater autonomy over production decisions and by allowing them to retain a greater fraction of the profits they generated. At the same time, the Chinese government introduced auctions for top managerial jobs where potential candidates would submit bids promising minimum performance targets for the future (see McMillan and Naughton (1991)). These auctions could play a similar role as auctions for private ownership in terms of achieving better matching. The combination of all of these reforms has had a tremendous impact on productivity (see Hussein and Stern (1991) and Groves et alii. (1991)). The positive effect of these reforms indicates that sensible partial reforms can

substantially increase the efficiency of the state sector. Note, however, that in the case of Hungary, Poland and the Soviet Union, previous partial reforms allowing greater autonomy in decision-making and giving higher retained profits were not necessarily as successful, most often yielding little gain and unleashing inflationary pressures. Chinese reforms were, however, more radical to the extent that they were combined with auctions for top managerial jobs and with the creation and development from below of a significant private sector.

An important difference should however be noted here between Eastern Europe and China. When the state firms were reformed in China there was no expectation that they might be privatized in the near future. The mere expectation of privatization may create incentive problems that are difficult to control. An extreme form of perverse incentives created by the expectation of privatization is the plundering of assets by incumbent managers that have been witnessed in Poland and Hungary. There are many less visible manifestations of this type of behaviour and in order to counteract these perverse incentives it is important to provide incumbent managers in the state owned firms with a stake in the privatization of their firm. This could be achieved for example by letting incumbent managers do a leveraged buyout when no alternative serious buyer appears. Alternatively, incumbent managers ought to be allowed to participate in the auction for their firm, or they should receive compensation for losing their jobs after privatization if they can show that their management efforts prior to privatization have enhanced the efficiency of the firm.³⁷

An important aspect in the management of the public sector in the transition period is centralized control over expenditures and access to credit. In the case of East Germany, Treuhandanstalt monitors the management of its enterprises by controlling their access to liquidity and investment credits (Carlin and Mayer, (1992)). Hardening the budget constraint in the public sector essentially means a) limiting the expenditures of public enterprises, b) using the threat of bankruptcy to obtain higher effort. These instruments are however imperfect. Indeed, squeezing access to public sector funds can induce enterprises to reduce their costs, but can also reduce the quality and quantity of their service. As for the threat of bankruptcy, its credibility will remain low as long as capital markets are not developed enough, and as long as the rate of entry of new firms is not important enough to compensate for exiting firms. If bailing out

privatized firms may prove difficult to resist in the near future, this will *a fortiori* be true for state-owned enterprises.

Finally, one should also mention the importance of the efficiency of both the state and private sectors of the introduction of well functioning labour and housing markets. These dimensions as well as those concerning the underlying legal structure are well identified but a full treatment of these issues is unfortunately beyond the scope of this paper.

6. CONCLUSIONS.

One central policy conclusion emerges from the above analysis. Privatization through give-away schemes is likely to create a budgetary crisis, unleashing inflation and thus destabilizing the young and fragile democratic regimes in Eastern Europe. In addition, but less importantly, it creates an environment which is too favourable to incumbent management. In Czechoslovakia, the voucher scheme will lead to the privatization of cash-flow claims but it will not lead to the privatization of control; incumbent managers will remain in place and as a result of the absence of well functioning capital markets, inefficient managers will not easily be removed through takeovers. Neither is product market competition going to impose discipline on these inefficient managers, since there has been no attempt at breaking up the monopolistic structure of the old state sector. In Poland, a mechanism for controlling incumbent management has been proposed -- mainly the creation of financial intermediaries playing a supervisory role -- but it is unclear how effective these holding companies will be and how they will in turn be monitored effectively by the regulatory authorities.

Privatization through sales has been dismissed too soon because of the difficulties arising from the low level of private wealth and the valuation problems in the absence of capital markets. These problems can and must be solved, even though the solutions cannot be perfect. We have suggested a policy of auctioning off state assets in exchange for cash and non-cash bids, involving the transfer of control into private hands in exchange for debt claims or other securities and thus transforming the government into a net nominal creditor.

Such a policy reconciles several desirable policy objectives: speed of privatization, higher efficiency, introduction of capital markets and balanced budgets. It also allows the government to write off the existing enterprise debts without substantial revenue loss, since the debt write-offs will be reflected in higher bids for the state firms. The important added advantage of writing off debts before privatization is that the government will not be faced with the prospect of having to write off some of these debts in the future in those firms that have inherited an unusually high stock of debt, thus introducing doubts in the minds of managers about the government's commitment to enforce debt repayments.

Still, one should not underestimate the difficulties ahead, in particular the enormous administrative and management efforts associated with mass privatization. A generalized policy of sales in exchange for cash and non-cash bids may require similar monitoring efforts, in identifying serious buyers, to those undertaken by the Treuhandanstalt. This will then inevitably slow down the pace of privatization. In addition, the larger firms to be privatized are likely to see a separation of ownership and control, as the winning bidders will only own a small fraction of the cash flow claims. As we argued in Section 5, these firms' management teams may need to be supervised by the newly privatized banks. Alternatively, they may be monitored effectively by supervisory boards similar to those existing in Germany.

We believe that the most important issue concerning privatization in Czechoslovakia, Hungary and Poland is the dramatic consequences on the government budget of the loss of cash-flows from the previously state owned firms. There is mounting evidence that even in the remaining state sector the tax authorities are having increasing difficulties in collecting tax revenues. These difficulties will be even greater once these firms are privatized. Therefore, the main priority of the privatization plans in these countries should be the maximisation of the proceeds from the sale of state assets. The pursuit of this objective may go against accelerating the pace of privatization. We believe that this is a small cost to pay for the guarantee of a smooth transition process. The recent experience of China in reforming its planned economy indicates that following the decentralisation of decisions in state firms the government quickly lost control over the revenues generated by those state firms and despite a sharp increase in productivity government revenues declined. As a result the

government deficit increased sharply despite the fact that the economy was booming. This increase in the deficit in turn led to an increase in inflation, which was so sharp that the government was forced to interrupt the reform process and to trigger a severe recession at the end of the 1980s. A similar scenario awaits Czechoslovakia, Hungary and Poland, if they do not control the erosion in state revenues following the privatization of the bulk of state assets.

