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Author: Joshua Aizenman

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Financial Opening: Evidence and Policy Options

Joshua Aizenman

12.1 Introduction

This paper has two goals. First, it evaluates the empirical evidence of increasing the chances of financial crises induced by opening up developing countries to short-term capital inflows. Second, it appraises the various proposals made for mitigating the severity of financial crises. We argue that there is solid evidence that financial opening increases the chance of financial crises. There is more tenuous evidence that financial opening contributes positively to long-run growth. Hence, there may be a complex trade-off between the adverse intermediate run and the beneficial long-run effects of financial opening. These findings impose the challenge to policy makers of how to supplement financial opening with policies that would improve this intertemporal trade-off. The literature abounds with proposals aimed at reducing the costs of financial crises, yet there has been limited progress in designing credible reforms to deal with these challenges.

To put this issue in a broader context, the debate about financial opening is a reincarnation of the earlier immiserizing-growth literature that identified conditions under which growth may be welfare reducing in the presence of preexisting distortions.¹ While financial opening increases welfare when the only distortion is restricting intertemporal trade across countries, financial opening may be welfare reducing in the presence of

Joshua Aizenman is professor of economics at the University of California, Santa Cruz, and a research associate of the National Bureau of Economic Research.

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1. See Johnson (1967), Bhagwati (1968), and Brecher and Diaz-Alejandro (1977).

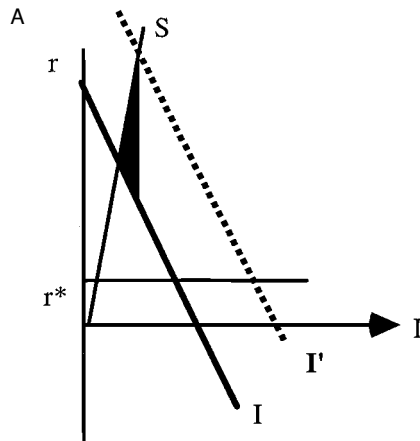
other distortions. An important example of such a distortion is moral hazard, which frequently acts as an implicit subsidy to borrowing and investment.² Moral hazard arises when investors believe they will be bailed out of bad investment by the taxpayer. This bailing out may be carried out by the treasury, the central bank, or by international agencies (e.g., the International Monetary Fund [the IMF], World Bank, etc.). In these circumstances, the taxpayer subsidizes the investment.

A frequent rationale for the bailing out is the “too big to fail” doctrine—the fear that allowing large borrowers to go under will trigger a systemic crisis (this fear is referred to as the “systemic risk”). See Dooley and Shin (2000) and Bongini, Claessens, and Ferri (2001) for empirical validations of the moral-hazard interpretation in the context of the recent crisis in the Far East. It can be shown that the moral-hazard argument applies even in the absence of any bail out and in circumstances where the investment is debt financed, and the riskiness of investment is private information. This result follows from the nature of the limited-liability system, which implies that the value of the firm behaves as an option, thus leading to excessive risk taking (see Aizenman 2003).

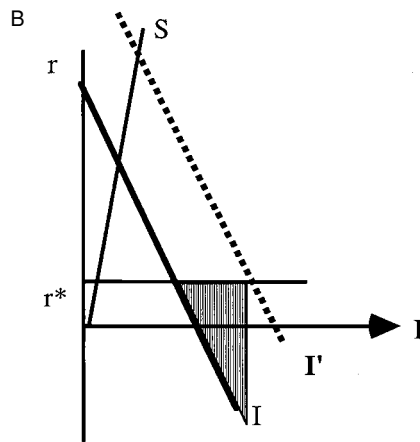
In financial autarky, the pool of domestic savings confines the cost of the moral-hazard distortion. Financial opening implies that the scale of investment will be determined by the access to global saving. In autarky, if the domestic real interest rate exceeded the global one, the resultant inflow of capital would magnify the existing distortion, thereby reducing welfare. This situation is illustrated in figure 12.1, where S depicts domestic saving, and I is the domestic investment in the absence of moral hazard. Moral hazard would shift the effective investment to I' . In these circumstances, the welfare cost of moral hazard is given by the black triangle in panel A (where the benchmark for evaluating welfare in panel A is financial autarky in the absence of moral hazard). If the global interest rate is r^* , financial opening in the presence of moral hazard reduces welfare by the shaded triangle (where the benchmark for evaluating welfare in panel B is the welfare with open financial markets in the absence of moral hazard). If the supply of domestic saving is relatively inelastic, whereas the demand for investment is relatively elastic, financial opening will tend to reduce welfare. A similar argument applies to other distortions.

The more recent literature dealing with welfare effects of financial opening added to the earlier studies by modeling the process of financial intermediation. A key difference between the earlier literature and the ones dealing with financial intermediation is the switch in focus from the commercial to the financial aspects of opening up. This matters, as the adjustment of financial markets to news and policies is much faster than that of

2. See McKinnon and Pill (1996); Corsetti, Pesenti, and Roubini (1999); Dooley (2000); and Hellmann, Murdock, and Stiglitz (2000).



Financial autarky



Financial integration

Fig. 12.1 Financial opening, moral hazard, and welfare: *A*, Financial autarky; *B*, Financial integration

commercial flows of goods and services. A by-product of this switch is the focus of the new literature on conditions leading to the instantaneous reversal in the flow of financial assets, which generates financial crises.

