



Private Infrastructure, Public Risk

Whether developing countries reap the full benefits of privatizing infrastructure will depend on how risks are allocated. If governments assume risks that should be borne by investors, they may reduce incentives for efficiency and incur significant liabilities. But steps can be taken to decrease risk and improve the measurement and budgeting of guarantees.

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FACING budgetary constraints and recognizing their inability to provide infrastructure services efficiently, governments in many developing countries have opened their infrastructure sectors to private investors. The stock of private foreign financing for infrastructure projects in developing countries grew from \$0.1 billion in 1988 to \$20.3 billion in 1996. The private sector is now involved in areas once considered the preserve of governments—such as power, gas, telecommunications, water, roads, railroads, ports, and airports—in more than a hundred countries.

But infrastructure projects are often risky: they tend to have long gestation periods, and providers of infrastructure services are typically subject to political pressures to keep their prices low. Therefore, investors often request, and sometimes receive, some form of government guarantee—which may be backed by a multilateral institution—against such risks as changes in the political or regulatory climate, breach of contract by state-owned companies, cost overruns, low demand, or fluctuations in exchange and interest rates. For example, to attract private investment in power generation, the governments of Pakistan and the Philippines have

agreed to honor the obligations of their public utility companies to purchase power at a predetermined price regardless of demand. When Spain's highway network was being built in the 1960s and 1970s, the Spanish government guaranteed 75 percent of the foreign loans and assumed the full exchange rate risk—a measure that eventually cost the Spanish taxpayers \$2.7 billion. In the recent El Cortijo-El Vino toll road project in Colombia, the Colombian government agreed to reimburse the concessionaire if traffic was less than 90 percent of a specified level. It also guaranteed a minimum revenue when it awarded a build-operate-transfer contract for a new runway at Bogotá's El Dorado airport.

Such guarantees threaten to undermine the benefits of privatization. First, if a government assumes the risk of project failure—for example, by guaranteeing demand for the services to be provided—private investors have little incentive to choose financially sound projects and to manage them efficiently. Second, guarantees may impose excessive costs on the host country's taxpayers or consumers. Because a government's guarantees rarely show up in its accounts or budgets, it may be willing to assume risks that should be borne by

investors and may not even know the extent of its exposure. At worst, the issuance of guarantees could lead to a fiscal crisis by encouraging investors to take excessive risks (“heads I win, tails the government loses”). To encourage private investment in infrastructure without incurring liabilities that could jeopardize their future budgets, governments should reduce project risks and improve the way they measure and budget the guarantees they must provide.

Reducing project risks

Governments are often forced to guarantee projects because of shortcomings in actual or anticipated policies. Private investors are more willing to bear project risk without demanding guarantees in countries with strong policies. For example, stable macroeconomic policies reduce the likelihood of large changes in exchange and interest rates, thereby making it less necessary for governments to provide exchange rate guarantees or to discontinue currency convertibility or transferability. Similarly, the regular disclosure of timely and reliable information on the state of the economy and government finances makes it easier for investors to forecast future revenues.

Firms are less likely to insist on guarantees when investing in a country with a good regulatory framework, nonpolitical regulatory agencies, and a strong and independent judiciary. Firms investing in the United States, for example, do not request government guarantees against opportunistic government behavior because they are confident that the courts will protect them in the event of expropriation or unjust regulatory changes that could result in property losses. A firm that operates in a competitive environment or in one where tariff regulations are enforced by an independent regulatory agency is less likely to insist on guarantees on tariffs. By the same token, by allowing recourse to international arbitration, countries can allay investors’ fears of being mistreated by local courts that may not be independent.

Developed countries rarely find it necessary to provide government guarantees for infrastructure projects. This is also the case for several developing countries that have undertaken needed reforms. For example, there is considerable private investment without government guarantees in Argentina’s power industry, which has been restructured and privatized, as well as in Chile’s telecommunications, power, and gas sectors.

Good policies cannot be implemented overnight, however, and, in many countries, private investment is unlikely to be forthcoming unless governments assume certain risks or provide subsidies. When should governments agree to bear the risks of infrastructure projects, and which risks should they assume? Are government guarantees preferable to budgetary subsidies?