FOOTNOTES

1 See Vickers and Yarrow (1988) for an excellent overview of the issues raised by privatization in the West.

2 DIW *Wochenbericht*, 31/91, p. 444.

3 *Financial Times*, 7-11-91.

4 See Sinn and Sinn, 1991, for a thorough discussion of the restitution issue.

5 SPA Newsletter, October 91.

6 SPA Annual Report August 1991.

7 Nuti(1991), p. 7.

8 *Financial Times*, 8-11-91.

9 See Begg (1991) for a more detailed analysis of the restitution issue in Czechoslovakia.

10 Grosfeld (1991).

11 Source for figures in this paragraph: Grosfeld (1991) and *die Zeit* n° 45, november 1991.

12 Source: OECD.

13 For a discussion of the incentive effects of ownership when individual agents are unable to write complete contracts see Williamson (1985); see also Grossman and Hart (1986), Hart and Moore (1990) and Bolton and Whinston (1992) for a formal analysis of how ownership of assets should be allocated to individual agents in order to achieve maximum efficiency in terms of investment incentives for all the agents.

14 Even if some individuals are wealthy enough to be able to purchase entire industrial complexes it is likely that they would not want to take the risk of putting most of their wealth in one enterprise.

15 In a recent paper Jensen and Murphy (1990) point out that when shareholder wealth increases by \$ 1 million the total increase in CEO compensation in the largest US corporations is only \$ 32.5 on average. These figures indicate that CEO's do not have strong financial incentives to maximise shareholders' wealth. However, it is worth noting that their estimates are much smaller than those reported in other studies and seem to depend crucially on specific assumptions about functional forms (see Rosen (1990)).

16 The Treuhand's approach has been to favour break-ups before privatization (see Carlin and Mayer (1992)). Even in Poland several of the larger firms have been broken up, despite the official line against such break-ups before privatization (see Mayhew and Seabright (1991)).

17 *Dynamika prywatizacji*, n° 1 1991.

18 Some discussion of these issues can be found, however, in relation to the Chilean privatizations. See e.g. Buchi (1991). See also Driffill and Favero (1991).

19 Other things being equal, the German privatization effort has had the effect of increasing the aggregate demand for savings; this increased demand has been met both by direct increases in savings from private households in Germany and by indirect increases through the government deficit; in addition there has been an inflow of foreign capital. In order to obtain an adequate inflow of capital, however, German real interest rates had to be raised substantially.

20 Note, however, that some of these effects may be attenuated by letting foreigners purchase assets in foreign currency (say, dollars) and by using these foreign currencies to build up an exchange rate stabilisation fund and to purchase foreign (investment) goods.

21 As shown in Appendix 1, there may be exceptional circumstances where the sale of state assets may actually increase the government's net revenues because of the sharp increase in profitability resulting from privatization.

22 Further economies on items on the expenditure side of the budget will be difficult to find. Indeed, there will be some irrepressible components on the expenditure side. With the progress of transition and restructuring of the economy, unemployment will increase, thereby increasing the fiscal burden of unemployment benefits. Subsidies will continue to be paid to loss-making firms remaining in the public sector, if the cost of these subsidies is smaller than the costs of unemployment benefits for workers of those firms in case of liquidation. A minimum investment in infrastructure will be needed, if only at the level of replacement investment which is in itself pretty high, given the obsolescence of important parts of public infrastructure.

23 See *The Economist* of march 6th for a description of the difficulties the Polish tax authorities in enforcing tax compliance.

24 For a discussion of the costs and benefits of worker ownership in terms of economic efficiency see Milanovic (1990) and Lipton and Sachs (1990).

25 In addition, as Williamson (1991) has forcefully argued given that these holding companies will be subject to administrative oversight they will not have the high-powered incentives that full ownership can provide.

26 In most schemes, mutual funds are supposed to disappear after they have performed the role of privatizing the assets of which they have received the custody. It might be useful to recall here that ENI, the Italian public holding set up after the second world war, was supposed to be dissolved after a period of 5 years. It is still one of the biggest financial institutions in Italy.

27 This is a well known feature of competition by financial intermediaries for depositors (see Yanelle (1988)).

28 If one assumes convex tax collection costs, the inflation tax becomes a cheaper way of raising revenue, starting from a certain level of expenditures.

29 See *The Financial Times* (pp 17, 06/02/1992).

30 The government would have been able to obtain revenues of the order of at least 10,000 koruny for each adult and possibly much more if it had attempted to sell state assets through auctions with cash and non-cash bids (see Section 4).

31 A similar pattern emerges from decentralizing reforms in other socialist countries. McKinnon (1991) in particular documents the loss of government revenue brought about by the greater autonomy Soviet enterprises gained with perestroika.

32 Some of the government's debt must be secured, otherwise the threat of bankruptcy may be ineffective

33 In order to avoid creating a situation where most of the voting shares are in the hands of the managers and the bulk of remaining shares (owned by the state initially) are non-voting, one can specify provisions giving a voting right to the shares once they end up in private hands.

34 When assets with clear production complementarities are sold separately as parts of different Konzerne then the buyers of these assets are likely to underprice the individual assets since they face hold-up risks over the assets they do not own but which are necessary for production (see Hart and Moore (1990) for an explanation for why assets that must be combined for production ought to be integrated within the same firm.

35 An additional benefit of this procedure is related to the credibility of bankruptcy as an incentive scheme. Privatization is like a change of regime and being soft on debtors during the regime change does not necessarily signal that the government will be soft with debtors in the future. On the other hand, if the government fails to write off debts before privatization and allows such write-offs to take place after privatization when firms are in financial distress, then the government may find it difficult to enforce a hard budget constraint on the newly privatized firms. We thank Paul Seabright for this remark.

