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## Analytical Literature on Crisis Resolution

The debate on emerging-market crises resembles the debate on car accidents. Do car accidents occur because of bad luck, because of a random accident causing pile-ups on the highway, or because of reckless driving? Does the existence of car insurance encourage bad driving? If so, should we then ban car insurance or somehow limit it? Once an accident occurs, should we avoid sending an ambulance to help a reckless driver or perhaps just provide less medical insurance to strengthen the incentives for others to drive safely? Similarly, are emerging-market crises the product of bad luck (unexpected shocks), accidents in other emerging economies that cause the financial equivalent of a pile-up (contagion), or reckless policies in debtor countries and reckless lending by their creditors? Do IMF bailouts reduce the incentives for strong policies in emerging economies and sound investment decisions by creditors? If so, should the size and frequency of IMF bailouts be limited to encourage borrowers and lenders to adopt more prudent policies? Once a crisis occurs, how should policymakers resolve it? What should be the right mix of official support (bailouts), policy conditionality (adjustment), and coordinated rollovers or debt restructurings (bail-ins)?

This chapter reviews the analytical models developed to answer these questions. Most models address one of the two core debates on crisis resolution: Does a debt restructuring need to be painful in order to create incentives for a country to pay rather than walk away from its debts, or do barriers to a restructuring just impose unwelcome costs when an unexpected shock makes a restructuring unavoidable? Does an international

### Box 3.1 Defining moral hazard

Adverse selection and moral hazard are the two main market failures associated with the presence of insurance. Insurance companies worry that their client base will be biased toward those most at risk: A person who knows that he or she is sick has a particularly strong incentive to buy health insurance. This is the problem of *adverse selection*. Insurance companies also worry about that purchasing insurance will change the incentives of their clients: Car insurance can lead to more reckless driving, thus increasing the amount the insurance company has to pay out; fire insurance can lead homeowners to take fewer precautions. The risk that insurance will reduce incentives for prudent behavior by lowering expected losses is called *moral hazard*. Both adverse selection and moral hazard derive from *asymmetric information* (the insurer cannot fully observe the nature and behavior of the insured) and give rise to potential market failures—concerns about adverse selection and moral hazard can prevent mutually beneficial trade and contractual agreements from taking place.

Moral hazard enters the debate over how to respond to international financial crises in at least two ways. First, a lender has trouble monitoring how a borrower spends borrowed funds after making the loan, just as an insurance company has difficulty monitoring the behavior of its clients after it writes an insurance policy. The risk that a borrower will take out a loan that it has no intention of repaying is often called debtor moral hazard—it is analogous to a homeowner buying insurance and then setting fire to his home to collect on the policy. Debtor moral hazard arises in a game with just two parties—the borrower and the lender. A third party is not needed. Second, IMF lending to protect against the risk of a run can be thought of as a form of insurance: It protects both the borrower and its creditors from the risk of a run leading to an avoidable default. The implicit insurance associated with IMF lending, like the implicit insurance that emergency lending by domestic central banks create, therefore potentially could change the incentives of both the country, which is protected against the risk of running out of funds (debtor moral hazard), and its creditors, who are protected against the risk of a default (creditor moral hazard).

In practice, the IMF has a much greater capacity to assure that its lending does not distort the debtor's incentives than it does to assure that its lending does not distort the creditors' incentives. So long as IMF loans have to be repaid in full, a debtor that takes such a loan to repay its private debts is not reducing its debt burden or the amount of effort that it will ultimately have to make to repay its debts. Moreover, IMF loans are conditional on the debtor making the effort to assure repayment to the IMF (and in most cases to other creditors as well).<sup>1</sup> The availability of an international lender might lead

*(box 3.1 continues next page)*

source of emergency liquidity help stop the international analogue to a bank run from devastating basically sound economies, or does it lead countries to adopt poor policies and lenders to make imprudent loans in the anticipation of a bailout?

Many models lend themselves to extreme conclusions. Models that show how liquidity runs cause crises often conclude that the IMF needs to be transformed into a true international lender of last resort that can supply liquidity in unlimited quantities. Models that focus on the risk that countries and their creditors act recklessly because of the IMF's insurance against a default (the moral hazard problem) often conclude that the IMF's capacity to lend large sums should be curtailed, if not eliminated

### **Box 3.1** *(continued)*

the debtor to delay making the effort to service its debts or to rely more on short-term debt than it otherwise would, but it should not make it easier for the debtor to take out debts that it has no intention of repaying.

The presence of “liquidity” insurance is more likely to influence creditors’ decisions: So long as creditors expect to be fully paid, no matter what, through IMF lending, they will be more willing than they should be to lend to a debtor pursuing risky policies. Consequently, the availability of “liquidity insurance” may make creditors more willing to finance a debtor that has too much short-term debt and is therefore vulnerable to a run: investing in high-risk projects that could also generate large losses or not currently running the kind of fiscal policy that provides strong assurances of its future payment capacity. Obviously, debtor and creditor moral hazard are interlinked: Without reckless lending by creditors, the debtor would not be able to obtain the financing needed to pursue reckless policies.

Finally, it is worth distinguishing between international moral hazard—the risk that IMF lending will reduce incentives for good debtor policy and for international creditors to insist that sovereign borrowers follow sound policies or to lend too freely to a country’s banks—and domestic moral hazard, which is created by the various types of insurance that most sovereign governments provide to the domestic financial system. The two can be related: In some cases, international support may be necessary for the debtor country’s government to be able to honor its domestic guarantees.<sup>2</sup> But domestic moral hazard is also possible and pervasive in the absence of any international support. For example, taxpayers can be stuck with large losses if the expectation that taxpayers will protect depositors from all losses leads depositors to keep their funds in banks that are making reckless loans.

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1. Of course, this presumes that the IMF can enforce the debtor’s promise to change its policies. In practice, this is an issue, and the IMF’s main stick is refusing to provide the balance of a tranching loan or make a new one.

2. Even when governments have declared *ex ante* that they will not guarantee private claims, they are often nonetheless forced to take responsibility when the time comes. Chile in the early 1980s was a case in point. Korea’s guarantee of cross-border bank liabilities in late 1997 is another example from the Asian crisis. Turkey is a more recent case: During the November–December 2000 turmoil in its markets, it decided to guarantee all bank liabilities, including the cross-border ones.

(see box 3.1 on moral hazard). It is important to understand these perspectives—and the key assumptions that lead to these extreme conclusions. But we believe that neither the evidence nor a close read of the literature supports such extreme remedies. Rather, policymakers need to find the right trade-off between the different considerations in various canonical analytical models.

Consequently, we are drawn to models that introduce ways of evaluating trade-offs rather than those that push toward extreme solutions. We don’t think the theoretical case for either abolishing the IMF to eliminate the risk of moral hazard or making the IMF a true lender of last resort to eliminate the risk of runs trumps the pragmatic case for providing partial

insurance that can stop some but not all runs without providing so much protection as to create incentives for bad policies. The need for insurance against the risk of a run deepening a crisis is real, even if that risk cannot be divorced from a country's policies. The chance of runs devastating sound economies is slim. But the risk of runs pushing a country willing to make the reforms needed to assure its medium-term sustainability into immediate default is real. The advantage of an international source of emergency liquidity, though, has to be balanced against the risk of the presence of this "insurance" against a deeper crisis leading countries to follow poorer policies in the expectation of a bailout. This suggests that the optimal policy response is state contingent: The appropriate size and form of bailouts or bail-ins depends on whether a country is closer to being insolvent rather than just illiquid.

Similarly, an efficient regime for responding to crises should make default and the subsequent debt restructuring neither too easy nor too costly. On one hand, debt contracts must be difficult to renegotiate to create an incentive for a sovereign borrower to make an effort to pay and to avoid "opportunistic defaults." On the other hand, restructuring should not be so costly that difficulties reaching agreement with creditors prevent a country from taking needed action to address a problem marked by true "inability to pay," or add excessively to the cost of unavoidable restructurings.

This chapter is organized into four broad sections. The first summarizes four competing views on the fundamental causes of debt crises in emerging economies. The second examines models that imagine a world without the IMF or similar source of emergency financing. These models help understand how the difficulties of enforcing a contract with a sovereign shape international debt markets. The third section introduces models that add a third party—most easily conceptualized as the IMF—to the equation, whether to sanction restructurings that stem from a country's inability to pay or to provide emergency liquidity to prevent runs or both. The fourth section examines whether the IMF's lending practices that keep its insurance "partial" also crimp its effectiveness.

## Four Approaches to Crisis Resolution

Four major conceptual lenses have been used to analyze emerging-market crises. Each of these lenses offers a different interpretation of core policy challenges in a crisis.

- The first set of models suggests that a country may not be able to service its debts in full and on time because of pure "inability to pay." Adverse shocks—a negative terms-of-trade shock like a fall in the price of oil or of the country's other exports—can leave a country that is making a serious effort to pay unable to do so. Alternatively, a country

may have borrowed for investments with lower-than-expected returns, thus leading to low economic growth. If insolvency stems from “bad luck,” the process for restructuring the country’s debt to reduce it to a level consistent with its real ability to pay should be fast and orderly. Unnecessary liquidation costs need not be added to the unavoidable costs deriving from lower-than-expected returns. It follows from this perspective that legal reform that makes restructuring less costly is good for both the debtor and its creditors.

- The second set emphasizes how the difficulty of writing enforceable contracts on a sovereign government creates a potential “unwillingness to pay” problem. A sovereign that has the ability to pay may refuse to do so and default “opportunistically.” This is a particular risk with sovereign borrowing because a sovereign borrower, unlike a firm, enjoys considerable effective protection from litigation, as will be discussed in chapter 8. Moreover, any country could in principle reduce its consumption and spending to mobilize the resources to service its external debts; thus all defaults are strategic or opportunistic. The core policy challenge, from this point of view, is to make sure that a sovereign debt restructuring is costly so that a sovereign has an incentive to honor its debts. It follows that legal reform—such as an international bankruptcy court—or even IMF-sanctioned debt suspensions that make restructuring less costly would be a mistake. Such reforms would reduce capital flows to emerging markets and increase the cost of borrowing for debtors who intend to pay.
- A third set of models emphasizes the risk of a run on the sovereign’s or country’s debt. It emphasizes the similarity between emerging-market economies and banks, as both tend to finance long-term investments with shorter-term borrowing, and highlights the risk that a self-fulfilling run triggered by investors’ panic could drive a solvent country into default. The core policy challenge, from this point of view, is to prevent a run from forcing a solvent country into an avoidable bankruptcy, as the “bankruptcy costs” of default disrupt a basically successful economy. It follows that steps to transform the IMF into an international lender of last resort (ILOLR) able to lend in sufficient quantities to stop a run could help avoid crises.<sup>1</sup>
- A fourth set emphasizes how “insurance” can create incentives for taking on too much risk. IMF lending is a form of insurance and can en-

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1. Some have suggested that IMF-sanctioned payment standstills could offer an equally effective solution to a run. However, a payment standstill is only equivalent to a lender of last resort if there are no doubts about the debtor’s solvency, and creditors are not risk averse. In practice, those who worry most about the risk of a run tend to emphasize the need for an international lender of last resort, while those who worry most about moral hazard advocate IMF-sanctioned payment standstills.

courage reckless policies in emerging economies (debtor moral hazard) and reckless lending by creditors in industrial countries (creditor moral hazard). Just as the literature on sovereign runs draws heavily on bank runs, the literature on sovereign moral hazard draws heavily on models that highlight the risk of domestic deposit insurance leading depositors to keep their money in banks that gamble on high-risk, high-reward investments.<sup>2</sup> The risk of moral hazard implies that even effective efforts to reduce the cost of a crisis may be inefficient if they distort incentives in ways that lead others to get into trouble.

Finally, some approaches combine different lenses to develop unique explanations for sovereign debt crises. For example, the standard model of external debt considers international borrowing as beneficial: Such borrowing finances investment at home and helps smooth consumption in the face of temporary shocks. However, some authors suggest that international borrowing *by governments* may be more bad than good. The ability to borrow from abroad will exacerbate a political bias toward budget deficits and an intrinsic tendency to accumulate too much debt. In the standard model, the inability to enforce debt contracts leads to too little international borrowing. However, in models with a political bias toward deficits, existing debt contracts provide the sovereign with access to too much international credit. Overborrowing either leads to a costly default or simply creates an excessive debt burden that crimps the economy's potential and leaves it vulnerable to external shocks.

The policy recommendations that emerge from these different lenses are often in conflict, and not just in obvious ways. For example, those concerned about the risk that an ILOLR presence could create moral hazard in potential crisis countries often suggest that the solution is to make payments suspensions easier and less costly. The country's ability to bail in its creditors in the event of a run then substitutes for an international lender bailing the country out. Yet while making debt suspensions easier may reduce the moral hazard distortions that expectations of a bailout create, it may exacerbate the "unwillingness to pay" problem—creating another type of moral hazard.

Each of these models help understand the choices the official sector faces in a crisis, yet no one model offers a complete picture of the policy options. If sovereign default were too easy, it would be too frequent—but there is little evidence that sovereigns currently find default too easy and too painless and thus opt for it too quickly. If sovereign default is too costly and painful, both debtors and creditors may lose value relative to a regime where debts can be renegotiated with limited costs when a debtor

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2. Thus, two conceptually separate types of moral hazard matter in sovereign debt—one exists even in the absence of an ILOLR and is the pure "unwillingness to pay" problem; the other is the distortions in debtor (and creditor) behavior that bailout expectations generate.

is unable to pay.<sup>3</sup> If the risk of opportunistic default stops beneficial international capital flows, steps that make default easier lead to further unwanted falls in capital flows. But if access to international borrowing fuels internal biases—like a tendency to run excessive budget deficits—making default easier may stop governments from borrowing funds they never should be borrowing in the first place.

