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Why and When Do Governments Initiate Public Enterprise Reform?

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Initiating public enterprise reform is a complex decision influenced by economic factors as well as the ideological biases and personalities of political leaders. Nevertheless, the use of a contracting framework yields important generalizations about what drives the decision. This article argues that the decision depends fundamentally on the potential efficiency gains from the reform and its associated transactions costs. Costs arise because of asymmetries in information and opportunism, problems that usually plague contract negotiations. The article identifies observable variables that may affect either the potential gains or the transactions costs, uses them to construct a simple probit decision-making model, and tests the model using data from fifteen developing countries over a twenty-year period.

In the last ten years considerable attention has been cast on public enterprises, much of it centering on their poor performance and the burden they impose on national treasuries. Yet in many countries, reform of such enterprises has proceeded at a slow and uneven pace. Many governments have been reluctant to alter incentives within the public enterprise sector that would improve efficiency, and are even more reluctant to privatize. Even under intense pressure from external agencies, some governments have muted necessary large-scale reforms. Clearly, factors other than economic efficiency influence the possibility, nature, pace, and extent of public enterprise reform. The objective of this article is to identify some of those factors.

We adopt the view that economic policies represent a set of contracts between the government and various socioeconomic groups that addresses problems of market failure and demands for redistribution. There is no shortage of frameworks for analyzing the determinants of economic policy, but most rely on concepts that are difficult to operationalize and test. For example, models of economic policy based on the notion of the degree of state autonomy (for example, Evans 1992) are not falsifiable. Also, models of

policy reform focused on the role of "insulated change teams" (for example, Waterbury 1993) are incomplete. Since such teams are themselves a creation of the government, they cannot serve as explanatory variables. The existence of the team is an endogenous variable that must be explained as part of the overall policy determination. Finally, there is a whole gamut of interest-group or class-based theories. Our framework is in part interest-group based, but it differs from the others in that it treats the government (or the state) as an independent actor, not simply as a passive agent of interest-group demands. Our approach is most closely related to North's (1981) "predatory state," although in our approach the state might be termed pragmatic rather than predatory. The idea of economic policy as a contract can be dated from at least Goldberg's (1976) proposal to analyze regulation as an administered contract.

According to our framework, policy reform can be interpreted as a renegotiation of contracts that entail direct government involvement in production toward more efficient, market-oriented ones. But to consent to a reform package, interest groups that currently support or could support the ruling coalition must know what they will gain from the reform, how the gains will be distributed, and whether the distribution of rewards will indeed be honored by the government. Thus the reform decision is hampered by the usual contracting problems— that is, problems of information and opportunism.

Imperfect and asymmetric information between interest groups and the government can lead to prolonged bargaining, to resource expenditure on signaling and screening, and to fewer options for recontracting. Opportunism also reduces recontracting options and calls for costly arrangements to convince interest groups that they will receive the rewards promised to them. Opportunism is a potentially serious problem in government-interest group contracts because many terms of such contracts are implicit, given the government's role as the enforcer of its own responsibilities. Lack of well-defined property rights also makes it difficult to determine when the government is acting in an expropriatory manner. These problems can be partially mitigated by institutions and rules that constrain the government, but such a solution is often incomplete. In particular, the need to ensure procedural fairness impedes flexibility and efficiency (Owen and Braeutigam 1978). Furthermore, because property rights are at least partly implicit, it is difficult for the government to obtain commitment from, or compensate, agents affected by policy changes.

Both opportunism and information problems involve transactions costs, whose magnitude depends (positively) on the volume of redistribution entailed by the reform; that is, a reform entails both benefits and costs. Benefits stem from the efficiency gains that would accrue from the reform of the public enterprise sector. Costs arise from the risks that the reform poses to the government and its constituency and from the need to establish mechanisms to reduce such risks.

A government's decision to reform public enterprises depends on whether the potential efficiency gains exceed the associated costs.[1] The government can use the gains to compensate losers and to reward new supporters; however, because it has to shoulder some costs to produce those gains, it would do so only if net gains accrue. This approach is a close cousin of Rodrik's (1994), which uses the concept of "efficiency gains-redistribution cost ratio" as the main determinant of trade reform. We take the analysis further: we derive the relationship between the decision to reform the public enterprise sector and a number of structural and institutional variables that influence the related costs and benefits.

On the basis of this framework, we derive several operational hypotheses relating the reform decision to the broad characteristics of the economy and the public sector that can have a significant impact on the costs and benefits of public enterprise reform. We compile a data set to carry out preliminary tests of the hypotheses and to show how the methodology can be used for predicting whether or not countries attempt reform. In particular, we present evidence relating reform attempts to macroeconomic downturns, the extent of public ownership in the economy, the sectoral structure of the economy (specifically, the relative size of the nonagricultural sector), per capita income, and the degree of openness to international trade. The relationship between some of these variables and macroeconomic and trade reforms has been discussed in the literature, but empirical evidence is scarce. (See, however, Rodrik 1994, Alesina 1994, Drazen and Grilli 1993, and Edwards 1993.) Similar investigations in the case of public enterprise reform are, to the best of our knowledge, rare.

We focus on the attempt to reform, not on the success or failure of such attempts. We deal with the latter issue in Campos and Esfahani (1995). Our concept of reform attempt includes actions by the government, such as privatization, commercialization, and so on, to enhance efficiency through changes in the incentives facing public enterprise managers. To qualify as a reform attempt, these changes must affect more than just a few small public enterprises. Section I of this article describes our analytical framework; section II analyzes the influence that economic downturns and a country's economic structure and trade orientation have on public enterprise reform; and section III concludes. Our choice of variables is explained in the appendix.

I. THE ANALYTICAL FRAMEWORK

That political leaders strive to remain in power is a basic fact of politics. In industrial democracies as well as in strong-arm dictatorships, politicians constantly seek to keep their power. In the United States in particular, incumbents use their position to increase their chances of being reelected (Erikson 1971; Mayhew 1975), and, as a consequence, reelection rates have increased tremen-

1. Galal and others (1994) extensively document the gains from selling public enterprises. Although their work covers only privatization, it suggests that, in many circumstances, public enterprise reform can yield substantial gains.

dously over time (Fiorina 1989). In many developing economies, political leaders have all employed various means to stay in power; see, for example, the Kuomintang in Taiwan (China) (Amsden 1979; Wade 1990), the military regimes in the Republic of Korea (Amsden 1989; Haggard 1990), the post-independence governments in Zambia and Ghana (Bates 1981; Bates and Krueger 1993), and the populist and conservative parties in Argentina (O'Donnell 1978). It is therefore reasonable to assume that the dominant political objective of any regime is to remain in power and that a regime formulates policies and strategies around this objective.

Retaining power requires establishing sufficient political support from the polity. Without such support governments fall, coalitions collapse, dictators are deposed, parties are defeated, and presidents are unseated. Political support is obtained in part through quid pro quo arrangements—income transfers exchanged for support, such as votes or campaign funds. Governments "sign" social contracts with various socioeconomic groups. For example, in industrial countries, regulation is often used to direct transfers to politically influential groups. Farmers in Canada, Japan, the United States, and Western European countries have long benefited from regulations that raise their incomes above what they would be under free market conditions (Gardner 1981; Rausser 1982; Michelmann, Stabler, and Storey 1990). In developing countries, protection of domestic oligopolistic industries from import competition has been extensive (Little, Scitovsky, and Scott 1970). More generally, empirical work has shown that government intervention has often been used for redistribution (Stigler 1971; Anderson and Tollison 1984; Rowley, Tollison, and Tullock 1988; Michelmann, Stabler, and Storey 1990; Krueger 1974; Bates 1981; Bardhan 1984; Ake and Mohammed 1986). And theoretical work has shown this to be a logical outcome of a "tenure-maximizing" regime—one that stays in power for as long as possible (Brock and Magee 1978; Becker 1983; Findlay and Wellisz 1984). Government interventions cannot be divorced from issues of redistribution, because it is partly through redistribution that a regime sustains itself.

Redistribution in this context does not necessarily mean a transfer of wealth from rich to poor—in the real world of politics it often means transfers from the less influential to the more influential. The more influential groups are typically better organized and thus more capable of providing support for, or withdrawing support from, the incumbent regime (Olson 1965). Such groups might be firms in large, highly concentrated industries; labor unions; urban groups; the military; ethnic groups; landlords; or even individuals capable of influencing less organized groups. In addition, the threat of participation in spontaneous riots and revolutions could help channel benefits to unorganized groups as well. The large consumption subsidies in the form of cheap staples maintained in many countries may reflect such concerns. Whatever the case, regimes must pay close attention to the demands of at least a subset of interest groups, and more often than not, these demands include some form of transfer.

Several implications for public enterprise reform follow from this framework. Redistribution can be accomplished directly or indirectly. Regulation is an indirect instrument for redistribution; the operation and control of public enterprises is a more direct instrument. Public enterprises are a convenient vehicle through which regime leaders can redistribute wealth. State ownership and control over employment, wages, input purchases, and so on give the regime easier access to resources with which to reward supporters and punish detractors. Thus, although these enterprises may genuinely address some market failure or social objective, they are temptations for a regime, which can use them to build and maintain political support. They are particularly tempting to regimes in developing countries, where political institutions are much less developed—mechanisms for establishing and enhancing accountability, transparency, and competition take generations to mature. We would thus expect these enterprises to be used to promote politically motivated redistributive arrangements, as Campos and Esfahani (1994) prove with evidence from a wide range of countries indicating the extensive use of public enterprises for politically motivated redistribution.

Given the importance of public enterprises in securing political support, regimes would likely resist reform. But when rent redistribution and centralized control significantly distort production incentives and cause large efficiency losses, political leaders may search for ways of exploiting the gains from increased market orientation to buy further support from their existing or potential constituency. The larger the expected efficiency gains are, relative to the political and economic costs involved in providing alternative means of rent allocation or changing the existing allocation, the more attractive the reform option is.

