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EXTERNAL SHOCKS, POLITICS AND PRIVATE INVESTMENT:
SOME THEORY AND EMPIRICAL EVIDENCE

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ABSTRACT

The manner in which the political system responds to external economic shocks in developing countries is a key determinant of the private investment response. We look at a simple model of political-economic equilibrium to make this intuition more precise, and develop the idea of a "political transmission mechanism." Even in the confines of this simple model, we find that ambiguities abound: domestic politics can magnify or dampen the effect of the external shock. In our empirical work, we find that a high level of urbanization magnifies the investment reduction in response to an external shock. This is consistent with the supposition that high levels of urbanization are conducive to distributive politics with pernicious economic effects. We also find that the provision of political rights is conducive to superior private investment behavior.

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I. Introduction

One of the most damaging consequences of the debt crisis has been the collapse of private investment in much of the developing world. While the numbers vary among countries, the reduction of private investment in the highly-indebted countries has been in the range of 2-3 percentage points of national income. Figure 1 shows the trend for a group of twenty-eight countries. This reduction has depressed current levels of output and has hampered future prospects for growth.

There are a number of obvious culprits for the disappointing investment performance. Most directly, the increase in world interest rates in the early 1980s and the sharp reduction in capital flows to these countries have raised the shadow cost of capital. The stagnation in domestic output has hurt investment demand through the usual accelerator mechanism. Moreover, the inadequate policy response to the shocks of the early 1980s has aggravated the situation in many respects: the presence of a "debt overhang", it is often claimed, has reduced investment incentives since a large stock of outstanding debt acts as a claim on the future output of the economy; moreover the stop-go and hesitant pattern of policy making has greatly enhanced the uncertainty in the economic environment. A number of empirical tests of these propositions has been carried out, with generally supportive results; see in particular Faini and de Melo (1990), Lopez (1990), Serven and Solimano (1990), and Greene and Villanueva (1990).

But these studies leave much of the cross-country variation unexplained and many puzzles unaccounted for. The trends in private investment often show

very different tendencies even in countries which are superficially alike in terms of their economic problems and policies. Argentina and Brazil, for example, are often mentioned in the same breath as countries with very high inflation, large debt overhangs, severe fiscal problems, and inadequate macroeconomic adjustment. Yet private investment has been much more resilient in Brazil than in Argentina during the 1980s. Following a large reduction in the second half of the 1970s (which however reflects the abnormally high investment levels in 1974-76), private investment in Brazil has suffered only a small drop in the early 1980s and then has picked up. Meanwhile, in Argentina the slide has continued to the point where net capital formation is now probably negative (Figure 2). Mexico and Bolivia are two countries which have attacked their macroeconomic problems courageously by undertaking drastic fiscal retrenchment as well as a broad range of structural reforms (e.g., trade liberalization, price reform, and privatization). Private investment has recovered in Mexico to almost pre-crisis levels, while it remains depressed in Bolivia (Figure 3).

It is reasonable to suspect that such differences in private investment behavior may be linked to differences in the workings of the local political economy. In particular, the impact of external shocks on domestic private investment may be shaped by what we may call a "political transmission mechanism", that is the manner in which the external shocks are intermediated by domestic politics. Our purpose in this paper is to take a small step on this road. While one can think of many such political transmission mechanisms, we concentrate on one plausible scenario here.

Our starting point is the view that the investment climate in any country is determined, at least in part, by the distributive struggle between labor

and capital. The acquiescence of labor in the policies required to deal with external shocks are a key component of successful adjustment (see Nelson [1991] for a broad recent discussion). We formalize the relationship between labor and capital as a non-cooperative game in which each side has one "weapon": workers have politics on their side and have the ability to enlarge their share of the pie by taxing capital; capitalists have economics on their side, and can withdraw investment (and engage in capital flight) as domestic taxation increases. It should be clear from the outset that we view the capital "tax" in question somewhat metaphorically; what we have in mind is any type of redistributive policy that transfers resources to labor while diminishing investment incentives. The equilibrium of the game determines the tax on capital and the level of domestic investment as functions of exogenous variables.

Our framework has a number of similarities to a model developed by Pazarbasioglu (1991) in independent work. She also considers the distributive conflict between labor and capital in the context of a developing economy. In her model, the government attaches certain welfare weights to each of the two groups, and these weights can be influenced by political activity. In particular, political activity on the part of workers leads to pro-labor policies, albeit at a utility cost to workers. In our framework, we simply postulate a policy reaction function that specifies the tax on capital as a function of workers' political activity.

Our focus, as in Pazarbasioglu (1991), is on the changes in this political-economic equilibrium as the economy is hit with external shocks, such as an increase in world interest rates or a reduction in capital inflows to the public sector.¹ These two shocks hit the system at different points:

the interest-rate shock affects private investment demand, while the net resource transfer shock affects the government budget. But in our model they yield qualitatively similar consequences. In both cases, the shocks interact with the distributive struggle to affect the equilibrium level of the tax on capital. Interestingly, we show that the effect could go either way. The political transmission mechanism could either dampen or magnify the fall in investment. Put crudely, the dampening scenario is more likely when the initial level of redistributive politics is low, while the magnification scenario is more likely when redistributive activity is initially high (see also Pazarbasioglu, 1991). Hence, politics does not always have a pernicious effect on economic outcomes.

We then take a broad look at the empirical evidence to see whether our model's predictions are broadly consistent with it. We experiment with a range of proxies for the political variables highlighted by the model. We find that these proxies have statistically significant effects on the private investment response, when interacted with the external shock. However, the effects that we pick up are at best part of the story, and could also have alternative interpretations.

II. The Framework

Our model is based on a simple view of politics where the main action lies in the distributive struggle between labor and capital in the urban,

1. There is also a parallel between the question we pose here and the one looked at in Persson and Tabellini (1990). These authors analyze the endogenous changes in fiscal policy as the European economy becomes more integrated.

manufacturing sector of a developing country. In principle, large-scale agriculture could also be accommodated in our model as a similar conflict arises between urban workers and agrarian capitalists. We focus on the political strength of urban workers as this is likely to be the proximate determinant of the domestic investment climate.