A crisis country's ability to borrow from the IMF to avoid a bad outcome is a form of insurance that risks generating moral hazard. But this risk balances against the risk of the failure to provide emergency liquidity resulting in a "run," which would assure a disruptive default. Such a default is not only damaging to the crisis country but also can spill over and damage other economies. Moreover, the risk of a run can undermine incentives for reform if policymakers conclude that a run will lead to default well before the country starts receiving credit for any policy reforms.<sup>4</sup> Not providing any insurance avoids the risk of moral hazard but can be costly in other ways. Moreover, there are ways, other than getting rid of all insurance, to limit the risk of an insurance policy distorting incentives.

## Crisis Resolution in IMF's Absence

Most attempts to analyze a world without the IMF look at motives and incentives of the two main players in the international debt market: a debtor country that borrows abroad and its international creditors. Most models implicitly assume that the borrower is a sovereign government and that it only has international creditors—for simplicity's sake, domestic residents are assumed not to participate in the international debt market. Chapters 6 and 7 discuss the issues created in the more realistic case where a sovereign borrows from both its own citizens and foreigners and may assign different priority to repayment of domestic and external debt.<sup>5</sup>

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3. This need to reduce bankruptcy cost is behind proposals for legal reform such as an international bankruptcy court for sovereigns (the IMF's sovereign debt restructuring mechanism [SDRM] proposal) or a contractual approach to debt restructuring (see Eichengreen and Portes [1995] for an early argument in favor of such collective action clauses). This debate on statutory versus contractual approaches to debt restructuring will be discussed in detail in chapter 8.

4. Also, as discussed later, IMF support has an international public good component: It may limit disruptive contagion and may induce the appropriate type of policy adjustment for the country and the system as a whole.

5. Private-sector agents of the debtor country that are also borrowing from private international creditors could also be added. But, for the time being, the important issues related to the debt-servicing difficulties of private-sector borrowers are not discussed. Some of the analysis on how to address liquidity and fundamental runs on a sovereign also applies to a cross-border run on domestic banks (and even domestic bank runs), since both a bail-in and a bailout can resolve such a run. A well-established domestic bankruptcy regime provides

## Debt Problems and Their Resolution

### Does Inability or Unwillingness to Pay Cause Crises?

Why does a sovereign borrower experience difficulty paying its international debts? One broad answer is bad external shocks: These shocks are exogenous—that is, they are the product of changes in the domestic or international environment that are beyond the control of the sovereign borrower. Bad luck that lowers the ex post return on investments made with borrowed funds and leads to low growth and unexpected shocks to the borrowers' terms of trade are both examples of bad "states of nature" that can make a country unable to service its debts. For example, a government that depends on taxing oil exports to generate the revenue it needs to pay its external debt may experience difficulties when the oil price falls.

Another broad answer is unwillingness to pay. A sovereign may opportunistically default both in good and bad states of the world. When economic conditions in a country are good, the sovereign may decide that the conditions would be even better if it did not have to repay its external creditors. When economic conditions are bad, the sovereign may decide it can make economic conditions somewhat better if it did not repay its external debt. Or perhaps a sovereign debtor uses a foreign loan to finance consumption rather than investment and then decides to default when weak economic performance makes the cost of servicing the debt higher than expected.

This unwillingness to pay is a general problem associated with all lending. After a loan is made, the creditor cannot control the debtor's actions and may have difficulty monitoring the borrower's behavior to assure that the loan is being used for its intended purpose. However, theorists of sovereign borrowing and lending often argue that the risk of opportunistic default is higher in the sovereign context because foreign creditors have few effective remedies against a sovereign that chooses not to honor its debt contracts. If creditors cannot protect themselves against the risk of opportunistic default, cross-border lending would be too little: Creditors would have no way of knowing ex ante whether a debtor intended to pay and thus would be unwilling to lend to some creditworthy borrowers. The difficulty in taking legal action against a sovereign is sometimes characterized as a product of the legal doctrine of sovereign immunity but, as will be discussed in chapter 8, it is a more a product of the difficulty of en-

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the basic framework for addressing the debt problems of private firms. But there are several caveats: (1) Often debtor governments assume/guarantee the external liabilities of private borrowers, like in the case of banks in Asia or Turkey most recently; and (2) the policy decision of the government can directly (capital controls) and indirectly (tax levies, regulations, and weak policies) affect private debtors' ability to pay. This is what Tirole (2002) refers to as the dual-agency problem. Resolving a crisis triggered by problems of private-sector debtors is discussed in the last section of this chapter and in more detail in chapter 6.

forcing a judgment against a sovereign. Most sovereigns are not immune from litigation, but it is still hard to use litigation to force payment.<sup>6</sup>

Consequently, the central paradox addressed in much of the literature on sovereign debt is why any sovereign would ever want to service its debts once it has borrowed, given the difficulty in seizing its assets if the sovereign default breaks the debt contract.<sup>7</sup> This literature (starting with Eaton and Gersovitz [1981], Sachs [1984], and surveyed in Eaton and Fernandez [1995]) identified two potential reasons why sovereign debtors have an incentive to pay, and thus creditors would have an incentive to lend. The first is “reputational” costs. A sovereign may be better off in the short run if it opts not to pay, but it loses in the long run because creditors won’t lend to it again if it defaults (i.e., the sovereign is cut off from international capital markets as a punishment for default). The second is the “punishment” costs that creditors can impose immediately after a default. Michael Dooley and Sujata Verma (2001) emphasize the loss of output deriving from default; others postulate that the cost comes from trade sanctions. Thus, penalties are necessary to sustain international lending to emerging markets when lenders cannot distinguish between default due to inability to pay and default due to unwillingness to pay (opportunistic default).<sup>8</sup>

A key question that emerges from the 1980s literature on sovereign debt crises is whether the reputational costs of default (cut off from international capital markets) are large enough to create a world where opportunistic sovereign defaults do not dominate. The answer is a qualified yes: There are sufficient incentives for good behavior to make it unattractive, in theory, for a sovereign with the ability to pay to refuse to do so. The precise combination of costs needed, however, remains a subject of dispute. Jeremy Bulow and Kenneth Rogoff (1989a) argued that “reputation” alone

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6. Through the 1930s, a sovereign benefited from complete immunity from litigation, though not complete immunity from “gunboat diplomacy.” After World War II, the doctrine of sovereign immunity started to erode, and a sovereign no longer enjoys absolute immunity in its commercial activities. Sovereigns that borrow abroad usually waive sovereign immunity. However, it remains difficult to enforce a judgment against a sovereign even if it waives formal immunity (Buchheit 2000b).

7. Indeed the sovereign debt literature starts from the logical assumption that defaults are always due to unwillingness rather than inability to pay. In fact, with enough adjustment (cut in consumption and/or increase in taxes), any sovereign borrower should be able in principle to service its debts. Thus, inability to pay is effectively a form of unwillingness to pay: When the costs of servicing the debt (in terms of reduction in consumption and increased effort to produce) are greater than the benefits, a sovereign will decide to default rather than exert the effort to service the debt. See Sachs and Cooper (1985).

8. In the optimal contract, default sanctions are not always imposed. Rather, the sanctions are imposed only when there is an opportunistic default arising from an unwillingness to pay, while sanctions are waived if there is a true inability to pay (whether from a run that requires a rescheduling or from a shock that requires debt reduction). If lenders cannot distinguish between the two with a high degree of certainty, they will impose sanctions in all cases, and the maximum sustainable amount of foreign debt is lower.

was insufficient to sustain incentives for payment: The costs of being cut off from international borrowing are not sufficient to make repayment more attractive than borrowing the funds, putting them into an international interest-bearing asset, and using the invested funds as a buffer against future shocks. Other—trade or output—costs of default are needed to prevent opportunistic default as long as the defaulter is not cut off from international lending (rather than borrowing) after default.<sup>9</sup> The subsequent literature on whether being cut off from capital markets is sufficient to support an equilibrium without opportunistic default is vast: Some recent contributions come to different conclusions than Bulow and Rogoff (1989a) and suggest that reputation can be a key incentive for payment (Kletzer and Wright 2000; Wright 2001a, 2001b).

If the value a debtor places on its reputation for paying is not enough to sustain incentives to pay, breaking debt contracts needs to be costly in order to give rise to the “punishment costs” to deter opportunistic default. Many (like Dooley 2000) who are concerned about reforms that would make sovereign default too easy stress this need: They caution that any change that gives a sovereign more legal protection could enhance the temptation to default. Making the restructuring process more orderly, and by implication less painful, would result in less lending to emerging economies—and penalize emerging economies that do intend to pay with higher borrowing costs. Ironically, if default is too easy, capital flows to emerging markets could shrink, thus hurting debtors. Consequently, contracts need to be rigid, and change in payment terms should be difficult and costly.

On one hand, debt restructuring must be difficult enough to make an opportunistic default costly. On the other, rigid contracts create problems if a shock—a sharp fall in the price of the debtor’s exports or a run that requires the debtor to suspend payments—leaves the debtor truly unable to pay. In these latter cases, the ability to restructure the debt contract *ex post* is clearly advantageous to all: The debtor truly cannot pay, and any added costs associated with default and restructuring hurt both the debtor and its creditors. But the ability to change a contract *ex post* in the event of bad luck usually requires putting mechanisms in place *ex ante* that would make all debt renegotiations less costly. Consequently, procedures designed to make it difficult to renegotiate contracts to deter opportunistic defaults become a problem when the debtor truly finds itself in a position where it cannot pay, either because of insolvency or illiquidity.

In other terms, an efficient international debt workout mechanism needs to trade off two objectives: Workouts should not be too costly, as de-

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9. Whether a defaulter can lend (or accumulate foreign assets after a default) is an open issue and depends on whether the creditors can seize such assets.

fault may at times be due to the inability to pay, and restructuring can thus benefit both the debtor and its creditors, without being so easy that a debtor is strongly tempted to default opportunistically.<sup>10</sup>

### Should Debt Contracts Be Linked to the Debtor's Ability to Pay?

Classic debt contracts—which commit the debtor to pay the contracted interest and principal independently of the return on the investment—fail to match the debtor's legal payment obligations to its payment capacity. In contrast, debt contracts ideally would be written so that payments are state-contingent. If the borrower and lender agree *ex ante* how to adjust payments in the event of negative shocks, there is no need to renegotiate the contracts *ex post*, should a shock occur. Payments would automatically be higher in good states of the world (when output and growth are high) and lower in bad states of the world (recession and low growth), reducing the chance of debt-servicing difficulties in bad states of the world. Indeed many authors—including most recently Shiller (2003), Caballero (2003), and Borensztein and Mauro (2002)—have highlighted the advantages of introducing state-contingent debt into international debt markets.

However, these contracts generally pose two broad types of problems. First, it is difficult to specify all potential shocks and contingencies in a contract. Some shocks that reduce the debtor's ability to pay would not be covered in the contract, and conversely, a debtor might cheat and claim that an exogenous shock is causing debt-servicing problems that are really due to an unwillingness to pay.

Second, like all forms of insurance, writing contracts that insure against specific contingencies risks changing the debtor's incentives. For example, a debt contract that makes payments contingent on GDP may create incentives to incorrectly measure certain GDP items and to understate GDP. More generally, a debtor that issued GDP-based bonds would be partially insured against a lower-than-expected growth and arguably would have less incentive to adopt policies that increased growth. However, this argument should not be overstated: It would be difficult for a debtor to obtain full insurance against a fall in GDP, and if the insurance is only partial, the debtor's incentives are better aligned with its creditors.

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10. During the recent discussion about the development of an international bankruptcy regime for sovereigns, the IMF suggested three ways of preventing a sovereign that defaulted opportunistically from obtaining legal protection. In the IMF's initial proposal, legal protection would be conditional to an IMF assessment that the country has an unsustainable debt position. In the second iteration of the proposal, a majority of creditors would vote on whether to grant the debtor protection from litigation. In the final proposal, the IMF did not provide any protection for the debtor, arguing that legal action was already difficult, and the capacity to force a minority to accept the final restructuring terms would be sufficient to deter most litigation. This is discussed in chapter 8.

A more realistic example of potential moral hazard comes from contracts that offer insurance against an oil price shock. Oil is an internationally traded commodity: It would be hard for a debtor to understate the oil price to lower its payments. However, a country that has market power could follow policies that lead to overproduction of oil, knowing that it was fully insured against falls in oil prices. Here, too, the obvious solution is to make the insurance partial—or to provide insurance against oil price shocks only to countries that are too small to influence global prices.<sup>11</sup>

Such contracts have not caught on inertia for another reason. Market participants know how to trade standard debt contracts and argue that contracts that make payments state-contingent would be illiquid. At least initially, the market would charge a “hard-to-trade” premium on top of an “insurance” premium for a form of debt that protects against bad shocks. To date, debtors generally have not been willing to pay the premium the market demands for this kind of contracts.