Guidelines for risk allocation

Other things being equal, risks should be allocated to agents who have the most influence or control over risky outcomes

and who can bear the risks at the lowest cost (because they are the least risk averse, can most easily insure or hedge against the risks, or can spread the risks among many people). However, these two factors often push in different directions—the group or organization that has the most control over the outcome may not be the one most capable of bearing the risk. Other factors to consider are whether the party assuming a risk has an incentive to reduce the risk and what alternatives there are to a government guarantee.

Political and regulatory risks. Expropriation, currency inconvertibility, and nontransferability are directly under the government’s control; thus, it makes sense for the government to assume these three risks. However, the assumption of regulatory risks—that is, the government promises not to change the laws and regulations affecting the investment project (or to compensate investors in the event that it does change them)—is trickier. Although governments can control regulatory risks, it is sometimes desirable for them to change laws in ways that adversely affect investment projects. It may be beneficial to increase taxes to fund needed public investment, for example, or to adopt regulations aimed at mitigating newly recognized environmental problems.

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Regulatory risks are best handled on a case-by-case basis, using the principles discussed above as guidelines.

Quasi-commercial risks. When an investor contracts with public suppliers or purchasers that may renege on contractual commitments, whether or not the government should assume the risk depends on the degree to which it can influence the behavior of the public entities involved. If a utility has full autonomy, a government guarantee makes little sense. But if the performance of a utility is controlled by the government, a government guarantee may be desirable. Even so, increasing the agency’s autonomy by privatizing it is preferable.

Construction costs and demand. In road, bridge, and tunnel projects, governments are often asked to bear the risks associated with construction costs and uncertainty about future demand for the services to be provided. The rationale for their doing so is weak, however. The concessionaire usually has considerably more control than the government over construction costs. And, even though government policies can influence demand, assigning demand risk to the government reduces investors’ incentives to screen projects carefully. But a government can reduce demand risk for certain kinds of infrastructure projects. Instead of auctioning off the right to operate the service for a fixed period of time, as is typical, the term of the operating concession could be allowed to vary with demand: if demand is higher than

expected, the concession will be shorter; if demand is lower, the concession will be longer. The United Kingdom has used this method for operating bridges. An ingenious variant of this method is to award the concession to the bidder seeking the lowest present value of revenue, which can be calculated in advance using a discount rate specified by the government. Such a concession ends when the concessionaire's revenue reaches the specified present value. The concessionaire still bears some demand risk—if demand is too low, revenue may never reach the target value—but the risk is greatly reduced.

Exchange and interest rates. Because many infrastructure investments are funded by foreign-currency-denominated loans made at floating interest rates, profits are highly sensitive to changes in exchange and interest rates. At first glance, it may appear that governments should assume the risks associated with these exposures because they have some control over exchange and interest rates, and, if they take on these risks, they will have an incentive to follow stable macroeconomic policies. There are a number of reasons, however, why investors should bear exchange and interest rate risks.

First, government guarantees may encourage investors to take large exposures to exchange and interest rate risks. Then, if a currency depreciates, they could blame the government for their losses instead of recognizing the danger of excessive borrowing in foreign currencies. Second, exchange rate guarantees may have an adverse influence on government behavior. For example, they might discourage a government from allowing a needed depreciation of the domestic currency following a terms of trade shock. Third, many governments—and the taxpayers who support them—may already be exposed to the risks associated with exchange and interest rate shocks. An adverse terms of trade shock, for example, might lead to both a currency depreciation and a decline in incomes, forcing the government to compensate investors just as its tax base is shrinking. Finally, in the absence of a government guarantee, the private sector might have more incentive to manage exchange rate risk. For example, in the case of Spain's road projects described above, investors could have hedged the risk for much less than the \$2.7 billion the guarantee cost Spanish taxpayers.

Measuring and budgeting guarantees

To make informed decisions about which risks it should assume, a government needs to consider how it can measure risks and incorporate them in its accounts and budgets. Otherwise, the government may be courting financial disaster.

Identifying and listing guarantees. The first and simplest step that governments can take to improve the monitoring and management of risks is to compile and publish a list of their contingent liabilities and the maximum amounts they stand to lose. The New Zealand government presents this information in its statement of contingent liabilities published on the Internet (<http://www.treasury.govt.nz>).