This recent literature has led to a spirited debate concerning the wisdom of unrestricted capital mobility between the Organization for Economic

Table 12.1 The Welfare Effects of Financial Opening—Theory

The Welfare Effect of Financial Opening	Explanation
Potentially large benefits	Financial opening may lead to large benefits stemming from better risk pooling, information collection, and maturity transformation, thereby providing deeper liquidity (Greenwood and Jovanovic 1990; Obstfeld 1994; Acemoglu and Zilibotti 1998).
Positive but small benefits from financial opening	Second-order magnitude gains from international diversification of output risk (Cole and Obstfeld 1991).
Ambiguous welfare effects	If production does involve learning by doing, opening capital markets does not necessarily improve welfare for the nation or for the world as a whole (Kohn and Marion 1992). Overborrowing due to moral hazard and euphoric expectations, leading to crises (McKinnon and Pill 1996; Corsetti, Pesenti, and Roubini 1999); overborrowing due to congestion externalities, where atomistic agents do not internalize the full effects of marginal borrowing on future welfare (Aizenman 1989); and overborrowing due to free-rider problems in economies short of international collateral, a condition generated by imperfections of the domestic capital market (Caballero and Krishnamurthy 2001). Emerging markets are more prone to financial crashes. This will be the case when financial market capitalization depends on the expectations of agents regarding aggregate investment in their economy. This gives rise to potential coordination failures, which may be exacerbated for low-income countries by financial globalization (Martin and Rey 2001).

Cooperation and Development (OECD) and emerging markets. Various studies have identified circumstances in which unlimited capital mobility may be suboptimal (see table 12.1 for a summary of some of these studies). Notwithstanding the aforementioned debate, the strongest argument for financial opening is the pragmatic one. Like it or not, greater trade integration erodes the effectiveness of restrictions on capital mobility. Hence, for successful emerging markets that engage in trade integration, financial opening is not a question of if, but of when and how. Consequently, the pragmatic approach to the problem should recognize that there is no quick fix to the exposure to financial crises induced by financial opening. Instead, the challenge is to reduce the depth and the frequency of the crises. The core of the problem is that we deal with incomplete financial markets, exposing the creditors to sovereign risk and moral hazard.³ As there are fundamental reasons for the incompleteness of these markets, one doubts whether or not a smart fix exists that will prevent future crises. Instead, the hope is that new policies and improved coordination will reduce the severity of financial crises, thereby improving the odds of a positive long-run welfare effect of financial opening.

Section 12.2 starts with the review of the empirical evidence. Section

3. For a review of the literature on sovereign risk, see Eaton and Fernandez (1995).

12.3 reviews the various proposals attempting to reform the global financial system. Section 12.4 provides an appraisal of the various proposals made for preventing financial crises. Specifically, it argues that a version of the Lucas critique may limit the welfare gain of these proposals. Of course, this is not an argument against adopting reforms. It suggests, however, that a better understanding of the structural characteristics leading to exposure and crises is the key for designing a successful restructuring of the capital market. A reform that would not deal with these structural factors runs the risk of leading to disappointing welfare gains, at best, and to crises in the worst case. Some of the reforms may fall short of success due to coordination failure: They may be effective only if they would be adopted comprehensively by all the relevant financial centers. Finally, some of the proposals may be too optimistic, ignoring the time inconsistency and political-economy considerations that would challenge the practicality of the best-intended reforms, as well as presuming the ability to verify unambiguously the quality of macroeconomic adjustment.

12.2 Financial Opening and Financial Crises: The Evidence

The recent research has two common themes: It validated empirically the assertion “Good-bye financial repression, hello financial crash” (Diaz-Alejandro 1985), yet it also found tenuous evidence that financial liberalization tends to increase growth over time. Both observations suggest an intertemporal trade-off. In the short run, the fragility induced by financial opening leads frequently to crises, but if these crises would force the country to deal with its structural deficiencies, financial opening may induce a higher growth rate in the long run. The empirical literature relies frequently on cross-country methodology. Thus, it provides us with little guidance in evaluating the net-welfare effects of financial opening. For example, it remains hard to gauge if Korea would have been better off by refraining from financial opening in the early 1990s, or if Chile would have benefited by retaining financial repression in the 1980s and 1990s.⁴ The an-

4. Obviously, the 1997 financial crisis had an adverse impact on Korea's welfare. One may argue, however, that it prevented a much deeper and longer calamity, akin to Japan's recession in the last ten years. Arguably, had Korea continued with financial repression, a Japanese type of a correction would have hit Korea later. Korea's development path resembles that of Japan—its domestic banks accumulated over time large nonperforming loans. These loans were the heritage of the earlier development strategy in which large corporations had selective access to preferential lines of credit. According to this argument, the crisis of 1997 prevented a larger buildup of these loans, saving Korea from a much deeper correction. Obviously, it is hard to provide a sound test of this argument. See Haggard (2000) for further discussion on the interaction between the public and the private sector in Korea and other countries in the Far East. Similar ambiguities apply to Chile, which has been the best performing Latin American country in recent years and is credited with a sound banking system. Yet, Chile experienced a massive banking crisis in the 1980s following earlier financial opening. Arguably, one may credit the superior recent performance of Chile to the painful earlier reforms that were triggered by the crises of the early 1980s.

swers to these questions depend crucially on the time horizon of the analysis as well as on the evaluation of what is the relevant counterfactual; both are issues to which there are no satisfactory answers.⁵

We illustrate the empirical literature by reviewing selectively several examples. Kaminsky and Reinhart (1999) found that problems in the banking sector typically precede a currency crisis and that a currency crisis deepens the banking crisis, activating a vicious spiral. Importantly, they also found that financial liberalization often precedes banking crises. Similar results were replicated in several papers using different methodologies. Glick and Hutchison (1999) investigated a sample of ninety countries during 1975 to 1997, covering 90 banking crises, 202 currency crises, and 37 twin crises. They found that banking and twin crises have occurred mainly in developing countries, and their number increased in the 1990s. Twin crises are mainly concentrated in financially liberalized emerging-market economies. These findings support the conjecture that openness of emerging markets to international capital flows, combined with a liberalized financial structure, makes them particularly vulnerable to twin crises. *The costs of these crises are substantial.* Currency crisis, on average, leads to a cost of 8 percent of precrisis gross domestic product (GDP). Simultaneous currency and banking crises reduce the precrisis GDP by 18 percent (World Bank 1998; Caprio and Honohan 1999).