Emerging-market countries that desire a greater amount of risk sharing can take another approach: financing current account deficits with equity (both FDI and portfolio equity) rather than debt. By definition, equity is state-contingent: Profits, earnings, and dividends paid to foreign equity holders are greater in good times and lower in bad times. While a government, unlike a private firm, cannot directly issue equity, it may be able to raise external financing by privatizing state-owned enterprises and other real public assets.<sup>12</sup>

## Should Default Be Easier to Discourage Overborrowing?

The standard analytical approach to thinking about international debt starts from the assumption that cross-border borrowing and lending is

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11. Note that, in addition to a debt contract linked to GDP or export prices, one could achieve some more state-contingent real debt payments, if debt contracts were denominated in domestic currency rather than foreign currency. A variant of the moral hazard argument then explains why most emerging-market economies are unable to borrow long term in their own currency in international markets (the “original sin” hypothesis): Unexpected inflation and depreciation by the debtor could wipe out the real value of this debt. Analogously, one can argue that any debt contract has some partial equity-like state-contingent features as default and restructuring allow the debtor to renegotiate the terms of the contract if negative shocks reduce the ability to pay; in this context, legal innovations such as collective action clauses make this renegotiation less costly and make debt more state-contingent than otherwise. But, again, some have presented concerns about a form of moral hazard—i.e., unwillingness to pay—as a caution against excessively easy terms for recontracting debt instruments.

12. Care, though, must be taken not to guarantee investors in privatized companies a return independent of local economic conditions. Argentina, for example, let the owners of privatized utilities price in dollars and increase their prices in line with US inflation—in theory, insulating investors from both domestic deflation and a nominal depreciation.

good: It facilitates the flow of capital from capital-rich to capital-poor countries when profitable investment opportunities in a country are greater than its national savings, it provides opportunities for portfolio diversification, and it may let countries borrow to smooth consumption in the face of temporary adverse shocks (such as wars and recessions). The key risk, from this point of view, is that difficulties in enforcing an international financial contract will lead to too little international borrowing and lending.

A growing number of theorists, however, are making the opposite argument. Sovereign borrowers do not always have benevolent incentives. Rather, sovereigns—specifically domestic policymakers who can borrow on behalf of the people of the country—may have incentives to overborrow. Policymakers may be “corrupt” or “malevolent” and have incentives to borrow to live well today and transfer the debt burden to future policymakers and taxpayers.<sup>13</sup> For example, in models of two-party competition, a government that inherits an underindebted country will borrow today—indeed, it will overborrow today—to finance benefits that flow to its constituents, since the cost of the borrowing may be born not by the party in power but by the opposition if a partisan change in government occurs in the future. Access to international finance can exacerbate this distortion, since there is a smaller risk that large deficits will drive up interest rates and crowd out domestic investment.<sup>14</sup>

From this point of view, the problem with sovereign debt is not that there is too little borrowing but rather too much of it. Sovereign governments have an inherent bias toward deficits and taking on too much debt. The ability to borrow internationally only fuels this bias and helps governments take on more debt than they should. Some governments will default rather than adjust to pay for their inherited debt, while others will be hit by adverse shocks and be unable to pay.

Bulow (2002) has made an interesting but radical argument: It should be made legally easier for a sovereign to default in order to make it harder for a sovereign with less-than-benevolent motives to borrow. Bulow specifically proposes to allow sovereign debtors to borrow only in their own legal jurisdictions, where sovereign immunity is close to full. Since emerging markets would have trouble issuing local-law debt to foreign investors, this reform aims to severely restrict the ability of “reckless” sov-

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13. See similar views in Bulow and Rogoff (1990), Bulow (2002), and Rogoff (1999, 2003a). Rogoff (2003b), however, recently tempered his past concerns about debtor moral hazard and the distortionary effects of IMF lending.

14. See Alesina and Tabellini (1990). Corsetti and Roubini (1997) show that the political bias toward budget deficits and debt accumulation is exacerbated when policymakers can borrow in international capital markets, as the distortionary costs of deficits in closed economies are reduced.

foreign debtors to borrow internationally to finance bad policies.<sup>15</sup> Only good and responsible sovereign policymakers would be able to convince foreign investors to lend them in securities issued in domestic jurisdictions.<sup>16</sup> In this view, the partial legal protection offered to creditors in international jurisdictions exacerbates the bias of emerging-market policymakers toward budget deficits and debt accumulation.

Bulow thus argues that the risks of excessive debt accumulation are so severe that the world would be better off if most sovereign debtors were unable to borrow from international investors. But since a sovereign benefits from effective immunity from having its assets seized even when it borrows abroad, it is not obvious that reducing international creditor rights would, more than marginally, affect the sovereign incentives to default. Thus, even if the deficit bias and overborrowing arguments are assumed to be correct, Bulow's proposed solution would not be binding and would fail to reduce this overborrowing bias. Of course, transitioning to this new world would also be difficult: Those emerging economies that already have large stocks of debt want to find ways to lower their borrowing costs and reduce their current debt burden, not increase it.

Care, though, must be taken to avoid imposing a cure that is worse than the suspected disease. Some sovereigns may tend to run excessive deficits, overborrow, and eventually default.<sup>17</sup> However, responsible international borrowing also provides many benefits to governments: Economic theory suggests that investment spending (including productive public investment) could be optimally financed with borrowing rather than current taxes (the "golden rule" of public investment financing). Also, external borrowing provides one way for responsible sovereigns to smooth the effects of external shocks that hit a typical emerging-market economy's fiscal balance (terms-of-trade shocks, changes in international li-

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15. Bulow assumes that only international sovereign borrowing causes debt crises. This argument is not terribly convincing. Both cross-border bank borrowing (which may indirectly be a form of sovereign borrowing, if there is an expectation that the sovereign will guarantee payment on the debt in bad states of the world) and domestic debt have been more common sources of financial difficulty. Moreover, restricting the ability of a sovereign to borrow internationally will have a limited effect so long as the ability of the private sector to borrow internationally is not restricted (Corsetti and Roubini 1997). As discussed in chapter 2, the sovereign will borrow at home, and the private sector will in turn borrow from abroad to indirectly finance the sovereign's borrowing needs.

16. This theoretical perspective has an interesting application to the debate on international bankruptcy regimes. In Bulow's view, an international bankruptcy court that is designed in a way that the relative power of the debtor makes it easier for a sovereign to default and restructure its debts has the advantage of sharply reducing the amount of international capital lending to emerging-market sovereign debtors.

17. See Rogoff, Reinhart, and Savastano (2003) for the "debt intolerance" hypothesis—i.e., the view that emerging-market economies with high debt levels due to a history of deficit are more likely to "resolve" such a debt problem through default rather than fiscal adjustment.

quidity and risk aversion, and global business cycles). Borrowing to sustain spending and avoid procyclical fiscal adjustment can make sense in the face of a temporary shock (even if distinguishing between temporary and permanent shocks may not be easy in practice, and many emerging economies lack the credibility needed to borrow countercyclically). Thus, offering external investors the protection of a local governing law to eliminate the ability of sovereigns to borrow is a draconian solution to a real problem.

## Is Litigation the Real Cost of External Default?

Creditors holding defaulted international bonds generally cannot take effective legal action against a sovereign debtor (see chapter 8 for detailed discussion). Nonetheless, most emerging-market economies have not defaulted opportunistically. Turkey, Brazil, and Uruguay are all committed to primary surpluses of over 4 percent of their GDP to avoid a default: Ecuador currently is running a primary surplus of over 5 percent after its default. Sovereign debtors have not taken the decision to default lightly. If anything, they are biased toward postponing default and delaying a restructuring, given the concerns about the economic costs of such defaults (Krueger 2001a, 2001b). Part of the explanation is that sovereign borrowers (and their political leaders) do value their reputation and believe that an opportunistic default would damage their capacity to borrow in the future (and their political future in the case of leaders).

The integration of domestic and international markets has increased the immediate economic cost of sovereign default (further discussed in chapter 8). A sovereign that defaults on its international debt usually calls into question both its ability and commitment to honor its domestic debts—and to backstop the domestic banking system. Consequently, domestic residents and international investors in local-currency assets often “punish” a sovereign for defaulting on its external debt through runs on the local banking system and on the currency. Thus, default typically is “not” an easy or painless option even when a sovereign benefits from substantial legal protection. Many emerging-market governments who inherit large debts from their predecessors—including debts that arguably stem more from overborrowing rather than from healthy investment in the future—still have tried to pay these debts rather than default.

## Crises of Creditor Coordination

### Self-Fulfilling Liquidity Runs

The models discussed so far have emphasized debtor behavior and focused on the difference between debt-servicing difficulties stemming from unanticipated economic shocks and from an unwillingness to pay—or

perhaps an unwillingness to try to withstand possible economic shocks. Another set of models highlights how problems of creditor coordination can create debt-servicing problems. In these models, the fact that the debtor has multiple creditors is important—the incentive of each creditor to leave the others with the bill for any bad outcome can create avoidable problems for the debtor. An obvious example is the case of a panic-driven creditor “liquidity run” (see Sachs [1984] and many other models of self-fulfilling runs).<sup>18</sup> If a creditor believes that the others will not roll over their short-term debts, it is rational for that creditor to withdraw its financing—by refusing to roll over maturing debts—before other creditors do, even if the debtor is solvent in the long term.

The only necessary condition for a run is short-term debt in excess of the sovereign’s liquid assets. A run can occur both in good states, where external conditions leave the debtor solvent, and in bad states. Runs also can occur both when the debtor is making strong policy efforts and when the debtor’s policies leave something to be desired. In other terms, liquidity runs can occur both in a world where opportunistic default is a risk and in a world where there is no debtor moral hazard and where all debtors can be assumed to try hard to avoid default.<sup>19</sup>

Consider the case where moral hazard is not a problem: Bad states of “nature” are the only source of debt-servicing difficulties. Suppose the debtor is capable of paying its debts in full in good but not in bad states. A key insight from the domestic literature on bank runs (such as Diamond and Dybvig [1983] for a model of bank runs and Sachs, Tornell, and Velasco [1996a, 1996b] and Chang and Velasco [2001] for liquidity runs in an open economy) is that liquidity runs are costly in both cases. In good states, a run on a debtor whose short-term debts exceed liquid assets causes a solvent debtor to default. However, even in bad states a run makes the impact of the unavoidable bad shock worse than it needs to be. In these cases, debt reduction is unavoidable, but the run generates *additional*, avoidable bankruptcy costs on top of the real costs of the bad shocks. Aggregate losses would be minimized if all creditors rolled over their short-term claims and then all creditors accepted a reduction in their claims linked to the real unavoidable economic cost due to bad shocks.

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18. Many of these open-economy models of bank or debt runs (such as Chang and Velasco [2001] and Cole and Kehoe [1996]) are international variants of the Diamond and Dybvig (1983) and Bryant (1980) models of bank runs. But see also Kindleberger (1970) for a classic study of panics, manias, and bubbles from a historical perspective.

19. Models of both self-fulfilling currency crises and liquidity runs imply that fundamentals have to be weak, but not too weak, to put an economy in a region where multiple equilibria, as opposed to a certain crisis (if fundamentals are very poor) or a certain noncrisis (if fundamentals are very strong), can occur. In currency crisis models the range of fundamental variables that can put an economy in a vulnerable region is varied, but in liquidity run models the condition for the economy to be in a multiple equilibria region usually occurs when the stock of liquid assets is lower than the stock of claims that can be rolled off in a run.

The desire of each individual creditor to get out before taking losses drains the sovereign's limited liquidity and increases the total cost of the restructuring.<sup>20</sup>

## Do Creditors' Efforts to Protect Themselves from Opportunistic Default Increase the Risk of Runs?

Coordination failures and self-fulfilling runs also can occur when debtor moral hazard is an issue, and debtors do not intrinsically have an incentive to make a full economic effort to avoid default. Indeed, one interesting strand of the theoretical literature highlights how steps that creditors take to limit the debtor's incentive to follow poor policies have the side-effect of making the debtor more vulnerable to output-reducing liquidity runs.

Olivier Jeanne (2000a, 2000b) argues that creditors do not know at the time they lend whether a debtor government's fiscal policies will be prudent or profligate. International investors want to keep the government on a short leash, so they lend only for short terms.<sup>21</sup> The risk that creditors will run if the government opts for undisciplined fiscal policies, in turn, creates the needed incentives for the debtor to be fiscally responsible. The disciplining role of short-term debt, however, makes a debtor that does not maintain sufficient liquid assets to cover all its short-term debts vulnerable to a run. Similarly, in the Kumar, Masson, and Miller (2000) model, issuing short-term debt allows the debtor to signal its commitment to fiscal discipline: Since creditors cannot perfectly observe the debtor's policies, they need a debtor to signal its commitment. In equilibrium, the risk of a run that short-term debt creates increases the debtor's policy effort by making poor policies more costly to the debtor. However, in this model, a debtor with sound policies is still vulnerable to a self-fulfilling run. "Sunsspots" (random and unpredictable events) can still trigger panic-driven runs even in good states. Thus, their model introduces a trade-off between the disciplining role of short-term debt and its role in increasing the probability of self-fulfilling runs.

A number of policy implications result from the insight that the risk of illiquidity from short-term debt emerges naturally as part of the market's

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20. As shown by Allen and Gale (2000a) in a model of fundamentals-based bank runs, even if one rules out the pure self-fulfilling equilibria and thus real fundamental shocks trigger a bank crisis, in equilibrium a fundamental run will occur, and it will trigger extra and avoidable liquidation costs. See Chui, Gai, and Haldane (2000) for a model of self-fulfilling runs where poor fundamentals play an important role in triggering the run. See also Corsetti, Guimaraes, and Roubini (2003) for a fundamental run in a model where the debt crisis in an open economy can go from illiquidity to insolvency on a continuous spectrum.

