NBER WORKING PAPERS SERIES

EXTERNALITIES, INCENTIVES, AND ECONOMIC REFORMS

Joshua Aizenman

Peter Isard

Working Paper No. 3395

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
June 1990

This paper was written while Mr. Aizenman was a visiting scholar in the Research Department of the International Monetary Fund. The authors are grateful for comments by Guillermo Calvo, Morris Goldstein, Joshua Greene, Don Mathieson, Kent Osband, and other participants in a seminar at the IMF. This paper is part of NBER's research program in International Studies. Any opinions expressed are those of the author(s) and not those of the IMF or the National Bureau of Economic Research.

NBER Working Paper #3395
June 1990

EXTERNALITIES, INCENTIVES, AND ECONOMIC REFORMS

ABSTRACT

The paper emphasizes the role of institutions and incentives in the presence of externalities. An economy with multiple public decision makers is likely to experience "overspending," "undertaxing," "overborrowing," and "overinflation" unless effective institutions exist for overcoming coordination failure. External financing may weaken incentives for adjustment over the longer run unless assistance is made conditional on fundamental institutional reforms. The paper also analyzes reforms that strengthen incentives to provide effort. Uncertainty regarding future taxes reduces present effort and the responsiveness of output to market signals. In addition, the paper addresses the adverse effects of bank insurance and soft budget constraints.

Joshua Aizenman
Economics Department
Dartmouth College
Hanover, NH 03755

Peter Isard
Research Department
International Monetary Fund
Washington, DC 20431

I. Introduction

Much attention is currently being focused on market-oriented reform programs for planned economies. In many respects, the main issues are similar to those that arise in designing adjustment programs for economies that are market oriented to begin with. Although the difficulties that programs must be designed to address vary considerably among countries and change over time, the successes and shortcomings of programs that have already been implemented provide many general lessons. 1/

This paper attempts to reinforce and provide deeper insights into several of the most important lessons. The essential purpose of economic reform programs, by definition, is to establish institutions and implement policies that provide incentives for individual decision makers to behave in ways that are collectively desirable. Accordingly, the analysis focuses predominantly on externalities and incentive structures, emphasizing that macroeconomic performance--and the ability to implement effective macroeconomic policies--depends fundamentally on the monetary, fiscal, and legal institutions that motivate and constrain individual decision makers.

The main body of the paper is divided into four sections. Section II addresses negative externalities associated with multiple public decision makers (e.g., different ministries or regional authorities). It is shown that, in the absence of effective institutional arrangements for overcoming "coordination failure," these externalities cause a bias to "overspend," "undertax," "overborrow," and "overinflate"

1/ See, for example, Kornai (1986).

relative to the cooperative equilibrium. The presence of such externalities suggests that macroeconomic control will be difficult without a strong central bank and a reliable mechanism for controlling the public budget.

Section III turns to the issue of how the availability of external resources is likely to affect a country's incentives to carry through its adjustment and reform efforts. The analysis suggests that an infusion of external resources increases the short-run gains from overcoming coordination failure but may weaken incentives for adjustment and reform over the longer run. Making external financing conditional on fundamental institutional reforms thus increases the likelihood of overcoming coordination failure on a lasting basis.

Section IV addresses the x-efficiency production gains that can be achieved by changing the incentives faced by enterprise managers while also ensuring a given volume of public tax revenue (and preserving the real income of nonmanagerial labor). In addition to focusing on the comparative static gains from tax system reforms, we address the adverse effects of tax uncertainty. It is shown that uncertainty regarding future taxes will reduce present effort, and will also reduce the responsiveness of output to productivity changes and other market signals. This suggests that systems that tax enterprises and other economic agents on a uniform basis will tend to generate more effort and output than systems in which tax rates are subject to agent-specific uncertainty. It also suggests that effort and output are enhanced by credible fiscal leadership that reduces the general level of uncertainty regarding future taxes.

Section V analyzes the implications of social "insurance" (in whatever form, explicit or implicit) for the behavior of banks and other firms. The analysis of banks illustrates that insurance can have adverse implications both for the quality of the investment projects that banks finance and for inflation. The analysis of state-insured firms illustrates that soft budget constraints can have adverse implications for the efficient use of resources and for the wage-price spiral. These perspectives provide an argument for allowing banks and other firms to fail, and for promoting a competitive environment in which the size and political influence of individual enterprises does not preclude the possibility of allowing them to fail. This does not deny arguments for providing an adequate social safety net, but it does suggest that social safety nets can provide counterproductive incentives if they are not designed carefully.

Section VI provides concluding remarks.

II. Externalities Associated with Multiple Public Decision Makers

One of the most formidable tasks in designing a reform program, in many cases, is the challenge of changing the behavior of the public sector. The challenge can be particularly difficult when control over public spending, or over money and credit expansion, is spread among numerous decision makers representing different regions of the country or different ministries of the central government. It is widely acknowledged that lack of centralized control over public deficits and money and credit expansion can undermine an adjustment program, but it must also be acknowledged that political realities generally limit the scope for

diluting the powers of established ministries and regional authorities. In this context, it is essential to recognize that the case for public sector reform is based on negative externalities transmitted through the inflation process, and that such externalities hold out the prospect of widespread benefits from successful reforms. The underlying problem is inherently a matter of "coordination failure." 1/

1. A simple example

The following example illustrates the nature of the negative inflation externalities and points to different approaches for addressing the coordination failure through restructuring institutions and modifying incentives. Consider an economy in which aggregate real fiscal spending (G) is the sum of the real spending levels (G_i) chosen by n independent ministers:

$$(1) \quad G = \sum_{i=1}^{n} G_i .$$

Assume that part of government spending is financed by money creation. More specifically, suppose that the expansion of real money balances (M/P) depends positively on real fiscal spending, and that the rate of inflation (π) is an increasing function of the change in the money supply:

$$(2) \quad \frac{\Delta M}{p} = g(G); \; \frac{\partial g}{\partial G} > 0$$

1/ On coordination problems in the context of fiscal policies, see Alesina and Tabellini (1987). On coordination and seignorage, see Aizenman (1989a). On the role of the political economy in stabilization and inflation, see Alesina and Drazen (1989), Cukierman, Edwards, and Tabellini (1989) and Bruno (1989).

$$(3) \quad \pi = \pi\left(\frac{\Delta M}{P}\right); \ \frac{\partial \pi}{\partial (\Delta M/P)} > 0.$$

In addition, assume that the welfare achieved by the i^{th} minister is summarized by a utility index (U_i) that depends positively on his own spending level and negatively on the rate of inflation: 1/

$$(4) \quad U_i = U_i(G_i, \pi); \ \frac{\partial U_i}{\partial G_i} > 0; \ \frac{\partial U_i}{\partial \pi} < 0$$

Accordingly, by combining conditions (1)-(4), each minister's utility level can be re-expressed as a function of both his own spending level and the spending levels of all other ministers:

$$(5) \quad U_i = V_i(G_1, G_2, \ldots, G_n); \ \frac{\partial V_i}{\partial G_j} < 0 \quad \text{for} \quad i \neq j.$$

This is a classic case of a negative competitive externality. 2/ If each minister acts independently, taking the choices of other ministers as given, the optimizing noncooperative choice (G_i^N) will satisfy

$$(6) \quad \frac{dU_i}{dG_i} = \frac{\partial U_i}{\partial G_i} + \frac{\partial U_i}{\partial \pi} \frac{d\pi}{dG_i} = 0.$$

1/ The negative marginal utility of inflation may reflect either the decision maker's sensitivity to the attitudes of his constituents or an environment (see Aizenman (1989a)) in which real spending levels are eroded by inflation.

2/ For purposes of highlighting a particular source of negative externalities that has received considerable emphasis by economists involved in the practice of program design, we ignore the positive externalities that government spending may provide.

could be undermined by incentives to cheat. Other approaches to dealing with the coordination failure involve legal frameworks and penalty mechanisms for constraining the amount of spending that ministers can finance. For example, the spending limits of cabinet ministers might be specified through a centralized appropriations process, while spending by regional governments might be restricted (relative to tax revenues) by constitutional law. To the extent that legal frameworks often develop loopholes, moreover, a strong central bank can play an important role by refusing to monetize fiscal deficits.