Demirgüç-Kunt and Detragiache (1998) studied the empirical relationship between banking crises and financial liberalization in fifty-three countries during 1980 to 1995. They found that banking crises are more likely to occur in liberalized financial systems. The impact of financial liberalization on the fragility of banks is weaker, however, when the institutional environment is strong. (Relevant institutional characteristics are respect for the rule of law, a low level of corruption, and good contract enforcement.) They found that banks' franchise values decline after financial liberalization. Hence, the intensification of the moral hazard associated with lower franchise values may be one of the sources of increased banking-sector fragility. Financial liberalization is followed by improved financial development, while banking crises tend to slow it down. In countries that liberalize from a position of financial repression, financial development improves even if a banking crisis takes place. Their results support the view that financial liberalization should be approached cautiously where the institutions necessary to ensure law and contract enforcement and effective prudential regulation and supervision are not fully developed, even if macroeconomic stabilization has been achieved.

A useful survey of financial liberalization is Williamson and Mahar

5. A welfare evaluation of these issues may depend on the degree to which there are political economy trade-offs between a large crisis versus a series of smaller crises; a large crisis may be needed to overcome entrenched opposing interest groups, yet it may lead to larger welfare costs.

(1998), who focused on thirty-four countries that undertook financial liberalization between 1973 to 1996. Overall, they found a mixed record of financial liberalization—the gains are there, but the liberalization carries the risk of leading to financial crisis. Financial liberalization has yielded greater financial depth, and increased efficiency in the allocation of investment, yet it has not brought a boost in saving. The drawbacks in the liberalization process are the danger that the liberalization will lead to a financial crisis. For the majority of countries, capital-account liberalization increases its probability. The challenge is to design a liberalization program that does not bring a financial crisis in its wake. The main recommendations emerging from their study are akin to Hellman, Murdock, and Stiglitz (2000); start with macroeconomic stabilization and improve bank supervision while delaying capital-account convertibility until the end of the process. In the transition, mild financial repression, in the form of a ceiling on deposit interest rates, may be advantageous. This follows from the observation that exceedingly high interest rates encourage risk taking by borrowers—that is, moral hazard induced by self-selection. Banks in stress may wish to gamble for resurrection by lending to such borrowers, which is ultimately at a cost to the taxpayer. Williamson and Mahar conclude that maintaining high spreads may be needed in a transition until banks are able to work off the legacy of bad debt inherited from the period of financial repression. In such an environment, free entry of foreign banks may be a mixed blessing. The efficiency gains should be balanced against the threat of the gamble for resurrection by older domestic banks that are losing their franchise value. Imposing higher capital requirements increases the cost of a gamble-for-resurrection strategy. In these circumstances, deposit-rate controls may complement capital requirements.

The overall effect of financial opening on growth remains debatable. Levine (1997) found a positive association, whereas Rodrik (1998) failed to depict any positive effects of financial opening on investment, growth, and inflation. While Levine's interpretation attaches the direction of causality from financial deepening to growth, the old dictum that correlations do not indicate causality remains valid. More recently, Beck, Levine, and Loayza (2000) evaluated the empirical links between the level of financial intermediary development and economic growth, total factor productivity (TFP) growth, physical-capital accumulation, and private-savings rates. The main findings are that financial intermediaries exert a large, positive impact on total-factor-productivity growth, which feeds through to overall GDP growth. Yet, the long-run links between financial intermediary development and both physical-capital growth and private-savings rates are tenuous. Bekaert, Harvey, and Lundblad (2001) found that equity-market liberalizations, on average, lead to a one percent increase in annual real economic growth over a five-year period. The investment-GDP ratio increases postliberalization, with the investment partially financed by for-

eign capital, which inducing worsened trade balances. The liberalization effect is enhanced by a large secondary-school enrollment, a small government sector, and an Anglo-Saxon legal system.⁶

Rodrik's earlier methodology has been revisited by Arteta, Eichengreen, and Wyplosz (2001). While they found indications of a positive association between capital-account liberalization and growth, the effects vary with time, with how capital account liberalization is measured, and with how the relationship is estimated. The evidence that the effects of capital-account liberalization are stronger in high-income countries is fragile. There is some evidence that the positive growth effects of liberalization are stronger in countries with strong institutions. Capital-account liberalization appears to have positive effects on growth only in countries that have already opened more generally, hence sequencing matters. But there are significant prerequisites for opening, including a reduction of trade barriers and an ability to eliminate macroeconomic imbalances. These conclusions are akin to Edwards (2001a) who reported that, after controlling for other variables (including aggregate investment), countries with a more open capital account have outperformed countries that have restricted capital mobility. There is also evidence that an open capital account affects growth positively only after a country has achieved a certain degree of economic development. This provides support to the view that there is an optimal sequencing for capital account liberalization.

12.3 Proposals for Preventing Financial Crises Induced by Financial Opening

This section provides a brief summary of the various proposals.⁷ These reforms can be classified along several dimensions. First, proposals differ in the weight given to reforming the incentives facing creditors, debtors, or to the interaction between the two groups. Second, proposals differ in the weight given to ex ante risk reduction, versus ex post orderly management and resolution of actual crises. Third, proposals differ in the depth of the reform. Some deal with upgrading regulations within the existing institutional environment, whereas others suggest bolder steps, envisioning the creation of new institutions. Table 12.2 summarizes the main proposals.

One line of reform focuses on the possibility that, by subsidizing sovereign borrowing, the involvement of institutions may exacerbate the problem, inducing moral hazard. For example, the belief that the IMF, World Bank, and banking-deposit-insurances schemes will bail out creditors generates overborrowing and ends with more frequent and deeper crises at the

6. As is frequently the case with empirical studies relying on macrodata, endogeneity and reverse causality remain a valid concern in interpreting some of these results.