21. Similarly, borrowing in foreign currency is also a commitment device as it prevents the borrower from wiping out the real value of the debt via inflation, currency depreciation, or both.

response to the risk of opportunistic default. One way to reduce the risk of a liquidity run is to lengthen the maturity of the borrower's debt. However, policy recommendations such as "avoid borrowing at short-term maturities" beg the question why in equilibrium does short-term debt emerge in the first place. Models like those by Jeanne (2000b) suggest that if maturity lengthening is forced on emerging markets by, for example, making rollover options mandatory in external debt contracts, then the flow of capital to emerging markets will shrink: Creditors may be willing to lend only if they can use short-term debt as a disciplinary device to reduce the debtor's temptation to follow poor policies. One implication of the Kumar, Masson, and Miller (2000) model is that an IMF capable of fully protecting a debtor against the risk of a run is not optimal, since the risk of a costly run is needed for short-term debt to create incentives for the debtor to sustain sound policies.

### Can Runs Be Resolved Without an IMF Loan?

Problems with creditor coordination—such as a liquidity run—provide one of the main theoretical justifications for creating an international institution able to supply emerging markets with large amounts of foreign currency. Lending can help the debtor and its creditors avoid unnecessary "bankruptcy" costs in the event of a self-fulfilling run on a sound debtor. The case for an international body as an international lender of last resort therefore hinges on the assumption that creditor coordination failures cannot be easily resolved in the absence of a rescue loan from an institution like the IMF.<sup>22</sup> "Bankruptcy" and the resulting debt restructuring are costlier solutions to a debtor's liquidity problems than a large loan.<sup>23</sup>

What are the potential coordination problems that could make a restructuring costly? Remember that if the debtor is solvent and could pay its debts in full over time, the best solution is a voluntary rollover of all short-term debt. This avoids the cost of sovereign "bankruptcy." If a run occurs when the debtor is insolvent and there is a need to write down debts, the optimal approach is for creditors to agree to take an immediate haircut and thus avoid the additional liquidation costs deriving from a "disorderly" debt restructuring.

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22. There is debate on whether IMF is a true ILOLR. Formally, the IMF resources are limited and the potential run in an open economy very large; thus, the IMF may not be able to be a true ILOLR (Jeanne and Wyplosz 2001). See Fischer (1999) for a case in favor of the IMF as an ILOLR.

23. See Sachs (1995) for an argument in favor of an ILOLR along such lines. Indeed, in the Diamond-Dybvig model, a full ILOLR liquidity support or even a government guarantee of deposits—deposit insurance—is able to prevent self-fulfilling bank runs. See also Jeanne (2000b), who shows that global welfare is increased through ILOLR intervention. But moral hazard from the existence of an ILOLR is finessed in most ILOLR models such as Jeanne and Wyplosz (2001).

Of course, if “bankruptcy” is costly to the debtor and is a risk in a world that lacks an ILOLR or a close substitute, then the debtor has an incentive to take steps to protect itself from the risk of a liquidity run. Consequently, it is worth looking both at the ex ante steps a debtor could take to avoid a run in the first place and the ex post solutions that the debtor would have to turn to in a world that lacked an institution like the IMF. Options include: (1) holding enough liquidity (foreign reserves) to avoid a run; (2) securing liquidity or a private bailout loan; (3) negotiated agreements with creditors to roll over short-term debts; and (4) unilateral payments suspensions/standstills.

**Holding More Reserves (or Borrowing Less).** One way to eliminate the risk of a run is to keep liquid foreign-currency reserves on hand well in excess of the sovereign’s short-term debt, a form of “self-insurance.” Korea and other East Asian countries, for example, responded to their 1997 crisis by running large balance-of-payment surpluses and building up a large reserve “war chest.” Unfortunately, holding reserves has a cost: The yield on reserve assets like US treasuries is well below the average cost of an emerging-market bond. Building up reserves either requires running current account surpluses—exporting more than the country imports—or “banking” the proceeds of international borrowing and absorbing the interest rate differential between the emerging economies’ cost of funds and the return on reserve assets.

Another option (discussed in chapter 6) is for a debtor to purchase in advance the right to borrow reserves from a consortium of private banks: The fee that the borrower pays to maintain access to such contingent lines obviously indicates the cost of securing access to such reserve assets, and the cost of borrowing from such facilities determines their cost if accessed.<sup>24</sup> Note also that debt rollover options—another form of insurance—if appropriately priced in the market, are just another variant of saying that countries should not borrow too much at short-term maturities.

**Private Lender of Last Resort.** Securing emergency liquidity from a private lender would appear to be the best way to deal with a liquidity run. In absolute terms, there is plenty of international liquidity (liquid assets) that the markets can provide, since even the largest emerging markets are small relative to the size of global capital markets.<sup>25</sup> However, in the real

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24. As will be discussed in chapter 6, the market currently is not willing to supply such contingent credit facilities on terms that emerging markets find more attractive than, say, holding an equivalent quantity of reserves. International banks have discovered that it is risky to commit to provide emergency liquidity to a country when other market participants are pulling out (and market spreads are going up).

25. Brazil’s total public debt stock is smaller than the United States’ 2003 budget deficit.

world, the needed liquidity might not be available even to a solvent borrower. Most of the world's liquidity is not available in a crisis: Investors in US treasuries are not suddenly going to reallocate more of their portfolio to emerging markets during times of stress. Indeed, the amount of money available for unsecured lending to emerging-market sovereigns is likely to fall in a crisis. Moreover, no individual market participant may have enough liquidity (or be willing to put all of its capital at risk on a single large bet) to provide the needed liquidity alone. Each individual lender may be willing to supply a fraction of the needed liquidity but only if it is confident that other creditors are willing to do so as well. This is a classic coordination problem: The absence of a private actor large enough to internalize the coordination problems will block the private provision of crisis liquidity.

The difficulties in putting together a coalition of willing private lenders to act as a lender of last resort are augmented when there is uncertainty about the country's fundamentals. No private lender—particularly those that lack security, the protection of legal seniority, or both—wants to lend to a country that is not truly solvent. Conditioning the liquidity on policy reform is one way of reducing this risk, for which creditors would be required to not only coordinate the provision of emergency liquidity but also to reach an agreement on the macro conditions that accompany the lending and determine how best to enforce these conditions.

These institutional impediments make it difficult for emerging markets to access emergency liquidity from private markets in times of crisis. An emerging market that would be solvent if it implemented needed policy reforms may not be able to tap the global pool of liquidity by offering slightly higher interest rates. Investors that are not already familiar with emerging economies would be as likely to be scared away by the higher interest rate as to put their money in.

**Negotiated Extension of Maturities.** A debtor that cannot obtain an emergency loan from a consortium of private lenders can look to its existing creditors for emergency financial support and negotiate a rollover arrangement with them to avoid a unilateral suspension of payments.<sup>26</sup> Unfortunately, the same problems that lead to a run in the first place make agreement on a voluntary rollover difficult: Each individual creditor would prefer to exit while others roll over their claims. Moreover, if creditors seriously doubt the debtor's solvency, they have a strong incentive to exit if they can—particularly because of the difficulty in linking the

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26. Here, ex post rollover arrangements—i.e., negotiated during an incipient crisis—are considered. There may also be room for ex ante rollover arrangements, such as a rollover option, that are systematically included in loan contracts; the case for these rollover options is considered in chapters 6 and 9.

rollover to policy changes in the debtor country. If agreement on a rollover cannot be reached, the debtor is forced to default and incur the socially inefficient costs of bankruptcy. Both approaches have problems.

**Payments Suspension.** A final option is for the debtor to impose a unilateral payments suspension—and then to renegotiate its maturing debt contracts. This solves the creditor coordination problem: No creditor can run. Indeed, one of the more surprising conclusions of the theoretical literature on bank runs is that a “bank holiday” can solve the bank run problem as effectively as a lender of last resort. So long as the run is a “pure panic,” the bank’s solvency is not in question, and creditors are not risk averse. This conclusion can obviously be applied to a run on a sovereign: If a pure panic were to lead to a run on a solvent debtor, creditors should be indifferent between a debt standstill and a rescue loan from an institution like the IMF, which provides sufficient liquidity to cover all near-term payments.

This raises two issues: First, how strong is the argument that a standstill offers as effective a solution to a liquidity run as an international lender? Second, if a debtor may need to unilaterally suspend payments in the event of a run, how can creditors be protected against the risk that a debtor may unilaterally and opportunistically reduce its debts? Both issues are taken up in the next section.

## IMF, Crises of Creditor Coordination, and Moral Hazard

### IMF as a Source of Emergency Liquidity

One of the main arguments in favor of an ILOLR is that a liquidity run risks prompting avoidable output losses. A domestic lender of last resort cannot provide the liquidity support needed to avoid a run on foreign currency-denominated claims: Domestic monetary authorities can print domestic currency at will but not foreign currency.<sup>27</sup> So long as the private

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27. Some caveats are necessary here. In a fixed-rate regime, local-currency liquid claims can roll off and be claims against the central bank reserves. This is why the risk of a liquidity run is larger in a fixed than in a flexible exchange rate regime. Liquidity runs can also occur in a fully dollarized economy, particularly if the dollarized country lacks foreign-currency reserves in the absence of a central bank. Of course, while capital flight by local-currency claims can be addressed through the provision of local-currency liquidity by a domestic lender of last resort in a flexible (or semiflexible) exchange rate regime, the effectiveness of such a domestic lender of last resort is often limited. Such liquidity provision may lead to a free fall of the currency value. For example, Ecuador’s attempts to save its banks via liquidity provision in 1998–99 led to a collapse of an already floating exchange rate and eventually to the decision to dollarize in 2000.

provision of emergency liquidity or a payments suspension cannot resolve at a low cost the coordination failures that lead to runs, international emergency liquidity support to illiquid but solvent sovereigns leaves all parties better off.<sup>28</sup>

The availability of an international institution that can lend to address coordination problems is in some ways providing a global public good, and not just helping to avoid a bad outcome in the crisis country. A crisis in a systemically important country could trigger crises elsewhere (contagion): Consequently, liquidity support from the IMF or a similar institution could play the same role as a domestic lender of last resort (or deposit insurance) in avoiding the spread of bank runs.<sup>29</sup> Even in the absence of financial contagion, a large fall in output in a major country will reduce global output, as the crisis country imports less and as its exchange rate collapse puts pressure on other exchange rates. Finally, international liquidity support not only can encourage policy adjustment but also is presumably the right kind of adjustment and reform both for the crisis country and the international system as a whole.

The case for an international lender able to provide a “full bailout” that stops a run has to be assessed relative to the alternative policy of a “full bail-in”—a combination of broad debt standstills/suspension, capital controls, and other measures to lock in all investors who are rushing to the door.<sup>30</sup> Why do supporters of standstills prefer them to liquidity support even in liquidity cases? For two main reasons:<sup>31</sup> First, official liquidity support may lead to a new form of moral hazard—that is, imprudent behavior by the debtor and its creditors in the expectation of an official bailout. Second, the official creditors may provide emergency liquidity by mistake to an unsustainable and insolvent sovereign. The typical response to a sovereign as well as a bank run has been to supply emergency liquidity, not to declare a quick standstill.

In certain theoretical models, moreover, a full bail-in solves the coordination failure that causes the run as efficiently as a full bailout. Indeed, in pure liquidity cases, the threat of a full bail-in is *sufficient* to rule out the

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28. See Sachs (1995) for an argument in favor of an ILOLR along such lines. Indeed, in the Diamond-Dybvig (1983) model, a full lender-of-last-resort liquidity support or even a government guarantee of deposits—deposit insurance—is able to prevent self-fulfilling bank runs. See also Jeanne (2000b), who shows that global welfare is increased through ILOLR intervention.

29. See Gorton and Winton (2002) for a recent survey of contagion in bank crises. Goodhart and Huang (2000) show that an ILOLR can prevent international bank runs (contagion), but their model does not consider the issue of moral hazard, which is discussed later.

30. Such standstills are the international equivalent of bank holidays in the case of a run on a solvent bank. A credible bank holiday avoids the collective action problem (the sequential service constraint or “first-come-first-served” rule) that triggers the run in the first place.

31. See chapter 6 for a more detailed discussion.

bad equilibrium: The threat alone, so long as it is credible, is sufficient to stop the run and maintain the good, “no run” equilibrium. Since no run actually occurs, the debtor does not actually ever need to implement the threat of suspending payments.<sup>32</sup> Similarly in theory, the presence of a lender of last resort that promises to provide sufficient liquidity to stop the run prevents the bad run equilibrium. If all creditors know that, if and when a run occurs, the debtor will introduce standstills, capital controls, or both, and the incentive to run will disappear.

This conceptual equivalence of the full bail-in and full bailout solutions, however, hinges on two key assumptions—(1) there is no uncertainty about the debtor’s solvency, and (2) creditors are not risk averse.