2. A more general framework

The previous example, of course, is drastically oversimplified in many respects. The inflationary impact of government spending generally stems primarily from spending in excess of tax revenues; government deficits are often financed on credit rather than through direct money creation; and the links between fiscal deficits and inflation may be quite complex.

Accordingly, it is worth noting that the same basic framework applies to cases in which the coordination failure involves inadequate collection of tax revenues (T_i) by different regional authorities rather than excessive spending levels (G_i). 1/ Moreover, the framework extends to any macroeconomic model that generates a positive reduced form

---

1/ Prior to the reforms undertaken since a new Government took office in March 1989, macroeconomic management in Yugoslavia was undermined by, among other things, lack of federal authority in setting tax rates, which varied substantially across and within republics.

relationship between inflation and the sum of the regional budget deficits (D_i). In the more general case, the inflation process would reduce to the simple form

$$(3') \quad \pi = \pi(D); \ \frac{\partial \pi}{\partial D} > 0$$

where D is the aggregate deficit

$$D = \sum_i D_i = \sum_i (G_i - T_i).$$

The preference structure would be characterized as:

$$(4') \quad U_i = U_i(G_i, T_i, \pi) = U_i[G_i, T_i, \pi(\sum_j (G_j - T_j))];$$

$$\frac{\partial U_i}{\partial T_i} < 0; \ \frac{\partial U_i}{\partial \pi} < 0.$$

Accordingly, the optimizing noncooperative choices of tax levels (T_i^N) will satisfy

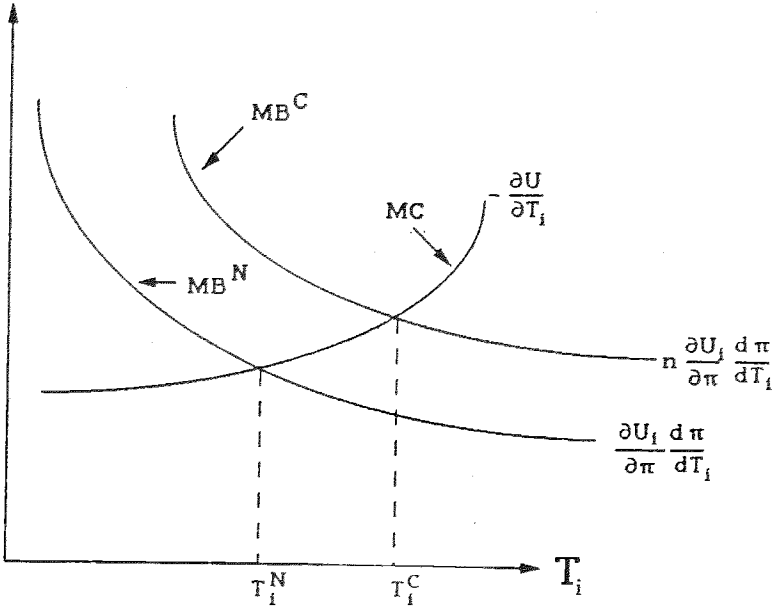
$$(6') \quad \frac{\partial U_i}{\partial T_i} + \frac{\partial U_i}{\partial \pi} \frac{d\pi}{dT_i} = 0$$

while the cooperative outcomes (T_i^C)--for the symmetric case in which all decision makers are alike--will satisfy

$$(7') \quad \frac{\partial U_i}{\partial T_i} + n \frac{\partial U_i}{\partial \pi} \frac{d\pi}{dT_i} = 0$$

These two outcomes are contrasted in Figure 2 for the "normal case" in which higher taxes provide positive and increasing partial marginal disutility and contribute to reducing inflation, while lower inflation provides higher marginal utility. Without cooperation--or in the absence of institutional mechanisms that lead the authorities of individual regions to coordinate on the collectively optimal solution--regional

FIGURE 2


MB^C
MB^N
MC
$-\frac{\partial U}{\partial T_i}$
$n\frac{\partial U_i}{\partial \pi}\frac{d\pi}{dT_i}$
$\frac{\partial U_i}{\partial \pi}\frac{d\pi}{dT_i}$
T_i
T_i^N
T_i^C

authorities will set taxes below the collectively optimal level, regional budgets will be excessively in deficit, and the national inflation rate will exceed the optimal level. 1/ It is noteworthy that enriching the model will broaden the distortive effect of coordination failure. For example, if the economy has access to the international credit market, it will overborrow. 2/ 3/

3. Incentives to overcome coordination failure

The existence of negative externalities implies that the various political constituencies in any country (whether defined by region, ministry, or otherwise) can be made better off, in principle, if a politically acceptable mechanism can be found for overcoming coordination failure--i.e., if institutions and incentives can be established that will move the individual decision makers collectively away from the

---

1/ Note that in Figure 2, the MC surve corresponds to the marginal cost of higher taxes (T_i), MB^N is the marginal benefit as perceived by the decision maker in the noncooperative regime, and MB^C is the marginal benefit in the cooperative regime.

2/ See Aizenman (1989b).

3/ The prospect of "undertaxation" and "overborrowing" has raised concern in the context of the movement toward greater monetary and economic integration in Europe. Indeed, the Report of the Delors Committee (1989) has suggested that "binding rules are required . . . [to] impose effective upper limits on budget deficits of individual member countries of the Community . . ." (p. 17). See also Casella and Feinstein (1988).

noncooperative equilibrium to the collectively optimal outcome. The challenge in practice, of course, is to find a politically acceptable mechanism. There is a large body of collected wisdom on the strengths and weaknesses of different types of institutional arrangements, and on certain issues--such as the importance of imposing hard budget constraints on fiscal authorities and establishing strong central control over money and credit expansion--there is a strong consensus of opinion. In general, however, we view the challenge of establishing institutional arrangements to overcome coordination failure as a challenge to which different countries are likely to find different solutions, given the different institutional arrangements and political considerations from which they start. Accordingly, the formulation of mechanisms for overcoming coordination failure is largely a country-specific task and is beyond the scope of this paper.

A positive general theory of the requirements for overcoming coordination failure is also beyond the scope of this paper. The appealing approach to developing such a theory is to focus on the strategies that individual decision makers can employ in maneuvering for larger shares of the aggregate gain. The role of delay tactics has been emphasized in this context. 1/

An appealing hypothesis, however--even in the absence of a positive theory--is that the incentive to overcome coordination failure is positively related to the aggregate gain that can be achieved. An increase in the aggregate benefits foregone (or costs incurred) by not

---

1/ Alesina and Drazen (1989).

overcoming coordination failure is likely to limit the extent to which individual decision makers maneuver for a more favorable distribution of the benefits (or costs). This hypothesis is consistent with the view that it often takes a crisis to catalyze fundamental institutional reforms.

III. External Resources and Incentives to Reform

The previous discussion and analytic framework leads naturally to the issue of how the availability of external resources affects the strength of a country's incentives to undertake reforms.

The impetus for a reform program or a growth-oriented adjustment program typically emerges from a state of general economic turmoil. Countries in need of effective programs are often saddled with heavy external debt burdens and, in any case, are typically in need of external resources for balance of payments financing. In the context of the evolving debt strategy, there is a broad consensus that effective adjustment requires both strong domestic policies and external resources--as essential complements--along with an external environment that supports the efforts of the adjusting country to strengthen its export revenues. 1/ A view has also emerged that problem countries are trapped in a "bad equilibrium," and that a successful transition to a "good equilibrium" with attractive prospects for growth requires an adjustment effort--in terms, implicitly, of both policy actions and external resources--that is sufficient in scale to preclude confidence failures 2/ or credibility crises. 3/

1/ Camdessus (1988).

2/ Blejer and Ize (1989).

3/ Calvo (1990).