Calculating expected losses. While helpful, the listing of guarantees and possible maximum losses does not indicate

what losses a government should expect. For example, if the government guarantees a \$10 million payment by one of its state-owned enterprises and there is a 10 percent chance the enterprise will default (and a 90 percent chance of full payment), the expected cost to the government of the guarantee is \$1 million. In more realistic cases, it is more difficult to calculate the expected cost. There may be more than two possible outcomes, and estimating the probability of any given outcome may be extremely difficult. Nevertheless, the calculation of expected losses is sometimes feasible using relatively straightforward techniques. In cases where a government has issued a large number of similar guarantees for many years and has recorded information on defaults, the expected cost of the guarantees can be estimated actuarially in the same way as, say, car insurance premiums are calculated. In other cases, econometric modeling or simulating outcomes based on multiple scenarios with different probabilities may be feasible.

The techniques developed over the past twenty-five years to value financial derivatives (such as options, futures, and swaps) can also be used to value guarantees and contingent liabilities. The value of a guarantee can be used to calculate the government's expected loss. Extending a credit guarantee, for example, is equivalent to the government's selling—at zero price—a put option to the lender. This option can be valued using option-pricing techniques. The valuation of some guarantees is difficult, however, requiring the skills of financial specialists. Also, the feasibility of timely, reliable, and cost-effective valuation has not yet been widely tested. But the possibilities are not merely theoretical—guarantees have already been valued using option-pricing techniques in both Colombia and the United States.

Valuing a government's guarantees and other contingent liabilities has important advantages over simply noting maximum exposures. By calculating the expected cost of guarantees, the government and its observers can more easily compare guarantees with cash subsidies. When guarantees are not valued, a government may choose to provide a guarantee instead of a subsidy even when the former is more costly, because the costs of the guarantee are hidden and may be borne by a future administration. When guarantees are valued, decisions are more likely to be made on the basis of real, rather than apparent, costs and benefits.

Incorporating expected losses in accounts and budgets. Once expected losses can be reliably calculated, they should be incorporated in government accounts and budgets. Most governments' budgets and accounts are cash-based. Although it is both possible and desirable to note guarantees and other noncash items in what are essentially cash-based budgets and accounts, fully incorporating them requires a shift away from cash-based systems. With standard accrual accounts and budgets, many noncash expenditures show up in a government's budgets and operating statements, and the government has no fiscal incentive to prefer these noncash expenditures to cash expenditures. But although standard accrual accounting discloses guarantees, it records them as expenses only if the

loss is considered probable and can be quantified. From an economic point of view, drawing a distinction between probable and improbable losses is not always useful; a 10 percent chance of losing \$10 million is worse than a 90 percent chance of losing \$1 million. More useful is an estimation of the present value of the expected loss arising from the contingent liability.

An ideal system of accounting and budgeting would record the expected present value of all contracts into which the government entered. Under such a system, a government would have no fiscal incentives to issue guarantees instead of giving subsidies of equivalent value, because both would show up as expenditures affecting the deficit and both would require appropriation by the legislature. While full-present-value accounting and budgeting is not feasible, the adoption of accrual accounting—and the systematic recording of present values where they are significant and quantifiable, even when losses are not probable—appears to be a crucial step toward the better management of guarantees.

Conclusion

Whether the potential benefits of private provision of infrastructure are fully realized depends on how governments



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allocate the risks. Governments can increase benefits by assuming risks they can control, but they should normally avoid bearing other risks. That way, investors face strong incentives to select projects carefully and run them efficiently. In many private infrastructure projects, however, governments have assumed risks that should have been borne by investors. A government can take two steps to improve the environment for risk allocation. It can reduce the risks to investors by pursuing stable macroeconomic policies, disclosing information, implementing good laws and regulations, and strengthening its judiciary. And it can improve the way it measures, budgets, and accounts for the guarantees it does provide, so that the costs and risks are clear at the time the guarantees are issued—rather than later, when the government has to pay up. **F&D**

Suggestion for further reading:

Timothy Irwin, Michael Klein, Guillermo E. Perry, and Mateen Thobani, eds., 1997, *Dealing with Public Risk in Private Infrastructure, World Bank Latin American and Caribbean Studies: Viewpoints* (Washington: World Bank).

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