- First, the theoretical “equivalence” of a “bank holiday” solution (i.e., a standstill) and an ILOLR only holds in the extreme case where the bank is perfectly solvent, and the only problem the bank faces is illiquidity. If there is some chance that the bank is not solvent, a depositor is better off getting out first rather than being locked in with a bank holiday. Similarly, a sovereign’s creditors are indifferent between getting out and being locked in only if the sovereign too is perfectly solvent. As discussed in chapter 2, most actual cases are not ones of pure illiquidity: creditors usually doubt the sovereign’s ability to make the adjustments needed to assure its solvency. If there is some uncertainty about the country’s willingness to take action to assure its solvency, bail-ins and bailouts cease to be equivalent.<sup>33</sup>
- Second, even in theory, if creditors are risk averse, the equivalence of a full bail-in and full bailout breaks down. Risk-averse creditors—particularly if they doubt the country’s fundamental solvency—will react to the expectation or threat of a bail-in by rushing out. Consequently, the threat of a standstill is not enough to stop the run, and the debtor likely will have to implement a standstill, and the cost of the standstill risks reducing the debtor’s welfare, leading to financial losses for investors, or both. Indeed, the fundamental problem with any attempt to force creditors to supply emergency liquidity by stretching out their claims is that the expectation of such an approach may accelerate the crisis, as risk-averse creditors rush to get out before the expected suspension. Indeed, in the extreme, fears that a debtor will suspend payments could even trigger a crisis that would have not otherwise oc-

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32. Indeed, Diamond and Dybvig (1983) suggest that a temporary debt suspension (bank holiday) is the optimal policy to prevent multiple-equilibria runs.

33. Indeed, in the bank run literature, in addition to models of panic-driven runs, such as Diamond and Dybvig (1983), there are also many models of bank runs and crises driven by fundamentals (see, for example, Allen and Gale [2000a], Jacklin and Bhattacharya [1988], Gorton [1987]).

curred.<sup>34</sup> This point is familiar from economic theory: “Unexpected” capital controls may prevent a speculative attack and run on a currency, but “anticipated” ones can accelerate the attack.

The analogy between a run on a bank and that on a sovereign also is not perfect. Demand deposits in excess of available liquid reserves characterize a stylized bank. All demand depositors have the right to withdraw their funds from a bank at any given moment. At least in theory, the bank holiday can be lifted without any fundamental restructuring of the depositors’ claims, so long as the bank is confident that demand depositors will not run after the holiday is lifted. A sovereign payments suspension, however, typically requires a comprehensive debt restructuring before payments can be resumed. Short-term debts that fall due during the payments suspension have to be either paid in full when the standstill ends or restructured. In most cases, the debtor will also want to reschedule payments that are coming due in the near future.

The risk that coordination problems could complicate even a necessary debt restructuring process creates additional uncertainty. As discussed earlier, creditors have an incentive to make sure that it is not too easy to change the terms of a contract in order to avoid debtor moral hazard, yet this creates a risk that both the debtor and the creditor will take losses when a restructuring is in both their interests. The greater the uncertainty and the larger the potential for the restructuring process itself to generate losses, the stronger the incentive to run before the imposition of a sovereign standstill.<sup>35</sup>

### Will a Debtor Use a Run to Walk Away from Its Debts?

There is a risk that a debtor may stop payments not just to deal with pure liquidity runs but also to reduce its debt payments after failing to make a real effort to pay. This is all the more true if the line between a liquidity and a solvency crisis is not clear and if a country experiences a run in part because of doubts about its willingness to take the actions needed to assure its future solvency. A debtor may conclude that if it’s going to have

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34. One can argue that hair-trigger runs by creditors are the response of creditors who want shorter maturities so they can get out at par at the first sign a debtor’s policy effort is lagging. Indeed, as Jeanne (2000a) and Jeanne and Wyplosz (2001) suggest, the maturity of external debt is endogenous and may serve as a disciplining mechanism. However, if debtors believe that the short maturities that creditors want to discipline the debtor create a countervailing risk of liquidity crises that are too costly to them, debtors also have an incentive to pay more to lengthen their debt maturity.

35. The stylized model of a “painless” bank holiday that avoids any need for a deposit restructuring also may be somewhat unrealistic. Deposit restructurings have followed many bank holidays when banks were in fundamental distress.

to suspend payments because of a run anyway, it might as well also seek additional debt relief and thus opportunistically default. The costs of a restructuring strengthen incentives for creditors to run in anticipation of a standstill and increase the risk of the “bankruptcy costs” of a standstill leading to a loss of output that may tip the scales of a crisis from illiquidity to insolvency.

At the same time, making the debt restructuring process easier so that standstills are a more attractive solution to the problem of a run risks making it easier for an opportunistic debtor to obtain agreement on a restructuring that reduces its debts. Easy resort to standstills could exacerbate the risk of debtor moral hazard and lead, in equilibrium, to lower capital flows to emerging markets. Models that introduce the risk of debtor moral hazard alongside the risk of liquidity runs typically argue that the costs of renegotiating contracts should not be too low, even if large “renegotiation” costs complicate the resolution of liquidity runs. In Dooley and Verma (2001), a debtor’s incentives to take actions to maintain its solvency hinge on the costs of “bankruptcy.” In Kumar, Masson, and Miller (2000), default needs to be costly to provide the “punishment mechanisms” that create the incentive for the debtor’s ongoing policy effort. Thus, paradoxically, while standstills are usually recommended as a way to resolve the problem of moral hazard deriving from the existence of IMF liquidity support, they may exacerbate the other moral hazard problem, since steps to make standstills less costly could make opportunistic default more attractive.

### Should the IMF Sanction Standstills Rather than Provide Emergency Loans?

Most calls for debt suspensions/standstills as a solution to debt runs have come from policy circles, not academics. However, some recent studies have assessed analytically the case for IMF-sanctioned debt standstills.<sup>36</sup> The basic idea is simple: The IMF would give its nod only to debtors that imposed a standstill for the right reasons, and the IMF’s blessing would reduce either the legal consequences or the economic cost of such debt suspensions.

Prasanna Gai, Simon Hayes, and Hyun Song Shin (2002) concluded that officially sanctioned standstills may not reduce *ex ante* lending to emerging markets as long as the IMF can distinguish between a debt-servicing problem triggered by random negative shocks and one triggered by an opportunistic default. The IMF’s ability to distinguish among different types of crises effectively substitutes for market discipline. The result makes sense. If private creditors can be reassured that standstills will be

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36. Related studies have considered analytically the case for and against an international bankruptcy court and collective action clauses; chapter 8 will consider these arguments, where statutory and contractual approaches to debt restructurings are analyzed.

imposed only if “bad luck” prevents a debtor that is making a strong effort to pay from servicing its debt or in case of pure runs, then lending to emerging markets should not be reduced *ex ante*. At the same time, if the official sector can distinguish between unwillingness and inability to pay, a lender of last resort may still provide a better solution to liquidity crises if the imposition of a standstill risks triggering a broader run—a risk not captured in their model.

Hyun Song Shin (2001) and Benjamin Martin and Adrian Penalver (2003) study the effects of standstills and forced rollovers on debt’s maturity structure and pricing. Since standstills reduce the liquidity of short-term debt, they lead *ex ante* to higher short-term interest rates. In the context of these models, however, standstills also reduce long-term interest rates as orderly, IMF-sanctioned standstills increase recovery values in case of default. Shin (2001) argues that IMF-sanctioned standstills could even lead to a fall in both short-term and long-term interest rates if standstills solve creditor coordination problems and reduce the risk of destructive runs.

One implication of these studies is that IMF-sanctioned standstills will lead creditors to lengthen the maturity of their lending. A standstill penalizes short-term debt relative to long-term debt, unlike a lender of last resort, which rewards short-term debt. However, the conclusion that standstills will lead to a reduction of long rates, an overall fall in the yield curve, and maturity lengthening strongly depends on the assumption that standstills cannot be used for opportunistic defaults. Moreover, if there is any risk that standstills will lead to losses, creditors will have incentives to lend in ways that allow them to get out fast, ahead of the standstill.

Gai and Shin (2002) examined whether IMF-sanctioned standstills should trigger a rush to the exits. In their model, an orderly standstill has two effects. On one hand, investors concerned about the loss of liquidity in the case of a standstill will tend to shorten the maturity of their debt holdings so that they can rush to the exits more quickly. On the other hand, an orderly standstill increases recovery values in the case of a crisis, which favors investors who hold longer-term, rather than shorter-term, debt. These authors’ calibration results show that the relative strength of these two effects depends on the standstill’s nature: If a standstill is short and significantly increases recovery values, the second effect dominates—average debt duration increases, and the probability of a crisis is reduced. The rush to the exits dominates when standstills last longer and have a smaller impact on recovery values.

However, none of these analytical models provides a systematic comparison of the benefits and costs of standstills relative to solutions based on emergency liquidity. Rather, they tend to compare disorderly unilateral debt suspensions only with more orderly IMF-sanctioned standstills. Realistic models of standstills that can be compared in terms of their normative implications with realistic models of catalytic official finance remain to be developed.

## International Lender of Last Resort and Moral Hazard

An international lender of last resort effectively provides a form of insurance—liquidity insurance—to sovereign countries. A large body of literature has explored how insurance influences the behavior of the beneficiaries, specifically how the insurance that reduces the cost of risky behavior may perversely make it more likely. The benefits of an international source of emergency liquidity, including the ability to avoid self-fulfilling crises, have to be balanced against the risk of the provision of emergency liquidity distorting the incentives facing debtor countries and the creditors who lend to them.

### Will International Lending of Last Resort Create Moral Hazard?

Before looking at models that examine how the existence of an official creditor could affect the strategic game between private creditors and sovereign debtors,<sup>37</sup> it is worth reviewing, once again, how deposit insurance and a domestic lender of last resort affect a bank's incentives. These models have obvious parallels to the sovereign case.

In the Diamond-Dybvig model (1983), banks are vulnerable to panic-driven runs without a domestic lender of last resort. Yet other models highlight how the existence of a lender of last resort—or more commonly, mispriced deposit insurance that eliminates the risk of a run—creates moral hazard. The incentives of the bank's owners are not necessarily aligned with the interests of the bank's depositors or the source of the deposit insurance. If the banks lack sufficient capital, the bank's owners have an incentive to “gamble for redemption” by making risky loans. If the risky loans succeed, the bank's owners win. If they fail, the owners do not lose much. The bank's capital is already gone. Since the deposits are insured, the “insurer”—in this case, the domestic government—bears any additional losses. Thus, liquidity support, which reduces the risk of losses by depositors, risks creating moral hazard even if it prevents liquidity runs. In the domestic context, such distortions can be reduced by “incentive compatible deposit insurance” (i.e., appropriately priced deposit insurance) and by regulating and supervising the banks that benefit from access to the lender of last resort. The central bank or the regulatory authority also has the power to seize the bank, change its management, restructure it, merge it with other banks, or even liquidate it—all of which should strengthen incentives for responsible bank management.

It is worth noting that the case for a domestic lender of last resort hinges, in part, on its (usually the central bank) ability to distinguish more

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37. See Bulow and Rogoff (1988c); Rogoff (1999); Wells (1993); Klimenko (2001); Bhattacharya and Detragiache (1994); Spiegel (1996); Paasche and Zin (2001); Kumar, Masson, and Miller (2000); Dooley and Verma (2001); and Corsetti, Guimaraes, and Roubini (2003).

effectively than depositors between runs on insolvent institutions and those on illiquid institutions. Since small bank depositors generally have difficulty monitoring the balance sheet of a bank, such an information asymmetry is not an unreasonable assumption.<sup>38</sup>

Much of this analysis also applies in the international context. The existence of an ILOLR could distort the incentives of international creditors, who, like insured depositors, would not discipline a debtor pursuing risky policies by denying it financing. Creditors could lend in the expectation that the availability of liquidity from an ILOLR will allow their loans to be repaid, no matter what. The existence of an ILOLR only distorts the incentives of the debtor if international liquidity support is implicitly or explicitly subsidized. Then, a sovereign debtor may have an incentive to take out an international loan to finance the analogue of a gamble for redemption rather than face the immediate loss of entering into sovereign bankruptcy. If this gamble fails, the costs are born not by the debtor—which is already close to bankruptcy—but rather either by the crisis lender (if their claims are not senior) or by existing long-term lenders (who cannot get out and might have to take larger losses to assure the repayment of senior IMF lending).

Moral hazard could be a larger problem in the international than the domestic context for two reasons. First, a domestic regulator/lender of last resort has powers that are not available to an international regulator/lender of last resort. Sovereign debtors cannot be seized, merged, or closed down after a crisis:<sup>39</sup> An international lender cannot regulate sovereigns in the same way a domestic lender can regulate banks to assure that the banks maintain prudent policies.<sup>40</sup> Second, the argument that official creditors have an informational advantage and are better able to distinguish illiquidity from insolvency is not as strong as the argument that a domestic lender of last resort has access to information that a typical depositor

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38. In the domestic context of a bank run, Wallace (1988) showed that a policy of tightening caps on deposit withdrawals as a run starts (a form of payment suspension) is superior to a policy stopping the run by providing complete deposit insurance (a form of emergency lending) if the lender of last resort does not have superior information on the nature of the run. In Wallace's model, the central bank, not the bank experiencing the run, imposes the deposit standstills: Since the central bank is assumed to be benevolent, this analysis fails to provide insights into the risk that a standstill might exacerbate debtor moral hazard.

39. Historically this seizure solution to sovereign debt problems was actually available. In previous centuries, when "gunboat diplomacy" was the rule, creditor governments could take over defaulting sovereign countries and seize their assets, or tax authorities or customs, to ensure the servicing of external debts.