Expected efficiency gains depend on two factors: the extent of inefficiency and the extent of the reform's credibility (that is, the likelihood that the reform measures will be sustained in the future). The costs of redistribution, on the other hand, depend on the volume of redistribution and the information imperfections regarding the distribution of gains and losses across interest groups. Information asymmetry, in particular, increases the costs of policy renegotiations, because it can give rise to a war of attrition in which each interest group delays reform by refusing to concede, claiming that its gains from reform are small—and thus that the reform costs must be shifted toward other groups (Alesina and Drazen 1991).

The costs of public enterprise reform are likely to be commensurate with the amount of rent that is redistributed through public enterprises. The reason is that at the time such rents come into existence, the recipients either attempt to erect political and legal means to protect those rents or condition future political support on implicit or explicit guarantees of continued rent flow. This point has long been made in the literature on rent seeking (see, for example, Krueger 1974) and is to some extent inherent in any arrangement for creating incentives (whether for production or for political support). Incentives do not take effect without some institutional mechanism ensuring that the arrangement is difficult

to change unilaterally and, therefore, promises of future rewards are likely to be honored. The costs that such rent and incentive-protection mechanisms impose on policy change can be exacerbated by informational problems. These provide an additional explanation for the persistence of inefficient policies and can also help explain why reform of public enterprise policies often takes the form of abrupt change rather than gradual adjustment to new information and unfolding events. Renegotiation costs are likely to be fixed, and every time the government modifies its policies, the agenda for redistributing rents opens up. Then the regime has to deal with rent-protection mechanisms.

Innumerable variables may influence the size of potential efficiency gains, rents, reform credibility, and informational imperfections. Shifts in these underlying variables alter the economic and political calculus of policy change and may trigger reform. Later we focus on a number of important variables that can be measured more easily and can be used to predict a given country's readiness for reform. Naturally, this procedure leaves out many other important but less quantifiable variables. In particular, many of the variables that influence a reform program's credibility are difficult to document and analyze. Other sets of relevant but hard-to-measure variables are the structure of rent distribution through public enterprises, the nature of beneficiary and loser groups, and the structure of the country's politics. For example, the costs of reforming a public enterprise are likely to differ if the public enterprise is used for passing on rents to consumers rather than to input suppliers. Similarly, the political influence of the recipient groups with respect to others and their ability to claim part of the gains from reform are also relevant factors. Given the limited scope of available data, we have little choice but to rely heavily on key aggregate variables that can be more easily documented.

In the case of credibility we assume that past actions of the government and the consequences of those actions can serve as the main variables. Specifically, we use the degree of outward orientation of the economy as a measure of commitment to liberal economic policies. However, institutional structures that make policy change difficult also lend credibility to reform policies, unless the policies are inherently unsustainable. We do not incorporate institutional structures in our present analysis, mainly because we do not have a comparable measure of the cost of such policy change across countries. But we do not see this as a major bias in our results, because the same barriers also add to the costs of adopting the reform, although institutional barriers to policy change increase the probability that the gains from a reform will be realized. In this sense the net impact of institutional structure on reform attempts may be small, although, as we show in Campos and Esfahani (1995), the impact on the success of reforms, once the reforms have been adopted, is significant.

In the following pages we focus on a limited number of variables and argue why these variables are important for public enterprise reform and what theoretical influences they might have on the reform decision. Since our arguments are mostly heuristic, the readers may disagree with some of the theoretical links

we establish. When the readers do disagree, they may simply view our empirical work as an attempt to identify a number of important predictors of public enterprise reform (see the appendix).

Because many variables are involved in the economic and political calculus of reform, no single variable can be pinpointed as the sole cause. Each variable influences only the probability of the initiation of reform, given other variables. For example, although we identify economic downturns as a catalyst for reform, they are neither necessary nor sufficient for reform. If other underlying variables raise the expected efficiency gains relative to the costs of redistribution sufficiently, a reform could materialize, absent an economic downturn. Likewise, a downturn may not necessarily induce a reform attempt if other conditions are not met.

Economic Downturns

The literature on macroeconomic and trade reform recognizes the relationship between economic crises and policy change.[2] (For recent discussions of the relationship between economic crises and macroeconomic and trade reform, see Rodrik 1994, Alesina 1994, and Drazen and Grilli 1993.) Our framework suggests that this relationship may also apply to public enterprise reform. To be sure, there may be a trivial relationship between economic downturn and privatization if economic crises cause extensive failure in the private sector and the government is forced to adopt and rehabilitate them. In such cases, privatization may simply reflect returning the economy to its long-term growth path. Such episodes are relatively rare, however. The more common case of reform, which we discuss in more detail in the next section, involves changing the incentives for firms that have long operated as public enterprises. We also argue that macroeconomic downturns are the forms of economic crisis most likely to lead to public enterprise reform.

In our analysis we ignore the possibility that sectoral- or industry-level crises may also trigger reform for three reasons. First, in developing countries, public enterprises are present in many sectors, and substantial reforms in the public enterprise system often require relatively widespread adverse shocks. (In our definition of "reform attempt" in section II, we exclude cases in which policy changes have been minor or have affected an insignificant portion of the public enterprise system.) Second, when crises are limited to a sector or an industry, the government can use resources from public enterprises in other parts of the economy to mitigate the consequences for groups that support the government. This possibility curtails the impetus for reform, compared with situations in which the shrinkage of resources is more widespread. Third, significant sectoral-

2. Political crises are also sometimes mentioned as factors behind reform attempts. Our contracting framework suggests that, if anything, political crises should delay reform because they shorten the regime's horizon and reduce the survival probability of any reform program. But testing these hypotheses is not easy, because it is difficult to identify episodes of political downturn. Our experiments with a few indicators were inconclusive.

and industry-level crises are likely to be reflected in macroeconomic perfor-
mance.

Why should we expect a strong adverse economic shock to induce a regime to
reform public enterprises? Given a regime's desire to maintain power, a regime
should not wait to act until things deteriorate badly. One explanation lies in the
impact that shocks have on both the potential gains from costs of reforms and
redistribution of these costs. The explanation that follows is along the lines ar-
gued by Rodrik (1994). In the context of trade reform he argues that, for every
dollar of efficiency gain, some amount of income is effectively transferred from
those that were beneficiaries under the status quo to other groups. During a
downturn, this amount is much smaller. This, suggests Rodrik, explains why
trade reform is politically so difficult in normal times and why times of down-
turn provide an opportune moment for undertaking structural reforms. Simi-
larly, Drazen and Grilli (1993) argue that, in the context of Alesina and Drazen's
(1991) war-of-attrition model, reform is accepted sooner if an economic down-
turn increases the costs of the status quo relative to the postreform situation.
However, they go further and demonstrate theoretically that introducing
distortionary policies to induce a downturn may be welfare enhancing for econo-
mies caught in a low-level political equilibrium. Bradburd (1993) and Water-
bury (1993) make somewhat different arguments. Bradburd's argument is based
on asset specificity. He argues that groups will continue to block efforts to change
the existing arrangements only if the assets whose values depend heavily on the
continuance of these arrangements fall below lobbying costs. Waterbury main-
tains that a free-rider problem keeps groups from opposing reforms during a
downturn. Maintaining the status quo is a public good for those groups who
benefit from it. During a downturn, the benefits to each group shrink, and thus
no single group has the incentive to absorb the cost of lobbying. Each group
would rather concentrate on striking individual deals with the regime in order to
cut its losses. The result is that none of the beneficiary groups do anything to
preclude reforms.

As we have argued above, the costs of renegotiating the implicit or explicit
contracts that are part of the existing public enterprise policy impede attempts
to remove inefficiencies. But movements in the underlying determinants of costs
and benefits can tip the balance and trigger reform. Adverse shocks to domestic
production can play such a role, because they tend to reduce the rents available
through public enterprises, and thus diminish the amount of redistribution re-
quired to achieve market-oriented reform. For example, when public enterprise
production falls because of a shortage of imports, the government will have
fewer resources available to transfer to public enterprise workers or customers.
Thus lower amounts of rent will be taken away from the beneficiaries when the
reform takes effect: the current beneficiaries will lose less.

The potential gains from reform, however, are unlikely to decline and may
increase when the economy experiences a long-term adverse shock. The reason
is that, in the absence of market orientation, public enterprises respond slug-

gishly to shocks. As a result, sectors dominated by public enterprises will be much slower to rebound, making it more difficult for resources to flow toward their optimal uses and for growth to resume. There is an issue regarding the potential gain from the privatization of a specific firm: a negative demand shock may in fact reduce the gain. But for a large-scale reform in developing countries, this effect is unlikely to arise. In contrast to the situation in industrial economies, where demand shocks are generally caused by a fall in consumption or investment demand, in developing countries such shocks are more often caused by the government. The government is typically predisposed to overspending, so that weak aggregate demand (without prior runaway inflation) is rarely a problem: generally the government constricts demand in order to control inflation. Part of this intervention includes reducing the deficits of public enterprises, which in turn induces a fall in the rents that are distributed through public enterprises. This drop reduces the opportunity cost of the beneficiaries of those rents and thus the potential opposition to large-scale public enterprise reforms. Instituting reforms then creates the potential for efficiency gains, since privatized public enterprises will have more flexibility (than traditional, bureaucratically controlled public enterprises) for exploiting new possibilities once demand returns to normal.