Our political-economic equilibrium is a non-cooperative equilibrium in which: (i) capitalists choose their investment level in an uncoordinated manner, taking as given the tax imposed on them by the political power exercised by workers; and (ii) workers, as a group, select how much political activity to undertake, anticipating the policy reactions of the government, but taking as given the level of aggregate investment. Workers coordinate in the political sphere but not in the economic sphere, so that the labor market is competitive. We solve for the equilibrium levels of investment and workers' political activity from which neither capitalists nor workers have the incentive to deviate unilaterally.

The model has three building blocks: (i) a policy reaction function; (ii) investment behavior; and (iii) determination of workers' political activity. We take each in turn.

(i) The policy reaction function

We start by specifying the link between workers' political activity and the tax on capitalists. Let us denote by S all kinds of political activity that urban workers can undertake; this encompasses general strikes, political contributions, voting and the like, as well as more subtle means of exercising influence. We suppose that the higher the level of S , the more pro-labor will government policy be. In particular, we assume that the political system will

generate a level of transfers to workers, as a share of domestic output, which is increasing in S . Therefore, the transfer to workers, T , can be written as:

$$(1) \quad T = \pi(S)f(K, L),$$

where $f(\cdot)$ is a constant returns to scale production function, and $\pi' > 0$ and $\pi'' < 0$. It will be convenient to work with particular functional forms, so we write:

$$\pi(S) = \pi_0 S^\sigma, \quad \text{and} \quad f(K, L) = f(K_0+I, 1) = [K_0+I]^\alpha,$$

where we have normalized the economy's labor force to unity, and broken up K into the pre-existing capital stock (K_0) and new flow of investment (I). We assume diminishing returns to political activity, so $0 < \sigma < 1$. Note the interpretations to be attached to π_0 and σ . π_0 captures the degree to which the political system is partial to workers; the more pro-labor is the government, the higher will π_0 be for any level of S . σ , on the other hand, is a measure of the sensitivity at the margin to pressure from workers. In principle, one could imagine a highly pro-labor government that is not very sensitive to worker demands at the margin (high π_0 , low σ), as well as a pro-capitalist government that is very sensitive to changes in worker support (low π_0 , high σ). But in practice a high π_0 is likely to go together with a high σ , and vice versa.

We rule out direct political activity by other groups, and by capitalists in particular. While this assumption is certainly at odds with reality, it is not that important in our context. Capitalists will be able to influence government policy indirectly, through their investment behavior.

The government's behavior is dictated by its budget constraint. The

transfer to workers has to be financed by taxing domestic capitalists or by net resource transfers from abroad:

$$(2) \quad rK + D = T,$$

where r stands for the tax on capital and D for the external inflow. Note that the tax on capital, r , has to be interpreted broadly, and somewhat metaphorically. It could of course represent a real capital tax; but more realistically, it will stand for other policies which also serve to depress private investment. Among examples of such policies are: resort to the inflation tax, which discourages investment by increasing relative-price variability and macroeconomic instability; or resort to domestic borrowing, which also depresses investment by raising domestic interest rates and generating financial instability. The main point is that thanks to the government's budget constraint, an increasing transfer to workers will almost surely depress investment incentives.

Combining (1) and (2) we can derive the government's policy function, which can be written as follows:

$$(3) \quad r = r(I, S, D);$$

with $r_I = \partial r / \partial I = -[(1-\alpha)\pi K^\alpha - D] < 0$ (provided D is small),

$$r_S = \partial r / \partial S = \sigma \pi S^{-1} K^{\alpha-1} > 0,$$

$$r_D = \partial r / \partial D = -K^{-1} < 0.$$

Note the small ambiguity with respect to r_I . An increase in domestic investment enlarges the tax base, but it also increases national output, a constant fraction of which has to be transferred to workers (at a constant level of S). The first of these works towards reducing the tax rate on

capital, the second towards increasing it. As long as external transfers are not a large share of national income (and correspondingly the transfer to workers is financed largely from the domestic tax base), the second effect cannot outweigh the first, and an increase in private investment would lead to a reduction in the tax on capital. This is the case we assume here.

The other partial derivatives are easy to understand. An increase in political activity by workers would increase the capital tax, as would a decrease in the capital inflow (holding domestic investment constant in each case).

(ii) Investment behavior

We next turn to investors. We assume that capitalists do not coordinate their investment decisions, and that they therefore take as given both the tax rate, τ , and the wage rate W . Having inherited a fixed capital stock of magnitude K_0 , and a certain amount of "liquid" resources L , they decide on the allocation of L between domestic investment and foreign investment. The latter activity earns r^* . The problem the representative investor solves is given by:

$$\text{Max}_I f(K_0+I) - W - \tau(K_0+I) + r^*(L - I)$$

which yields the standard equality between the (value) marginal productivity of capital and the opportunity cost of investment:

$$(4) f_K = \alpha k^{\alpha-1} = r^* + \tau.$$

This first-order condition implicitly defines an aggregate investment function

that depends on r^* , and through τ , on S and D . Differentiating (4) totally:

$$[f_{KK} - \tau_I]dI - dr^* + \tau_S dS + \tau_D dD.$$

Note that since $\tau_I < 0$, $[f_{KK} - \tau_I]$ is of ambiguous sign in principle. In fact, if τ_I is sufficiently large (in absolute value), we could have increasing returns to investment in this model, even though $f(\cdot)$ itself exhibits constant returns. The reason is that an increase in aggregate investment reduces the tax on capital in equilibrium, and this could increase the post-tax return to capital even though the pre-tax return has to decline. Since

$$[f_{KK} - \tau_I] = -[(\alpha - \pi)(1-\alpha)K^\alpha + D]K^{-2},$$

a sufficient condition for diminishing returns to capital (when $D > 0$) is that $\alpha > \pi$, that is that the income share of capital be larger than the share of GDP transferred to labor through the political mechanism. We assume that this condition is satisfied, as it is likely to be in the real world. Otherwise we would get paradoxical results: for example, an increase in r^* would lead to a rise in investment.