40. In the corporate finance jargon of Tirole's (2002) analysis, the problem faced by both corporate and sovereign debtors are the limits to pledgeable income that can be used as effective collateral for borrowing. Sovereignty makes this problem even more serious for sovereign borrowers.

lacks. Many of the investors in the international sovereign debt market are quite sophisticated. There is a broad theoretical argument that bail-ins are better than bailouts if the official sector lacks an informational advantage.<sup>41</sup> On the other hand, the argument that an informational advantage is needed for there to be a case for bailout can itself be questioned: Runs on illiquid but solvent countries may stem from market imperfections other than a lack of information (for example, the forced unwinding of leveraged positions), or the official sector may have an intrinsic advantage in monitoring a country's policy effort through its conditionality even if it has access to the same information as other creditors.

### Strategic Game Between a Sovereign, Its Private Creditors, and Official Lenders

The classic model of the sovereign debt market as a strategic game between sovereign debtors, their private creditors, and the official sector examined how the presence of official creditors influenced negotiations between sovereign debtors and private creditors on how much to reduce external debt. The IMF no longer lends to encourage a debtor in default to strike a deal with its creditors (apart from the indirect effects of an IMF "lending into arrears" policy). But this model can easily be extended to examine how an official lender can help a debtor avoid a restructuring in liquidity runs, so it is worth examining in some detail.

In Bulow and Rogoff's (1988c) model, private creditors know that official creditors care about international trade flows and cannot credibly commit not to be involved in debt restructuring negotiations. In their model, official lending during the negotiations allows the debtor to offer a better deal to creditors than would otherwise have been possible. Sovereign debtors expect the official sector to allow them to offer their private creditors a better deal should they default. This means that, in equilibrium, private creditors charge sovereign debtors lower loan spreads than they would have in the absence of such official creditors. Thus, the exist-

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41. A number of studies have examined the case for an ILOLR when the IMF lacks perfect information on the nature of the crisis and may not be able to distinguish crises due to pure panic runs from those due to insolvency or distinguish unwillingness to pay from inability to pay. In general, the case for IMF intervention is diluted if the IMF cannot precisely distinguish between those two types of crises. Ghosal and Miller (2002) show that if the official creditor cannot assess the nature of the crisis (insolvency versus opportunistic default), there is a case for "constructive ambiguity"—i.e., official liquidity support should be provided with probability less than one. Gai, Hayes, and Shin (2001) find that the IMF's role is more likely to be beneficial if the IMF can make an accurate assessment of the country's policy efforts. Spiegel (2001) argues that the IMF's inability to distinguish runs caused by "sunspots" from those caused by "fundamental insolvency" provides an argument for lending at high "penalty" rates, since under certain conditions penalty rates can help distinguish the illiquid from the insolvent borrowers.

tence of official creditors that lend into a debt restructuring increases the moral hazard distortion in sovereign lending—creditors lend too much at too low a price, and debtors borrow more than they should.<sup>42</sup> Similarly, the large-scale provision of official financing to provide a sovereign with the liquidity needed to pay claims with a short-residual maturity should, by application of the Bulow-Rogoff model, be anticipated in advance and could lead to overborrowing and overlending.

Two caveats are needed here. First, the impact of IMF lending to avoid any debt restructuring in a liquidity crisis is clearer on short-term rather than on long-term claims. Since long-term claims cannot exit quickly on the back of official lending, creditors holding longer-term claims only unambiguously gain if the bailout works. Argentina's long-term bondholders are in the process of discovering that official lending that backs a failed program can dilute the value of their claims: The official sector is effectively senior and typically gets paid before long-term bondholders, who may have to take a larger haircut to assure full payment of the IMF (the greater haircut on long-term bonds "pays" for the losses created when short-term creditors were able to exit an insolvent debtor at par before the default).

Second, the Bulow-Rogoff model has only three players: the sovereign debtor, its external creditors, and the official sector. The benefits of official lending go either to the debtor or to its external creditors. In reality, other players also have a stake in the game. Adding more parties to the game creates the possibility that these parties, rather than private external creditors, will gain from the official lending. For example, if official liquidity is used to provide liquidity to domestic banks facing a run on their dollar deposits, the gains from official lending may flow to domestic bank depositors rather than to the sovereign's long-term creditors. If a default still takes place, the sovereign debtor's long-term external creditors may need to take a larger haircut to bring it back into solvency while the sovereign

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42. Wells (1993) analyzes how the presence of an official creditor affects the bargaining between a sovereign debtor and its private creditors in an asymmetric information debt reduction game. An IMF policy of "lending into arrears" is more efficient than one of "no lending into arrears." The former policy leads to more efficient bargaining as delay times are reduced, and the benefits of IMF transfers go to the debtor. In Wells (1993) the IMF is an exogenous source of funding rather than a strategic player in the game. Klimenko (2001) shows that the debtor country's market power in trade affects its bargaining power in debt restructuring games involving official and private creditors. Also, he shows that if the official lender is a strategic player rather than a passive source of funds, the debtor is better off in a "lending into arrears" regime—not because its bargaining power increases relative to the private creditor but rather because its power increases relative to the IMF. Variants of the games where the IMF is a passive provider of funds rather than a strategic player are in the papers on the "debt buyback" debate (Bulow and Rogoff 1991, Sachs 1989a) where the controversial issue was whether debtors or creditors obtain most of the surplus deriving from IMF-financed debt buyback schemes. See Cline (1995) for a survey of this debate.

debtor is still repaying the IMF loans it took out to support the domestic banking system.<sup>43</sup>

Both these scenarios slightly modify the Bulow-Rogoff framework by adding a fourth group, thus qualifying the framework's strong conclusion—namely that official lending benefits private external creditors. In the first scenario, external creditors are effectively divided into two groups—those with short-term claims and those with long-term claims—with potentially divergent interests. In the second scenario, domestic creditors are added to the mix. The Bulow-Rogoff model nonetheless provides a useful baseline for analysis, as it highlights how *anticipated* official-sector lending will influence the strategic game between a sovereign debtor and its various heterogeneous creditors.

Other models of sovereign crises have also highlighted the risk that IMF intervention could distort the market. For example, in the Dooley-Verma (2001) model, anticipated and unconditional lending (insurance) by official creditors leads to moral hazard and makes also crises more costly: It subsidizes capital inflows before the crisis and intensifies capital account reversal and output losses once a crisis occurs.

## IMF Lending May Not Lead to Moral Hazard

There is little doubt that there is a trade-off between the potentially valuable role an institution like the IMF can play in limiting the risk of panic-driven runs leading to avoidable defaults and the risk of the expectations of such lending encouraging risky policies and risky lending. Earlier, two reasons were noted why moral hazard could potentially be a greater concern in the international rather than in the domestic context: The IMF lacks the regulatory authority of a domestic central bank, and the IMF's information advantage over international investors is likely to be smaller than a domestic central bank's information advantage over domestic depositors. However, the arguments that the IMF's presence inherently distorts a debtor's incentives to adopt sound policies have three caveats.

- IMF conditionality offers a potential solution to debtor moral hazard. If IMF lending is conditional on policy changes/increased effort and if the IMF can effectively monitor the country's adherence to its promises, then IMF lending can avoid runs while IMF conditionality ensures good effort. The fact that the debtor ultimately has to make the full effort needed to repay its original loans should limit its incentives to overborrow: Creditors may get off scot-free in a crisis without dis-

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43. Of course, this result assumes that domestic current and future taxpayers don't bear the costs of bailing out the domestic depositors. The exact allocations of benefits and losses among different agents depends on assumptions about the strategic strength of different players once official finance is provided.

torting overall flows so long as the debtor does not have any incentives to overborrow.

- IMF lending creates debtor moral hazard only if it has a subsidy component. If the IMF lends to a sovereign at the appropriate risk-adjusted rate, it will not engender moral hazard. It is the debtor country—not international taxpayers—that ultimately has to pay the costs of adopting risky policies: Risky policies early on means more adjustment later on to repay the IMF in full. Since IMF lending is “preferred” and paid ahead of the sovereign’s other cross-border debt, the fact that the IMF lends at below-market rates does not imply that IMF lending is subsidized.<sup>44</sup>
- Recent theoretical work suggests that the risk of runs, in some conditions, can undermine a debtor’s incentive to exert additional effort to improve its policies (Corsetti, Roubini, and Guimaraes 2003). This work will be reviewed in more detail later, but the basic intuition is simple: Without official support, a liquidity run will assure an immediate default, and policymakers will have no incentive to make policy reforms that will generate only benefits over time. The debtor’s “policy effort” needs official support to have a chance of succeeding.

Finally there is a broader argument: The IMF has not created widespread moral hazard because it is not an ILOLR able to lend in large enough quantities to protect all debtors and their creditors from the risk of default. A domestic lender of last resort is usually able to protect all bank depositors from the risk of any losses. However, most international bailouts, as will be discussed in chapter 4, have been partial, not full. Long-term creditors in particular have little reason to believe that IMF lending will allow them to exit and plenty of reason to pay close attention to the debtor’s policies.

Partial bailouts can be thought of as a form of partial insurance: They do not fully protect either the debtor or its entire body of creditors from a bad outcome. Just as a homeowner whose fire insurance policy carries a large deductible still has incentives not to take actions that put his house at greater risk, creditors who lend to a sovereign that has access only to “partial” liquidity insurance have different incentives than creditors who lend to one that has “full” liquidity insurance. Indeed, one of the strongest critiques of IMF lending is not that it is so effective at limiting the risk of runs that it gives rise to moral hazard but rather that partial lending is so

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44. Thus, often-heard arguments (IFIAC 2000, for example) that IMF lending is a US taxpayer subsidy to emerging-market borrowers are substantially flawed as they do not recognize that IMF’s *seniority* is consistent with its lending at below market rates without providing any subsidy to the sovereign borrower. Indeed, if the IMF is senior in the repayment order, its loans are less risky, and thus, it can lend fairly at below market rates.

ineffective at stopping runs that it is not worth providing. The next section takes up this topic.

### Importance of the Risk of Moral Hazard in Practice

Moral hazard is inherent in all forms of insurance. The core issue is not whether IMF lending has the potential to introduce moral hazard, since it would clearly create moral hazard by lending in unlimited quantities to overindebted countries without demanding any policy reforms. The real issue is how important the distortion is in practice and whether the steps the IMF takes to limit the risk of moral hazard—limiting its lending and conditioning its lending on strong policy efforts—are able to minimize the risk of moral hazard without undermining the effectiveness of IMF lending.

Views on the analytical and practical importance of moral hazard distortions in international capital flows differ radically. Some, such as Calomiris (1998); Schwartz (1998); Dooley (2000); and Chinn, Dooley, and Shrestha (1999), believe that such distortions are important. Others, such as Summers (2000b), Zhang (1999), Truman (2002), and Mussa (2002a), think that the importance of such distortions has been overstated.<sup>45</sup> The issue is obviously one of quantitative degree rather than absolutes.

Two empirical issues exist in assessing the case for a large official provider of international liquidity: Does IMF finance include an implicit/explicit subsidy component? What is the empirical evidence that the expectations of IMF bailouts have distorted overall capital flows toward emerging economies, by leading either to too much overall lending to emerging economies or to too much lending to particularly risky emerging economies? Relatively little work has been done on the first question, but the existing research has rather strong conclusions: IMF lending has a very small subsidy element. Olivier Jeanne and Jeromin Zettelmeyer (2001) show that the domestic taxpayers in the debtor country—not the IMF or international financial institutions (i.e., the international taxpayers) or the country's other creditors—pay the costs of official support packages. Their best estimate is that the subsidy component of IMF lending, under realistic scenarios, is very small. The fact that domestic taxpayers bear the cost of crisis lending, in turn, limits the incentive for debtors to pursue risky policies.<sup>46</sup>

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45. Corsetti, Pesenti, and Roubini (1999a, 1999b) and Burnside, Eichenbaum, and Rebelo (2000) model and stress that the distortions deriving from debtors' government bailout guarantees of the private (financial and nonfinancial) sector, rather than IMF bailouts, as the most important source of moral hazard in recent crisis episodes.

46. Of course, a short-sighted government that may not be in power in the future may follow reckless policies, then borrow from the IMF and thus shift the domestic burden of imprudent fiscal policy to future governments and taxpayers. But again, there is no international subsidy here—only a domestic redistribution of the costs of servicing IMF loans.

The effect expectations of IMF lending had on flows to emerging markets in the 1990s are hard to test, in part because it is generally hard to determine what drives capital flows to emerging economies.<sup>47</sup> Formal and systematic evidence on these issues is scarce. Xioaming Zhang (1999) did not find evidence that the Mexican bailout led to the significant reduction in sovereign spreads before the Asian crisis. Spreads on emerging-market debt fell after Mexico's rescue, but so did spreads on high-risk corporate bonds that clearly would not benefit from an IMF bailout. Timothy Lane and Steven Phillips (2000) found that it is difficult to detect evidence of moral hazard in market reactions to various IMF policy announcements and so failed to find evidence that would suggest that moral hazard has recently been on the rise. Steven Kamin (2002) did not find evidence that moral hazard has significantly distorted overall flows to emerging markets.