Regimes may also delay reform until an economic downturn occurs because of underlying uncertainties about the distribution of gains and losses. Before economic conditions deteriorate, interest groups are likely to be uncertain about who will lose if no action is taken to prevent economic decline. They are also likely to be uncertain about which policy would prevail once attempts to dismantle the status quo begin and about what the outcome of a given reform program would be. Such uncertainties can discourage political actors from attempting to initiate reform, because expected costs may outweigh gains for decisive groups (Howitt and Wintrobe 1995; Fernandez and Rodrik 1991). But once a downturn occurs, part of this uncertainty will be resolved, because certain groups will find themselves on the losing side. Although the uncertainty about the outcome of various reform options may remain, the implicit social contracts become easier to renegotiate. In short, an economic downturn raises the ratio of potential gains to redistribution costs and thus encourages reform. We posit that *economic downturns create conditions that make regimes more likely to introduce public enterprise reforms.*

A related explanation is that even if the government does foresee the crisis, it may not have the political support to launch a reform, since the general population may not recognize the onslaught of a crisis. Only when the crisis materializes does the general population come to recognize it, and only then will the population be willing to take sides.[3]

But a downturn is not always sufficient to jerk a political regime into action. Many countries have experienced major downturns, and their governments did

3. We are grateful to one of the referees for pointing this out.

not attempt to introduce public enterprise reforms; nor is it necessary—countries have embarked on reforms even when no shock had occurred. Other factors influence the likelihood that a regime will undertake a reform.

The Structure of the Economy

Potential net benefits of public enterprise reform will likely depend on the activities undertaken in the economy and on how they are divided between the public and private sectors. Because countries with a variety of structures undertake reform, the relationship cannot be a simple one; it needs to be dissected so that it can be specified and measured. In particular, as we argue later, the share of the public sector in the economy has two opposite effects on the probability of reform: a positive effect that arises from the inefficiencies of public enterprises and a negative effect that depends on the complexity of the economy, as reflected by the range of production activities and the linkages among them.

The degree of inefficiency caused by the incentives imposed on the public sector is difficult to measure, though we do know that inefficiencies depend on the type of production. Some activities allow the government to redistribute a great deal of rent at low inefficiency cost, while redistribution through other channels may entail significant production disincentives. For example, in the context of countries that lack the capacity to regulate (owing perhaps to institutional weaknesses), public enterprises may not perform much worse than private enterprises in sectors in which sunk costs are large and the quality of the product is relatively easy to assess. In these countries, however, public enterprises can be highly inefficient in the provision of products that are sensitive to quality (for example, fashion clothing or fresh vegetables and other perishable goods). In these activities, market failure is less likely to occur and, even if it does, it is likely to be of much smaller magnitude. Certainly, government ownership cannot improve performance in markets in which producers must be responsive to the demand for detailed characteristics. As a result, effecting the same redistribution through public ownership in these types of activities is much more costly than in activities in which quality is easily determined. Indeed, in developing countries public ownership has been and remains common in public utilities and heavy industry, but is quite uncommon in fashion clothing and fresh vegetable production. Public ownership of some lines of retail trade was given up even in orthodox, centrally planned economies.

The implicit ranking of economic activities in terms of their efficiency loss per unit of redistribution under public ownership implies that, as the range of activities covered by public enterprises increases, the marginal efficiency gain from reform should increase relative to the costs of redistribution necessary to achieve those efficiency gains (for evidence, see World Bank 1994a). Thus, all things being equal, the net benefits of reform should increase with the relative size of the public sector in the economy.

On the negative side, a larger public sector implies greater renegotiation costs because more information is needed to design and implement the reform, but

less information is available because of curtailed competition. Informational imperfections tend to be smaller when most economic activity is carried out in the private sector, because information about the performance of individual public enterprises and the size and distribution of gains from reform are more readily available when public enterprises interact with private firms as suppliers or competitors. For example, competition from private firms can reveal which manufacturing public enterprises are the worst performers. Or, demands of private firms can expose which public enterprises are the worst providers. This information, in turn, indicates which public enterprises are more likely to be targeted for reform. Such factors help all those affected by reform to better understand what the outcome of reform might be, which groups will gain, and which groups might have to bear most of the burden. Hence interest groups would have less incentive to engage in what Alesina and Drazen (1991) call a "war of attrition." Reformers would also be in a better position to devise more effective incentive and redistribution schemes and thus attract wider support for policy change. In contrast, the wider the range of activities dominated by public enterprises, the greater will be the informational burden of a reform program, and the more costly it will be to undertake a reform.

We can empirically distinguish the two effects, because the negative effect depends on the complexity of the economy, but the positive effect does not. Complexity reflects the underlying informational characteristics of an economy: the more interlinkages there are between different sectors in the economy, the more difficult it is to extract information. As the degree of complexity (set of informational attributes) rises, an increase in the size of the public enterprise sector imposes a higher cost of retrieving the information needed to design a reform program. Therefore, juxtaposing the size of the public sector with a measure of complexity should isolate this effect from other effects of public sector size on the net gains from public enterprise reform.

The complexity of the economy itself has an independent effect. When the activities in the economy are highly interlinked, inefficiency in one part can strongly propagate to other parts. In contrast, when large parts of the economy use few inputs from the rest of the economy, inefficiency in the rest of the economy has a limited impact on the economy as a whole. As a result, the efficiency gain from (and the demand for) reform in a given part of the economy increases as the other parts of the economy become less self-contained. (For a discussion of the concept of self-containment and its application to the role of institutions in determining a country's comparative advantage in international trade, see Clague 1991.)

A variable that is easy to measure and captures the above notion of complexity is the relative size of the nonagricultural sector of the economy. This variable reflects the decline of traditional activities—especially those in agriculture—which are more self-contained, and the rise of specialized activities—especially those in industry and services—which depend on inputs from the rest of the economy. Using this measure of complexity, we can summarize the results of the above arguments as follows: *All things being equal, the probability of public*

enterprise reform is negatively related to the size of the interaction between the public sector and the nonagricultural sector of the economy, but each of these two variables has a positive residual effect on that probability.

The structural characteristics of the economy may also influence the probability of reform through their impact on credibility. To the extent that these variables increase the potential gains from market orientation, they make reversals more costly and increase the probability of adherence to the new policies. In addition, the government's success in developing nonagricultural sectors under private ownership can indicate the regime's commitment to market-oriented policies and lend credibility to its public enterprise reform program. But all of these effects tend to reinforce the relationships delineated above and are difficult to distinguish from them.

Trade Orientation

Outward orientation of a government's economic policy and a government's involvement in international free trade agreements are important indicators of a regime's commitment to market-oriented policies. Thus a public enterprise reform proposed by such a government is more likely to be perceived as a credible extension of previous actions. But in addition, outward orientation influences the efficiency gain-redistribution cost ratio of public enterprise reform and thus at the margin may induce regimes to undertake public enterprise reform. To see this, although many producers and consumers may receive rents from public enterprises, their inefficiencies ultimately increase the cost of production for the economy as a whole. In inward-oriented economies, final demand is relatively inelastic, and higher costs can be largely passed on to consumers. As a result, the benefits of public enterprise reform are diffuse and difficult to assess. In contrast, in outward-oriented economies a large proportion of producers face relatively elastic demands, and domestic inefficiencies affect their level of competitiveness in world markets. These producers can directly gain from increased public enterprise efficiency through cheaper domestic inputs and, to the extent that this effect is mitigated by real exchange-rate appreciation, they can indirectly benefit from cheaper imported capital and intermediate inputs. Therefore, in outward-oriented economies, enterprise reforms produce more visible gains. For this reason we expect that, *given other factors, the probability of public enterprise reform increases with the increased outward orientation of the economy.* This hypothesis also implies that a successful trade reform can induce a public enterprise reform by making the potential gains visible and creating a clear group of beneficiaries.

II. THE INFLUENCE OF ECONOMIC DOWNTURNS, ECONOMIC STRUCTURE, AND TRADE ORIENTATION

As we show in this section, most attempts at public enterprise reform follow an economic downturn, but the likelihood that a reform is undertaken after a

given downturn depends on a country's economic structure and trade orientation. We begin by specifying our indicators for a reform attempt and economic downturn and showing that they are correlated. We then develop a probit model of the reform decision. The model tests whether each of the variables specified earlier has the predicted influence on the probability that a regime will attempt a reform. We end the section with the presentation and discussion of the statistical results.

Our data are based on the experience of a diversified group of fifteen developing countries: Argentina, Chile, Egypt, Ghana, India, Indonesia, the Republic of Korea, Malaysia, Mexico, Nigeria, Pakistan, the Philippines, Senegal, Turkey, and Venezuela. We restrict our analysis to the period from 1972 to 1993 in order to control for the effect of the international environment. The emphasis on private sector-led development in developing countries grew stronger in the 1970s, and, in particular, international lending institutions began to emphasize such policies later that decade. To ensure greater homogeneity in this respect and test the sensitivity of our findings to the selected sample, we also experimented with a smaller sample based on the period from 1978 to 1993. This switch did not significantly change the results.

Downturns and Reform Attempts

By "reform attempt" we mean a proclamation of new policies and guidelines to enhance market incentives of public enterprises, followed by an initiation of some of the proposed policy changes (for example, changes in prices, regulation, layoffs, divestiture, and opening of public enterprise markets). Therefore, changes such as the sale of minority shares in a few public enterprises to raise revenue, or reorganizations of the public sector that shift the responsibility of public enterprises from one government organization to another without giving the enterprises stronger incentives to improve efficiency, do not qualify as reform episodes. Further, it is not enough for policy changes to be announced or to be embodied in new laws and regulations. The proclamation must be followed immediately by the implementation of one or more of the proposed changes.