36 Of course, if the firm is far removed from the risk of financial distress the effectiveness of bank monitoring is reduced; takeovers and/or monitoring by large shareholders may then play a role. But, there is little indication that this form of monitoring is very effective.

37 One natural countervailing force inducing managers to run the state owned firm efficiently even if the firm is likely to be privatized soon is the reputation managers are likely to acquire. This reputation may help them to find a job in the emerging private sector, just as a reputation for efficient administration in, say, the French civil service can allow a civil servant to get a high managerial position in the private sector (see Roland and Sekkat (1992)).

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APPENDIX 1.
SOME SIMPLE ANALYTICS OF MASS PRIVATIZATION

In this appendix, we use a simple model to analyse the interaction between the microeconomic and the macroeconomic effects of mass privatization, formalizing the reasoning of Section 3.

We first present the model. Then the initial situation in the socialist economy is described. Finally, the changes brought about by privatization are analysed. We emphasize the role of allocation of assets, wages, the budget, investment and the stock-flow constraint in privatization programs.

1. A simple macroeconomic model.

We start with a closed economy. The economy is composed of productive assets, workers, managers and the government.

1. ASSETS.

There is a continuum of assets in the economy, operating at minimum efficient scale. Assets differ in efficiency. Specifically the productivity per worker is denoted by β , where β can take any value in the interval $[\beta, \bar{\beta}]$. The mass of assets of productivity β is then given by $h(\beta)$. In other words, the total asset productivity in the economy is given by :

$$\int_{\beta}^{\bar{\beta}} \beta h(\beta) d\beta \quad (1)$$

For any given asset type, productivity can be enhanced if assets are matched with the corresponding managerial skills. In other words, we assume that managers differ in their skills to operate given assets, and the required skills vary across assets. Productivity

⁰ With our notation, average productivity in the economy is given by $\frac{\int_{\beta}^{\bar{\beta}} \beta h(\beta) d\beta}{\int_{\beta}^{\bar{\beta}} h(\beta) d\beta}$.

per worker increases by the rate δ when assets and managers are correctly matched and remains the same when they are mismatched.

In addition, productivity can be enhanced if managers and/or workers put in higher effort.

To formally incorporate these two aspects into our model, we write productivity per asset as a function of e and δ , where e denotes managerial and worker effort :

$$\beta = \beta(e, \delta) \quad (2)$$

To keep things as simple as possible, we assume that e takes only two values $e_1 < e_2$. We denote $\beta(e_i, \delta)$ as $\beta_i(1 + \delta)$, where $\beta_1 < \beta_2$.

For simplicity, assume that an equal number x of workers per asset is required for production.

Under socialism, technological progress was stagnant. New investments hardly improved productivity. We shall assume that, after privatization, new investments can enhance productivity by a factor $(1 + g(i))$, with positive and decreasing returns to investment, $g' > 0$ and $g'' < 0$, where i stands for investment per asset, for any

given asset, aggregate private investment being $I = \int_{\beta_p}^{\bar{\beta}} i \cdot h(\beta) d\beta$,

with β_p being the lowest productivity privatized asset. Effects of investment on productivity however occur with a one-year lag to take into account the time to build. The effect of investment will only be considered when the analysis is extended to the two-period model.

To summarize, assets in the economy vary in an "autonomous" productivity parameter. Efficiency can however be improved under three conditions : a) higher managerial effort, b) correct matching between assets and managers c) private investment.

2. WORKERS.

Workers supply inelastically N man-hours of labour. Let L denote equilibrium employment, then aggregate worker revenue is given by $L \cdot w + b(N-L)$, where w is the wage rate and b denotes unemployment benefits.

Under the socialist system, the wage rate is exogenously given and there is full employment.

When privatization occurs, the wage is allowed to vary, but cannot decrease beneath level $w(b)$, because of, say, efficiency wage

considerations which are not modelled here. Clearly, the extent of unemployment associated with the privatization programme is a key variable.

We assume that workers desire to save a fraction $s \in (0,1)$ of wage income (for simplicity, s is given exogenously). Let a_w denote the stock of accumulated nominal per capita worker savings, including any forced savings component. The origin of forced savings under socialism will be analysed below.

3. MANAGERS

To begin with, we assume that there are potentially more managers than assets. The mass of managers N_m is greater than

$\int_{\beta}^{\beta} h(\beta) d\beta \equiv A$. the mass of assets. Given a random allocation of

managers to assets, the probability that a given asset is well matched with a manager is given by q .

For simplicity, assume that under state-ownership managers always choose the low effort level e_1 and under private ownership they choose e_2 . With privatization, the managers transform themselves into entrepreneurs and efficient businessmen. We take a rosy view of the market here, deliberately ignoring incentive problems arising from the separation of ownership and control. However, appendix 2 discusses some of these issues in the context of firms' capital structure. For our purpose here, it is sufficient to note that privatization will increase managerial effort, compared to the situation under socialism.

Let a_m denote the accumulated stock of nominal per capita managerial savings under socialism. Under state ownership, managers get a wage w_m of which they save a fraction $s \in (0,1)$. Under private ownership, managers can potentially be full residual claimants; the degree to which they are residual claimants is determined by the amount of capital they had to raise elsewhere (and also on the form in which they raise this capital).

4. THE GOVERNMENT.

Under the state system, the government owns all productive assets and is therefore entitled to all residual returns generated by

these assets. In addition, the government has seigniorage and can finance its nominal expenditures by printing money. Moreover, the government has a centralized control over the general allocation of resources. It can therefore decide on real government expenditures which could, in principle, be any fraction of GDP. On the revenue side, these expenditures are then financed by i) retained profits of enterprises, ii) forcing workers and managers to save more than desired, and (iii) printing money. The latter two instruments are equivalent when prices are set by the government.

In the privatized economy, there are still government expenditures. These are i) unemployment benefits for workers made redundant by privatization; ii) possible subsidies for loss-making public enterprises that are not yet privatized (the reason for these subsidies will be discussed below); iii) investment in public goods and infrastructure, broadly defined.