Dell'Ariccia, Schnabel, and Zettelmeyer (2002) examined how sovereign spreads reacted to the Russian crisis. They find partial, and mixed, evidence of moral hazard. The widening spread that occurred after Russia's default could be interpreted as evidence that the market had priced in a strong expectation that sufficient official support would be available to avoid major sovereign defaults. The "surprise" that Russia was allowed to default led market participants to reassess the scale of potential official support available to all emerging economies, leading to a widening of all sovereign spreads. Other studies (Sarno and Taylor 1999, Chang 2000, Spadafora 2001) also present evidence that is consistent with the existence of creditors' moral hazard.

It is also worth reviewing more circumstantial evidence of moral hazard. Little anecdotal evidence suggests that the expectations of large-scale IMF support that emerged after the Mexican bailout fueled the large increase in bank lending to Asia. This is possibly because Mexico was considered a special case due to its proximity to the United States. But it seems more likely that international banks and other investors simply believed in the Asian miracle and lent because they did not think Asian countries would need to be bailed out.

More anecdotal evidence suggests that investors may have expected large official support packages for certain systemically important countries, notably Russia in 1998, Brazil in 1998–99, and Turkey in 2000–03. Market participants certainly referred to Russia as a "moral hazard play" in 1998. Russia was considered too nuclear to fail, and the expectation of official support may have made the markets more willing to finance Russia than they otherwise would have been in 1997 and the first part of 1998.<sup>48</sup> This argument, though, cuts both ways: Investors who made the

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47. See Roubini (2000) for a more detailed discussion of these arguments.

48. See, among others, Rubini and Weisberg (2003, 278): "I argued providing money [to Russia] under these circumstances would create an immense moral hazard problem. I had lived in the markets, and could feel people taking advantage of the situation."

moral hazard play in Russia ended up taking large losses and presumably learned a lesson.

More recently, spreads on Turkish external bonds arguably have been significantly lower than those of similarly rated sovereigns or of borrowers with comparable fiscal deficits and debt levels. This could be the result of expectations that Turkey is too strategically important to fail.<sup>49</sup> Spreads certainly widened significantly in March 2003, when the Turkish parliament failed to approve the deployment of US troops on its territory, and Turkey lost \$6 billion in grants (which potentially could support a larger loan package). Spreads then came down when the United States provided \$1 billion in aid for Turkey, in part because the markets perceived this as a signal of the United States' continued support for Turkey.

Despite circumstantial evidence that moral hazard has influenced investment decisions in Russia and to a lesser extent in Turkey, broader evidence of moral hazard seems lacking:

- The large official support packages that were extended to Asian countries in 1997–98, the large support package to Brazil in 1998, and the more recent series of large packages for many major Latin American countries (Argentina, Brazil, Uruguay, and Ecuador) did not trigger a wave of fresh lending to emerging economies. Net capital flows to emerging economies (particularly debt flows) collapsed after the Asian and Russian crises. Flows started to recover in 2003 but remain well below their 1996–97 peak.<sup>50</sup>
- Similarly, it is difficult to find evidence that the expectation of official support systematically has prompted emerging economies to undertake riskier policies. If anything, the evidence suggests the opposite. Mexico adopted much more prudent policies after its 1995 bailout and managed to navigate the 2000 election without experiencing a financial crisis. The Asian-crisis countries have dramatically increased their holdings of reserves while paying down their short-term debt, making it less likely that they will need to turn to the IMF again. Even with IMF support, the cost of recent financial crises has been severe.

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49. Turkey's dollar-denominated international bonds trade differently than many other bonds because domestic Turkish banks are major holders of such instruments. This does not, however, refute the moral hazard hypothesis: Turkish banks may be willing to hold Turkey's bonds in part because they—not international investors—believe the country is too important to fail.

50. This assessment is based on the Institute of International Finance (IIF) data on capital flows in emerging markets through the end of 2003. Medium- to long-term nonbank lending to emerging markets peaked—after sharply rising in the early 1990s—in 1997 to a level above \$80 billion and was down to about \$10 billion in 2003. Overall net private flows to emerging markets (including both bank and nonbank equity and debt flows) fell through 2002 and staged only a modest recovery in 2003. The compression in the Emerging Market Bond Index spreads in 2003 and high returns to the asset class led to a renewed interest in the emerging-market sovereign bond asset class in 2003, but net new financing has been modest so far, apart from a prefunding spike in early 2004 driven by the compression in borrowing costs.

In summary, the empirical evidence does not suggest that IMF lending, in its current form, has created widespread moral hazard. The subsidy component in IMF lending is small. Available studies do not find strong evidence that the expectation of IMF lending has significantly altered overall capital flows to emerging markets or spreads. The high cost of crises even with IMF support suggests that countries have few incentives to follow policies that may lead to currency, banking, and financial crises and possible default just because of the expectation of an IMF bailout.<sup>51</sup>

However, expectations of IMF support may have played a significant role in creditors' decisions to lend in some cases (Russia in 1998 and Turkey more recently). Moreover, while a sovereign may not purposely follow reckless policies to get IMF support, its expectations of IMF support may, at the margin, lead it to delay taking steps to get its house in order. More likely, though, delay stems from the difficult political economy of reform, not expectations of bailouts. Incentives abound for myopic policymaking that have nothing to do with the IMF.

## **Do Partial Bailouts Ever Work?**

### **Case Against Partial Bailouts**

The existing analytical literature has emphasized the limitations of any "partial" solution to a sovereign financial crisis and instead has emphasized the need to adopt radical "corner" solutions—either a complete suspension of payments and of currency convertibility or the provision of enough liquidity to assure full payment of all short-term claims. According to this line of argument, supplying large but still limited amounts of liquidity (a partial bailout) won't stop the run, because creditors still have an incentive to get out before other creditors exhaust the debtor's limited supply of liquidity. A similar critique can be made of "partial" standstills: Restructuring one set of claims won't work, as locking in one set of creditors in a "partial" bail-in will lead other groups of creditors to run. If you suspend payments on the sovereign's external debt, domestic bank depositors may pull their funds out of the bank and seek to move them abroad. To be effective at ruling out a bad equilibrium, a standstill and the following restructuring need to be broad and comprehensive, and all potential channels for exiting need to be closed off.

Influential observers (Paul Krugman, for example) consequently have argued that the best solutions to liquidity crises are "corner" solutions: Half-measures don't work, and to stop runs the IMF needs to either become an ILOLR with enough resources to engineer a full bailout or, at the

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51. A side implication of this observation is that Bulow's (2002) aversion toward lending by the IMF and IFIs on the grounds that IMF lending will be a source of strategic gaming between debtors and private creditors does not have strong factual basis.

other extreme, start relying on broad standstills that bail in<sup>52</sup> all investors. The theoretical work of Zettelmeyer (1999) and Jeanne and Zettelmeyer (2001) support the Krugman hypothesis. Their model of self-fulfilling runs stemming from a shortage of liquidity shows that partial bailouts (or partial bail-ins for that matter) are bound to fail: The “bad” equilibrium cannot be ruled out and creditors still have an incentive to run if official lending fails to eliminate the gap between the resources the debtor has on hand and those needed to cover all potential short-term claims. Ilan Goldfajn and Rodrigo Valdes (1999) make a similar point. Marcus Miller and Lei Zhang (2000) argue that debt standstills are preferable to liquidity support—since IMF funds are limited, it cannot credibly commit to provide enough money to stop a run.

### **Case for Partial Bailouts**

In reality, however, partial bailouts and bail-ins have succeeded in some, though not in all, cases. Mexico is the most famous example of large-scale official lending without any debt restructuring, yet even in Mexico, the combined IMF and US government bailout was partial. Official lending was sufficient to cover the government’s short-term debts but not to have “financed” a broad-based run out of the banking system. Korea’s bail-in was also partial: The agreement to roll over short-term interbank claims, even when supplemented by official lending, failed to provide Korea with the amount of liquidity that would have been needed had domestic bank depositors sought to move their funds offshore en masse. Empirically, the combination of adjustment, financing, and targeted rollover agreements/debt restructuring has succeeded in restoring confidence, even in the absence of sufficient financing, to avoid a bad equilibrium if everyone decided to run. While partial solutions may not work in the context of traditional theoretical models of multiple equilibria, they do seem to work in practice at least some of the time.<sup>53</sup>

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52. A full bail-in requires doing far more than suspending external debt payments: All domestic residents and foreign investors also need to be prevented from trying to turn their local assets into foreign assets.

53. It is worth noting that the middle solutions that have worked best have been those with the most financing, such as Mexico in 1995. The initial Korean package in early December 1997 did not stop the run or prevent the crisis from deepening in part because the amount of financing available was too limited, relative to the country’s maturing short-term claims—though policy uncertainty before the presidential elections also played a role. Korea’s crisis was resolved only when a restructuring of maturing debts effectively increased the amount of funds that were on the table by adding a private contribution to the official lending package. Initial disbursements in cases like Indonesia were much smaller than in Korea, and one can thus argue that the limited disbursements may have contributed to the deepening of the crisis, though policy and political problems also were more serious in Indonesia. These cases are discussed in detail in the next chapter.

A set of recently developed models help close the gap between the existing theoretical analysis, which supports the “corner” solutions, and existing experience, which suggests that “middle” solutions can be successful. Giancarlo Corsetti, Bernardo Guimaraes, and Nouriel Roubini (2003) and Morris and Shin (2003) formally analyze whether partial catalytic finance (a partial bailout) can work when a crisis may be a combination of liquidity and weak fundamentals. These models provide an analytic demonstration of how catalytic IMF financing could work to stop an incipient run, in part because these new models allow for a more sophisticated understanding of the causes of a run.

In classic multiple-equilibria models, the possibility of a self-fulfilling run cannot be ruled out completely so long as the sovereign faces a financing gap. The economy always risks ending up in the bad equilibrium if not enough liquidity is available to pay everyone in the event of a rush to the exits. Limited official lending is not enough to avoid the bad equilibrium. Moreover, nothing (apart from random events, formally “sunspots”) can nail down the probability that the economy will end up in the bad as opposed to the good equilibrium: The country’s policy actions do not play a role in determining whether the country’s creditors decide to run or stay in. Consequently, the economy is as likely to end up in one equilibrium or the other. In the new models, the state of economic fundamentals, the amount of official financing, and the amount of policy effort a sovereign exerts all play a role in determining whether or not a run happens: the better the fundamentals and the more the official support and the policy effort, the lower the risk of a run.

The Corsetti, Guimaraes, and Roubini (2003) model has a number of innovative features. Both fundamentals, including a debtor’s policy action and the creditors’ actions (speculation), can contribute to a sovereign debt crisis. As in Franklin Allen and Douglas Gale’s model of bank runs (2000a), crises occur along a spectrum that goes from pure illiquidity to insolvency. This offers a more realistic description of crises than models that follow Diamond and Dybvig (1983). Such models ignore or downplay either the role of macroeconomic shocks or the risk that the country may be fundamentally insolvent in triggering a run. Unlike many of the models that draw on the classic Diamond and Dybvig model, which tends to downplay the issue of moral hazard, the Corsetti, Guimaraes, and Roubini (2003) model allows for the risks of both a run and moral hazard. Moreover, it is possible to perform a positive and normative comparative statics analysis of the trade-off between moral hazard from official support and the risk of a run. In contrast, in typical multiple-equilibria models, nothing—only random “sunspots”—pins down whether the good (no-run) or bad (run) equilibrium will occur.

The Corsetti, Guimaraes, and Roubini (2003) model also presents a more realistic description of the market than models that assume all creditors have access to the same information and will want to take the exact

same portfolio position. This model draws on the literature on global games (Carlsson and van Damme 1993, Morris and Shin 1998), so the state of the economy and speculative activity are not common knowledge among all parties, and the game has a single unique equilibrium (rather than multiple). Since signals are noisy, and different players have access to different information on the true state of the country's economic fundamentals, not all players will follow the same choice (to run or not).<sup>54</sup> Finally, Corsetti, Guimaraes, and Roubini (2003) model the role of official financial institutions as that of large players in the market, whose actions can influence the behavior of other market participants depending on the relative informational advantage that such large players may or may not have compared with private investors.<sup>55</sup>

Many of the new analytical insights in this model stem from the impact IMF lending can have on other market participants. The IMF is assumed to seek to lend to illiquid, but not to insolvent, countries: In the model, the IMF makes mistakes but is still more likely to provide liquidity to cases where a liquidity run causes the crisis than to cases of insolvency. IMF lending therefore provides a signal to the market: A better-informed IMF reduces the aggressiveness of private speculators and lowers the likelihood of a crisis.<sup>56</sup> The IMF has a stronger impact on market behavior if it can strategically signal its position to the market—for example, if it can move before private investors. An IMF with sufficiently precise information can induce “strong herding behavior”—that is, private funds’ managers disregard their private information and make their portfolio conditional on the IMF move, rolling over their debt if the IMF makes liquidity available to the country while pulling out funds if it does not. This body of work helps to shed light on the channels that allow “catalytic financing” to work. The bottom-line conclusion is consistent with common sense. Catalytic financing can help when the country’s fundamentals are sound but not when the macroeconomic outlook is hopelessly weak.<sup>57</sup>

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54. Vives and Rochet (2002) used a global games model to study domestic lenders of last resort. They find that regulating banks to protect their liquidity and solvency can avoid runs in the absence of a lender of last resort. However, the steps the banks have to take to protect themselves have a high cost—money that otherwise would be invested has to be used to protect the bank from runs. Emergency liquidity support, along with prudential regulation, is socially optimal: Liquidity support allows the banks to avoid the runs without lowering their investment below optimal levels.