We can therefore express our investment function in the following manner:

$$(5) \quad I = I(r^*, S, D),$$

$$\text{with } I_r = \partial I / \partial r^* = -[(\alpha - \pi)(1-\alpha)K^\alpha + D]^{-1} K^2 < 0;$$

$$I_S = \partial I / \partial S = -\sigma \pi S^{-1} K^{1+\alpha} [(\alpha - \pi)(1-\alpha)K^\alpha + D]^{-1} < 0;$$

$$I_D = \partial I / \partial D = [(\alpha - \pi)(1-\alpha)K^\alpha + D]^{-1} K > 0.$$

Aggregate investment is decreasing in the interest rate and workers' political activity. Note also that an increase in external transfers to the public

sector leads to a rise in private investment, as the transfer allows the government to lower the tax on capital. Therefore the two exogenous shocks of the early 1980s, the increase in world interest rates and the reduction in sovereign lending, have qualitatively similar effects on domestic investment once the political economy environment is taken into account.

(iii) Workers' Political Activity

To close the model we need to specify the behavioral rules that shape the extent of political influence exerted by urban workers. Since this takes us outside narrow economics, we take a simple, but seemingly realistic approach. We assume that workers coordinate their political activities, either through unions or through a political party they control. The benefit they derive from political activity is determined by the function $\pi(S) = \pi_0 S^\sigma$, which reflects the government's own political inclinations (through π_0) and its sensitivity to changes in political pressure (through σ). Furthermore, we assume that the costs of political activity are proportional to the surplus that workers obtain by having jobs in the modern sector of the economy. The higher this surplus, the more workers stand to lose by taking a confrontational stance against capital.

Let us denote the opportunity wage as \bar{W} . This could be the wage in the rural sector, or in the urban informal sector. The wage in the modern sector, W , will be normally above \bar{W} . The opportunity cost of undertaking political activity is then proportional to $[W - \bar{W}]$. Workers' net income can be written as:

$$(6) \quad W + \pi(S)f(K) - \theta [W - \bar{W}]S$$

where θ is a parameter which converts $[W - \bar{W}]S$ into consumption units. This captures the notion that high wages in the urban sector increase the stake that workers feel they have in the system. Note, moreover, that since W will equal the marginal value product of labor and hence be a function of investment, the investment level chosen by the capitalists will affect both the marginal benefits and marginal costs of political activity selected by workers.

One concrete story that may lie behind our specification of the opportunity cost goes as follows. Suppose that as workers get more militant, the probability that they will be laid off increases. In particular, assume that a unit increase in S leads to an additional θ fraction of workers to be fired. Workers who lose their jobs in the modern sector have to get jobs in the informal (or rural) sector where the going wage is \bar{W} . Then, $\theta[W - \bar{W}]S$ (plus some term that does not depend on S) captures exactly the opportunity cost of workers' political activity from the standpoint of workers presently employed in the modern sector.

Maximizing (5) with respect to S leads to the following first-order condition:

$$(7) \quad \pi'f - \theta[W - \bar{W}] = 0.$$

This is an expression which implicitly defines S as a function of I ,

$$(8) \quad S = S(I).$$

To see the nature of the functional dependence, we differentiate (7) totally. Noting that $W = (1-\alpha)[K_0 + I]^\alpha$, the value marginal product of labor, we get after using the first-order condition (7) and simplifying:

$$(9) S_I = \partial S / \partial I = \alpha [\sigma(1-\sigma)\pi_0 K]^{-1} S (\pi_0 \sigma - \theta(1-\alpha)S^{1-\sigma})$$

The sign of this expression is ambiguous, and depends on the sign of the expression in curly brackets. The ambiguity arises because an increase in private investment raises at the margin both the benefit of political activity and its cost. On the one hand, as investment rises, so does domestic output, and the "productivity" of political activity rises accordingly. (Remember that the transfer to workers, for any given S , is proportional to domestic output.) On the other hand, an increase in investment boosts modern-sector wages and increases the opportunity cost of political activity.

Which of these effects dominates depends on the parameters of the economy. By inspecting the expression in curly brackets in (9), can we see that S_I is more likely to be positive when ceteris paribus:

- (i) the government is pro-labor (high π_0);
- (ii) the government is very responsive at the margin to worker pressure (high σ);
- (iii) the pre-existing level of redistributive political activity is low (low S);
- (iv) the consumption cost of worker activism is low (low θ);
- (v) the capital share in pre-tax income is high (high α).

When these conditions hold, an increase in private investment will raise the marginal benefit of political activity more than it raises the marginal cost, and workers will respond by increasing S . Alternatively, a cutback in investment will reduce S . Conversely, when expression (9) is negative (due to a low π_0 or a high θ , for example), an increase in investment will result in a fall in S , while a decrease in I will result in a rise in S .

This ambiguity will be of central interest when we analyze the response

of investment to external shocks. For lack of better terminology, we will refer to the first of these cases ($\partial S/\partial I > 0$) as one where distributive politics and investment are "complements" for each other, and the second ($\partial S/\partial I < 0$) as one where they are "substitutes". Whatever the properties of the initial equilibrium, it will turn out that economic performance in response to an external shock will be superior in the complements case.

(iv) The Full Equilibrium

The full equilibrium of the model can be determined by putting equations (5) and (8) together, to solve for S and I as functions of r^* and D . Figure 4 shows the equilibrium graphically. Two schedules are drawn in each panel of Figure 4. The first one, labeled AA (for accumulation), shows the investment locus; it is unambiguously downward sloping since $I_G < 0$ as discussed above. The second locus, labeled RR (for redistribution), graphs equation (8). Depending on conditions discussed above, and in particular on whether the initial level of distributive politics is high or low, the RR schedule can be negatively or positively sloped. The two panels of the figure show the two possible cases. Note that when RR is negatively sloped, we rule out the possibility that it may be flatter than AA.² This condition is analogous to the stability requirement in any Nash non-cooperative game. Basically, the condition prevents the objective functions from being less sensitive to the own choice variable than the choice variable of the other actor.