Even though the government has several sources of revenue, actually raising those revenues involves costs. Tax collection costs exist under socialism, and are especially important after privatization.

Before transition, even though they do not own the enterprises, managers have an incentive to hide part of their profits, and keep them in form of rents. It is thus costly for the government to extract those hidden profits.

We assume that tax collection costs under public ownership, denoted Γ_s , take the following form :

$$\begin{aligned} \Gamma_s &= 0 \text{ if } G < \frac{g_s}{1-\lambda_s} \\ &= -g_s + (1-\lambda_s)G \text{ otherwise} \end{aligned} \quad (3)$$

In other words, denoting G for the level of government expenditures and T for taxes,

$$\begin{aligned} \text{for } G \leq G_s = \frac{g_s}{1-\lambda_s}, \quad T &= G \\ \text{for } G > G_s, \quad \lambda_s T &= G, \quad \lambda_s < 1. \end{aligned}$$

This simplified tax collection costs technology is meant to capture the economic content of convex collection costs. As can be seen, above level G_s of expenditures, a part of tax revenues are lost due to tax collection costs, (here $(1-\lambda_s)$ is the cost of public funds

parameter under state ownership).¹ Total revenues raised must thus be higher than the corresponding level of expenditures.

However, it is likely that, with transition, tax collection costs become even higher, at least in the short run, because there are more small and medium enterprises, which are costlier for the tax authorities to monitor, and because private owners have greater freedom to evade taxes than the managers of public enterprises. Moreover, as the state system is completely reformed, in the aftermath of communism, tax collection costs are especially important in the transition period, because the new administration lacks the necessary information and experience.

We thus assume the following technology of tax collection costs :

$$\begin{aligned} \Gamma_c &= 0 \text{ if } G < G_c = \frac{g_c}{1-\lambda_c} \Rightarrow T = G & (4) \\ &= -g_c + (1-\lambda_c) G \text{ otherwise} \Rightarrow \lambda_c T = G \\ g_s &> g_c, \quad \lambda_s > \lambda_c \end{aligned}$$

We thus see that $\forall G, \Gamma_c \geq \Gamma_s$. The increase in tax collection costs, associated with privatization, increases the danger of inflation in the transition period. Indeed, when tax collection costs become too high, whether under state ownership or under private ownership, the inflation tax is used to raise real revenue to finance government expenditure. Under socialism and fixed prices, revenues from forced savings and/or printing money involve obvious efficiency costs in the distribution system². Inflation has distortionary effects and involves well known costs (see the discussion in the main text). These costs are modelled in the following way:

$$\Gamma_I = (1-\nu) G \Rightarrow \nu T = G \quad (5)$$

One might argue that the distortionary costs of excessive printing of money are higher under socialism than in a market economy. But for simplicity, we assume that $(1-\nu)$, the distortionary cost associated to the inflation tax, is the same under both systems.

¹ See Caillaud et al. (1987) for a similar modelling device in Public Finance theory.

² See Weitzman (1991) for a discussion of the costs resulting from shortages.

2. The economic situation before privatization.

We start with the determination of output.

Because of the adverse incentive effects under socialism (among which the famous ratchet effect), managers choose a low level of effort, e_1 .

Under state-ownership we assume that matching between assets and managers is random, since there is no managerial labour market. This assumption may overestimate the inefficiency of state ownership given that skills are to some extent acquired on the job. A proportion q of the assets has thus productivity $\beta_1(1+\delta)$ and a proportion $(1-q)$ has productivity β_1 . Moreover, all existing assets are operating.

We thus obtain the following formula for GDP in the state system:

$$Y_s = \int_{\beta_1}^{\beta_1} \beta_1 [(1-q) + q(1+\delta)] h(\beta_1) d\beta_1 \quad (6)$$

We now look at the Government budget under socialism.

On the expenditure side, we assume only two components: 1) subsidies to loss-making enterprises (or assets) and 2) public investment.

Define $\hat{\beta}_1 = wx + w_m$, as the zero profit cut-off point for non-matched assets and $\tilde{\beta}_1(1+\delta) = wx + w_m$, as the cut-off point for matched assets. Given that all assets are operated under socialism, total subsidies R are then given by

$$R = q \int_{\tilde{\beta}_1}^{\tilde{\beta}_1} [wx + w_m - \beta_1(1+\delta)] h(\beta_1) d\beta_1 + (1-q) \int_{\hat{\beta}_1}^{\hat{\beta}_1} [wx + w_m - \beta_1] h(\beta_1) d\beta_1 \quad (7)$$

Investment in infrastructure and public productive assets is denoted I_p . There is no private investment under socialism.

On the revenue side of the budget, there are:

1) retained profits:

$$\lambda_s \pi = \lambda_s \left\{ q \int_{\beta_1}^{\beta_1} [wx + w_m - \beta_1(1+\delta)] h(\beta_1) d\beta_1 + (1-q) \int_{\beta_1}^{\beta_1} [wx + w_m - \beta_1] h(\beta_1) d\beta_1 \right\} \quad (8)$$

2) revenues from household savings: a proportion s of revenues are desired savings. These savings can be used by the government at virtually no cost, given that the government is the only agent performing investment in this economy. The cost of using these savings is just the discount factor in the economy, assumed here to be zero. A proportion $\tau-s$ of revenues may be forced savings (if $\tau > s$). Revenues from forced savings definitely involve a cost per unit of forced savings, which, for the sake of simplicity, is assumed to be equivalent to the distortionary cost of the inflation tax, v . Thus, total revenues from savings are given by:

$$[s + (\tau-s)v](xw + w_m) \int_{\beta_1}^{\beta_1} h(\beta_1) d\beta_1 = [s + (\tau-s)v](xw + w_m)A \quad (9)$$

The budget equation is thus:

$$\lambda_s \pi + (s + (\tau-s)v)(xw + w_m)A = R + I_p \quad (10)$$

By assumption, investment adjusts to equate the difference between collected profits and individual savings, net of subsidies. This means that, on average, $(\tau-s)$ is equal to zero.