Of course, there is an element of judgment in labeling some policy changes, especially those in which the scope of change is limited, formal measures are weakened by informal countermeasures, or implementation is marginal and gradual. But as noted later, our results do not appear to be sensitive to possible judgment errors. In general, public enterprise reforms are embodied in the larger context of macroeconomic reforms and are often preceded by such reforms. To assess the sensitivity of our assessment and dating of reform attempts, we also made an alternative count of reform attempts in which we identified a policy change as a reform regardless of whether it was a macroeconomic, trade, or public enterprise reform (or any combination). This indicator is expected to capture public enterprise reforms that start with a macroeconomic or trade reform, which may or may not materialize (see appendix figure A-1 and table 1). In contrast with the public enterprise indicator, which may undercount public

Table 1. *Public Enterprise Macroeconomic Reform Variables and Conditions in Sample Countries*

Country	Years	Public enterprise macroeconomic reform (y_i)	Magnitude of downturn (MD)	Ratio of public to total investment (RPI)[a]	Share of nonagriculture in GDP (SNA)[a]	Interaction term (RPIxSNA)	Trade orientation (TO)[b]	GDP per capita (thousands of 1987 U.S. dollars) (GDPPC)
Downturn episodes								
Argentina	1975–76	0	–4.58	0.3762	0.9195	0.3459	0	3.648
	1978	0	–5.33	0.3958	0.9181	0.3634	0	3.747
	1981–82	0	–12.09	0.3914	0.9184	0.3595	1	3.782
	1985	0	–7.97	0.2460	0.9129	0.2246	1	3.604
	1988–90	1	–11.65	0.2698	0.9132	0.2464	2	3.455
Chile	1972–73	1	–9.11	0.4865	0.9218	0.4485	1	1.447
	1975	1	–13.18	0.6214	0.9259	0.5754	2	1.420
	1982–83	1	–17.51	0.3226	0.9183	0.2962	2	1.477
Egypt	1992	1	–1.77	0.6030	0.7987	0.4816	1	0.739
Ghana	1972	0	–5.94	0.4576	0.4611	0.2110	0	0.523
	1975–76	0	–21.04	0.5645	0.4490	0.2535	0	0.514
	1979–83	1	–28.01	0.7742	0.4795	0.3712	0	0.453
India	1971–72	0	–3.61	0.3820	0.5561	0.2124	0	0.245
	1974	0	–1.09	0.4180	0.5731	0.2396	0	0.241
	1976	0	–0.61	0.4208	0.5804	0.2442	1	0.241
	1979	0	–7.60	0.4338	0.5946	0.2579	2	0.255
	1991	1	–0.70	0.4560	0.6801	0.3101	2	0.342
Indonesia	1982	0	–2.24	0.4350	0.7309	0.3179	2	0.345
Korea, Rep. of	1980	0	–4.87	0.2186	0.7856	0.1717	3	1.660
Malaysia	1975	0	–1.57	0.3146	0.7061	0.2221	3	1.116
	1985–86	1	–5.31	0.4606	0.7818	0.3601	3	1.812
Mexico	1982–83	1	–9.34	0.4240	0.9110	0.3863	3	1.833
	1986	1	–5.79	0.3984	0.9155	0.3647	3	1.948
	1988	1	–0.47	0.3456	0.9133	0.3156	3	1.860
Nigeria	1972	0	–1.81	0.3330	0.4996	0.1664	0	0.376
	1975	0	–6.13	0.4680	0.5346	0.2502	0	0.394

	1978	0	−8.75	0.6168	0.5961	0.3677	0	0.425
	1981–84	0	−33.70	0.6726	0.6510	0.4379	0	0.427
	1986–87	1	−4.51	0.7320	0.6779	0.4962	0	0.337
Pakistan	1971–72	0	−5.20	0.4950	0.6301	0.3119	2	0.223
	1993	1	−0.10	0.4870	0.7446	0.3626	3	0.354
Philippines	1983–85	1	−20.29	0.3048	0.7675	0.2339	2	0.671
	1991–92	1	−5.27	0.1792	0.7677	0.1376	2	0.600
Senegal	1971	0	−1.51	0.5524	0.7169	0.3960	0	0.723
	1973	0	−8.25	0.4554	0.7369	0.3356	0	0.723
	1977–78	0	−13.16	0.4943	0.7264	0.3591	0	0.710
	1980–81	0	−9.38	0.5087	0.7343	0.3735	0	0.708
	1983–84	1	−7.79	0.3708	0.7720	0.2863	1	0.673
	1989	0	−3.47	0.3284	0.7859	0.2581	2	0.674
	1991	0	−1.77	0.3222	0.7840	0.2526	1	0.679
Turkey	1979–80	1	−6.09	0.4622	0.7941	0.3670	1	1.040
	1989	0	−0.54	0.5410	0.8135	0.4401	2	1.226
	1991	1	−0.09	0.4938	0.8221	0.4060	2	1.306
Venezuela	1971–72	0	−4.25	0.2390	0.9500	0.2271	0	3.297
	1974–75	0	−2.46	0.3236	0.9509	0.3077	0	3.240
	1978–85	0	−29.18	0.3660	0.9516	0.3483	1	3.282
	1989	1	−11.34	0.4164	0.9404	0.3916	1	2.648
Reform episodes without downturn								
Indonesia	1986	1	0	0.4648	0.7470	0.3472	3	0.397
Korea, Rep. of	1984	1	0	0.2436	0.8391	0.2044	3	1.996
Malaysia	1991	1	0	0.3882	0.7937	0.3081	3	2.059
Pakistan	1977	1	0	0.5970	0.6615	0.3949	2	0.220
	1990	1	0	0.5274	0.7374	0.3889	3	0.327

a. Values represent the five-year average.

b. Values follow Dollar's (1992) index, which assigns a ranking of 0 through 3 to each observation, with 0 indicating the most inward-oriented set of policies and 3 the most outward-oriented set.

Source: Values for the reform variable (y_i) are based on the authors' evaluations from a variety of sources, including country economic reports of the World Bank, Sundaran (1993), Bates and Krueger (1993), Bruton (1992), Gyimah-Boadi (1993), Means (1991), Haggard and Webb (1994), Waterbury (1993), and Williamson (1994). Values for the other variables come from the World Bank data base.

enterprise reforms and responses, the public enterprise-macroeconomic indicator tends to overcount them. The results we report in the text are not very sensitive to the measure employed.

We define "economic downturns" as declines in real gross domestic product (GDP) per capita, and we refer to the consecutive years in which per capita GDP growth is negative as a "downturn episode." This is of course one of many countless concrete definitions we can give to economic downturn. For example, a certain level of decline in the growth rate might be considered a downturn. Alternatively, we could define a threshold for each country's growth rate below which the country would be in a downturn. Or, we could establish a threshold for an increase in the rate of inflation. Our basic rationale for choosing negative per capita GDP growth is that it reflects a shrinkage in resources available to maintain the political-economic system. By running a deficit, the government can temporarily forestall a fall in GDP. But if it tries to do this indefinitely without correcting structural imbalances, the economy will eventually collapse. Our measure of downturn captures these types of situations—those that embody severe economic deterioration. It also captures the costly aspects of other variables commonly used for indicating economic crises, such as accelerating inflation and trade and budget deficits. Another advantage of this measure is that it is independent of a country's level of development.

To examine the link between economic downturns and reform attempts, we first identified all reform attempts and downturn episodes for fifteen developing countries from 1972 to 1991. We plotted per capita GDP growth rates over time for the fifteen countries and identified the downturn episodes. For example, the years 1982 and 1983 represent a downturn episode for Chile (figure 1). Having identified and listed all episodes, we then determined whether each reform attempt could be classified as a response to a downturn. For a reform attempt to qualify as a response to a downturn, we imposed the condition that it had to occur reasonably close to the beginning of a downturn. More specifically, the declaration of the attempt and at least preliminary actions had to have taken place either during a downturn period or within a year from the end of the downturn period.

Examples of downturns and reforms identified in Malaysia and Ghana demonstrate how we identified reform attempts and classified them as responses or nonresponses to downturns.[4] The examples also show the difficulties inherent in deciding which incidents constitute separate reform episodes and whether they are responses to particular downturns.

MALAYSIA. During the 1970s and early 1980s Malaysia's public enterprise sector grew rapidly under the New Economic Policy, which had been adopted in 1970 to expand the wealth and earning opportunities of the country's politically dominant but economically weak Bumiputra population. The number of public

4. Basic information about the other countries in our sample is available from the authors upon request. It can be examined in greater detail to assess the appropriateness of labels assigned to the episodes.

Figure 1. *Growth Rate of Gross Domestic Product per Capita, Chile, 1971–92*
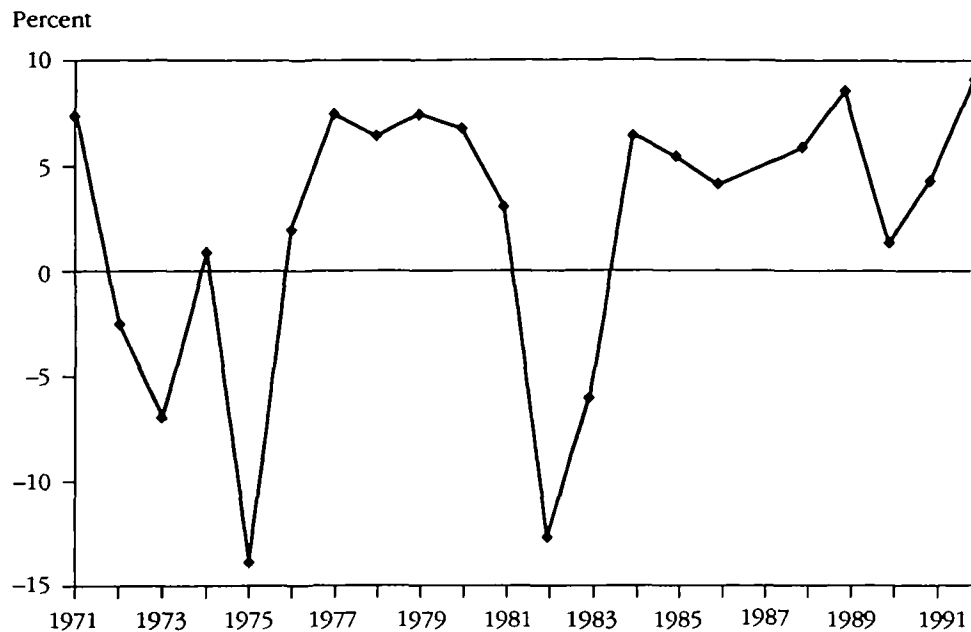
Percent

Source: World Bank (1994b).

enterprises grew from 109 in 1970 to 1,014 in 1985. Government investment in them grew from 32 percent of the development budget during the period from 1966 to 1970 to 56 percent during the period from 1981 to 1985. Meanwhile, the Malaysian economy was growing rapidly, except for 1975 and 1985–86, when the per capita growth rate turned negative. These downturn periods were associated with declines in the terms of trade that reduced export earnings and government revenues. The first downturn came when the public enterprise sector was still relatively small. At the time, the New Economic Policy relied mostly on imposing weak employment and ownership quotas on private firms to achieve its objectives. Shortly after the downturn the government tried to strengthen the quota enforcement, but backed off when the business community objected to the pressures. Instead, the government decided to rely more on the expansion of public enterprises to further the goals of the New Economic Policy (Bowie 1991). In our data set we counted this incidence as an episode of downturn without reform.