7. Several recent monographs overviewed comprehensively the various proposals; see Eichengreen (1999), Rogoff (1999), Frankel and Roubini (2003), and Feldstein (2003).

Table 12.2 Overview of Proposals

Proposition Author	Emphasis	Key Features
Meltzer Committee Report	Ex ante steps to reduce the moral hazard induced by institutional bailouts	The IMF would provide unconditional short-term credit only to countries that are preapproved (ex ante conditionality). The credit is at penalty rate. They recommend to restrain the IMF's ability to allocate credit using ex post conditionality and to prevent the IMF from supporting countries that follow loose fiscal and monetary discipline.
Basle Committee	Ex ante risk management by creditors	The adjustment of the minimum-capital standards to the risk exposure of banks, including an adjustment for sovereign risk. This is done in order to mitigate moral hazard and induced by deposit insurance, which is due to the "too big to fail" systemic-risk doctrine.
Eichengreen (1999)	Ex ante risk management by debtors	Argues for Chilean-style capital-inflow taxes as the only effective solution to the dangers of an open capital account when risk management is inadequate, supervision and regulation are not effective, and there is a culture of explicit guarantees.
Sachs (1995) and Miller and Zhang (2000)	Ex post crisis resolution	Adopting international bankruptcy-style procedures akin to those applied to corporate debt. The proposed procedure provides better coordination among competing creditors, as well as a short-run relief to the debtor from the induced credit crunch, enabling the continuation of export and production. This would be done as part of a controlled restructuring, and may include issuing new senior debt.
Portes (2000)		The addition of collective-action clauses to loan agreements and the establishment of standing-bondholders committees are needed for a market-based solution to be feasible.

(continued)

Table 12.2 (continued)

Proposition Author	Emphasis	Key Features
Krueger (2001)		She proposes international workout mechanism: a framework offering a debtor country legal protection from creditors that stand in the way of a necessary restructuring in exchange for an obligation of the debtor to negotiate with its creditors in good faith and to put in place policies that would prevent a similar problem from arising in the future.
Buiter and Sibert (1999)	Crisis mitigation and resolution	They propose attaching to all foreign-currency liabilities the option entitling the borrowers to extend the debt for a specified period at a mandatory penalty rate.
Soros (1998)	Ex ante insurance against default	They propose insurance by a global authority, akin to a global FDIC. Borrowers would pay the premium. International monitors (like the IMF or the BIS) would set borrowing ceilings and no bailouts would be enforced on noninsured loans.
Jeanne (2003)		He proposes a crisis-insurance fund that bails out countries conditional on the payment of the risk premium and on making the needed fiscal adjustments.
Rogoff (1999)	Ex ante steps to reduce crises incidence	Shifting financing from debt to equity is proposed. This would be facilitated by mitigating the factors contributing to the bias towards debt [like a deposit insurance that subsidizes bank intermediation, underdeveloped equity markets in emerging markets, etc.).
Kaminsky, Lizondo, and Reinhart (1998)		They propose a warning system for crises that takes into account a broad variety of indicators.

taxpayers' expense. A profound reform of the IMF, as suggested by the Meltzer committee (Meltzer 1998), would restrict the IMF's role to helping countries meeting *ex ante* conditionality (see also Jeanne 2003). Another radical approach calls for the formation of a global lender of last resort (see Soros 1998), an approach that would institutionalize a global type of the Federal Deposit Insurance Corporation (FDIC) arrangement. All these proposals share the concern of minimizing *ex post* bailouts that were not preapproved at the lending stage.

A less aggressive approach to provide greater stability is the imposition of reserve requirements on lenders, borrowers, or both, as well as the possibility of capital-adequacy requirements that are linked to the bank's portfolio risk. The Basle committee (as well as Greenspan 1998) advocates this approach. The rationale for the reserve requirements is provided by the presence of various externalities. On the lender's side, the anticipation of bailouts is introducing an externality, where marginal lending has adverse impacts on the taxpayer. On the borrower's side, as long as partial defaults are costly, marginal borrowing affects all agents by increasing the probability of a costly default that would have an impact on all (see Aizenman and Turnovsky 2002). Alternatively, emerging markets may enact similar policies aimed at curbing short-term financial flows, akin to the Chilean system in the 1990s (see Eichengreen 1999).⁸

A different tack of reforms has focused on the *ex post* resolution of crises. One approach advocates institutionalizing *ex ante* the possibility of credit relief in bad times. This may be accomplished by attaching to all foreign-currency liabilities the option that entitles the borrowers to extend the debt for a specified period at a mandatory penalty rate (see Buiter and Sibert 1999). In order to facilitate the coordination among large numbers of diffused lenders, various proposals advocate deeper institutional changes. The adoption of a modified version of domestic bankruptcy procedure has been frequently advocated (see Sachs 1995; Miller and Zhang 2000; Kreuger 2001). Specifically, such an international workout mechanism would aim at minimizing the cost of protracted negotiations. It would allow the debtor the continuation of export and production with minimal disturbances. It would also serve to coordinate among the diffused creditors, thereby allowing smoother and faster resolution of the standoff between the involved parties.

8. See De Gregorio, Edwards, and Valdes (2000) for a mixed review of Chile's experience with controls on inflows. Edwards (2001b, 25) concludes that these controls "were successful in changing the maturity profile of capital inflows, and of the country's foreign debt. Also, the controls allowed the monetary authority to have greater control over monetary policy. This effect, however, appears to have been confined to the short run, and was not very important quantitatively." In evaluating Chile's experience, one should keep in mind that Chile has been the best performing country in Latin America in recent years. Hence, Chile's experience may provide limited inference about the potential benefits of controls on inflows to countries with more-fragile financial systems.