Seen as an accounting identity, (10) is always true, given that we assume a closed economy.

Moreover, in a centrally planned economy, the budget equation is identical to the equation for macroeconomic equilibrium.

Indeed, on the expenditure side, GDP net of tax collection costs, denoted by Y'_s is equal to private consumption and government expenditures:

$$Y'_s = Y_s - (1 - \lambda_s)\pi - (1-v)(\tau-s)(wx + w_m)A = (1-\tau)(wx + w_m) + I_p + R \quad (11)$$

On the revenue side, we have:

$$Y'_s = \lambda_s \pi + [1 - (1-v)(\tau-s)](xw + w_m)A \quad (12)$$

Putting together (11) and (12) yields (10).

Only consumption expenditures and household revenues are private under central planning. Voluntary private savings are thus necessarily financing public investment. However, the state has the power to determine the allocation of output to consumption and investment, so that total private consumption, and thus savings, is determined by the government. Macroeconomic equilibrium, i.e. the equality between desired household savings and desired public investment, is thus equivalent to equation (10) with $(\tau-s) = 0$.³

Having described the real state system, we now introduce nominal variables. These are given by the total outstanding stock of money, the counterparts of which are accumulated savings of workers and of managers.

$$M = A(xa_w + a_m)$$

Prices, being fixed statutorily, are omitted here.

This closes the description of the state-system. We now turn to the description of the private ownership economy.

3. The economic consequences of privatization.

As will become clear below, the equilibrium in the privatized economy depends on the process of privatization chosen.

The process of privatization has effects on a) the allocation of assets to entrepreneur managers, b) the government budget, c) inflation, d) the equilibrium in the labour market, and (e) intertemporal effects concerning the same issues.

The ideal outcome of privatization is given by efficient resource allocation and a balanced budget without inflation.

Various types of constraints have however to be met.

First of all, there are informational constraints. Here, the most important question is that of correct matching: who is the best manager for each asset ?

³ Contrary to conventional wisdom, a large body of empirical work, inspired by disequilibrium macroeconomics, has shown that centrally planned economies did not exhibit systematic aggregate excess demand (see e.g. Portes, Quandt, Winter and Yeo, 1987).

Second, there is the government budget constraint. Allocative efficiency requires that loss-making enterprises should be closed. Unemployment benefits will therefore have to be paid to workers made redundant. Given that unemployment benefits have to be paid anyway, it is preferable to subsidize some enterprises. A minimum level of investment in public infrastructure is also necessary, if only to compensate for wear and tear. On the revenue side, as argued above, it will be much harder to collect taxes from private enterprises. The cost of collecting taxes thus increases with the level of privatizations, and the risk of inflationary budgetary finance increases.

Formally, the goal of privatization is described by the first best efficient outcome. First of all, there is perfect matching, which implies $q = 1$. Second, there is high effort provision by the manager-entrepreneurs: \Rightarrow we have $\beta_2 > \beta_1$. We assume that all enterprises with non-negative profits, after possible subsidies, are privatized.

A few words on the labour market. The level of wages plays a crucial role in the privatization process: it determines the extent of privatizable enterprises. We do not assume market-clearing wages, but rather take the view that there is an efficiency wage. In reality, wages will take time to adjust downward. Thus given the exogenously specified unemployment benefit, b , the minimum wage is given by $w(b)$.

Assuming that the equilibrium wage equals $w(b)^4$, we can determine the fraction of assets to be shut down and the fraction of assets that continues to operate even though making losses. We determine those as follows.

Total output is now :

$$Y_p = \int_{\beta_2(w)}^{\tilde{\beta}_2} \beta_2 (1+\delta) h(\beta_2) d\beta_2 \quad (13)$$

where $\beta_2(w)$ is the level of productivity for which the enterprise's losses just cover the unemployment benefits:

⁴ For the sake of simplicity, we assume that this is also the basic wage for managers, taking into account the fact that they now become entrepreneurs, and that their income is primarily determined by profit.

$$(x+1)b = (x+1)(w) - \beta_2(w)(1+\delta)(x+1)$$

$$\Rightarrow \beta_2(w) = \frac{w-b}{1+\delta} \quad (14)$$

Total subsidies are then given by :

$$T_{FB} = (x+1) \int_{\beta_2(w)}^{\tilde{\beta}_2} (w - \beta_2(1+\delta)) h(\beta_2) d\beta_2$$

$$= (x+1) \int_{\frac{w-b}{1+\delta}}^{\frac{w}{1+\delta}} (w - \beta_2(1+\delta)) h(\beta_2) d\beta_2 \quad (15)$$

where $\tilde{\beta}_2 = \frac{w}{1+\delta}$ is the break-even type.

Total unemployment is given by :

$$U \equiv (x+1) \int_{\beta_2}^{\frac{w-b}{1+\delta}} h(\beta_2) d\beta_2 \quad (16)$$

Government expenditure is then equal to :

$$G = T_{FB} + U \cdot b + I_p$$

where I_p stands for public infrastructure and $\beta_2(w)$ is the productivity cut-off point. Assets with a lower productivity need to be subsidized at a rate per worker exceeding unemployment benefits and thus should be closed. Only assets with a productivity between $\beta_2(w)$ and $\tilde{\beta}_2$ will be kept operating. Assets with productivity

between $\beta_2(w)$ and $\bar{\beta}_2$ must be subsidized but at a less costly rate per worker than the unemployment benefit. In a world where b is equal to zero, there would be no subsidies and unemployment would not represent a burden to the budget.

A few evident but important remarks are in order here.

First, wages play a first order role in determining profitability. The lower the equilibrium wage, a) the higher the number of assets that are privatizable and b) the lower the unemployment and the number of assets that have to be closed down, and (c) the lower the budgetary expenditures.

Second, a correct matching between assets and entrepreneurs has the same effects.