These views are virtually indisputable, but there is an important caveat: namely, that the provision of external resources can conceivably reduce the pressures for a country to undertake strong policy actions, thereby putting at risk both the prospects for growth and the country's ability to eventually repay its creditors. This caveat has been the basis for the evolving practice of "conditionality," whereby the manner in which external resources are provided over time is linked to the credibility of policy intentions and the achievement of agreed performance criteria. 1/ A central question in the theory of conditionality is the extent to which performance criteria ought to be specified in terms of the implementation of fundamental institutional reforms, rather than simply in terms of traditional quantitative performance indicators. 2/

1/ The "theory and practice of conditionality" will undoubtedly be affected in the period ahead by the success of the reform program launched in Poland at the beginning of the year. In particular, the experience in Poland is likely to provide important perspectives on the wisdom of a "crash program" in which reforms are introduced fairly rapidly, rather than phased in gradually over time.

2/ See Guitián (1981) for a discussion of the principles and practices of International Monetary Fund conditionality as of the early 1980s. In recent years, there has been a growing awareness within the Fund that "structural weaknesses" impede the effectiveness of macroeconomic policies, and that in many cases, successful adjustment requires that "structural measures" be implemented at an early stage of the adjustment program.

In this section, we extend the framework from Section II to analyze how the availability of external resources affects incentives to undertake fundamental reforms. We thus continue to focus on the negative inflation externalities associated with multiple public decision makers (e.g., the authorities of different regions of the country) and the potential gains from institutional reforms to deal effectively with a situation of "coordination failure."

The first step is to characterize the relationship between the rate of inflation and the level of external resources (F). We view F as the net transfer of external resources to the government, such that the fiscal deficit is G-T-F. This makes it natural to assume

$$(3'') \quad \pi = \pi(G-T-F); \ \pi' \equiv \frac{\partial \pi}{\partial (G-T-F)} > 0$$

It is convenient to focus simply on the spending side of the coordination problem; accordingly, we assume that tax revenues (T) are collected at the national level, and for the symmetric case in which the n regional spending authorities are all alike, we represent the inflation process as:

$$\pi = \pi(nG_j - T - F)$$

As before, the utility index for the authorities of region i is written as

$$U_i = U_i(G_i, \pi)$$

The noncooperative outcome (G_i^N) satisfies

$$(6'') \quad \frac{dU_i}{dG_i} = \frac{\partial U_i}{\partial G_i} + \frac{\partial U_i}{\partial \pi} \pi' = 0$$

and yields the utility level

$$V^N(T+F) = U_i(G_i^N, \pi(nG_i^N - T - F))$$

The cooperative outcome (G_i^C) satisfies

$$(7'') \quad \frac{dU_i}{dG_i} = \frac{\partial U_i}{\partial G_i} + n \frac{\partial U_i}{\partial \pi} \pi' = 0$$

and yields the utility level

$$V^C(T+F) = U_i(G_i^C, \pi(nG_i^C - T - F))$$

The difference between V^C and V^N provides a measure of the gain from adopting institutional reforms that successfully address the coordination failure and induce the individual authorities to lower their spending levels from G_i^N to G_i^C. Alternatively, $V^C - V^N$ measures the cost of coordination failure. As in the analysis of the stability of a cartel, we presume that higher coordination failure costs will enhance the prospects of imposing the discipline needed to reach the cooperative equilibrium. Similarly, if the cooperative equilibrium has already been reached, a higher cost of coordination failure will reduce the temptation to behave noncooperatively.

Another useful measure of the stability of the cooperative equilibrium is the amount that an individual decision maker would gain if he were the only one to move away from the equilibrium. This measure of the marginal temptation to deviate from the cooperative equilibrium is the difference between the marginal benefit and the perceived marginal cost of higher fiscal expenditure G_i evaluated at the cooperative equilibrium. As represented on Figure 1, this is the vertical difference between a and b^C.

We investigate the dependency of each of these two measures on the volume of external resources. A key result developed in the Appendix is that a larger volume of external resources will increase the gain from

overcoming coordination failure and reduce the temptation to deviate from the cooperative equilibrium. This result has several important implications. First, it emphasizes that the provision of external resources can have two effects; in addition to allowing a country to increase its absorption in the absence of coordination, external resources can play a catalytic role in overcoming coordination failure. Second, by also emphasizing that the temptation to deviate from the cooperative equilibrium may strengthen after the transfer of external resources has taken place and debt-servicing obligations come due, it suggests that the full benefits of external resources are unlikely to be achieved unless the provision of external resources is made conditional on adjustment measures and/or institutional reforms that are capable of overcoming coordination failure on a lasting basis.

Formally, we show in the Appendix that:

$$(8a) \quad \frac{\partial [v^C - v^N]}{\partial F} > 0$$

and

$$(8b) \quad \frac{\partial [a - b^C]}{\partial F} < 0$$

where 1/

$$a = \left[-n \frac{\partial U_i}{\partial \pi} \pi'\right]^C \quad \text{and} \quad b^C = \left[- \frac{\partial U_i}{\partial \pi} \pi'\right]^C .$$

Starting in the noncooperative equilibrium, an increase in external resources will have mixed effects on incentives to cooperate. On impact,

---

1/ We use $[Z]^C$ and $[Z]^N$, respectively, to denote the values of Z in the cooperative and noncooperative equilibriums.

it will increase fiscal income (T+F), thereby raising the cost of coordination failure and improving the prospects of moving to the cooperative outcome. In the future, however, this effect may be more than reversed if the inflow of external resources ends and an outward net resource transfer is required to service the external debt.

In considering the possible implications for the future, however, it is essential to recognize that new external resources provided today not only have effects on future debt-servicing requirements but also have effects on future output, tax revenues, and debt-servicing capacity. More formally, suppose that tax revenue (T) equals tY, where t is the average tax rate and Y is output. The implications of current external resources for future fiscal income is then 1/

$$\frac{\partial(T_{+1} + F_{+1})}{\partial F} = \frac{\partial(tY)_{+1}}{\partial F} + \frac{\partial F_{+1}}{\partial F}$$

The first term on the right-hand side measures the effect on future tax revenue while the second term measures the negative effect on the future transfer of external resources due to increased external debt. An important role of conditionality is to ensure that the bulk of foreign resources are used to finance investment instead of fiscal consumption. This will increase future tax revenue and, if the investment is productive enough, the first term will dominate the second. In this case, the provision of foreign resources today will raise the cost of coordination

---

1/ The subscript +1 denotes the future value of the variable to which it is attached.

failure both today and in the future. In the absence of sufficiently strong conditionality, however, the external resources may be used primarily to finance consumption rather than investment and output growth. If this leads to a net drop in future fiscal income, the favorable effects of external resources on incentives to overcome coordination failure will only be temporary.

IV. X-Efficiency and Approaches to Raising Public Revenues

The previous sections of the paper have focused on the improvements in economic conditions that can be achieved by overcoming coordination failure in the presence of negative inflation externalities. Another major source of improvement in economic conditions is the potential for raising productive efficiency.

Following Leibenstein (1966), an important distinction has been drawn between allocative efficiency and "x-efficiency," where x-efficiency is related to motivation, incentives, and other nonallocative considerations. The movement to a market-based price system can provide important gains in terms of allocative efficiency, while the movement to a system in which managers and nonmanagerial workers have strong economic incentives to increase productivity can achieve substantial gains in terms of x-efficiency.