12.4 Reforming the Financial System: The Challenges

The growing list of proposed reforms is indicative of the emerging consensus that the present financial architecture needs a major overhaul. While it is easy to point out the flaws of the existing system, any fundamental reform will confront a host of challenges. We review briefly some of the general issues involved and illustrate their relevance in understanding the limitations of various proposals.

12.4.1 The Lucas Critique: Political Economy and Coordination Failure

Any significant reform will change agents' behavior in ways that are hard to predict without understanding the fundamental forces explaining sovereign borrowing and default. Some of the relevant fundamentals are determined by the political-economy characterization of emerging markets and by the challenges confronting attempts to deal with coordination failures. A version of the Lucas critique applies; without a fuller understanding of the fundamental forces leading to exposure and crises, suggested reforms may lead to disappointing results, at best, and welfare reduction at worst.⁹ We illustrate these considerations by analyzing the potential pitfalls in several proposed reforms.

12.4.2 Debt Maturity Structure

Jeanne (2003) illustrates the importance of understanding the forces leading to vulnerability as a necessary condition for evaluating the welfare effects of changing the international financial architecture. Specifically, he focused on understanding the maturity structure of countries' external liabilities as the solution to an incentives problem. He considered a country attempting to borrow when there is uncertainty about its solvency due to exogenous shocks. The country can enhance its solvency by implementing a costly fiscal adjustment, and it can borrow on a short-term or a long-term basis. This situation imposes a trade-off—when government's solvency deteriorates, short-term debt becomes less expensive or more accessible than long-term debt. This comes with a cost: The government is under more pressure to restore the fiscal situation if its debt has a shorter maturity because it is more vulnerable to a crisis in which creditors do not roll over

9. The Lucas critique stresses that economic relationships observed would be modified when policies or economic conditions change. This result follows from the observation that changes in policies affect the incentives and the budget constraints facing economic agents. Hence, new policies would alter the behavior of agents, thereby modifying the observed correlations. If policymakers attempt to take advantage of past statistical relationships, the effects manipulating thought expectations and agents' behavior may cause the relationships to break down (See Lucas 1976). Applications of the Lucas critique include the Phillips curve (illustrating the ineffectiveness of anticipated monetary policy) and the ineffectiveness of temporary changes in taxes.

their claims. This is due to the observation that short-term debt opens the door to self-fulfilling crises in which creditors stop rolling over their loans for an extraneous reason unrelated to the fundamentals. There is a tension, thus, between the disciplinary benefits of short-term debt and the risk of unwarranted rollover crises.

In this context, Jeanne investigates the welfare effect of institutions that facilitate an orderly workout of debt crises (e.g., an international bankruptcy court and officially sanctioned standstills) and of international lender of last resort. These measures are shown to improve welfare but to fall short of the first best. The first best in Jeanne's model is achieved by a crisis-insurance fund, which ex post bails out countries conditional on the ex ante fiscal adjustment and payment of a risk premium.

12.4.3 Transparency and the Feasibility of the Crisis-Insurance Fund Conditional on Ex Ante Adjustment Effort

It is noncontroversial that a minimum level of transparency of financial positions and policies is a necessary condition for financial markets to exist and to operate,¹⁰ yet it is not clear that greater transparency would eliminate the exposure to crises. Setting standards for transparency may encourage creative accounting in which each crisis exposes new loopholes, inducing a change in the required rules of the game. While "transparency creep" is unavoidable, putting too much faith in the importance of transparency may lead some investors to a false sense of security. Indeed, full information does not negate the possibility of crises induced by multiple equilibria.

One of the innovative proposals dealing with reforming the IMF is to insure countries against financial crises only if they met ex ante criteria (see Jeanne 2003; Meltzer 1998). A necessary condition for such a scheme is transparency. In practice, however, verification is costly and fuzzy. Frequently, it takes a major crisis to force the "real books" to open (see the case of Korea's reserves in the 1997 crisis, and the recent Enron fiasco). These practical considerations suggest that it is only in the aftermath of a crisis that we learn the degree to which the ex ante criteria were met, since a crisis may reveal that some of these criteria were met only superficially. It may be hard to verify ex ante if the institutional environment changed enough to warrant the insurance. Hence, costly monitoring and the impossibility to fully verify the depth of the adjustment limit the applicability of this proposal. In these circumstances, we are left with no clean solutions, and there may be no escape from the need to muddle through protracted negotiations in the aftermath of crises.

10. For example, greater uncertainty about the net indebtedness of a country would lead to thinner markets and may eventually lead to the collapse of voluntary lending (see Kletzer 1984; Calvo 2002; Aizenman and Marion 2002b).

12.4.4 The Use (and Abuse) of International Reserves and Vulnerability Indicators

A high short-term debt–international reserves ratio was found to be a vulnerability indicator, signifying exposure to crises (see Rodrik and Velasco 1999). Does it imply that emerging markets would benefit by increasing the cushion of international reserves, signaling thereby they are being a safer borrower? Countries like Chile, Korea, and Taiwan have managed large stocks of international reserves. Does it follow that other countries will benefit from hoarding more international reserves in order to reduce the above-vulnerability index? As the Lucas critique would suggest, a deeper understanding of the economy is needed in order to answer this question.