55. See also Corsetti et al. (2004) and Corsetti, Pesenti, and Roubini (2002) on the role of large players (in this case private players such as large hedge funds) in triggering currency crises.

56. Corsetti et al. (2004) and Dasgupta (1999) examined the impact of a different large player’s action—a speculator à la Soros—on the behavior and aggressiveness of other market investors in a currency-crisis model.

57. Morris and Shin (2003) reach similar conclusions on the potential success of the IMF’s catalytic approach in a stylized one-period model. The empirical work of Cottarelli and Giannini (2002), Corsetti and Roubini (2004), and Mody and Saravia (2003) lends support to

Less intuitively, the Corsetti-Guimaraes-Roubini (2003) model introduces the possibility that official liquidity assistance can be necessary, under some circumstances, for well-intentioned governments to undertake appropriate policy reforms. IMF liquidity assistance helps to shield the country from self-fulfilling speculative runs and limits the risk of a run leading to a costly crisis and to the bankruptcy costs of default before policymakers accrue any gains from their reforms. Consequently, providing the government with insurance against the risk of a run lets the IMF raise the expected gains from reforms, making policy reforms more attractive. This directly challenges the conventional wisdom that official finance exacerbates the debtor moral hazard problem, since the presence of official insurance lowers the cost of bad policies and leads to riskier policies.

Other recent studies have contributed to one's understanding of the policy trade-offs between liquidity and moral hazard. Haldane et al. (2002) present a model that allows for fundamentals-driven runs. While these authors discuss moral hazard, they do not model the trade-off between moral hazard and the risk of a run.

More work needs to be done in this area of alternative crisis resolution approaches to formally address the choices policymakers face—for example, a systematic comparison of catalytic financing and standstills has not been done. Introducing opportunistic default in these models would also lead to a more complex analysis of the relative benefits of alternative crisis resolution tools. More work could also be done to resolve crises that are characterized by simultaneous runs on the government's own debt and the country's domestic banks. This leads to the next area in the new literature on crisis resolution: how to address crises triggered by private-sector, rather than public-sector, financial vulnerabilities.

## **Resolving Crises Triggered by Private-Sector External Borrowing**

Until now, the analysis of crisis resolution has been conducted under the assumption that the borrowing debtor is a unified agent, either a country or a sovereign. This fiction enormously simplifies the analysis but increasingly limits its utility. As chapter 2 illustrated, vulnerabilities in the private sector, not public sector, triggered some emerging-market crises.<sup>58</sup> Other crises stem in part from the government's domestic borrowing.

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the argument that the catalytic approach is more likely to be successful in cases where fundamentals are not too weak—i.e., in cases where the combination of policy adjustment and official finance are more likely to restore investors' confidence and prevent a disruptive run. Hovaguimian (2003) provides a more skeptical view of the success of catalytic finance.

58. One important caveat here is that private-sector vulnerabilities may, at times, be due to distortions that government policies trigger. Authors such as Corsetti, Pesenti, and Roubini (1999a, 1999b), among others, have advanced this "moral hazard" interpretation of crises, linked to the government's implicit and explicit bailout guarantees of the private sector.

Emerging markets often experience linked currency and banking crises, or even combined currency, banking, corporate debt, and sovereign debt crises.<sup>59</sup>

Ideally, it would be possible to conceptualize emerging economies not as countries borrowing from abroad but rather as more complex economies where firms, banks, and the government all borrow externally and also domestically, in foreign—and possibly domestic—currency. Such an approach would disaggregate “the emerging-market borrower” into more than a single agent. While a large and growing analytical literature now examines how vulnerabilities that arise from private-sector borrowing can give rise to external payments crises (see chapter 2), much less analytical work tries specifically to analyze the appropriate international response to emerging-market crises that originate in the private sector.

In principle one could argue that private-sector crises could be addressed without any public-sector intervention, either by domestic authorities or by the IFIs. Well-functioning bankruptcy regimes provide the basic framework for private debtors and their creditors to renegotiate their debts, and if such a regime is in place, the resolution of private crises may not raise any policy issues. However, leaving the resolution of private crises to private borrowers and their creditors may not be optimal for a number of important reasons. First, macroeconomic shocks—particularly currency crises—often lead to systemic, rather than individual, crises, either in the banking or the corporate sector. A systemic crisis leaves most banks—or a very large number of firms—in financial difficulty. Institutions, like bankruptcy courts, that work well for solving the financial difficulties of a single firm may break down when a country’s entire private sector faces the need for a debt restructuring (Hoelscher and Quintyn 2003). Second, the government’s role in protecting bank depositors from losses almost inevitably involves it in the resolution of a systemic crisis, since large losses in the corporate sector almost always lead to large losses in the banking sector. A concerted effort to solve these crises with government intervention may be either necessary or impossible to avoid.

Most intriguingly, private-sector borrowing also risks causing “self-fulfilling” crises. Jeanne and Zettelmeyer (2002) have modeled the easiest such crisis to characterize it: A run triggers a currency crisis, and the currency crisis in turn triggers the insolvency of borrowers who have taken out foreign-currency loans. Private borrowers that would have been solvent but for the run are forced into bankruptcy, triggering a broad crisis.

Jeanne and Zettelmeyer show that domestic monetary policy alone cannot prevent a run if foreign-currency borrowing is extensive. Moreover, if the government’s reserves are limited, an ILOLR can potentially help to

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59. See Allen et al. (2002) and chapter 2 for an examination of the reasons why emerging-market crises snowball through different sectors.

avoid the broader crisis. The international lender can lend a fiscally solvent government the liquidity it needs to avert a private-sector crisis (Jeanne and Zettelmeyer 2002). International support allows the government to support domestic banks and firms that are “conditionally solvent”—that is, banks and firms that would be solvent but for the overshooting of the exchange rate—and thus avert a severe crisis. Broadly speaking, international liquidity support to a government that, in turn, supports the private-sector balance sheets makes sense only if the private entities are solvent and if international liquidity can potentially prevent a disruptive run, a fall in asset prices, or both from triggering a broader crisis (see Allen et al. 2002).

International intervention to help the authorities in emerging economies solve “private-sector crises”—typically bank runs—also raises complicated issues of moral hazard. International lending could increase “domestic” moral hazard: If the private sector expects that the government will intervene to protect private-sector lenders and borrowers, and if necessary, the official sector will provide the liquidity the government may need to be able to make good on its guarantees, the private sector has an incentive to take on more risk. Domestic moral hazard from implicit or explicit domestic bailout guarantees would be a concern even in a world without an IMF, but the issue becomes more complex when the IMF is providing the financing needed for the government to make good on its domestic guarantees, including a guarantee to sustain a particular exchange rate. Indeed, Douglas Gale and Xavier Vives (2001) suggest that dollarization could help to make a government’s commitment not to provide emergency liquidity to the banking system credible, helping to get rid of moral hazard. In these models, dollarization makes sense as long as the bankruptcy costs that follow from the absence of a domestic lender of last resort are low. Obviously, the availability of international liquidity would undermine the ability of dollarization to help eliminate domestic moral hazard even as it helps limit the risk that dollarization—or the more common use of the dollar to denominate local bank deposits—could increase the number of disruptive domestic bank runs.

The analytical literature on how to resolve systemic crises that originate in private-sector vulnerabilities is still in its infancy. However, such crises may be common in the future, given growing financial integration and the vulnerabilities that informal dollarization creates in many emerging economies. This area should attract greater analytical effort.

## **Policy Implications and Suggestions for Further Research**

The analytical literature helps to frame the debate on the core issue confronting policymakers of finding the right mix of conditional official support (bailouts), policy adjustments, and bail-ins to resolve a crisis. Differ-

ent theoretical traditions look at the sovereign debt market and see different risks. One tradition looks at the sovereign debt market—or cross-border lending more generally—and focuses on the difficulty in enforcing a contract against a sovereign given the incentive for opportunistic default. This tradition worries about the risk of difficulties in enforcing a debt contract resulting in too little lending, at too high a price. It focuses on the need to create incentives for debtors to honor their commitments and warns against any official intervention that reduces the cost of default. Others argue that sovereign borrowers have too much access to international credit—credit that helps policymakers with poor incentives accumulate dangerous levels of debt too rapidly. The proposed solution: Make sovereign default easier, so credit is harder to find. Another tradition looks at emerging economies and focuses on their vulnerability to external shocks: Debt problems stem from contracts that leave payments fixed even as external events reduce a country's capacity to pay. Steps that reduce the debt restructuring costs after an external shock reduces a debtor's ability to pay could facilitate more efficient crisis resolution.

Another tradition focuses on the risk that problems of creditor coordination will give rise to market failures and lead either to a run on the sovereign's debt or, more broadly, a run on a country's foreign-currency reserves. If such runs are a risk, one potential solution is to make payments suspensions and debt restructurings easier. Another solution is to provide the international liquidity needed to stop the run. The provision of enough liquidity can eliminate the risk of a self-fulfilling crisis pushing the country into a bad equilibrium—typically an avoidable default by a solvent debtor. In theory a payments standstill can stop a run as effectively as a lender of last resort, but the conditions required for this to be true hardly seem relevant in the sovereign context; also, standstills may exacerbate the moral hazard from opportunistic defaults. Thus, liquidity support rather than a standstill may be the more appropriate way to address liquidity runs.

Another tradition highlights the risk that the provision of insurance against a liquidity crisis may introduce distortions of its own into the market, specifically moral hazard from bailout expectations. An ILOLR cannot regulate a sovereign in the same way a domestic central bank regulates the domestic banking system. More broadly, the official sector's presence inherently changes the dynamics of the strategic interaction between sovereign borrowers and their lenders. One solution would be to not provide any liquidity insurance at all; this eliminates moral hazard but at the price of making liquidity problems harder to resolve. The more common solution, in practice, has been to provide only partial insurance. The IMF lends in limited quantities and makes its lending conditional on policy adjustments by the debtor. In some cases, the IMF also has made its lending conditional on creditors' willingness to restructure their claims—a means of limiting creditor moral hazard. The debtor's policy adjustment acts as a

kind of copayment that limits the risk of this insurance distorting the borrowers' incentives, just as any change in the servicing profile of creditors' claims reduces the risk of the insurance altering creditors' incentives.

All these models illuminate the challenge of developing an efficient policy for responding to crises in emerging economies. However, one of the weaknesses of the theoretical literature on international crisis resolution is that it tends to overemphasize the extreme cases. A sovereign debtor is either perfectly solvent and facing liquidity difficulties solely because of a creditor panic or insolvent regardless of any policy changes it might implement. The only effective solution to a liquidity crisis is either full liquidity insurance from an ILOLR or a total suspension of currency convertibility and sovereign payments. The only way to avoid creditor and debtor moral hazard is to avoid the provision of any IMF liquidity insurance. Any lending to a country after it defaults will be captured by international creditors or will reduce incentives for sound debtor policies *ex ante*. The policy prescriptions that emerge from the models that stress only one dimension of these trade-offs tend to be policies that are at the corners.

The analytical literature on crisis resolution, consequently, has provided relatively few tools to assess the policy trade-offs created by a world where the sovereign benefits from partial rather than full liquidity insurance and where most cases fall somewhere between pure illiquidity and pure insolvency. Some new models do allow for a run to exacerbate fundamental problems and for fundamental weaknesses to contribute to the source of runs. Some such models have interesting results. For example, Corsetti, Guimaraes, and Roubini (2003) illuminates why partial—or catalytic—IMF financing could work. Significant but not unlimited financing from a large player like the IMF can influence the position that other players in the market take and induce policymakers to undertake costly and risky policy adjustments.

Existing models of international crises suffer from a second set of weaknesses. They tend to assume a world that is defined by a single debtor (either a country or the sovereign), its external private creditors, and the official sector. These models yield important insights, and parsimonious models of international crises that simplify in order to clarify, no doubt, have immense advantages. But there are advantages also in developing analytical models that seek to identify more clearly the circumstances when the government, by providing hard-currency liquidity to local private entities, can avoid a broader crisis and the circumstances when such intervention is unwarranted. More effort should also be made to analyze the complex interaction between external default and domestic financial difficulty, which has characterized recent sovereign crises (most notably in Argentina). Models that imagine the emerging-market debtor as a single entity and look only at how the presence of an actor like the IMF af-

fects the strategic game between the sovereign and its external creditors offer limited insight into the domestic financial fallout of external default.<sup>60</sup>

We don't think the theoretical critique of partial IMF lending is sufficiently compelling to suggest that the IMF cannot play a constructive role in crisis resolution. Analytical models can help to identify the circumstances when the IMF's insurance, combined with policy adjustments by the debtor and sometimes with a restructuring that changes the profile of creditor claims on the country, can be effective. But the gaps in most existing models—notably their portrayal of the emerging-market debtor as a single entity—also suggest that the results of any model need to be interpreted with caution.

The next chapter examines the world's growing experience with emerging-market crises, both to assess whether limited IMF lending will work and when a debt restructuring is a necessary part of the solution to a country's financial difficulties. Chapter 6 picks up many of the themes of the latter part of this chapter as it examines how to address problems characterized in part by a shortage of liquidity. Chapter 7 returns to many of the themes in the first part of this chapter as it examines how different claims on a sovereign debtor should be treated in a comprehensive debt restructuring.

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60. Chapter 6 discusses in more detail the issue of how to resolve crises originating from vulnerabilities in the private sector.