After 1976 the government quickened the pace of establishing companies in which the Bumiputra were given privileged positions as workers, managers, and institutional or individual equity owners. When the costs of this strategy began to mount in the early 1980s, the controversies about the role of public enterprises grew stronger. But no action was taken until 1985–86, when a terms-of-

trade shock combined with the growing inefficiency of the public enterprises gave rise to another economic downturn. In 1986 the government largely abandoned the objective of redistributing rents through public enterprises and shifted its focus to growth (Bruton 1992). As part of a major reform, public enterprises were made more autonomous by decentralizing decisionmaking. The budgets of public enterprises that did not perform well were cut, and in many cases their managers were fired (Means 1991). In many major enterprises, Bumiputra managers were replaced by domestic minority or foreign managers (Bowie 1991). A number of public enterprises were placed under management contract, and some public enterprises were prepared for privatization, although few were actually privatized (Sundaram 1993). We qualified this as a downturn episode that led to an attempt at public enterprise reform.

The post-1986 policy process followed a steady pace until 1991, when the government announced a Privatization Masterplan along with three other major programmatic documents outlining Malaysian economic development policy for the foreseeable future. Soon privatization gained momentum, and within two years the market value of privatized firms reached 29 percent of Kuala Lumpur Stock Exchange capitalization (Sundaram 1993). The new policy was instituted even as the country continued to experience vigorous economic growth. Although from 1986 to 1991 many steps were undertaken to prepare the ground for increased privatization, the Masterplan reflected a major shift in Malaysia's economic policy to remove government ownership as a means of directing the economy. We counted this episode as a case of reform attempt without downturn.

Finally, it should be noted that the expansion of the public enterprise sector and later reforms in Malaysia were carried out under very stable political conditions. The same party has been in power since independence, and since 1970 the premiership has changed hands only twice, in 1976 and in 1981, with the deputy prime minister moving to the position of power in both cases.

GHANA. During the late 1960s and early 1970s the Ghanaian government limited public ownership to approximately fifty public enterprises that had been formed during the 1950s and early 1960s. In 1972 the economy experienced a major decline following a terms-of-trade shock and a military coup. The junta shifted the government's policy toward rapid expansion of the public enterprise sector. Even when another terms-of-trade shock precipitated a 15 percent decline in per capita GDP in 1975 and an additional 5 percent decline in 1976, the government continued to extend the role of public enterprises and follow other expansionary policies (Gyimah-Boadi 1993). We classified both incidents as downturns without reform.

In the second half of the 1970s, extensive rent extraction and redistribution by the government seriously damaged the Ghanaian economy such that even the sources of rent dried up (Leith and Lofchie 1993). The economy was so weak that it could not deal with the decline in the secular terms of trade, which began in 1978—per capita GDP fell precipitously from1979 to 1983. In 1979 a coup by

junior military officers, led by Jerry Rawlings, helped transfer power to an elected civilian government. But neither the coup makers nor the civilian government did much to reform public enterprises except for mounting an anticorruption campaign and shuffling some public enterprises from one supervisory organization to another (Gyimah-Boadi 1993). This approach also persisted for about a year after Rawlings regained power with a second coup in December 1981. But as exports and government revenues continued to fall precipitously, political leaders began to shift their position in favor of market-oriented policies.

In 1983 the government adopted an Economic Recovery Program to rehabilitate the economy through extensive liberalization, which consisted of macroeconomic, trade, and public expenditure reforms. After an initial emphasis on stabilization and trade liberalization, the government attended to the problems of the public sector. In 1984 public enterprises were allowed to raise their product prices, while hiring of new workers in the sector was frozen, and a job retrenchment plan was introduced. The government also ordered a study of 100 public enterprises that were to be prepared for privatization.

In 1985, performance contracts were set up for the managers in a number of public enterprises, and a task force was formed to compile a package of deeper public enterprise reforms. The program developed by the task force finally resulted in the advertisement of thirty-two public enterprises for sale in mid-1988. By 1993, eighty-six public enterprises had been or were being divested, thirty-two of which were cases of liquidation (World Bank 1993). Meanwhile the political situation has remained stable, and the economy has responded well to the reform measures, maintaining a positive growth rate (averaging 1.76 percent from 1984 to 1992) despite a continued terms-of-trade decline.

We considered the economic decline of the early 1980s and the policy changes in the mid-1980s to be an episode of downturn with a reform response. The reform was slow to materialize, and its implementation has been problematic; but there is little doubt that a reform attempt did begin around 1983–84. We could have counted the divestiture program in the second half of the 1980s as a separate reform attempt, but an examination of the history of Ghana's Economic Recovery Program suggested to us that divestiture was part of the original plan, each stage of which was carried out slowly.

Empirical Analysis

Examining all of the downturn episodes identified in the sample, we see that almost 80 percent of reform attempts (nineteen out of twenty-four) were preceded by economic downturns. Moreover, the five reforms that took place without downturns occurred in situations in which the country strongly met the structural and trade-orientation criteria for reform readiness (see table 1 and the following discussion). Therefore, although this evidence is limited to fifteen countries, it suggests that for most developing countries, economic downturn may be an almost necessary condition for public enterprise reform. But it is clear from figure 2 that downturns are by no means a sufficient condition: only

Figure 2. *Public Enterprise Reform Responses to Economic Crisis*


```
                    Did the country have
                    an economic crisis?
        YES (47 cases)              NO (5 cases)
```

```
    Did the country implement            Did the country implement
    public enterprise reforms?           public enterprise reforms?

  YES (19 cases)    NO (28 cases)              YES (5 cases)
```

Argentina	1988
Chile	1972, 1975, 1982
Egypt	1992
Ghana	1979
India	1991
Malaysia	1985
Mexico	1982, 1986, 1988
Nigeria	1986
Pakistan	1993
Philippines	1983, 1991
Senegal	1983
Turkey	1979, 1991
Venezuela	1989

Argentina	1975, 1978, 1981, 1985
Ghana	1972, 1975
India	1971, 1974, 1976, 1979
Indonesia	1982
Korea, Rep. of	1980
Malaysia	1975
Nigeria	1972, 1975, 1978, 1981
Pakistan	1971
Senegal	1971, 1973, 1977, 1980, 1989, 1991
Turkey	1989
Venezuela	1971, 1974, 1978

Indonesia	1986
Korea, Rep. of	1984
Malaysia	1991
Pakistan	1977, 1990

Source: World Bank data; Bruton (1992); Gyimah-Boadi (1993); Haggard and Webb (1994); Leith and Lofchie (1993); Means (1991); Sundaram (1993); Wade (1990); Waterbury (1993); Williamson (1994).

40 percent of downturns were followed by public enterprise reforms. Note that our observations do not change significantly if attention is restricted to the post-1978 period, when market-oriented policies gained wider acceptance: there were thirty-one downturn episodes, seventeen of which were associated with one of the twenty-one reform attempts (table 1).

Can characteristics of downturns or structural and trade orientation variables explain why some downturns led to attempts at reform but others did not? To answer this question, we undertake a probit analysis of reform attempts conditional on the occurrence of an economic downturn. To operationalize this analysis, we assign numbers (1 through 47) to the downturn episodes that we have identified and then define a dummy dependent variable, y_i:

$$y_i = 1, \text{ if downturn } i \text{ resulted in a reform attempt}$$
$$0, \text{ otherwise.}$$

We relate y_i to six variables listed in table 1. The first three right-hand-side variables (in the fourth, fifth, and sixth columns) reflect the role of the economy's structure: respectively, the five-year average ratio of public investment to total investment (RPI) prior to each downturn episode, the five-year average share of nonagricultural sectors in GDP (SNA) prior to each episode, and an interaction term between RPI and SNA ($RPI \times SNA$). We expect an increase in SNA or RPI to raise the likelihood that a regime will attempt a public enterprise reform and an increase in their interaction to reduce the likelihood. That is, we expect positive coefficients for RPI and SNA but a negative coefficient for $RPI \times SNA$.

The fourth explanatory variable (in the seventh column in table 1) is an index of the outward orientation of trade policy (TO) prior to each downturn episode. It is based on Dollar's (1992) cross-country real exchange rate comparisons. This index assigns a ranking of 0 through 3 to each observation, with 0 indicating the most inward-oriented set of policies and 3 the most outward-oriented set. Since Dollar provides only average ranking for the period from 1976 to 1985, we adjusted the ranking up or down over time according to changes in trade policy whenever a significant policy change could be detected. We expect the coefficient of TO to be positive since outward orientation increases the likelihood of a reform attempt.

The fifth variable (in the third column of table 1) is the magnitude of downturn (MD), which we define as the cumulative decline in GDP over the length of the downturn. For instance, suppose a country's per capita GDP falls by 5 percent in year t, then by 7 percent in year $t + 1$, and then 3 percent in year $t + 2$. The magnitude of this downturn would be 15 percent. To the extent that the decline in GDP per capita tends to reduce available rents for redistribution through public enterprises, this variable should measure the strength of incentives to initiate reform. Therefore, we hypothesize that the probability that a regime will attempt a reform increases with the magnitude of the downturn.