This point can be illustrated in a model of emerging markets, where there is a conflict between efficiency and political economy considerations. Specifically, countries characterized by sovereign risk, tax-collection costs, inelastic demand for fiscal outlays, and a volatile GDP opt to engage in large external borrowing. Suppose that international reserves are beyond creditors' control (this would be the case if the location and the magnitude of the reserves is not public information, implying also that the partial default repayment is independent of the stock of reserves). In the absence of political-economy considerations, higher borrowing can be shown to be accompanied with a greater accumulation of international reserves (see Aizenman and Marion 2002a). While this adjustment is welfare enhancing, it may do little to prevent a sovereign-debt crisis. Suppose now that there is political uncertainty regarding the identity of the future administration; there is a positive probability that an opportunistic administration will loot the treasury and channel resources toward narrow interest groups. Greater political instability can be shown to reduce the demand for international reserves and to increase borrowing.¹¹ Hence, the association between external borrowing and international reserves depends critically on political-economy factors. A high short-term debt–reserve ratio may be the symptom of political instability. In these circumstances, a policy that will target a drop in the short-term debt–international reserves ratio, without dealing with the political-economy considerations that determine the prospect of future looting, is welfare reducing. Such a policy does not necessarily reduce vulnerability to crisis, and, in fact, it may increase the probability of a crisis.

This would be the case, for example, if the increase in the stock of re-

11. If the present administration is opportunistic, it will loot all liquid resources, hence it will minimize its reserves holdings and maximize borrowing. If the present administration is benevolent, a higher probability of a future opportunistic administration will reduce the present demand for international reserves and will increase borrowing as a way of reducing the resources available for future looting.

serves, triggered by policies, increases the misguided expenditure of opportunistic administrations in the future. This effect is further magnified when the probability of the switch to the opportunistic administration increases with the resources available to such an administration, or when these resources trigger rent-seeking behavior. One may view this example as an illustration of the Lucas critique—policies that are beneficial in the absence of opportunism may backfire and reduce welfare in countries characterized by political polarization and instability.

Similar concerns may apply to the usefulness of vulnerability indicators. These indicators provide information on variables correlated with past crises. Attempts to encourage the dissemination and the use of these indicators in allocating global funds may have mixed results. One doubts the degree to which these indicators will perform in the future when they are out of the sample used to construct them. One may also envision situations in which the introduction of quasi-official indicators provides a false sense of security and in which market participants may attach too much value to these indicators, ignoring other relevant information. It may induce emerging markets to distort the indicators in order to signal their relative soundness. As the previous discussion illustrated, short of deeper reforms, these signals may be misleading and may not indicate a genuine reduction in vulnerability.

12.4.5 Time Inconsistency and Political-Economy Considerations— How Important Is the Choice of Exchange-Rate Regimes?

Crises are frequently the delayed manifestations of political-economy factors. Reforms that ignore these factors run the risk of inducing too optimistic an assessment of countries, which, over time, leads to a large exposure and ultimately to greater vulnerability. The literature on the optimal exchange-rate regimes frequently attaches too much importance to the choice of monetary policy. Beyond the short run, monetary and fiscal policies are intertwined via the intertemporal budget constraints. Indeed, one may argue that a deficient fiscal system may lead to crises independently of the exchange-rate regimes. In these circumstances, the choice of the exchange rate regime will have an impact only on the timing of the ultimate crisis. After all, sovereign risk and exchange-rate risks have different causes. Casting the problem in terms of the “smart” choice of an exchange-rate regime is potentially hazardous, as it obscures the need to challenge the deeper fiscal deficiencies.

These considerations are illustrated in the contrast of the policies undertaken by Brazil and Argentina in the last fifteen years. In the 1980s, both countries were characterized by similar fiscal deficiencies, stemming from their organization as a loose federal system in which the provincial states and municipalities had a significant bargaining power relative to the federal center. In the early 1990s, both countries went through successful

exchange-rate-based stabilizations. The nominal anchor, provided by pegging the exchange rate, supported rapid disinflation in both countries. Argentina, however, put a much greater emphasis on the importance of a peg—it adopted a rigid currency board. In contrast, Brazil put greater emphasis on dealing with its fiscal imbalances, thereby reducing the relative power of the provincial states.¹² In addition, Brazil moved over time from a fixed-exchange-rate regime towards discretionary-exchange-rate management, accommodating external adverse shocks with occasional depreciations. As the recent events have painfully illustrated, Brazil's choice allowed it to steer away from a deep crisis, whereas Argentina's choice has led over time to increased vulnerability and ultimately to the recent crisis.

12.4.6 Multiple Equilibria and the International Lender of Last Resort

One possible justification for bailing out countries is the presence of multiple equilibria. Exposure to multiple equilibria is a by-product of the maturity transformation accomplished by financial intermediation in which short-term deposits are used to finance longer-term real projects (see Diamond and Dybvig 1983 for a banking model; Chang and Velasco 1999 for an open economy model of bank and currency runs). In these circumstances, the presence of the lender of last resort is supposed to prevent the bad equilibrium. As Rogoff (1999) discussed, a lender of last resort comes with a hefty cost to the taxpayer. Some may view the fate of Argentina as an example of a country suffering from the adverse consequences of a switch to a bad equilibrium. Supporters of this view point out that conventional measures (e.g., current account, fiscal deficits, etc.) failed to flag out Argentina as a highly vulnerable country in the 1990s. Indeed, Argentina's fiscal measures were comparable to those of "respected" OECD countries. Can we infer from this that a lender of last resort would have prevented the Argentinean crisis?

While it is hard to test this assertion, there are fundamental challenges facing the multiple-equilibria argument. Vulnerability to a crisis may depend on the capacity of an economy to adjust to changing circumstances. This includes the ability of the fiscal system and the labor market to adjust to unforeseen events. More generally, country risk may be determined by the interaction between shocks and the quality of the institutions of conflict management (see Rodrik 1999). In the context of Argentina, the multiple-equilibria interpretation is challenged by the view that Argentina is a quasi-European-style welfare state standing on the shoulders of a very thin tax base. This situation is further exacerbated by the provincial states' bias towards overspending. Hence, one may conclude that there are fundamen-

12. While it's premature to conclude that Brazil has accomplished all the adjustments called for under the Fiscal Responsibility Act of 2001, it started the painful process of curbing the biases towards provincial overspending. See Dillinger and Webb (1999) for further details about the reforms.

tal reasons to view Argentina as a risky destination for global capital, even if its fiscal deficits and current-account deficits are comparable to OECD countries.