1. A simple example

The following model illustrates the nature of the x-efficiency gains that can be achieved by moving away from a system in which the government claims the entire surplus of enterprise revenues over costs to a system in which enterprise managers (or nonmanagerial workers) are allowed to

keep part of any additional surplus they produce. To abstract from issues of allocative efficiency, assume a one-good model in which output (Y) is produced with nonmanagerial labor and managerial effort or efficiency (E). In the traditional sector, each unit of labor produces one unit of output. In the entrepreneurial sector, the labor requirement per unit of output is 1-f(E). Thus, if the aggregate supply of labor and the number of entrepreneurs are denoted as L and N, respectively, and if each entrepreneur produces Q units of output, employment in the entrepreneurial sector (L_E) can be written as

$$(9) \quad L_E = NQ(1-f(E)); \ \frac{\partial f}{\partial E} > 0; \ \frac{\partial^2 f}{\partial E^2} < 0.$$

The aggregate output of the economy is

$$(10a) \quad Y = NQ + (L-L_E) = L + NQf(E)$$

Labor is paid a real wage equal to its marginal product in the traditional sector, which is one unit of output. The amount of output that is not distributed to labor (y) represents the sum of the output distributed to managers (S) and the net revenue collected by the national authorities (R):

$$(10b) \quad y = Y - L = NQf(E) = S + R$$

Entrepreneurs are homogeneous with identical utility functions that depend negatively on effort and positively on income (s):

$$(11) \quad U = U(E,s)$$

where

$$(12) \quad s = S/N$$

As the initial state of the economy, consider the case in which the manager is paid a fixed salary and supplies a level of effort just

sufficient to generate a target net surplus R_o. Hence, if s' and E' denote the initial levels of salary and effort, the initial state is characterized by:

(13) $Ns' + R_o = NQf(E')$

We think of E' as the minimal level of effort consistent with each entrepreneur meeting a target of Ro/N. 1/ The manager has no incentive to increase effort beyond the minimum when all additional output would simply be claimed by the national authorities.

Experience has demonstrated that dramatic increases in output can be achieved by reforming the effective tax system to provide significant incentives to increase effort. 2/ To illustrate, suppose the national

---

1/ E' would emerge, for example, if the manager's contract paid no salary in the absence of meeting Ro/N, and if $U(E',s')>U(0,0)$.

2/ The introduction of incentives for entrepreneurial effort has led to a profound transformation of the Chinese economy, with real GNP growth averaging close to 10 percent per year over the 1978-88 period. These incentives were not introduced through the tax system per sé, but rather through a series of reforms in rural areas beginning in the late 1970s (including incentives introduced through the household responsibility system) and in urban areas beginning in 1984 (including managerial incentives introduced through the contract responsibility system); see Blejer and Szapary (1989). Unfortunately, in the late 1980s, China experienced a deteriorating fiscal position and rapid inflation in the context of a relatively low-income elasticity of tax revenues and insufficiently strong central control over money and credit.

authorities introduce a system in which public revenues are collected by taxing the excess of output over the wage bill at a proportional rate (t), and in which the manager keeps the residual. From conditions (10b) and (12), the after-tax income of the individual manager is:

$$(14) \quad s = (1-t)Qf(E)$$

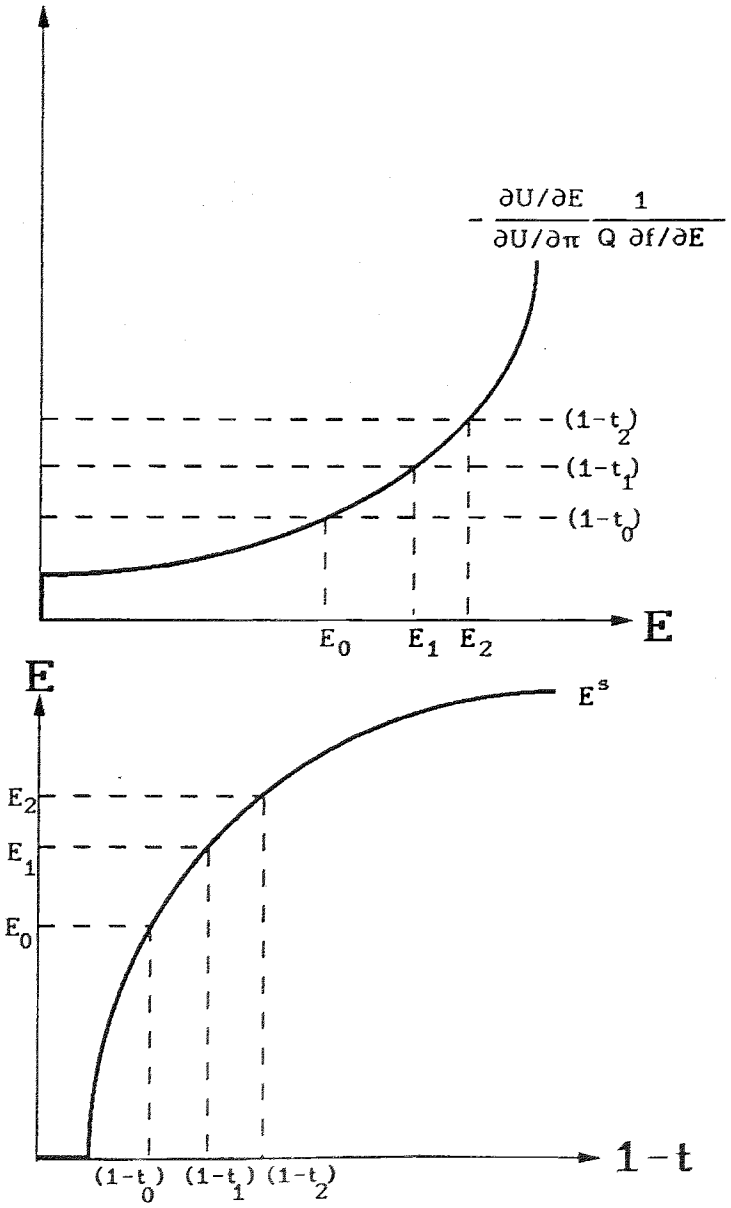
Assuming that the marginal tax rate is less than 100 percent (i.e., $t<1$), this systemic reform provides an incentive for the manager to increase effort to the level that maximizes $U(E,s)$ subject to (14). The optimizing manager will thus choose the level of E that satisfies

$$\text{implying} \quad \frac{dU}{dE} = \frac{\partial U}{\partial E} + \frac{\partial U}{\partial s}\frac{ds}{dE} = \frac{\partial U}{\partial E} + \frac{\partial U}{\partial s}(1-t)Q\frac{\partial f}{\partial E} = 0$$

$$(15) \quad \frac{-\partial U/\partial E}{\partial U/\partial s}\frac{1}{Q\partial f/\partial E} = 1-t$$

In Figure 3, the upward sloping curve in the top panel reflects the product of the two terms on the left hand side of (15): the manager's marginal rate of substitution in consumption between income and effort (i.e., the ratio of the marginal disutility of effort to the marginal utility of income); and the reciprocal of the marginal (pre-tax) return to effort. Each of these terms will normally be an increasing function of effort, which implies that the upward sloping curve is normally upwardly concave. The horizontal lines in the figure reflect different levels of the tax rate. The intersections of the upward sloping curve with the family of horizontal lines define the combinations of t and E that satisfy condition (15). These combinations, as shown in the lower panel, describe the manager's optimal supply of effort as a function of the after-tax rate (1-t). For the normal case, the effort supply curve exhibits positive but

FIGURE 3


$-\frac{\partial U/\partial E}{\partial U/\partial \pi}\frac{1}{Q\ \partial f/\partial E}$
$(1-t_2)$
$(1-t_1)$
$(1-t_0)$
E_0
E_1
E_2
E
E
E^s
E_2
E_1
E_0
$(1-t_0)$
$(1-t_1)$
$(1-t_2)$
1 - t

successively diminishing responses to increases in the after-tax rate. As drawn, the figure also reflects an assumption that below some minimal positive level of the after-tax rate, the manager will not exert any effort.