Figure 4 shows the effects of a rise in r^* (the case of a fall in D is entirely analogous). This has the result of shifting AA down in both panels

2. This requires $(1-\alpha)(\alpha - \pi) + \alpha(1-\sigma)^{-1}S^{\sigma-1}[\sigma\pi_0 - \theta(1-\alpha)S^{1-\sigma}] > 0$.

(but not necessarily by an identical amount³). The magnitude of the vertical shift here represents the purely economic effect of the increase in the opportunity cost of investment, with one caveat. The downward shift in AA also incorporates the effect of a reduction in the tax on capital: as investment falls, the corresponding decline in domestic output implies a lower absolute transfer to workers (at a given level of S). Consequently, the reduction in investment (at a constant level of S) is less than what it would be in a model without a policy reaction function.

In the new equilibrium, the level of distributive politics (S) will also change however. Figure 4 shows the two possibilities. In the complements case, the political effect is to dampen the reduction in investment. Since S falls along with investment, the endogenous downward adjustment in the tax on capital compensates somewhat for the increase in r^* . But in the substitutes case, the opposite occurs. The effect on investment is magnified, as the first-round reduction in investment intensifies worker political activity, and leads to a second round of investment cuts. Hence the presence of political conflict, and of redistributive conflict in particular, could work either way. The political transmission mechanism could amplify the external shock or smooth it, depending precisely on the nature of the political equilibrium.

We should stress a conclusion of the model which, at first sight, may seem paradoxical. As pointed out above, the complements case in which the investment reduction is dampened is more likely to occur when the government

3. This is because the magnitude of the downward shift in AA depends on the parameters which also determine whether RR is positively or negatively sloped.

is pro-labor (high π_0), very responsive at the margin to worker pressure (high σ), and when the consumption cost of worker activism is low (low θ). These are the circumstances under which one may have thought the investment reduction would have been more marked. In fact, the model suggests the opposite. The reason is that the political effectiveness of urban workers has different effects on the level of private investment and its response to exogenous shocks. When workers are politically powerful, they will impose a high tax on capital, and investment will be low on average. This is already captured in our model, as it can be checked that $dI/d\pi_0$ and $dI/d\sigma$ are negative. But when the economy is hit with an external shock, the political power of workers makes them act more "cooperatively" than they would have acted had they been weak. Hence, giving labor a better hearing in policy making may be conducive to superior adjustment in face of external shocks. For a general discussion on the politics of labor which concludes in a similar vein, see Nelson (1991).

It should also be stressed that the conclusions noted above with respect to dampening versus magnification refer to "global" comparisons within the model, and not to "local" behavior. That is, dampening occurs when π_0 and σ , say, are sufficiently high such that $[\sigma\pi_0 - \theta(1-\alpha)S^{1-\sigma}] > 0$. This does not imply that a small increase in either π_0 or σ will necessarily dampen the investment response. To infer local behavior, we have to solve explicitly for the change in investment, and then check the sensitivity of the resulting expression with respect to these parameters. With respect to the first step, we get:

$$(10) \quad dI/dr^* = -K^{2-\alpha}\{(1-\alpha)(\alpha - \pi) + \alpha(1-\sigma)^{-1}S^\sigma[\sigma\pi_0 - \theta(1-\alpha)S^{1-\sigma}]\}^{-1} < 0,$$

where we have evaluated the resulting expression at $D = 0$. Under our assumptions, investment is guaranteed to fall when r^* rises (or D falls). But it is difficult to conclude much from this expression about the local relationship between the magnitude of the investment response and the parameters of the model, π_0 and σ in particular. The relationship between the size of dI/dr^* and these parameters is complicated and of ambiguous sign.

III. Empirical Evidence

This section presents a preliminary empirical look at the interaction between external shocks and domestic political variables in determining the private investment response in specific countries. As it stands, the approach here does not constitute a direct test of the model described in the preceding section. Instead, we focus on the broad implications of the approach exemplified by the model. Our framework has three sorts of implications for how one should look at the the data and what one should expect to find.

First, since our basic political story relies on the distributive struggle between labor and capital in the modern sector, the empirical analysis should focus on the relative importance of urban groups (or lack thereof) and the salience of urban politics within the polity at large. Second, the model suggests that external shocks and domestic politics have an interactive effect on private investment. More specifically, our null hypothesis can be stated as the hypothesis that this interaction has an independent effect on investment--which is testable against the alternative that it does not. Third, the model itself, while very simple, does not make simple and unambiguous predictions with regard to the impact of different political variables. For this reason, it is all the more important to let the

data tell their own story.

(i) Specification

The framework above permits us to identify two types of regimes, one in which distributive politics and private investment are complements, and one in which they are substitutes. In both regimes, the equilibrium level of investment, I , is a function of all the parameters of the model:

$$I = \theta(r^*, D, K_0, \alpha, \theta, \bar{W}, \pi_0, \sigma),$$

which is defined implicitly by combining (3), (5), and (8). In the context of the model, the nature and functioning of the political process is captured by the following parameters:

- (a) π_0 , how pro-labor the government is;
- (b) σ , sensitivity of the government to political activity;
- (c) θ , the cost, to workers, of political activism.

The empirical specification we estimate, then, takes the form:

$$(11) \text{ PI/GDP} = f(\Phi, Z, P, Z*P),$$

where PI/GDP = private investment to GDP ratio;

Φ = a set of relevant economic variables;

Z = an external shock indicator;

P = a proxy for our political parameters;

$Z*P$ = an interactive variable.

(ii) Data and Variables.