The insistence of the Argentinean authorities on preserving the currency board, despite the growing strength of the dollar and the occasional real depreciations of Brazilian currency, may be viewed as a manifestation of these risks—viewing the currency board as the main safeguard against inflation runs the hazard of providing a signal that the deeper fiscal problems are still there. Placing too much faith on the currency board as the mechanism for fiscal discipline overlooks the fact that the cost of changing the exchange-rate regime (and of monetary policy, more generally) is much lower than the cost of a fundamental fiscal reform. Hence, a country like Argentina runs the risk of being viewed as fiscally unstable, independently of the realized path of current-account and fiscal deficits. In the long run, according to this view, the fiscal side will determine the strength of the system. Short of resolving fiscal deficiencies, a country like Argentina will find it hard to convince the market that it's a prudent destination for capital.

One may rephrase the above discussion in terms of the rules-versus-discretion literature, where there are gains from delegating monetary policy to a conservative agent. As was illustrated in Rogoff's (1985) seminal work, the optimal commitment to the conservative course depends on the stochastic structure. If the balance of shocks tilts over time toward adverse real shocks, a less conservative course is preferable. The success of Brazil and the failure of Argentina may be viewed as a vivid example of this principle. The success of the structural reform would require also challenging the fiscal deficiencies that determine, in the long run, the course on monetary policy. Hence, the relative success of Brazil is attributed to its success in curbing the bias towards provincial overspending and in a more appropriate use of discretionary-exchange-rate and monetary policy.

12.4.7 Policies Designed to Impose Discipline on the Market— Reserve and Capital-Adequacy Requirements

The introduction of reserve requirements by either borrowers or lenders may impose better discipline on the global financial market. Borrowing will decline and so will default risk, reducing the necessity for continuing bailouts. The introduction of reserve requirements will improve welfare in both the lending and borrowing economies. In these circumstances, the lender's optimal-reserve requirement increases with the expected bailout (see Aizenman and Turnovsky 2002). Indirectly, this policy may reduce the bias in favor of debt and against equity in international lending, identified by Rogoff (1999). But the design of the optimal-reserve requirement in a decentralized world is a delicate matter, and both the optimal lender's reserve requirement and the optimal borrower's requirement have equally attractive and unattractive features. Indeed, without a proper coordination among all

lenders, the reserve requirements will reallocate lending from high- to low-reserve countries with few beneficial effects. Hence, the gains of such policies will be determined by the ability of international institutions (e.g., the Bank for International Settlements [BIS], IMF, etc.) to induce all lenders to apply similar policies, driven by the underlying risk factors.

12.5 Concluding Remarks

The global financial market has been shaken throughout the 1990s by a series of major financial crises. Attempts to stabilize the global system have led to large bailouts. This experience suggests that the present system cannot survive indefinitely, since the willingness of taxpayers in the OECD countries to engage in continuing bailouts is approaching its limits. The presumption is that we deal with a second-best situation in which there is no quick fix, but welfare can be enhanced by the proper regulatory changes. While prudent borrowing of emerging-market economies is beneficial, excessive borrowing may be disadvantageous due to existing distortions. In such an environment, one should either reduce the existing distortions, or induce borrowers and lenders to internalize them.

Recent proposals for the new international financial architecture have focused on reform along two margins: reducing the ex ante probability of a crisis and inducing the more-orderly resolution of a crisis. In evaluating the various of proposals, it is important to stress that there are good reasons to support both more-effective crisis management and more-prudent ex ante allocation of credit. As each deals with a different margin, they should complement each other. Specifically, the crisis-management proposals do not address directly the excessive risk undertaken due to moral hazard, as the ex post solvency of some of the resultant projects hinge on bailouts. Similarly, improving the prudential regulations would not eliminate liquidity crises. Hence, the need for more-efficient crisis management and resolution remains a high-priority issue. This is especially due to the growing diversity of lenders, implying that the task of coordinating the resolution of crises is more involved.

Greater global integration increased the responsiveness of financial flows to news. This development is potentially beneficial in good times, but it has adverse consequences when things go wrong. Hence, the darker side of globalization is that financial crises increase the scope for conflicts—the direct stakes are higher. Once the bad news hits the market, the key issue is not only the ultimate distribution of the burden of adjustment between the debtors and creditors, but also the length of time it would take to settle down the dispute. The killer of future cooperation may be the uncertainty regarding the dispute-resolution mechanism, since it exposes creditors to the hazards of long haggling over a shrinking pie. Protracted negotiations will prolong the period in which both domestic and international agents re-

frain from new investments. This in turn will deepen the recession in the affected countries, increasing the social tension and further increasing losses. The net outcome may be greater temptation for the domestic authorities to embark on populist policies, which tends toward autarky, a trend that will hurt further prospects of trade integration. Hence, the recent crises may be viewed as a test case for the efficiency of the global dispute-resolution mechanism. While one hopes that the direct financial contagion from Argentina to other countries will be limited, one expects that a slow and protracted resolution of the crisis will highlight the inability of the present system to deal efficiently with adverse shocks, thereby reducing future financial flows and putting in jeopardy other vulnerable countries.

The urgency of these issues is illustrated by the willingness of top IMF executives to engage constructively in a debate concerning the future form of the global dispute-resolution mechanism (see Krueger 2001). One expects that only reforms that offer practical solutions will pass the market test and will endure the political process needed to implement them. One doubts the degree to which “clean” ideas, like insurance based only on meeting ex ante conditionality, will survive the time-inconsistency and the transparency challenges. Regulatory enhancements that would use existing institutions would have a greater chance of adaptation. Examples of such interventions are the regulations and supervision undertaken by central banks in the context of domestic banking. One expects a more stringent application of capital and reserve requirements. One expects also a greater role for the BIS and the IMF in coordinating these regulations across countries. Considering the greater weight of nonbank lending and the great increase in the number of institutional investors, one expects reforms dealing with better coordination among creditors and with the formation of international bankruptcy procedures to be vigorously tested by looming crises.