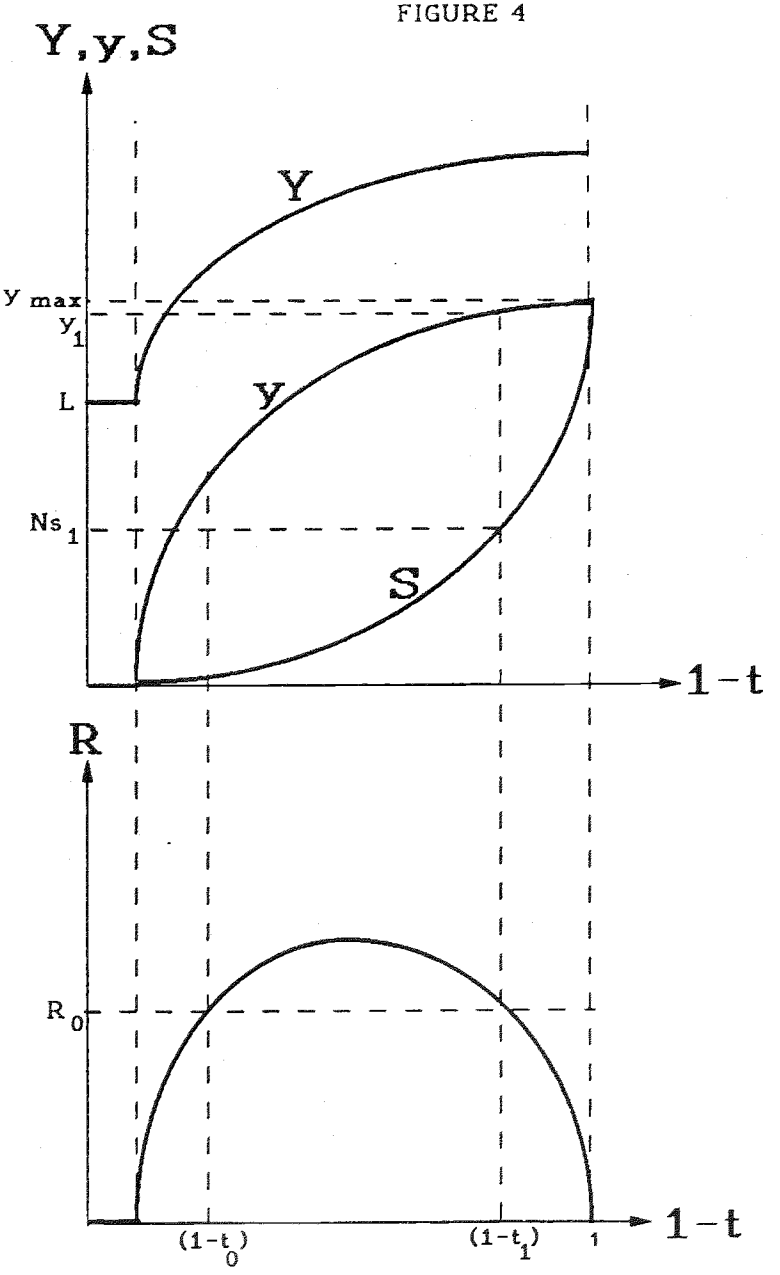
Figure 4 describes the level and distribution of output as functions of the after-tax rate. From conditions (10a) and (10b) and the lower panel of Figure 3, both Y and y will normally be upwardly convex functions of the after-tax rate.

The upwardly concave curve in the top panel of Figure 4 (curve S) represents the after-tax income of managers. Managerial income ranges from 0, at after-tax rates that are insufficient to induce any effort, to the entire excess of output over the wage bill at an after-tax rate of unity. 1/ The gap between y and S corresponds to the tax revenue of the national authorities, as plotted in the lower panel. The tax revenue function has a well-known feature: revenue rises as the tax rate is initially increased from zero, but beyond some critical level any additional increase in the tax rate will reduce tax revenue.

Figure 4 illustrates the x-efficiency gains that can be achieved through changes in the tax system. Recall that, in the initial state of the economy, managers were paid a flat salary s' at which they were induced--perhaps through the threat of losing their jobs and salary--to supply the minimal level of effort E' consistent with generating a target surplus R_o for the national authorities. As Figure 4 is drawn, under a tax system in which the manager's income does not include a fixed salary

1/ The concavity of S is not essential to the analysis that follows.

FIGURE 4



but is an increasing function of the effort he supplies, the tax rate t_o would replicate the initial outcome for the tax revenue of the national authorities. Under the same proportional tax system, however, a reduction in the tax rate could induce a higher level of effort, which not only would raise the after-tax incomes of managers, but also could generate higher tax revenue. As the figure is drawn (holding the wage bill fixed), any tax rate in the range between t_o and t_1 would provide at least R_o in tax revenue while allowing managers to enjoy incomes higher than at t_o.

The difference between Ns_1 and Ns' measures the x-efficiency gain that can be achieved by shifting from a system that offers no reward for managerial effort (beyond some minimal level) to a proportional tax system that generates the same revenue for the national authorities. The x-efficiency gain results from the incentives provided by raising the manager's after-tax rate to $1-t_1$. 1/

An additional x-efficiency gain can be achieved by raising the manager's marginal after-tax rate to the upper limit of 1. In particular, under a system in which each manager was assessed a lump sum tax of R_o/N and allowed to keep 100 percent of his marginal output, the level of output (net of the wage bill) would rise to y_{max}. The shift from the

---

1/ The fact that x-efficiency results only from greater effort on the part of management is obviously an implication of our specific over-simplified example. In reality, important x-efficiency gains can also be achieved by providing stronger incentives to nonmanagerial labor.

proportional tax t_1 to a revenue-preserving lump sum tax would achieve an x-efficiency gain of $y_{max} - y_1$. 1/

2. Intertemporal considerations and uncertainty

Although lump sum taxation may appear to be an optimal system based on the previous example, the experience of setting enterprise-specific tax rates or "effective tax" rates has led, in some countries, to perverse incentives over time. 2/ Such perversity can arise if enterprises come to believe that their lump sum tax assessments in future periods will reflect their profitability in the current period. Moreover, uncertainty about future tax rates can have a depressing effect on the level of effort expended by entrepreneurs. While the influence of policy uncertainty on

---

1/ It may also be interesting to consider a proportional tax on the incomes of both managers and labor, which is equivalent to a value-added tax. Given a target for total tax revenue (R_0), the shift to a value-added tax from a proportional tax on managerial income alone would involve a reduction in the tax rate on managerial income, thereby inducing a higher level of aggregate output in our example. The output gain would be achieved, however, through a redistribution of income away from non-managerial labor, which might make it unreasonable to treat the supply of labor as fixed.

2/ Kornai (1986) reports on a study of the balance sheets of all Hungarian state-owned firms during 1975-82. The study found that a high proportion of firms with high original profitability were converted--through "ceaseless and unpredictable changes of the financial rules, taxes and subsidies" (p. 1698)--into firms with low final profitability.

investment has been recognized (see, for example, Dornbusch (1988) and van Wijnbergen (1985)), the adverse effects of policy uncertainty on effort deserve further exploration.

These points are easily illustrated with a simple two-period example. Suppose that the manager's after-tax income in period j can be represented as

$$(16) \quad s_j = (1+\nu_j)E_j - T_j$$

where E_j is effort, T_j is a lump sum tax, and ν_j is a productivity parameter. Assume in addition that the second-period tax burden is linked to the manager's net income in the first period according to

$$(17) \quad T_2 = T_1 + hs_1$$

where h is a random variable with expected value $\bar{h}$ and variance Var(h). Suppose also that the manager's utility index can be described as

$$(18) \quad U = s_1 - \frac{a(E_1)^2}{2} + \rho\left[\bar{s}_2 - \frac{\theta}{2}\,\mathrm{Var}(s_2) - \frac{a}{2}\,\overline{(E_2)^2}\right]$$

where ρ is a discount factor, a "-" over a variable represents the expected value operator, and θ measures the degree of risk aversion. 1/

1/ This formulation should be viewed as a reduced form approximation. It is the exact reduced form for the case in which: (1) h follows a normal (or a truncated normal) distribution; (2) the periodic utility is $\mu_j = S_j - (a/2)\,(E_j)^2$; and (3) E_1 is chosen to maximize the expected value of a constant absolute risk-aversion discounted utility V, given by $V = -\exp\,[-\theta(\mu_1+\rho\mu_2)/\rho]$. Note that in the second period, E_2 is chosen to maximize μ_2. It can be shown that maximizing (18) is equivalent to