The estimation of equation (11) is done employing cross-section time-

series data, that includes thirty-two countries over the 1975-85 period. The data on private investment come from a compilation undertaken in the Trade Policy Division of the World Bank from country sources and reports. In this subsection, we discuss how we measure the economic, political, and external shock variables in the specification.

The economic variables include:

- (a) GRGDP: growth or real GDP per capita. As suggested by the accelerator model, this variable is expected to have a positive sign.
- (b) CAPGDP: real income per capita. This serves the function of controlling for the initial resources of different countries, as well as for other omitted, country-specific variables.
- (c) DETEX: debt-to-export ratio. This variable is included to capture any debt-overhang effects on private investment. It is expected to have a negative sign.
- (d) GINV: ratio of public investment to GDP. In principle, this variable could enter with either sign, depending on whether crowding-out effects dominate or are dominated by private-public capital complementarities.
- (e) MVA: manufacturing share of GDP. The purpose here is to measure the structural importance of the modern sector in the economy. MVA rises as countries get richer, but we shall be controlling for GDP per capita in the regressions. Moreover, in regressions where we control for urbanization (by including URB), MVA can also be interpreted as a rough proxy for one of two things: (i) the labor productivity differential between the modern and traditional sectors, and hence of the extent of economic dualism; and (ii) the extent to which manufacturing predominates over services in the urban areas.
- (f) INF: The CPI based rate of inflation. This variable is introduced since a high rate of inflation increases the riskiness of long term investment by reducing the average maturity of lending. Furthermore, high inflation is an indicator of macroeconomic instability, which reduces incentives for investment.
- (g) FX: Foreign exchange availability scaled by GDP. This variable is expected to have a positive sign as it enhances the ability to import capital goods.

The external shock measure employed is the real LIBOR rate (RLIBOR). As Figure 5 shows, this rate has peaked in 1981, just prior to the collapse of investment in many developing countries. This variable is our measures of r^*

in the model. In the regressions reported below, we have entered it on its own as well as interactively with our political variables.

The political parameters of the model, Z , are measured by the following variables.

(a) URB: percentage of urban population. As mentioned above, our framework is based on political conflict within the modern sector and on political activity by workers. This variable captures, crudely, the extent to which urban preoccupations are likely to govern policy making at the national level. As stressed by Huntington (1968) and Berg and Sachs (1988), urban politics tend to be at the root of populist and redistributive policies. We think that URB may act as a proxy for π_0 , by capturing the extent to which government policies are shaped by the requirement to avoid urban labor discontent.

(b) PR, CL: indicators of political rights and civil liberties, respectively. These are the indices developed by Gastil (1989) and higher values of these variables indicate decreased freedoms. They are defined as follows: "Political rights are rights to participate meaningfully in the political process.... Civil liberties are rights to free expression, to organize or demonstrate, as well as rights to a degree of autonomy such as provided by freedom of religion, education, travel, and other personal rights" (p. 7). We expect these indices to proxy for σ , the degree to which the political system is responsive to pressure from below.

As indicated in equation (11), these "political" variables are entered in levels as well as in interaction with RLIBOR.

The sample characteristics of all these variables are summarized in Table 1.

(iii) Estimation Results

Equation (11) is estimated employing the variables described in (ii) above, for 32 countries over the 1975-1985 period. Because of concern with simultaneous equation bias in the coefficient estimates, lagged values of the explanatory variables are employed. Furthermore to capture effects of geographic factors, we have included dummy variables for geographic regions. The results of our base estimations are reported in Tables 2 and 3,

respectively. In sub-section (iv) below, we will discuss the sensitivity of these results to changes in the base specification. Overall, the main finding that emerges from Tables 2 and 3 is the importance of political and structural variables in influencing private investment behavior.

The first column of Table 2 is our benchmark specification, and does not incorporate any of our political variables. GDP growth and per capita GDP do not have a statistically significant effect on the private investment ratio. Public investment (GINV) has a negative sign and is statistically significant, indicating crowding-out. The remaining variables all have the expected signs and they are statistically significant at conventional levels of confidence. Note that MVA, the variable that measures the importance of the modern sector in the economy, has a positive coefficient. This may reflect a measurement bias, insofar as a large part of private investment undertaken in services and agriculture may not be adequately captured in the data. The geographic region dummies primarily indicate that Africa had on average a higher private investment ratio than Latin America (the omitted region), even when one controls for the standard economic variables. This result may seem anomalous. But note that the GDP share of manufacturing value added is one of the explanatory variables, and MVA in Latin America is 19 percent, in contrast to only 8 percent in Africa.

The remaining columns introduce alternative combinations of political variables. Looking at Table 2 first, we see that urbanization has a statistically significant effect on private investment, but when interacted with RLIBOR rather than in levels. The interpretation of the finding with respect to URBL is as follows: since the coefficient of the interacted term is negative, the effect of an interest rate shock on private investment is larger

in more highly urbanized societies. Using the language of the preceding section, urbanization tends to magnify the consequences of an external shock on private investment. Similarly, we find that the interactive term of the political rights variable has a statistically significant negative parameter estimate. This finding suggests that the effect of an external shock on investment is larger in countries with more restricted political systems. (Remember that political freedoms decrease as the value of PR increases.) Conversely, increased political liberties dampens the effect of negative shocks.

Table 3 presents results from specifications that incorporate various combinations of the political variables. The magnification effect of high urbanization and political restrictions continues to hold in all these specifications.

Our results suggest that the impact of the political variables can be quite important. In order to evaluate the economic importance of these effects, we computed beta coefficients.⁴ Consider, for example, the beta coefficients that correspond to the OLS estimates presented in the first column of Table 3. The beta coefficients for URBL, PRL, FX and DETEX are -.25, -.78, .34, and -.12, respectively. These magnitudes indicate, for example, that when PRL changes from its sample mean of .015 by one standard deviation of .02, the investment to GDP ratio declines to .08 from its sample mean of .12. Similar calculations indicate that a one standard deviation increase in URBL leads to a decline in the investment ratio from its sample

4. Beta coefficients measure the change in the explained variable (in standard deviation units) for a unit change in each explanatory variable (again in standard deviation units) holding other variables constant.

mean of .12 to .10. On the other hand, a one standard deviation increase in foreign exchange availability increases investment from its sample mean to .137; a one standard deviation increase in the debt-to-exports ratio decreases investment to .11.