The success of privatization at the macroeconomic level thus depends fundamentally on the evolution of wages and on the way assets are matched to entrepreneurs. As discussed in the main text, a big disadvantage of giveaway privatization schemes is that they do not provide an efficient matching mechanism, contrary to sales through auctions. Giving away the assets could potentially lead to an increase in managerial effort, but the matching of entrepreneurs and assets would not take place since managers would typically remain in place.

Note finally that the extent of enterprise subsidization depends positively on the level of unemployment benefits.

Total savings out of wages are:

$$S_w = s_w w(x+1) \int_{\beta_2(w)}^{\bar{\beta}_2} h(\beta_2) d\beta_2 \quad (17)$$

Total profits are:

$$\Pi = \int_{\bar{\beta}_2}^{\beta_2} [\beta_2(1+\delta) - w](x+1) h(\beta_2) d\beta_2 \quad (18)$$

In a world where raising taxes is costless, and assuming a tax T on profits, macroeconomic equilibrium implies:

$$S_w + s_\pi(\Pi - T) = I + G - T \quad (19)$$

where s_π is the savings rate on profits, net of taxes.

Savings are at their desired level and are channeled to private investment that will increase productivity in the future.

However, we have to take into account the effect of tax collection costs. We assume that government expenditures are financed either through the collection of taxes or through seigniorage. We thus exclude deficit financing through bonds, as is the case in reality in these countries. Using (4) and (5), one can use two "threshold" levels of public expenditures, G_c and G_l . Below G_c , there are no tax collection costs, between G_c and G_l , there are tax collection costs, but no inflation tax, whereas the inflation tax is used beyond G_l . Formally:

$$T = G, \text{ for } G \leq G_c. \quad (20a)$$

This defines $T_c = G_c$.

$$T_c + \lambda_c(T - T_c) = G, \text{ for } G_c < G \leq G_l. \quad (20b)$$

This defines T_l such that $\lambda_c(T_l - T_c) = G_l - G_c$

$$T_c + \lambda_c(T_l - T_c) + v(T - T_l) = G, \text{ for } G > G_l \quad (20c)$$

T is implicitly defined by (20c).

INSERT FIGURE 2.

Another major disadvantage of giveaway schemes of privatization is that the government loses a potentially important instrument for raising revenues, at a low cost. Indeed, the old tax base of the (low) public enterprise profits, collected at low costs, disappears with privatization. Part or all of the increased productivity in the privatized enterprises could be dissipated due to the losses resulting from the increased costs of budgetary financing.

Privatization through sales can generate government revenues, but they are subject to the stock-flow constraint.

The government could raise $G - T_c$ out of private savings by privatizing. More is not needed, since it would divest savings from productive investment, and since, below T_c , there is no cost of raising taxes.

Two possible cases arise:

$$a) S_w + s_\pi(\Pi - T_c) > G - T_c$$

Then, $T = T_C$, revenues from privatization are exactly equal to the budget deficit, $G - T_C$ and residual private savings finance private investment.

$$b) S_W + s\pi(\Pi - T_C) \leq G - T_C.$$

Then, all savings will go into government revenues, and there will be no private investment. When the inequality holds strictly, tax collection costs will be inevitable. Then, there will be a level of taxes $T^* > T_C$ such that

$$S_W + s\pi(\Pi - T^*) = G - T^*$$

In both cases, there will be a problem after privatization because of the stock-flow constraint. If, for the efficiency reasons spelled out here, one wants to privatize fast, then the sale of the assets only provides government revenue for a very short period. Once sales are completed, then the problems of raising government revenue will become as acute as with giveaway schemes. Because of the stock-flow constraint, the government might be tempted to delay part of the privatization program. It is useful to investigate this question within a two-period framework.

4. Delayed privatization in a two-period setting.

Using the model, we briefly address two questions: a) given the stock-flow constraint, is it more efficient for the government to delay the privatization of the most or of the least profitable enterprises? b) what are then the costs and benefits of delaying privatization, and which gains can be achieved by relaxing the stock-flow constraint?

To answer the first question, note that there are only costs, and no benefits, to delaying the privatization of subsidized loss-making firms. Unemployment benefits would rise since the marginally least profitable enterprises, which could have survived because of the efficiency gain of privatization, would have to close. Subsidies might also increase, depending on how $h(\beta)$ is distributed⁵. There would thus clearly be an increase in government expenditures. At the same time, there would be no economy in tax collection costs, since these enterprises make losses. Keeping these enterprises public can therefore only increase the budget deficit. Moreover, because of the higher unemployment level, wage income, and thus total savings

⁵ If $h(\beta)$ is uniformly distributed, the level of subsidies would remain the same, only their allocation among enterprises would change.

out of wages would be reduced. In addition, the fact that there would be a smaller number of profitable enterprises would reduce total profits and savings out of profits. The increase in the budget deficit and the lower savings can only reduce investment, thereby adversely affecting future output.

By contrast, delaying the privatization of the most profitable enterprises yields marginally higher gains in tax collection costs, since the total amount of expenditures that have to be financed through private sector taxation is reduced by an amount equal to the higher profit of those enterprises. On the other hand, the most profitable enterprises are also likely to be correctly matched. The efficiency gain from their privatization is thus potentially not so high, compared to the gains in tax collection costs. It would thus pay most to delay the privatization of the most productive enterprises.

Let us now look at the effects of delaying privatization. There are gains in tax collection costs in the two periods. These gains must be compared to the total efficiency loss over the two periods, measured here by their contribution to net output. Let us briefly comment on these effects.