For this simple setup, it is easily shown that, whatever the outcome for period 1 and the setting of the tax parameter h, the optimal amount of effort to apply in period 2 is

$$(19) \quad E_2 = \frac{1+\nu_2}{a}$$

It can also be shown--by substituting (19) into (18) and maximizing with respect to E_1--that the optimal amount of effort to expend in period 1 is

$$(20) \quad E_1 = \frac{(1+\nu_1)[1-\rho\bar{h} + \rho\theta T_1 \mathrm{Var}(h)]}{a + \rho\theta(1+\nu_1)^2 \mathrm{Var}(h)}$$

Thus, by substituting (20) into the first term on the right hand size of (16), the level of output in the first period will be

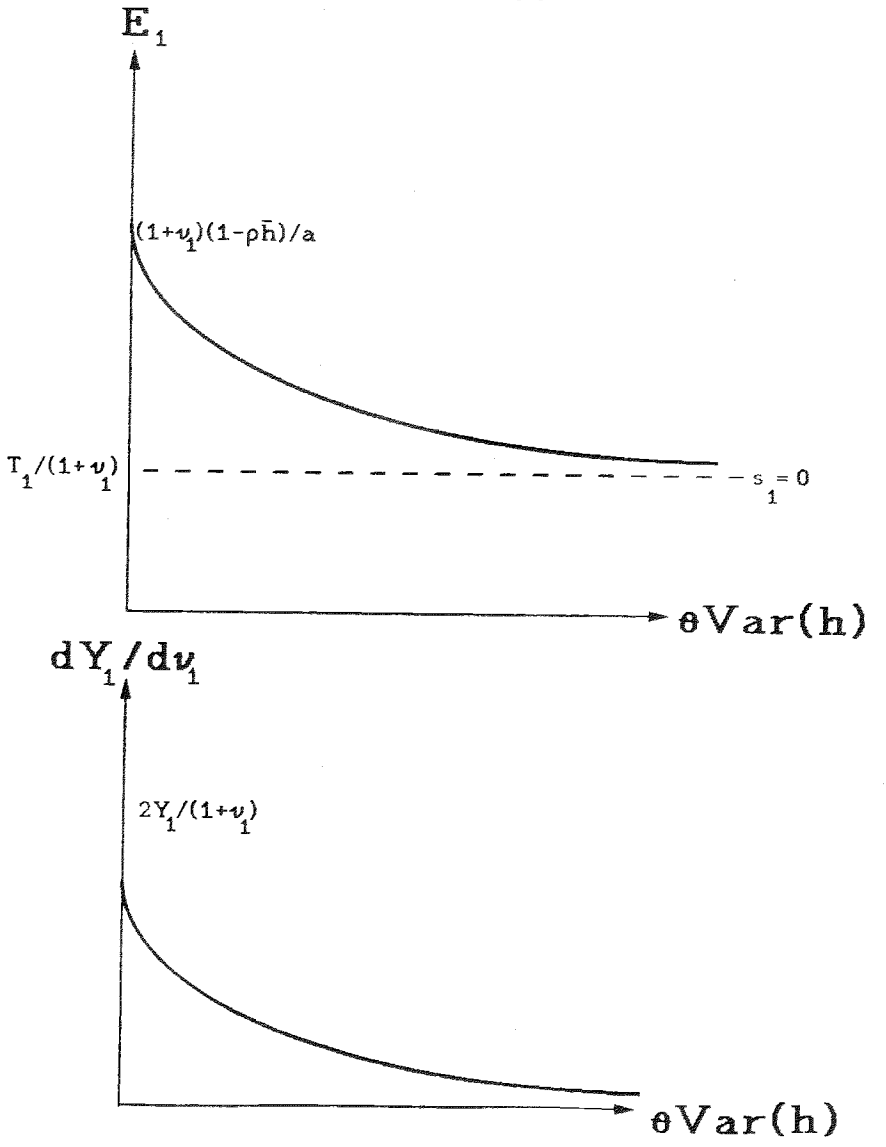
$$(21) \quad Y_1 = (1+\nu_1)E_1 = \frac{(1+\nu_1)^2[1-\rho\bar{h} + \rho\theta T_1 \mathrm{Var}(h)]}{a + \rho\theta(1+\nu_1)^2 \mathrm{Var}(h)}$$

Figure 5 shows some implications. As indicated in the top panel, when there is no uncertainty about the period-2 taxes, the level of effort exerted in period 1 depends negatively on the expected level of period-2 taxes and positively on the period-1 productivity term. As the

---

maximizing the expected value of V, and that our results can be extended to a general n-period model.

FIGURE 5



effective uncertainty about future taxes rises toward infinity, 1/ the level of effort exerted in period 1 declines toward the minimum level consistent with meeting the required period-1 tax assessment.

The degree of tax uncertainty also affects the response of output to favorable productivity shocks. This can be seen by differentiating condition (21) to obtain

$$(22) \quad \frac{dY_1}{d\nu_1} = \frac{2aY_1}{a(1+\nu_1) + \rho\theta(1+\nu_1)^3 Var(h)}$$

As indicated in the lower panel of Figure 5, as $\theta Var(h)$ becomes indefinitely large, the response of output to a favorable productivity shock declines to zero.

This result extends more generally to the responsiveness of output to other types of shocks, including changes in relative prices and other "market signals." The higher the degree of uncertainty about future taxes, the lower will be the responsiveness of output to any type of market signal.

The negative effects of tax uncertainty on both the supply of effort and the responsiveness of output to market signals argues in favor of fiscal systems that tax enterprises and other economic agents on a uniform basis, rather than at rates subject to agent-specific uncertainty. It also suggests that effort and output are enhanced by credible fiscal

---

1/ Note that the relevant uncertainty measure is $\theta Var(h)$. It is the outcome of weighing the "objective" uncertainty by the subjective degree of risk aversion θ.

leadership that reduces the general level of uncertainty regarding future taxes.

V. Externalities Associated with Insurance and Soft Budget Constraints

The previous sections of the paper have focused, inter alia, on the importance of public budget discipline and the case for tax systems that encourage managers and nonmanagerial workers to achieve high levels of x-efficiency. In comparing different tax systems, moreover, we have focused implicitly on ways to provide incentives for x-efficiency without sacrificing the authorities' ability to meet their revenue needs. Blejer and Szapary (1989), McKinnon (1989), and others have emphasized the difficulties encountered in China and the Soviet Union, for example, when reform efforts led to a deterioration of tax revenues as a share of GDP. Without a secure tax base that generates adequate public revenue growth as GDP expands, the prospect of maintaining public budget discipline loses credibility.

The prospect of maintaining public budget discipline can also lose credibility if the expenditure side of the budget is not adequately controlled. One of the mechanisms that can undermine control over public expenditures is the provision of explicit or implicit insurance to banks and other enterprises. If not designed appropriately, for example, the provision of public insurance for banks can have adverse implications for the quality of the investment projects that banks finance, which may

ultimately lead to a ballooning of public expenditures. 1/ Similarly, implicit understandings that various enterprises will not be allowed to fail may ultimately undermine public budget discipline and/or monetary control. 2/

1. Bank insurance

A well-functioning system of financial intermediation can substantially strengthen a country's macroeconomic performance. One important function of financial intermediaries is to economize on the costs of evaluating investment projects (or borrowers' creditworthiness) ex ante and monitoring production outcomes (or the incomes and assets of debtors) ex post. A second important function of intermediaries is to transform the combinations of liquidity, yield, and risk that are available to savers--and, in particular, to make it feasible for large investment projects with long gestation periods to be financed by individuals with small amounts of savings that they want to keep liquid.

The following example illustrates the importance of the information-gathering role of financial intermediaries and emphasizes that insurance

---

1/ This problem is shared by all types of economies; a dramatic recent example is the case of the savings and loan industry in the United States.