(iv) Sensitivity

In order to investigate the robustness of our findings, we undertook some plausible alternative specifications. The first set of changes concerns dropping some variables from the specifications in Tables 2 and 3. We excluded: (i) GDPCAP, (ii) MVA, and (iii) INF and FX. The main findings of this paper are robust to these changes as well as to the inclusion of year specific dummy variables. One interesting finding consistent with our prior interpretation concerns the dummy variable for Africa. When MVA is excluded, Africa is found not to be significantly different from Latin America.

Next we replaced RLIBOR with an alternative measure of the external shock. One shortcoming of the RLIBOR variable is that it is common across all countries and therefore does not discriminate between the timing of crises in different countries. In reality, the external shock for Turkey, for example, came when external resources dried up in the late 1970s, and not in the early 1980s as in most of the Latin American countries. To capture cross-country differences in the timing of the shock, we used the ratio of net resource transfers from abroad to GDP (NRT/GDP). This variable measures D in the model. The results obtained with this variable are broadly consistent with the findings above. However, they are significantly more fragile. In

particular, some specifications yield the levels of urbanization and political rights as negative and statistically significant. The levels of these variables are significant only when MVA is not included.

Finally, we employed the data in quadriennial form (as in Cardoso, 1991). As some of our variables move slowly overtime, this specification could be argued to be more appropriate. Overall, however, all the findings reported above continue to hold.

IV. Concluding Remarks

Our purpose in this paper has been mainly an exploratory one. We started from the observation that the manner in which the political system responds to external economic shocks must be a key determinant of the private investment response. We looked at a simple model of political-economic equilibrium to make this intuition a bit more precise, and to show how the "political transmission mechanism" could be conceptualized. Even within the confines of this simple model, we have found that ambiguities abound: domestic politics can magnify or dampen the effect of the external shock; moreover, the relationship between the magnitude of the investment response and key political variables, such as the political outlook of the government and its responsiveness to pressure from below, is of indeterminate sign. Similar results have been also presented in independent work by Pazarbasioglu (1991).

Our empirical work focused on enriching traditional investment equations by including proxies for political variables. We have found that such proxies have some effects on the private investment response, when they are interacted with the external shock. In particular, the empirical evidence suggests that a high level of urbanization magnifies the investment reduction in response to

an external shock. This is consistent with the supposition that high levels of urbanization are conducive to distributive politics with pernicious economic effects. We also found that the provision of political rights is conducive to superior private investment behavior. Controlling for economic determinants and geographic influences, countries with more open political regimes tend to experience lower declines in private investment in response to a negative shock.

We have looked here at only a limited group of political proxies, and it is possible to attach diverse interpretations to our findings. Hence, while we think that these results are sufficiently interesting to warrant further research, we should stress again that they are only exploratory in nature.