Finally, in the last column (table 1) we introduce the level of GDP per capita in constant 1987 U.S. dollars ($GDPPC$) to control for the level of development. This variable is an example of many country characteristics that may be correlated with the first five variables and may influence the reform decision in ways that cannot be determined a priori. We limited our experimentation with such variables to keep enough degrees of freedom for the probit model. As far as the

impact of *GDPPC* on the probability of reform is concerned, higher GDP per capita can facilitate reform (because the general level of development may reflect institutional capacity and commitment capability) or render reform unnecessary (because the ability to produce a high income may indicate the country's success in reducing public enterprise inefficiencies).

The model that we test is the following:

$$y_i = 1 \text{ if } z_i + e_i > 0 \text{ and } y_i = 0 \text{ if } z_i + e_i \le 0 \text{, where}$$

$$z_i = a_0 + a_1 SNA_i + a_2 RPI_i + a_3 RPI_i \times SNA_i + a_4 TO_i + a_5 GDPPC_i + a_6 MD_i + e_i$$

and e_i is a random term with a mean of zero. The function z_i is the reform-readiness function. Note that $\text{Prob}(y_i = 1) = \text{Prob}(z_i + e_i > 0)$, that is, the higher the value of z_i, the more reform ready country i is and, thus, the greater is the likelihood that country i will attempt a public enterprise reform when a downturn occurs.

Because there are repeated observations from each country, the e_i's cannot be assumed to be identically and independently distributed. But it is also difficult to disentangle the complex correlation matrix of this term for the sample. To examine the seriousness of this problem, we repeated the exercise with the sample of thirty-one episodes during the period from 1978 to 1993. Since this sample has fewer observations per country, a major difference in the estimates obtained from the two samples could be taken as an indication that the results are unreliable. We also experimented with a sample that excluded three episodes (Chile 1972–73, Chile 1982–83, and the Philippines 1983–85) in which the economic downturn was itself a partial cause of expansion in the number of enterprises under government ownership. In these cases privatization may be seen as a return to normal conditions, and the reform decision may have a different motivation than in other episodes. But the statistical results proved robust to these and similar changes in the sample (compare tables 2 and 3 with tables 4 and 5).

We also investigated the effects of defining our episodes somewhat differently. We divided the time period 1978–93 into two equal subperiods, 1978–85 and 1986–93. We selected all the subperiods in which a downturn occurred and formed our dependent variable, y_i, on the basis of whether the subperiod contained a public enterprise reform episode or not. For the downturn-reform episodes, we used the average over the five-year period preceding the beginning of the downturn for each of the independent variables. For the downturn with no reform episodes, we used the average for the subperiod. No fundamental changes resulted from this perturbation.

The frequency distribution of predicted, compared with actual, outcomes for the full and post-1978 samples is similar, suggesting that the estimates are not very sensitive to the correlation matrix of the error term (tables 2 and 3). The model has a decent fit since 85 percent of the outcomes can be predicted on the basis of the right-hand-side variables. Moreover, the coefficient estimates gen-

Table 2. *Probit Estimation Results for the Full and Post-1978 Samples*

Equation	Constant	Ratio of public to total investment (RPI)[a]	Share of nonagriculture in GDP (SNA)[a]	Interaction term (RPIxSNA)	Trade orientation (TO)[b]	GDP per capita (thousands of 1987 U.S. dollars) (GDPPC)	Magnitude of downturn (MD)	Log-likelihood
Full sample								
1	−42.026 (−2.589)	56.777 (2.327)	51.674 (2.466)	−67.560 (−2.169)	1.1084 (−2.386)	−1.8361 (2.617)	1.1119 (0.322)	−15.28326
2	−42.363 (−2.641)	57.982 (2.426)	52.187 (2.522)	−69.041 (−2.261)	1.0924 (2.626)	−1.8105 (−2.394)		−15.33486
3	−24.101 (−2.720)	29.231 (2.199)	31.773 (2.673)	−35.185 (−2.013)		−1.4649 (−2.930)		−20.92167
4	−14.282 (−2.282)	19.640 (1.719)	13.207 (1.787)	−18.057 (−1.238)	0.94625 (3.194)			−20.08399
Post-1978 sample								
5	−37.311 (−2.175)	53.696 (2.046)	46.671 (2.080)	−65.271 (−1.925)	0.85159 (1.960)	−1.4714 (−1.937)	−1.226 (−0.313)	−13.84862
6	−36.642 (−2.143)	51.828 (2.023)	45.607 (2.047)	−62.744 (−1.901)	0.89165 (2.119)	−1.4937 (−1.948)		−13.89815
7	−26.335 (−2.262)	34.798 (2.020)	35.338 (2.271)	−43.914 (−1.930)		−1.3694 (−2.422)		−16.94097
8	−11.757 (−1.669)	18.430 (1.416)	11.202 (1.326)	−18.626 (−1.103)	0.87505 (2.520)			−16.77872

Note: The dependent variable is the public enterprise reform dummy, y. t-ratios are in parentheses. The full sample (1972–93) has forty-seven observations, and the post-1978 sample (1978–93) has thirty-one observations.

a. Values represent the five-year average.

b. Values follow Dollar's (1992) index, which assigns a ranking of 0 through 3 to each observation, with 0 indicating the most inward-oriented set of policies and 3 the most outward-oriented set.

Source: Authors' calculations.

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Table 3. *Frequencies of Actual and Predicted Outcomes for the Full and Post-1978 Samples*

	Full sample			Post-1978 sample		
	Predicted			Predicted		
Actual	0	1	Total	0	1	Total
0	25	3	28	11	3	14
1	5	14	19	4	13	17
Total	30	17	47	15	16	31

Note: Results are from equation 2 for the full sample and from equation 6 for the post-1978 sample (see table 2). The predicted outcome has maximum probability. The full sample (1972–93) has forty-seven observations, and the post-1978 sample (1978–93) has thirty-one observations.

Source: Authors' calculations.

erally have the expected signs and display high statistical significance. The predicted probabilities of reform (reported in the last column of table 6) also show that the model identifies reform-ready conditions with reasonable accuracy. The only unexpected result is the insignificant coefficient of MD. The reason for this may be that MD does not reflect the relevant characteristics of downturns, which are important in triggering reform. We made some attempts to examine this possibility by including in the model changes in the rate of inflation and budget and trade deficits during the downturns. But neither variable was significant. The negative coefficient of GDP per capita could not be predicted a priori. The finding suggests that higher-income countries are less likely to engage in public enterprise reform, either because there are more resources to be redistributed as rents or because there are fewer gains to be made from reform.

To test the robustness of our probit model, we tried to predict the reform readiness of countries that attempted a reform without a downturn. These reform episodes were not included in the estimation sample because that estimation was conditional on the occurrence of a downturn. But our framework would suggest that to attempt reform without experiencing a downturn, a country must be ready for reform so that no additional impetus is needed. Therefore the data from these episodes should generate high positive values for the reform-readiness function and, thus, high predicted reform probabilities. Of the five cases of reform without downturn that we investigated, four have a positive z_i and predicted reform probabilities greater than 0.85 (table 6). Moreover, in those four cases the values of z_i are all higher than 1.10, which is the average z_i for all reforms associated with downturns. In fact, only 38 percent of the reforms associated with downturns had a z_i higher than 1.1 (table 6). Thus it seems that the model predicts reform readiness reasonably well in these cases, and in this sense does identify important preconditions for reform.

Dissecting the measure of reform readiness into its components can provide information as to why in one situation a country attempts to reform while in a different situation the same country or another does not. In order to simplify

Table 4. *Probit Estimation Results for the Reduced Full Sample*

Equation	Constant	Ratio of public to total investment (RPI)[a]	Share of nonagriculture in GDP (SNA)[a]	Interaction term (RPIxSNA)	Trade orientation (TO)[b]	GDP per capita (thousands of 1978 U.S. dollars) (GDPPC)	Magnitude of downturn (MD)	Log-likelihood
1	-39.897	55.253	48.58	-65.071	1.043	-1.5945	-0.59938	-14.61944
	(-2.518)	(2.324)	(2.368)	(-2.145)	(2.554)	(-2.060)	(-0.152)	
2	-39.805	54.732	48.47	-64.48	1.0524	-1.6171		-14.63109
	(-2.499)	(2.314)	(2.350)	(-2.132)	(2.589)	(-2.114)		
3	-23.204	28.143	30.08	-33.137		-1.3403		-20.34340
	(-2.532)	(2.065)	(2.446)	(-1.851)		(-2.597)		
4	-14.497	20.534	13.27	-19.008	0.92175			-17.98100
	(-2.226)	(1.717)	(1.718)	(-1.242)	(3.107)			

Note: The dependent variable is the public enterprise reform dummy, y_i. The reduced full sample has forty-four observations. Three episodes are excluded from the full sample: Chile 1972–73 and 1982–83 and the Philippines 1983–85. *t*-ratios are in parentheses.

a. Values represent the five-year average.

b. Values follow Dollar's (1992) index, which assigns a ranking of 0 through 3 to each observation, with 0 indicating the most inward-oriented set of policies and 3 the most outward-oriented set.

Source: Authors' calculations.