2/ In Yugoslavia, financial discipline until recently was virtually nonexistent. Nonbank enterprises enjoyed close ties with banks, and the National Bank of Yugoslavia (prior to receiving new powers under legislation enacted in 1989) lacked authority to constrain the expansion of bank credit.

can weaken incentives for intermediaries to evaluate investment projects effectively. Consider a simple financial system in which all intermediation is conducted by banks, and in which banks restrict their financial operations simply to accepting deposits from savers and making loans to investors. Under the assumption that the banking system is competitive, each individual bank takes as given the interest rate it must pay on deposits (r_D) and the interest rate it can charge on loans (r_L).

In the absence of insurance, the bank's profits depend essentially on the performance of its loan portfolio. The bank selects its portfolio from the applications it receives for loans to finance a number of investment projects that differ in terms of riskiness. For purposes of simplification, it is assumed that investment projects either fail completely, in which case the bank receives no loan payments, or else succeed in generating sufficient income to meet the full amount of the contractual loan payments. Let μ_i denote the failure probability for project i and let $1+e_i$ denote the yield that project i will generate if it succeeds. It is convenient to assume that all projects offer the same expected income $1+\varepsilon$, in particular:

$$(23) \qquad (1+e_i)(1-\mu_i) + 0\cdot\mu_i = 1+\varepsilon \quad \text{for all projects } i.$$

The bank's expected profit rate (per unit deposit) can be expressed as 1/

$$(24) \qquad R_B = (1+r_L)(1-\mu) - (1+r_D) - x = r_L - r_D - (1+r_L)\mu - x$$

where μ is the average failure rate on the bank's portfolio of loans ($i = 1,\ldots,n$)

1/ Condition (24) reflects the assumption that there is no reserve requirement.

$$(25) \quad \mu = \frac{1}{n} \sum_{i=1}^{n} \mu_i$$

and x is the cost that the bank incurs in evaluating investment projects. The allocation of resources to ex ante evaluation allows the bank to select a less risky loan portfolio and, therefore, to reduce μ 1/

$$(26) \quad \mu = \mu(x) \quad \text{where } \frac{\partial \mu}{\partial x} < 0.$$

The importance of evaluation by the bank can be appreciated by analyzing the incentives faced by investors. Note that the investor's expected profit on project i (R_i) is

$$(27) \quad R_i = (1-\mu_i)[(1+e_i) - (1+r_L)] + \mu_i \cdot 0 = (1+\varepsilon) - (1-\mu_i)(1+r_L).$$

Thus, for a given loan rate r_L, the investor can expect to benefit from undertaking riskier projects. This situation is known as an adverse selection problem. 2/ Evaluation and monitoring by the bank plays a key role in guiding investment toward less risky projects.

Suppose now that the national authorities change the organization of the economy by introducing deposit insurance or some other scheme to guarantee against bank failure. One important objective for introducing such insurance in the context of an underdeveloped internal capital market is to promote investment and growth by making it easier for financial

---

1/ We could equally imagine that μ might be held down by the allocation of resources to monitoring investment and production after the initial selection stage.

2/ On the adverse selection literature, see Stiglitz and Weiss (1981).

intermediaries to raise funds. A related objective is to stabilize the banking system by reducing the probability of bank runs.

It is easy to demonstrate that insurance against bank failures can lead to undesirable outcomes if it biases incentives toward risky activities. For example, an undesirable way to introduce such insurance would be for the authorities to guarantee individual banks the "safe return" of $1+r_L$ on their loan portfolios in the bad state in return for a fixed fee (per unit of lending). In this case, the expected profit rate (per deposit) of the individual bank would simply be

$$(28) \quad R_B = (1+r_L)(1-\mu) + (1+r_L)\mu - x - f = 1+r_L - x - f$$

where f is the insurance fee. Banks would have incentives not to spend any resources on evaluation (i.e., to set $x = 0$) and investors, as noted earlier, would have incentives to select risky projects. Accordingly, even if, from an ex ante perspective, the insurance fee was set at a "fair" level that compensated the authorities for the payments they could expect to make on the basis of historical experience, the authorities might find themselves saddled with large losses ex post--counterpart to large gains by private sector investors--as banks cut back on ex ante evaluation and investment shifted toward projects with failure rates that exceeded the ex ante historical average. 1/ Such an insurance scheme

---

1/ The authorities' loss (per unit deposit) would amount to $(1+r_L)\mu_1 - f$, where μ_1 is the failure rate realized after the insurance scheme has been introduced. A fee that might be considered "fair" based on historical experience would be $f = (1+r_L)\mu_0$, where μ_0 is the average historical failure rate. Thus, the realized drain on public finances would simply be

would thus introduce negative externalities via the erosion of the public budget.

The example, of course, has been designed to emphasize that insurance schemes can have undesirable consequences when introduced in ways that have adverse effects on incentives. In concept, insurance can be introduced in ways that leave banks motivated to maintain low-risk loan portfolios (e.g., insurance fees and payoffs can be based on the riskiness of bank portfolios), and capitalization requirements can be introduced to counter the adverse selection incentives of investors by forcing them to share the losses when investment projects fail. In practice, however, public insurance against bank failures--whether explicit or implicit--has often resulted in large losses for public budgets to absorb.

2. Soft budget constraints

Insurance against bank failures is only one of many mechanisms through which public sectors provide implicit or explicit insurance to enterprises and thereby distort incentives of enterprise managers. The bank insurance example has emphasized that insurance against failure can undermine the motivation to evaluate investment decisions appropriately. It is equally clear that implicit insurance against the failure of any production unit can undermine incentives to minimize costs. As Kornai

---

proportional to the gap between the realized failure rate and the average failure rate in the pre-insurance regime: $(1+r_L)(\mu_1-\mu_o)$. This loss to the public treasury would be reflected in higher incomes of private sector borrowers, whose average return on investment projects (after compensating banks for the insurance fee f) would be $\varepsilon-r_L + (1+r_L)(\mu_1-\mu_o)$.

(1979) has emphasized in coining the term "soft budget constraint," firms have weak incentives to use resources appropriately when their losses are disguised or compensated for by subsidies, favorable tax conditions, or bail-out credits. An environment of soft budget constraints, furthermore, is a ripe breeding ground for the wage-price spiral, as enterprise managers grant wage demands with little resistance and either pass on the higher wages directly into higher prices or finance them through a larger drain on the public budget, which fuels the inflation process indirectly.

The undesirable implications of soft budget constraints provide an argument for allowing banks and other firms to fail. The threat of failure must be credible, moreover, to motivate enterprise managers appropriately. This argues for promoting a competitive environment in which the size and political influence of individual enterprises does not preclude the possibility of allowing them to fail.

VI. Concluding Remarks

This paper has focused on several basic issues that arise in the design of reform programs for planned economies and growth-oriented adjustment programs more generally.

A crucial ingredient for successful program design is to keep clearly focused on the sources of large potential gains in output and price stability, and to design institutional changes carefully to reap these potential gains. From this perspective, the issues discussed in this paper have emphasized the importance of two types of reforms: (1) institutional changes aimed at addressing coordination failures and soft budget constraints in the presence of negative inflation externali-

ties feeding through public budget deficits; and (2) reforms aimed at strengthening incentives to provide effort.

In developing simple analytic frameworks to address the case for institutional reforms, the paper has suggested several extensions of the literature. The model of negative externalities associated with multiple public decisions makers builds on Aizenman (1989a) in providing insights into the biases toward "overspending," "undertaxing," "overborrowing," and "overinflating." Effective action to overcome these biases--which we view largely as a matter of overcoming coordination failure--may require different types of institutional changes in different countries, but is widely regarded as critical to the success of adjustment and reform programs.

The framework of multiple decision makers has been extended to analyze how the availability of external resources affects a country's incentives to carry through on its adjustment efforts, suggesting that an infusion of external resources increases the short-run gains from overcoming coordination failure but may weaken incentives for adjustment and reform over the longer run. This result provides an argument for making external financing conditional on fundamental institutional reforms that are capable of overcoming coordination failure on a lasting basis.

Finally, the model of the adverse effects of uncertainty regarding future taxes on the present level of effort--and on the responsiveness of output to productivity developments and other market signals--represents, to our knowledge, a new direction in the formal literature and an important parallel to existing literature on the adverse effects of policy uncertainty on investment.