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FIGURE 1

PRIVATE INVESTMENT/GDP

-WHOLE SAMPLE-

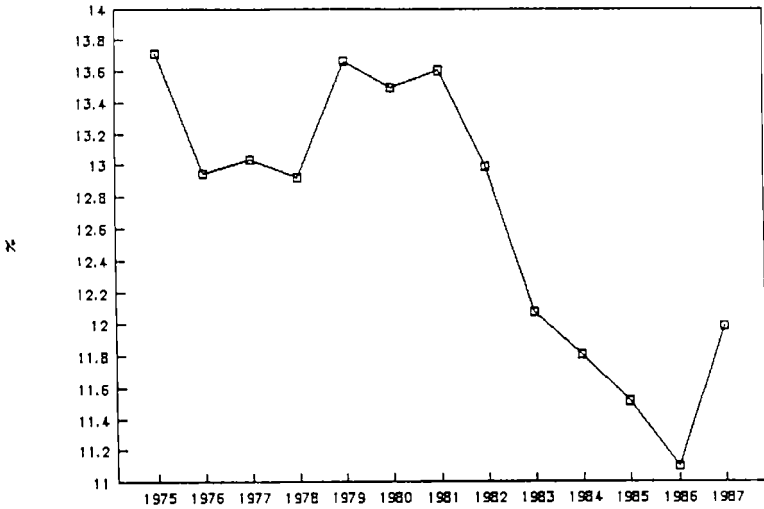


FIGURE 2

PRIVATE INVESTMENT/GDP

COUNTRIES: ARGENTINA, BRAZIL

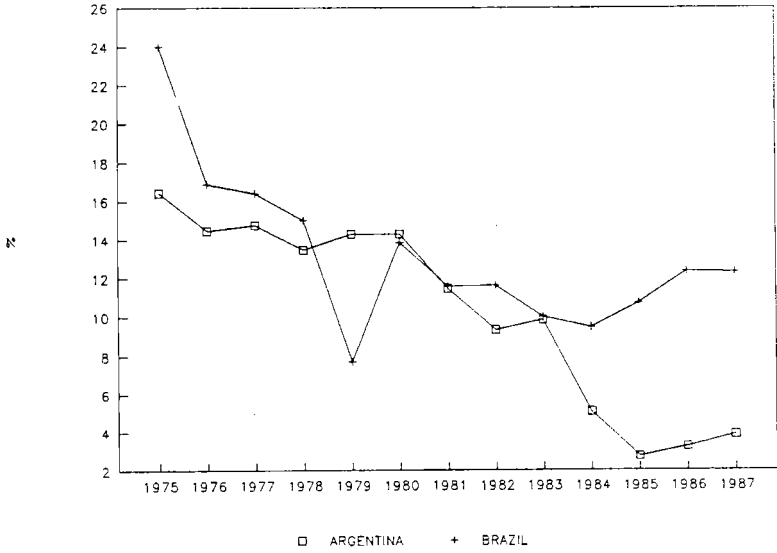


FIGURE 3

PRIVATE INVESTMENT/GDP

COUNTRIES: BOLIVIA, MEXICO

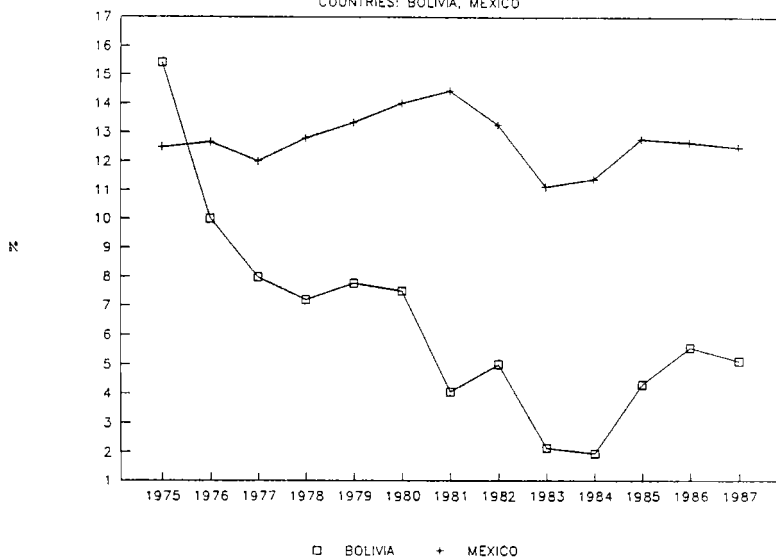
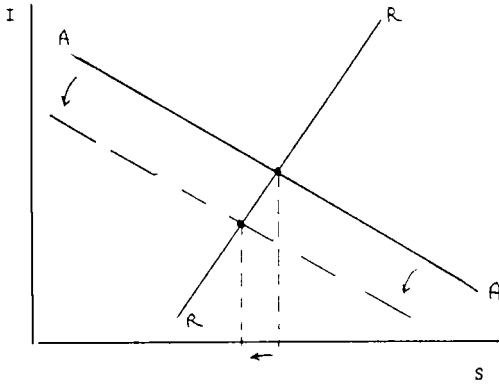
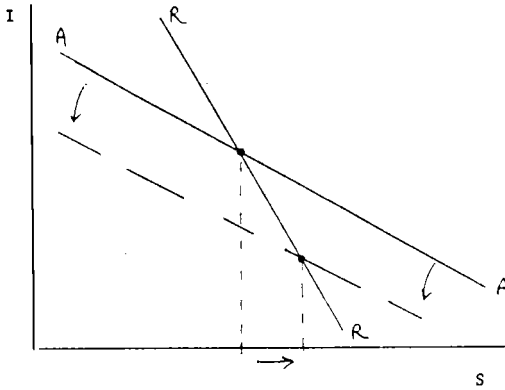


FIGURE 4



(a) Investment and workers' political activity are "complements"



(b) Investment and workers' political activity are "substitutes"

FIGURE 5

REAL LIBOR RATE

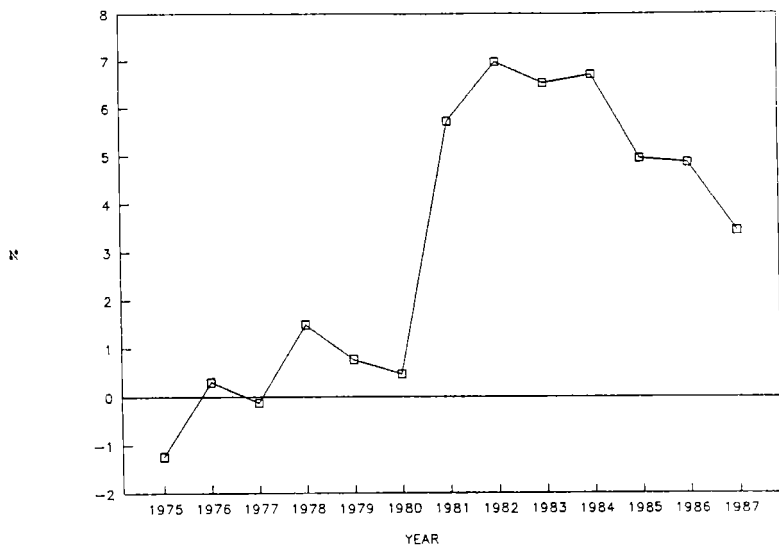


Table 1
Sample Characteristics

Variable	Mean	St. Dev	Variable	Mean	St. Dev
INV	.12	.05	RLIBOR	.03	.03
GRGDP	.04	.19	INF	.41	1.03
GDPCAP	1.90	1.11	FX	.36	.45
DETEX	3.00	1.91	URB	.44	.20
GINV	.08	.04	PR	.62	.24
MVA	.17	.06	CL	.61	.17

Notes: The countries in the sample are Argentina, Bolivia, Brazil, Barundi, Cameroon, Chile, Colombia, Côte d'Ivoire, Ecuador, Guatemala, Honduras, India, Indonesia, Jamaica, Kenya, Korea, Mexico, Morocco, Pakistan, Panama, Paraguay, Peru, Sierra Leone, Sri Lanka, Thailand, Turkey, Uruguay, Zaire.

The data are for 1975-1985 period.

GDPCAP is measured in thousands of dollars.