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Table 5. *Frequencies of Actual and Predicted Outcomes for the Reduced
Full Sample*

| | Predicted | | |
Actual	0	1	Total
0	25	3	28
1	5	11	16
Total	30	14	44

Note: Results are from equation 2 (see table 2). The predicted outcome has maximum probability.
The reduced full sample has forty-four observations. As explained in the text, the observations for Chile
(1972–73 and 1982–83) and for the Philippines (1983–85) are excluded.
Source: Authors' calculations.

this analysis, for each episode in table 6 we present the product of the right-hand-side variables of the probit model and their estimated coefficients (from equation 2 of table 2). In the sixth column of table 6 we also show the value of $a_0 + a_1 SNA_i + a_2 RPI_i + a_3 RPI_i \times SNA_i$, which measures the net impact of structural variables on the reform-readiness function. We call this component structural reform readiness to distinguish it from the effect of trade orientation and per capita income. The higher the value of this measure, the more predisposed a country is toward attempting a reform, given the level of GDP per capita and trade orientation.

Structurally, reform-ready countries are those that by virtue of their relatively large nonagricultural or public sectors can gain significantly from public enterprise reform. These countries may delay reform if their incomes are high and their economies are inward oriented, for example, Argentina and Venezuela, or if they do not experience a downturn to trigger reform, for example, Egypt. Interestingly, Argentina, Venezuela, and Egypt have initiated reforms as their circumstances have changed. Egypt experienced a downturn in the early 1990s. Argentina and Venezuela, after repeated incidents of downturn, ended up with much lower per capita incomes. They have also reoriented their trade policies. Comparing the experiences of these two countries with those of Chile and Mexico, which have been more active reformers, is interesting because the four countries were structurally similar, but Chile and Mexico had lower initial incomes and greater outward orientation.

Most countries that did not reform despite repeated economic downturns were those that lacked structural reform readiness. For example, Nigeria in the 1970s had relatively small nonagricultural and public sectors compared with the rest of the sample. Its relatively closed economy also reduced the impetus for public enterprise reform. But in the 1980s when the size of Nigeria's public sector increased sharply and its nonagricultural sector expanded, a downturn led to a reform attempt. Ghana, India, and Senegal have had similar experiences. But India's and Senegal's increased openness to international trade con-

tributed to reform readiness, and in Ghana a major expansion in the relative size of the public sector was the main contributory factor. It is interesting to observe that the inclusion of trade orientation and GDP per capita substantially affects the coefficients of the structural variables. The reason is that *RPI* and *SNA* are correlated with trade orientation and GDP per capita. Indeed, regressions of explanatory variables on each other based on our sample show that *RPI* is negatively (and significantly) related to both trade orientation and GDP per capita, while *SNA* is positively (and significantly) related to both variables. This confirms the common view that to reach higher levels of income, economies must become increasingly nonagricultural and open and must reduce their reliance on the public sector. It also supports our arguments that outward orientation is complementary to a large nonagricultural private sector and helps trigger reform when structural reform readiness is high.

The above discussions are not meant to give the impression that the results of our model are definitive. Certainly, the model can be refined by incorporating more explanatory variables, especially institutional characteristics and disaggregated structural measures. There is also a need to develop appropriate tests to deal with possible alternative hypotheses explaining the relationships we found in our empirical analysis. Nevertheless, the exercise shows that the model helps explain why reform did or did not occur in each situation, and establishes a practical way of assessing a country's readiness for reform. Moreover, when a country does not meet the preconditions for reform, the model shows how that may change as a result of changes in country characteristics.

III. Conclusions

Initiating reform in a country's public sector is a complex decision. It may be influenced by economic and political conditions, as well as other circumstances, such as the ideological biases and personalities of political leaders. Nonetheless, our theoretical and empirical analyses suggest that important generalizations based on a contracting framework could be made. By tracing the impact of a number of variables reflecting the conditions of the economy on the costs and benefits of renegotiating public enterprise policies, we presented evidence that reform is more likely under the following circumstances:

- *When the economy experiences an adverse shock.* Public enterprise rents decline, redistribution is less costly, and gains from reform may in fact increase.
- *The larger the size of the nonagricultural sector.* Public enterprises and the rest of the economy are more interlinked so that potential gains from reform are higher.
- *The larger the size of the public sector relative to the size of the economy.* The public sector is more likely to include activities for which the efficiency gains swamp the costs of redistribution.

Table 6. *Reform-Readiness Assessments in Sample Countries: Contributions of Each Variable to Reform-Readiness Function, z*

Country	Years	Constant	Ratio of public to total investment (RPI)[a]	Interaction term (RPIxSNA)	Share of nonagriculture in GDP (SNA)[a]	Structural reform readiness[b]	GDP per capita (thousands of 1978 U.S. dollars) (GDPPC)	Trade orientation (TO)	Reform readiness	Prob($y_i = 1$)
Downturn episodes without reform										
Argentina	1975–76	–42.36	21.81	–23.88	47.99	3.55	–6.60	0.00	–3.05	0.00
	1978	–42.36	22.95	–25.09	47.91	3.41	–6.78	0.00	–3.37	0.00
	1981–82	–42.36	22.69	–24.82	47.93	3.44	–6.85	1.09	–2.31	0.01
	1985	–42.36	14.26	–15.50	47.64	4.04	–6.53	1.09	–1.40	0.08
Ghana	1972	–42.36	26.53	–14.57	24.06	–6.33	–0.95	0.00	–7.28	0.00
	1975–76	–42.36	32.73	–17.50	23.43	–3.70	–0.93	0.00	–4.63	0.00
India	1971–72	–42.36	22.15	–14.67	29.02	–5.86	–0.44	0.00	–6.30	0.00
	1974	–42.36	24.24	–16.54	29.91	–4.76	–0.44	0.00	–5.19	0.00
	1976	–42.36	24.40	–16.86	30.29	–4.54	–0.44	1.09	–3.88	0.00
	1979	–42.36	25.15	–17.81	31.03	–3.99	–0.46	2.18	–2.27	0.01
Indonesia	1982	–42.36	25.22	–21.95	38.14	–0.95	–0.62	2.18	0.61	0.73
Korea, Rep. of	1980	–42.36	12.67	–11.86	41.00	–0.55	–3.01	3.28	–0.27	0.39
Malaysia	1975	–42.36	18.24	–15.34	36.85	–2.61	–2.02	3.28	–1.35	0.09
Nigeria	1972	–42.36	19.31	–11.49	26.07	–8.47	–0.68	0.00	–9.15	0.00
	1975	–42.36	27.14	–17.27	27.90	–4.60	–0.71	0.00	–5.32	0.00
	1978	–42.36	35.76	–25.38	31.11	–0.88	–0.77	0.00	–1.65	0.05
	1981–84	–42.36	39.00	–30.23	33.97	0.38	–0.77	0.00	–0.39	0.35
Pakistan	1971–72	–42.36	28.70	–21.53	32.88	–2.31	–0.40	2.18	–0.53	0.30
Senegal	1971	–42.36	32.03	–27.34	37.41	–0.26	–1.31	0.00	–1.57	0.06
	1973	–42.36	26.41	–23.17	38.46	–0.67	–1.31	0.00	–1.98	0.02
	1977–78	–42.36	28.66	–24.79	37.91	–0.58	–1.29	0.00	–1.87	0.03
	1980–81	–42.36	29.50	–25.79	38.32	–0.34	–1.28	0.00	–1.62	0.05
	1989	–42.36	19.04	–17.82	41.01	–0.13	–1.22	2.18	0.84	0.80
	1991	–42.36	18.68	–17.44	40.91	–0.21	–1.23	1.09	–0.34	0.37
Turkey	1989	–42.36	31.37	–30.39	42.45	1.07	–2.22	2.18	1.04	0.85

Venezuela	1971–72	–42.36	13.86	–15.68	49.58	5.40	–5.97	0.00	–0.57	0.28
	1974–75	–42.36	18.76	–21.24	49.62	4.78	–5.87	0.00	–1.09	0.14
	1978–85	–42.36	21.22	–24.05	49.66	4.47	–5.94	1.09	–0.38	0.35
Downturn episodes with reform										
Argentina	1988–90	–42.36	15.64	–17.01	47.66	3.93	–6.26	2.18	–0.14	0.44
Chile	1972–73	–42.36	28.21	–30.96	48.11	2.99	–2.62	1.09	1.46	0.93
	1975	–42.36	36.03	–39.72	48.32	2.26	–2.57	2.18	1.88	0.97
	1982–83	–42.36	18.71	–20.45	47.92	3.81	–2.67	2.18	3.32	1.00
Egypt	1992	–42.36	34.96	–33.25	41.68	1.03	–1.34	1.09	0.79	0.78
Ghana	1979–83	–42.36	44.89	–25.63	25.02	1.92	–0.82	0.00	1.10	0.86
India	1991	–42.36	26.44	–21.41	35.49	–1.84	–0.62	2.18	–0.28	0.39
Malaysia	1985–86	–42.36	26.71	–24.86	40.80	0.28	–3.28	3.28	0.28	0.61
Mexico	1982–83	–42.36	24.58	–26.67	47.54	3.10	–3.32	3.28	3.05	1.00
	1986	–42.36	23.10	–25.18	47.78	3.33	–3.53	3.28	3.08	1.00
	1988	–42.36	20.04	–21.79	47.66	3.55	–3.37	3.28	3.46	1.00
Nigeria	1986–87	–42.36	42.44	–34.26	35.38	1.20	–0.61	0.00	0.59	0.72
Pakistan	1993	–42.36	28.24	–25.04	38.86	–0.30	–0.64	3.28	2.33	0.99
Philippines	1983–85	–42.36	17.67	–16.15	40.05	–0.79	–1.21	2.18	0.18	0.57
	1991–92	–42.36	10.39	–9.50	40.06	–1.41	–1.09	2.18	–0.31	0.38
Senegal	1983–84	–42.36	21.50	–19.76	40.29	–0.34	–1.22	1.09	–0.46	0.32
Turkey	1979–80	–42.36	26.80	–25.34	41.44	0.54	–1.88	1.09	–0.25	0.40
	1991	–42.36	28.63	–28.03	42.90	1.14	–2.36	2.18	0.96	0.83
Venezuela	1989	–42.36	24.14	–27.04	49.08	3.82	–4.79	1.09	0.12	0.55
Reform episodes without downturn										
Indonesia	1986	–42.36	26.95	–23.97	38.98	–0.40	–0.72	3.28	2.16	0.98
Korea, Rep. of	1984	–42.36	14.12	–14.11	43.79	1.44	–3.61	3.28	1.10	0.86
Malaysia	1991	–42.36	22.51	–21.27	41.42	0.29	–3.73	3.28	–0.16	0.44
Pakistan	1977	–42.36	34.62	–27.27	34.52	–0.49	–0.40	2.18	1.30	0.90
	1990	–42.36	30.58	–26.85	38.48	–0.15	–0.59	3.28	2.53	0.99

a. Values represent the five-year average.

b. This is the value of $a_0 + a_1 SNA_t + a_2 RPI_t + a_3 RPI_t \times SNA_t$, which measures the net impact of structural variables on reform readiness, that is, the value of z_t.