1. There is a double gain in tax collection costs in the first period. This gain stems a) from the revenues generated by the privatized enterprises, denoted P_1 and b) from the profits of the non-privatized

assets, from β to β^* , the latter being the optimal cut-off point equalizing the marginal gains and benefits from delaying privatization. The marginal first-period gain in tax collection costs generated by delaying the privatization of that asset is given by its profit multiplied by $\frac{1-v}{v}$, in the case of the inflation tax:

$$\frac{1-v}{v} [\beta_1^*(1 + q\delta) - w](x + 1) \quad (21)$$

2. There is a first-period output loss due to the lower efficiency because of delayed privatization. Looking again at the marginal conditions for asset β^* , this loss is given by:

$$-[(\beta_2^* - \beta_1^*)(1 + \delta) + (q - 1)\delta\beta_1^*](x + 1) \quad (22)$$

As can be seen from (22), this loss has two components: the first due to the lower effort, and the second due to probable mismatching.

3. There is a second-period loss in output due to a lower first-period level of investment and due to the marginal delay in

privatization. Recall that, according to our assumptions, private sector productivity is enhanced by investment, with a one-year lag. Marginally, this gives

$$g'(i)di \int_{\beta_2^*}^{\bar{\beta}_2} \beta_2 (1+\delta) h(\beta_2) d\beta_2 - \beta_2^*(1+\delta)g(i) \quad (23)$$

$$\text{where } di = \frac{dI_1}{\int_{\beta_2^*}^{\bar{\beta}_2} h(\beta_2) d\beta_2}$$

The lower investment level is due to a combination of three factors. First of all, a part of private savings have been allocated to the acquisition of public assets rather than investment. Second, delay in privatization lowers total profits, and thus savings out of profits. The third, and somewhat counterbalancing factor is the fact that lower taxes have to be levied from the private sector. This factor is however outweighed by the first two, especially the first.

4. There is a gain in second period tax collection costs generated by the revenues from the final privatization package. This gain largely outweighs that derived from the second-period efficiency loss. The latter indeed increases the level of subsidies paid to loss-making firms.

What happens when the stock-flow constraint is removed as in our scheme of Section 4, and when the public assets are sold in exchange for debt claims, securing for the government a future flow of revenue? Clearly, all incentives to delay privatization are removed, thereby allowing an important gain in efficiency. The macroeconomic trade-off that then remains is the one between the yearly flow allocated to debt payment on the one hand, and to investment on the other hand. The optimal allocative outcome is one where the marginal gain in tax collection costs is equated with the marginal future efficiency loss due to lower investment and its derived fiscal effect, in terms of higher subsidies.

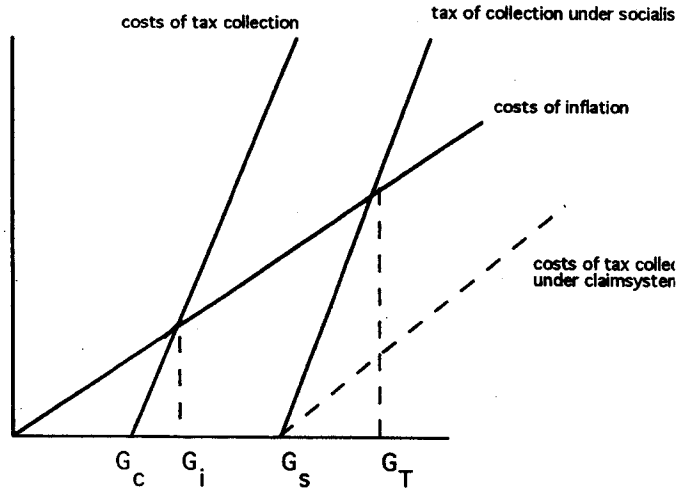
Conclusion

The proposal of Section 4 allows, at the same time to reap all the advantages of fast privatization and to keep, as much as possible, a non-distorting tax base. Privatizations are done on the basis of

auctions where bids depend on the net present value of the enterprise. This form of sale avoids the matching pitfalls of giveaway schemes. At the same time, quick privatization yields the highest productive gains. As bids are not constrained by accumulated wealth or actual savings, the highest bidders commit to future debt payments to the state which represent non-distorting tax revenues.

FIGURE 2.
new revenue technology

1. new revenue technology



A more efficient way of collecting revenues is privatization through sales. Assume that private savings can be channeled indifferently to private investment or to the acquisition of assets. The government wants to raise at most $G - T_c$ out of private savings. More is not needed, since it would divest savings from productive investment, and since, below T_c , there is no cost of raising taxes.

Two possible cases arise:

a) $S_w + s\pi(\Pi - T_c) > G - T_c$

Then, $T = T_c$, revenues from privatization are exactly equal to the budget deficit, $G - T_c$ and residual private savings finance private investment.

b) $S_w + s\pi(\Pi - T_c) \leq G - T_c$

Then, all savings will go into government revenues, and there will be no private investment. When the inequality holds strictly, tax collection costs will be inevitable. Then, there will be a level of taxes $T^* > T_c$ such that

$$S_w + s\pi(\Pi - T^*) = G - T^*$$

In both cases, there will be a problem the next period, since, if we abstract from the effects of investment, the next period will be similar, from the budgetary point of view, than the case with giveaways.

Because of that, the government might be tempted to delay part of the privatization program.

4. A two period model of delayed privatization.

The government wants to solve the following problem:

$$\begin{aligned} \max Y_1' + \theta Y_2' \\ \beta^*, P_1 \end{aligned} \quad (21)$$

where Y_1' and Y_2' are respectively first and second period output, net of tax collection costs, where is the last privatized enterprise in period 1, and where P_1 is the total amount of first period savings channeled to the purchase of privatized enterprises rather than to investment. θ is the discount factor. P_2 must also be determined in the model, but is solved for residually on the basis of second period taxes, government expenditures and savings.

The basic intertemporal trade-off involves equating reductions in tax collection costs against efficiency losses due to delayed privatization.

The basic intertemporal link is provided by investment. First period investment is given by:

$$I_1 = S_w 1 + s_\pi \Pi_1 - G_1 + (1 - s_\pi) T_1 - P_1 \quad (22)$$

Note that, unless $s_\pi = 1$ a decrease in taxes reduces investment, because it increases consumption, hence increasing savings less than the budget deficit.

Assuming an interior solution exists, i.e. only partial privatization in period one, a first question to be asked is whether delayed privatization should concern the most productive or the least productive assets.