Table 2

Estimation Results

Dependent variable: INV	Estimation Results						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Constant	.09* (.01)	.09* (.02)	.09* (.02)	.09* (.02)	.07* (.02)	.08* (.02)	.07* (.02)
GRGDP	1.56 (1.30)	1.53 (1.30)	1.36 (1.30)	1.56 (1.30)	1.26 (1.28)	1.55 (1.31)	1.49 (1.30)
GDPCAP	-.32 (.44)	.21 (.55)	.21 (.55)	-.26 (.45)	-.16 (.44)	-.38 (.46)	-.41 (.46)
DETEX	-.48* (.16)	-.44* (.16)	-.46* (.16)	-.48* (.16)	-.43* (.16)	-.47 (.16)	-.47* (.16)
GINV	-.60* (.08)	-.63* (.08)	-.64* (.08)	-.59* (.08)	-.61* (.07)	-.59* (.08)	-.61* (.08)
ASIA	1.52 (.82)	.97 (.89)	1.20 (.89)	1.55 (.83)	1.90* (.82)	1.41 (.85)	1.41 (.85)
AFRICA	2.49* (.93)	2.56* (.93)	2.50* (.93)	2.59* (.96)	2.01* (.95)	2.30* (1.02)	2.49* (1.01)
EUROPE	-1.51 (1.37)	-1.94 (1.39)	-1.70 (1.38)	-1.56 (1.37)	-1.03 (1.35)	-1.56 (1.37)	-1.17 (1.38)
RLIBOR	-.22* (.09)	-.22* (.09)	-.16 (.19)	-.23* (.09)	-.48* (.21)	-.22* (.09)	.30 (.30)
MVA	.53* (.08)	.56* (.08)	.53* (.08)	.52* (.09)	.51* (.08)	.53* (.08)	.54* (.08)
INF	-.81* (.25)	-.74* (.25)	-.75* (.25)	-.81* (.25)	-1.01* (.25)	-.80* (.25)	-.90* (.25)
FX	4.62* (.65)	4.62* (.65)	4.63* (.65)	4.62* (.65)	4.38* (.64)	4.60* (.65)	4.57* (.65)

Table 2 (Continued)

Dependent variable: INV							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
URB		-4.51 (2.90)	-1.43 (3.18)				
URBL			-.86* (.37)				
PR				-.54 (1.15)	2.28 (1.37)		
PRL					-1.18* (.33)		
CL						.82 (1.67)	3.12 (2.09)
CLL							-.86 (.47)
Adj R ²	.48	.48	.49	.47	.50	.47	.48
NOBS	268	268	268	268	268	268	268

Notes: The numbers in the parentheses are the standard error.

* Statistically significant at the 98% confidence level.

** Statistically significant at the 95% confidence level.

The parameters and standard errors of GRGDP, GDPCAP, DETEX, INF, FX, URB, PR, CL, ASIA, AFRICA and EUROPE are multiplied by (100).

Table 3

Alternative Specifications

Dependent variable: INV							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Constant	.07* (.02)	.07* (.02)	.07* (.02)	.06* (.02)	.08* (.02)	.06* (.02)	.07* (.02)
GRGDP	.84 (1.25)	1.01 (1.26)	1.00 (1.27)	1.26 (1.28)	1.36 (1.29)	1.12 (1.27)	1.40 (1.30)
GDPCAP	.35 (.54)	.36 (.54)	-.14 (.45)	-.19 (.55)	.21 (.55)	.27 (.55)	-.18 (.56)
DETEX	-.35* (.16)	-.42* (.16)	-.35* (.16)	-.46* (.16)	-.46* (.16)	-.36* (.16)	-.42* (.16)
GINV	-.63* (.08)	-.65* (.08)	-.58* (.07)	-.66* (.09)	-.63* (.08)	-.63* (.08)	-.63* (.08)
ASIA	1.47 (.92)	1.70** (.89)	1.72* (.83)	1.12 (.93)	1.00 (.94)	.92 (.91)	.65 (.89)
AFRICA	2.41* (.94)	3.05* (.93)	2.26* (.99)	2.63* (1.00)	2.27* (1.01)	2.44* (.99)	2.37* (1.02)
EUROPE	-1.94 (1.40)	-1.12 (1.36)	-1.98 (1.38)	-1.23 (1.40)	-2.02 (1.42)	-1.90 (1.38)	-1.92 (1.43)
RLIBOR	.55 (.37)	.99* (.28)	.26 (.30)	.89* (.37)	.12 (.19)	.50* (.21)	.29 (.30)
MVA	.50* (.09)	.51* (.09)	.49* (.08)	.54* (.09)	.52* (.09)	.55* (.09)	.56* (.09)
INF	-.96* (.25)	-.99* (.25)	-1.00* (.25)	-.87* (.25)	-.74* (.25)	-.94* (.25)	-.82* (.25)
FX	4.10* (.64)	4.36* (.63)	4.05* (.64)	4.60* (.64)	4.56* (.65)	4.24* (.65)	4.52* (.65)

Table 3 (Continued)

Dependent variable: INV							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
URB	-1.19 (3.16)	-.53 (3.15)		-1.43 (3.24)	-1.59 (3.27)	-4.81 (2.85)	-5.02 (2.92)
URBL	-.84** (.38)	-1.04* (.37)		-.99* (.39)	-.81** (.39)		
PR	1.85 (1.79)	2.39 (1.35)	1.84 (1.82)		-1.74 (1.63)	.57 (1.71)	-1.57 (1.64)
PRL	-2.09* (.55)	-1.27* (.32)	-2.25* (.55)			-1.25* (.32)	
CL	1.17 (2.71)		.90 (2.72)	3.42 (2.08)	2.37 (2.41)	4.36 (2.35)	5.21* (2.63)
CLL	1.34 (.78)		1.73* (.77)	-1.10* (.47)			-.86 (.47)
Adj R ²	.52	.51	.51	.49	.49	.51	.48
NOBS	268	268	268	268	268	268	268

Notes: The numbers in the parentheses are the standard error.

* Statistically significant at the 98% confidence level.

** Statistically significant at the 95% confidence level.

The parameters and standard errors of GRGDP, GDPCAP, DETEX, INF, FX, URB, PR, CL, ASIA, AFRICA and EUROPE are multiplied by (100).