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Comment Robert M. Stern

In Aizenman's opening section on financial openness and the occurrence of financial crises, what comes out clearly is the role of weak institutions coupled with political economy considerations that demonstrated the unwillingness or inability of government authorities to take timely and effec-

Robert M. Stern is emeritus professor of economics and public policy at the University of Michigan.

tive actions in dealing with the crises. There is abundant evidence of government macroeconomic and financial mismanagement in the cases especially of Mexico in 1993–1994 and several Asian countries in 1997–1998, including Thailand, Indonesia, Malaysia, South Korea, and Hong Kong. But it is interesting to note that some other Asian countries were apparently less vulnerable to crisis because of their more timely and effective domestic policies. The Philippines, Singapore, and Taiwan are cases in point. Furthermore, China and India were not greatly affected by the crises elsewhere in Asia because of their long-standing capital controls.

While Aizenman is mainly concerned with the broad aspects of the occurrence of financial crises, he devotes less attention to the different responses of governments to the crises and especially to the pace of recovery. Thus, for example, in the case of Mexico, considerable financial assistance was provided by the International Monetary Fund (IMF) and bilaterally by the United States. Moreover, with the onset of the crisis, Mexico moved quickly to float the peso and instituted a severe austerity program with tight monetary and fiscal policies. While income and employment in Mexico contracted considerably, the depreciation of the peso combined with the rapid expansion of the U.S. economy served subsequently to bolster the recovery process so that Mexico was able to finance the repayment of the bailout funds within a fairly short period of time.

The financial management experiences of the Asian countries were, as noted, more diverse. The role of the IMF proved more controversial as to whether it helped the recovery process or made things worse at the time, especially in Thailand, Indonesia, and South Korea. But some countries chose to forgo IMF assistance altogether, as in the cases of Malaysia, which instituted capital controls, and Hong Kong, which tightened its macroeconomic policies and was able to maintain its fixed exchange rate and currency-board arrangement. In retrospect, what is perhaps surprising about the Asian experience, as was the case also for Mexico, is how rapidly the countries were able to recover from the crises, aided especially by their currency depreciations and the significant upturn in the demand for their exports due to the rapid expansion of the U.S. economy in the late 1990s.

The question that emerges for several of the Asian countries noted is the extent to which they have been able to strengthen their financial institutions so that they are now less vulnerable to crises than they were previously. Aizenman intimates that there may be an endogenous improvement in institutions and policies once countries have experienced financial crises. This perhaps can now be tested to see how they are responding to the significant reduction of external demand with an economic slowdown in the United States, continued slow growth in Western Europe, and stagnation in Japan.

When we look at experiences with financial crises outside of Asia, the

most noteworthy cases include Russia, Brazil, Turkey, and Argentina. Following the collapse of communism, Russia was saddled with weak financial institutions and fiscal inadequacies. It received considerable IMF financial assistance, which was supported by the United States for political reasons, but this assistance proved unsuccessful, perhaps because it came too late. Russia defaulted on a considerable portion of its debt in August 1998. But since that time, aided by the significant depreciation of the ruble and the upturn in world oil and other commodity prices, Russia introduced financial discipline and strengthened its domestic fiscal and regulatory arrangements. Thus, Russia is in much better macroeconomic shape presently than it had been previously.

In the case of Brazil, the IMF provided substantial assistance designed especially so that Brazil could maintain its exchange rate peg. But this turned out to be unsustainable and raises the question again about the wisdom of IMF policies and advice. Subsequently, Brazil floated its currency and adopted policies of monetary and fiscal restraints. These measures have proven successful on the whole, although there are apparently some concerns currently about the sustainability of the fiscal restraints because of domestic political opposition.

Turkey has received considerable IMF assistance and has been supported politically by the United States because of Turkey's importance as an ally in the Middle East. But it is not clear if Turkey's macroeconomic position is sustainable because of insufficient domestic measures and political uncertainties. In any case, Turkey is so large and important to both U.S. and European interests that there will almost certainly be continued external financial support and encouragement of more effective domestic measures to control inflation and restrain expenditures.

It is well established that the maintenance of the currency-board arrangement in Argentina deprived Argentina of the use of monetary policy for stabilization purposes and exchange rate adjustments for external balance. Argentina was thus especially vulnerable to the Brazilian currency depreciation that occurred. Fiscal inadequacies and inflexible labor-market arrangements made it difficult for Argentina to adjust. Here, also, the IMF provided considerable financial assistance that proved to be ineffective, thereby raising the question once again about whether IMF assistance helped or made matters worse. The Argentine case is sad indeed because of the social consequences of the mismanagement involved on the part of the domestic authorities and the maintenance of the ultimately unsustainable exchange rate arrangement. The IMF has been reluctant to provide further financial assistance under current circumstances, and the United States has remained aloof in contrast to the political interests expressed in the cases of Russia and Turkey.

It appears clear from the foregoing review of country experiences that the first line of defense in dealing with financial crisis calls for the strength-

ening of domestic institutions and responsible government. At the same time, there is a need for complementary international and bilateral measures to deal with (1) short-term liquidity problems, which are the traditional role of the IMF, and (2) more deep-rooted structural problems. These structural problems may require arrangements for the rewriting of debt contracts and possibly for establishing an international system of bankruptcy procedures applied to nations.

In the final analysis, the question that needs to be answered is how much of a nation's painful adjustment in time of crisis is to be borne by the nation itself or shared with foreign creditors. In part, this may depend on international politics, especially as far as the United States is concerned. Otherwise, the country itself will shoulder most of the burden of adjustment.