What are the marginal costs and benefits of delaying privatization of the least productive enterprises?

Note first that there will be no effects on subsidies if $h(\beta)$ is uniformly distributed, since the amount of subsidy per enterprise lies between 0 and $b(x+1)$. With delayed privatization, otherwise more productive firms become subsidized, but other firms get closed, so that subsidies remain unchanged if $h(\beta)$ is uniformly distributed.

Second, there will be an increase in unemployment benefits, since enterprises, which could have survived, when privatized, now must close, since their loss, per asset, is higher than $b(x+1)$.

Delaying the privatization of the least productive enterprises thus increases government expenditures. At the same time, it does not allow to economize on tax collection costs, since these enterprises make losses. Keeping these enterprises public can only increase the budget deficit.

Moreover, a lower level of employment reduces savings out of wages, and a lower number of profitable enterprises, alongside with a lower efficiency due to delayed privatization, reduces profits and savings out of profits. The increase in the budget deficit and the lower savings can only reduce investment, thereby adversely affecting period 2's output. Delaying the privatization of the least profitable enterprises implies only costs, no benefits.

Gains in tax collection costs are highest when delaying privatization of the most profitable enterprises, since these higher profits reduce the total amount of expenditures that have to be financed through private sector taxation. If privatization must be delayed, in this model, it pays to do it with the most productive enterprises first.

To understand the problem, note that finding the optimal delay, and the optimal first period purchase payment are relatively independent problems.

In the former case, one must compare the following marginal effects:

a) the first period marginal output loss due to the delay in privatization:

$$-[(\beta_2^* - \beta_1^*)(1 + \delta) + (q - 1)\delta\beta_1^*](x + 1) \quad (23a)$$

b) the first period marginal gain in tax collection costs due to the budgetary contribution of the marginally non privatized enterprise:

$$\frac{1-v}{v} [\beta_1^*(1 + q\delta) - \underline{w}](x + 1) \quad (23b)$$

c) the second period change in output due to the change in investment and the marginal delay in privatization:

$$g'(i) di \int_{\beta_2^*}^{\bar{\beta}_2} \beta_2 (1 + \delta) h(\beta_2) d\beta_2 - \beta_2^*(1 + \delta)g(i) \quad (23c)$$

$$\text{where } di = \frac{dI_1}{\int_{\beta_2^*}^{\bar{\beta}_2} h(\beta_2) d\beta_2}$$

$$\text{and } dI_1 = s_\pi d\Pi_1 - dG_1 + (1 - s_\pi) dT_1$$

$$= s_\pi d\Pi_1 + \left(\frac{1 - s_\pi}{v} - 1\right) dG_1$$

$$\text{with } d\Pi_1 = -(\beta_2^* - \beta_1^*)(1 + \delta)(x + 1)$$

$$\text{and } dG_1 = -[\beta_1^*(1 + q\delta) - \underline{w}](x + 1)$$

d) the changes in second period tax collection costs due to the changes in subsidies triggered by the change in productivity brought about by investment:

$$-\frac{1-v}{v} dT_{FB2} = (x + 1)g'(i) di \int_{\beta_2(\underline{w})}^{\bar{\beta}_2} \beta_2(1 + \delta) h(\beta_2) d\beta_2 \quad (23d)$$

The second period effects depend on the sign of dI_1 . If the effect of lower profits outweighs the effect of a smaller contribution of the private sector to the budget, then investment is adversely affected by a delay in privatization. In that case, the first period gain in tax collection costs equates the first and second period cumulative losses in efficiency. In the other case, delaying privatization can increase private investment because the reduced fiscal burden on the private sector frees more resources, even though the public sector is less efficient.

There are thus marginal costs and advantages of delaying privatization even without sales. When public assets are sold, the latter problem is compounded by a trade-off between resources going to investment or to the budget.

The two problems are however relatively independent. If, independently of the effect on budgetary revenues, for the allocative reasons just discussed, one wants to privatize most of the assets in the first period, the equilibrium price per asset sold in period 1 will be much lower than the equilibrium price per asset sold in period 2. This is because purchases are constrained by the actual flow in savings. When there is such a cash-in-advance constraint, then there is an immediate trade-off between allocation of savings to the budget or to investment. Let us see this trade-off in the case where all assets would be privatized in the first period.

$$dI_1 = s\pi d\Pi_1 - dG_1 + (1 - s\pi)dT_1 - dP_1$$

There is no delay in privatization and thus $d\Pi_1 = 0$. An increase in P_1 yields a marginal gain in tax collection costs of:

$$dY_1 = \frac{1-v}{v} dP_1 \quad (24a)$$

This happens at the expense of a decrease in investment, unless $s\pi = 1$, thereby decreasing second period output and increasing tax collection costs for higher subsidies:

$$g'(i)di \int_{\beta_2(w)}^{\beta_2} \beta_2 (1+\delta) h(\beta_2) d\beta_2$$

$$\text{where } di = \frac{dI_1}{\int_{\beta_2(w)}^{\beta_2} h(\beta_2) d\beta_2}$$

$$dI_1 = -\frac{1-s\pi}{v} dP_1 \quad (24b)$$

$$-\frac{1-v}{v} dT_{FB2} = (x+1)g'(i)di \int_{\beta_2(w)}^{\beta_2} \beta_2 (1+\delta) h(\beta_2) d\beta_2$$

In the case where privatization is delayed, a higher P_1 lowers P_2 since lower investment reduces second period profits and savings, and increases expenditures and taxes:

$$dP_2 = s\pi d\Pi_2 + \left(\frac{1-s\pi}{v} - 1\right) dT_{FB2}$$

where $d\Pi_2$ is given by (24b).

As the two problems are independent, β^* and P_1 can be found independently. For P_2 to be positive however, there must be some delay in privatization in period 1. Now, the only source of gain in delaying privatization are economies in tax collection costs. One sees here that P_1 and P_2 introduce a form of non distortional taxation.