Source: Authors' calculations.

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- *The smaller the (multiplicative) product of the relative size of the nonagricultural sector and the public sector.* In a nonagricultural economy, redistribution is more complex, and the informational obstacles to reform tend to be greater when most of the economy is under public ownership.
- *If the economy is more outward oriented.* Efficiency gains are likely to be larger when producers face more elastic demands in international markets and there is a larger constituency demanding reduction in the costs of public enterprise inefficiency.
- *If the per capita income is lower.* Controlling for other factors, high-income countries are likely to have either larger resources for redistribution or reduced public enterprise inefficiency as a result of implementing appropriate solutions in the past.

Despite its inevitable shortcomings, our analytical and empirical framework for analyzing the determinants of public enterprise reform yields a reasonably robust model with strong predictive powers. It also has some important policy implications. In particular, it suggests that foreign aid may dampen the impetus for reform. Foreign aid affects the reform decision in two ways. First, it alleviates the impact of an economic downturn, and second, it acts as a brake on the fall in per capita income. Consequently, even countries that might be structurally reform-ready may opt to postpone introducing reforms. But the model also suggests that trade liberalization may strengthen the impetus for reform. This implies that making trade liberalization a condition for receiving aid may neutralize the dampening effect of aid. Aid can also be directly conditioned on public enterprise reform measures. This of course requires that the imposition of conditionality be credible. The advantage of conditionality on trade liberalization rather than on public enterprise reform is that donors are more likely to have a direct interest in the maintenance of liberal trade and, thus, respond to violations of the conditions.

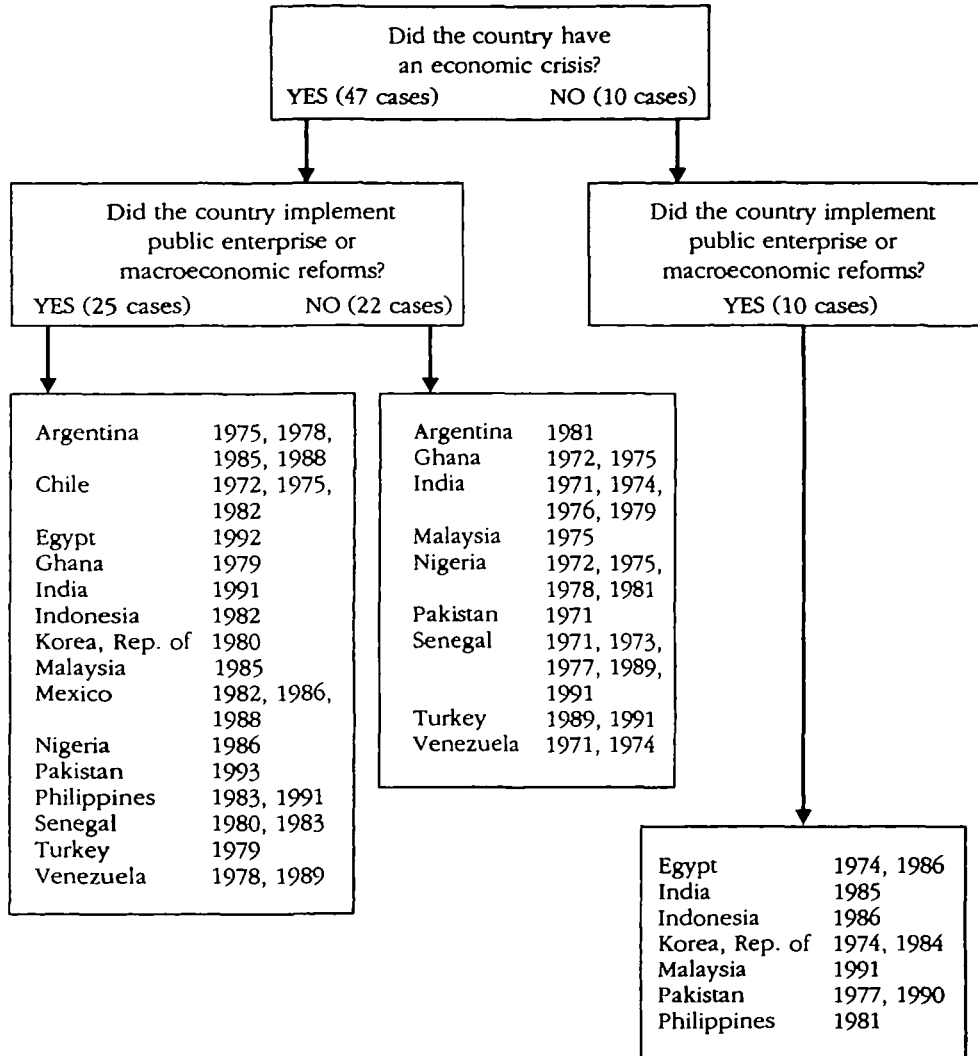## APPENDIX: SELECTION OF VARIABLES

We began this research with an extensive literature review. Perhaps the predominant theme that came up was that economic crises drove economic reforms. Hence we decided to follow the logic of the argument through the logic of our model and test the hypothesis. We needed a variable that represented a crisis—and chose to use a downturn in the growth rate. From a long list of variables that could conceivably affect the costs and benefits of undertaking public enterprise reform, we focused first on the division of activities between the public and private sectors. We argued that if a country has already reformed its public enterprise sector and cut it down in size, the country should have less to gain from further reform. When public enterprises are confined to a few enterprises with significant public good and natural monopoly elements, the economy is unlikely to gain a great deal from their reform since the size of the

sector is small and, moreover, these characteristics are likely to cause problems for any form of sectoral organization, public or private. To capture this effect, we chose the ratio of public to total investment *(RPI)*. The larger the public enterprise sector, the larger would be the ratio, and the larger the potential gains from reform.

But we recognized that the relationship may not be simple. From the privatization literature we knew that a developed domestic private sector can facilitate privatization through its financial resources, entrepreneurship, and ability to collect information and assess public enterprises that are sold. As the experience of Eastern European countries suggests, if the entire economy operates under public enterprises, knowledge and experience about how a market-oriented system (especially private firms) operates and information about who might benefit are scarce, and this scarcity makes reform difficult and costly. Therefore, we needed a measure of the part of the private sector that could be helpful for public enterprise reform. We thought an appropriate indicator was the relative size of the nonagricultural private sector, $(1 - RPI)SNA$, where *SNA* is the share of the nonagricultural sector in GDP. Our initial regressions indicated that both variables were significant and had positive coefficients.

Next, we focused on the informational attributes of the economy, which, as implied by our theoretical framework, could be an important determinant of the cost of undertaking a reform. We understood that privatization is only one type of public enterprise reform and concluded that the nonagricultural private sector may be particularly important for its informational role. We also needed a measure of informational requirements. Here we thought that an indicator of the economy's complexity, such as diversity of production, would be appropriate. *SNA* seemed to capture this notion and was included in the regression as a separate independent variable. We then saw that the three terms could be re-written as *RPI* and *SNA* with an interaction between the two signifying the role of information, hence the final form in which they are presented in the model. To these terms, we added the trade orientation variable to capture the need to enhance the competitiveness of the economy, as well as the government's commitment to market-oriented reforms. GDP per capita was introduced to control for whatever influence other country characteristics associated with the level of development might have. Finally, we toyed around with different measures of economic crisis, such as changes in the inflation rate and budget deficit, but our experimentation suggested that these were not very useful.

Figure A-1. *Public Enterprise/Macroeconomic Reform Responses to Economic Crisis*

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                    ┌──────────────────────────────────┐
                    │        Did the country have       │
                    │         an economic crisis?       │
                    │  YES (47 cases)      NO (10 cases) │
                    └──────────────────────────────────┘
```

Did the country implement public enterprise or macroeconomic reforms? YES (25 cases) NO (22 cases)	Did the country implement public enterprise or macroeconomic reforms? YES (10 cases)

Argentina	1975, 1978, 1985, 1988
Chile	1972, 1975, 1982
Egypt	1992
Ghana	1979
India	1991
Indonesia	1982
Korea, Rep. of	1980
Malaysia	1985
Mexico	1982, 1986, 1988
Nigeria	1986
Pakistan	1993
Philippines	1983, 1991
Senegal	1980, 1983
Turkey	1979
Venezuela	1978, 1989

Argentina	1981
Ghana	1972, 1975
India	1971, 1974, 1976, 1979
Malaysia	1975
Nigeria	1972, 1975, 1978, 1981
Pakistan	1971
Senegal	1971, 1973, 1977, 1989, 1991
Turkey	1989, 1991
Venezuela	1971, 1974

Egypt	1974, 1986
India	1985
Indonesia	1986
Korea, Rep. of	1974, 1984
Malaysia	1991
Pakistan	1977, 1990
Philippines	1981

Source: World Bank data; Bruton (1992); Gyimah-Boadi (1993); Haggard and Webb (1994); Leith and Lofchie (1993); Means (1991); Sundaram (1993); Wade (1990); Waterbury (1993); Williamson (1994).

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