APPENDIX

Derivation of Results

The purpose of this Appendix is to derive (8a) and (8b), which provide measures of the effect of external resources, on the cost of coordination failure and the temptation to deviate from the cooperative equilibrium. Note that from (6") and (7") we can infer 1/

$$(A1) \quad \frac{\partial V^N}{\partial F} = \left[\frac{\partial U_i}{\partial G_i}\right]^N \frac{dG_i^N}{dF} + \sum_{j=1}^{n} \left[\frac{\partial U_i}{\partial \pi}\,\pi'\right]^N \frac{dG_j^N}{dF} - \left[\frac{\partial U_i}{\partial \pi}\,\pi'\right]^N$$

$$(A2) \quad \frac{\partial V^C}{\partial F} = \left[\frac{\partial U_i}{\partial G_i}\right]^C \frac{dG_i^C}{dF} + \sum_{j=1}^{n} \left[\frac{\partial U_i}{\partial \pi}\,\pi'\right]^C \frac{dG_j^C}{dF} - \left[\frac{\partial U_i}{\partial \pi}\,\pi'\right]^C$$

Applying the first order conditions (6") and (7") to (A1) and (A2), respectively, we infer

$$(A3) \quad \frac{\partial V^N}{\partial F} = (n-1)\left[\frac{\partial U_i}{\partial \pi}\,\pi'\right]^N \frac{dG_i^N}{dF} - \left[\frac{\partial U_i}{\partial \pi}\,\pi'\right]^N$$

$$(A4) \quad \frac{\partial V^C}{\partial F} = -\left[\frac{\partial U_i}{\partial \pi}\,\pi'\right]^C$$

and hence

$$(A5) \quad \frac{\partial [V^C - V^N]}{\partial F} = \left[\frac{\partial U_i}{\partial \pi}\,\pi'\right]^N - \left[\frac{\partial U_i}{\partial \pi}\,\pi'\right]^C - (n-1)\left[\frac{\partial U_i}{\partial \pi}\,\pi'\right]^N \frac{dG_i^N}{dF}$$

The first two terms on the right-hand side of (A5) measure the utility change attributed to the lower inflation induced via the rise in F. The

---

1/ Without loss of generality, we are treating the current period value of T as predetermined and the G_j as endogenous.

third term measures the adverse welfare effect in the noncooperative regime generated by the inflation externalities associated with excessive spending of the decision makers.

We investigate the sign of (A5) under the assumption that the utility of the decision maker has the following separable form:

(A6) $U(G_i,\pi) = h(G_i) - k(\pi)$

with $h' > 0$, $h'' < 0$, $k' > 0$, $k'' > 0$, $\pi' > 0$, $\pi'' > 0$

Applying (A6), we can rewrite (6") as

(A7) $h' - k'\pi' = 0$

where, from (3")

(A8) $\pi' = \pi'(\sum G_j - T - F)$

By differentiating (A7) and evaluating at the noncooperative equilibrium point, using (A8) and the symmetry assumption $dG_i^N = dG_j^N$, we can infer

$$(A9) \quad \frac{dG_i^N}{dF} = \frac{\Omega}{n\Omega - h''}$$

where

(A10) $\Omega \equiv k'\pi'' + k''(\pi')^2$

To abbreviate notation further, let

$$(A11) \quad a = \left[- n \frac{\partial U_i}{\partial \pi} \pi' \right]^C$$

$$b^N = \left[- \frac{\partial U_i}{\partial \pi} \pi' \right]^N$$

$$b^C = \left[- \frac{\partial U_i}{\partial \pi} \pi' \right]^C$$

as also indicated in Figure 1. By substituting (A9) and (A11) into (A5) and collecting terms, it can be shown that

$$(A12)\quad \frac{\partial[V^C - V^N]}{\partial F} = \frac{\Omega(-h")}{n\Omega - h"}\left[\frac{a-b^N}{-h"} - \frac{b^N-b^C}{\Omega}\right]$$

Note that the slopes of curves $\partial U_i/\partial G_i$ and $-(\partial U_i/\partial \pi)\pi'$ in Figure 1 are $h"$ and Ω, respectively, at the noncooperative equilibrium point. Applying the concavity of these schedules, we infer that

$$(A13)\quad \frac{a-b^N}{-h"} > G_i^N - G_i^C > \frac{b^N-b^C}{\Omega}$$

Applying (A13) to (A12), we complete the derivation:

$$(8a)\quad \frac{\partial[V^C - V^N]}{\partial F} > 0$$

We turn now to drive (8b). Note from (A11) that

$$(A14)\quad a - b^C = -(n-1)\left[\frac{\partial U_i}{\partial \pi}\pi'\right]^C$$

Applying (7") and (A6), we obtain

$$(A15)\quad a - b^C = \frac{n-1}{n}\left[\frac{\partial U_i}{\partial G_i}\right]^C = \frac{n-1}{n}[h']^C$$

Thus,

$$(A16)\quad \frac{\partial[a-b^C]}{\partial F} = \frac{n-1}{n}h"\frac{dG_i^C}{dF} < 0$$

References

Aizenman, J., "Competitive Externalities and the Optimal Seignorage," Hebrew University and NBER Working Paper (1989a).

———, "Country Risk, Incomplete Information and Taxes on International Borrowing," The Economic Journal 99, 1 (March 1989b), pp. 147-61.

Alesina, A. and A. Drazen, "Why Are Stabilizations Delayed?," NBER Working Paper (July 1989).

Alesina, A. and Guido Tabellini, "Does the Median Voter Like Budget Deficits?," NBER Working Paper (1987).

Blejer, Mario I. and Alain Ize, "Adjustment Uncertainty, Confidence, and Growth: Latin America After the Debt Crisis," IMF Working Paper 90/105 (December 1989).

Blejer, Mario I. and Gyorgy Szapary, "The Evolving Role of Fiscal Policy in Centrally Planned Economies Under Reform: The Case of China," IMF Working Paper 89/26 (March 1989).

Bruno, Michael, "Economic Analysis and the Political Economy of Policy Formation," NBER Working Paper (1989).

Calvo, Guillermo A., "Credibility Crises and Economic Policy," manuscript (January 1990).

Camdessus, Michel, Opening Address to the Board of Governors of the International Monetary Fund at the 1988 Annual Meetings, reprinted in IMF Survey (October 17, 1988), pp. 309-14.

Casella, Alessandra and Jonathan Feinstein, "Management of a Common Currency," NBER Working Paper (October 1988).

Cukierman, Alex, Sebastian Edwards, and Guido Tabellini, "Seignorage and Political Instability," Working Paper, University of California at Los Angeles (1989).

Delors Committee, Report on Economic and Monetary Union in the European Community, April 1989.

Dornbusch, Rudiger, "Notes on Credibility and Stabilization," NBER Working Paper (December 1988).

Guitián, Manuel, Fund Conditionality: Evolution of Principles and Practices, International Monetary Fund, Pamphlet Series No. 38, (1981).

Kornai, Janos, "Resource-Constrained Versus Demand-Constrained Systems," Econometrica 47, 4 (July 1979), pp. 801-19.

———, "The Hungarian Reform Process: Visions, Hopes, and Reality," Journal of Economic Literature 24, 4 (December 1986), pp. 1687-1737.

Leibenstein, Harvey, "Allocative Efficiency vs. 'X-Efficiency,'" American Economic Review 56, 3 (June 1966), pp. 392-415.

McKinnon, Ronald I., "Stabilizing the Ruble," manuscript presented at the Atlanta meetings of the American Economic Association (December 1989).

Stiglitz, Joseph and Andrew Weiss, "Credit Rationing in Markets with Incomplete Information," American Economic Review 71, 3 (June 1981), pp. 393-410.

van Wijnbergen, Sweder, "Trade Reform, Aggregate Investment, and Capital Flight: On Credibility and the Value of Information," Economic Letters 19, 4 (1985), pp. 369-72.