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Xavier Vives

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IESE Business School – University of Navarra

Avda. Pearson, 21 – 08034 Barcelona, Spain. Tel.: (+34) 93 253 42 00 Fax: (+34) 93 253 43 43

Camino del Cerro del Águila, 3 (Ctra. de Castilla, km 5,180) – 28023 Madrid, Spain. Tel.: (+34) 91 357 08 09 Fax: (+34) 91 357 29 13

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BANKING AND REGULATION IN EMERGING MARKETS: THE ROLE OF EXTERNAL DISCIPLINE

Xavier Vives*

Abstract

This paper reviews the main issues of regulating and supervising banks in emerging markets with a view towards evaluating the long-run options available for the banking system in those economies. Particular attention is paid to the cases of Latin America and East Asia. A key idea is that these economies face a severe policy-commitment problem that leads to excessive bailouts and potential devaluation of foreign-investor claims. This exacerbates moral hazard and implies that there is a case for importing external discipline (e.g. acquiring foreign short-term debt). External discipline may come at the cost of excessive liquidation of entrepreneurial projects. This paper reviews the trade-offs imposed by external discipline and examines potential arrangements that have been proposed, such as narrow banking, foreign banks and foreign regulation, and the potential role of an international agency or international lender of last resort.

* Professor, Economics, IESE and ICREA-UPF

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BANKING AND REGULATION IN EMERGING MARKETS: THE ROLE OF EXTERNAL DISCIPLINE*

1. Introduction

Liberalization and integration of financial markets have been associated with an increase in capital movements and with financial crises. In particular, surges in foreign short-term debt have been blamed for crisis episodes in emerging economies in Asia (Thailand, Indonesia and South Korea) and Latin America (Mexico, Brazil, Ecuador and Argentina), as well as in the periphery of Europe (Turkey). These crises have proved costly in terms of output.

Several policy responses have been suggested. Among them, reduction of short-term-debt levels, stock-market development, improved regulation and supervision of the domestic financial system, enhanced transparency requirements and market discipline, as well as the establishment of an international lender of last resort (LOLR). A catalog of “solutions” has been proposed to take care of the problems of banking in emerging economies, including moving to a narrow banking system, building a currency union, and leaving banking in the hands of foreign banks and offshore institutions.

In this paper I identify policy responses tailored to the needs of emergent and developing economies. The question is whether the regulatory policies and practices of developed economies can be recommended essentially without change or whether a different policy mix is needed. A basic theme is that more acute asymmetric information problems and a weak institutional structure in emerging economies call for policy prescriptions that are different not only from developed economies but also across emerging countries.

I focus particular attention on a consequence of the weak institutional structure in emerging countries, namely the lack of capacity for policy commitment. This lack of commitment may be due to the short horizons of public officials in the face of, say, political instability. The outcome is that the government of an emergent economy may bail out the private sector, while encouraging excessive risk-taking or moral hazard, and/or may devalue foreign-investor claims

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by discouraging their investment in the first place. Indeed, a major problem in emerging markets is the implicit or explicit guarantee of a bailout in the event of a banking crisis, as experiences in Argentina, Mexico and Thailand have shown, and, in general, the use of inflation to devalue domestic-currency-denominated claims.¹

The end result is that domestic regulation may not be enough in countries that face a commitment problem, and those countries have to import discipline. However, some of the ways of importing discipline from abroad, such as increasing the role of short-term foreign debt, generate costs of their own. I examine the trade-offs imposed by the different ways discipline can be imported and classify countries according to the desirability of doing so. At the same time I analyze the catalog of solutions to the problems of financial systems in emerging economies and the potential role of an international agency such as the International Monetary Fund (IMF).

This paper is organized as follows. Section 2 deals with regulation in emerging countries: rationale, regulatory instruments and the optimal design of regulatory institutions. Section 3 examines the trade-offs for a small open economy associated with importing external discipline. Section 4 classifies a range of emergent economies according to the trade-offs examined, and provides an assessment of the cost and benefits of external discipline. Section 5 is devoted to solutions that have been proposed for emerging countries: narrow banking, currency unions, foreign banks, public banks and offshore banking. Section 6 studies the potential role of an international agency such as the IMF. Finally, Section 7 presents some concluding remarks.

2. Banking in emerging markets

What makes banking regulation different in emerging markets? Why do these countries require different regulatory and supervisory arrangements?

2.1. The role of banks and fragility

Banks provide transaction and payment-system services, insurance and risk-sharing (transforming illiquid assets into liquid liabilities). A key function of banks is financing and monitoring entrepreneurial projects, which are illiquid and opaque because of asymmetric information problems such as adverse selection and moral hazard.² Indeed, some entrepreneurial projects do not obtain market financing because no credible information on

¹ For the Argentinean case, Calomiris and Powell (2000) state that “the banking sector suffered from ineffective regulation and supervision and repeated, forced government rescues contributed significantly to Argentina’s past fiscal and inflationary problems”.

² Moral hazard in its literal meaning refers to the effects that insurance may have on the behavior of the person taking out the insurance that has adverse consequences for the insurance company. The problem arises because the insurance company does not observe the effort the agent makes to prevent a loss. In economic analysis, moral hazard refers to hidden actions in a contractual relationship. Adverse selection arises when the insurer knows more than the company about the probability of the loss happening. It is an issue of hidden information. In general, adverse selection involves the adverse consequences for uninformed parties of the actions of privately informed parties. In section 4 these asymmetric information problems are documented for a range of emerging markets.

them can be conveyed to the public domain. A bank can accumulate relationship-specific skills to monitor these projects to be able to finance them. The banking system thus helps overcome problems associated with asymmetric information in an economy.

Asymmetric information problems are bound to be more acute in emerging and developing economies. The production of information is more problematic in emerging economies because of institutional factors. Indeed, emerging economies fare poorly in terms of indicators of rule of law, protection of property rights and accounting standards, thus pointing to aggravated moral hazard and adverse selection problems. Furthermore, because the production of information typically involves a fixed cost, it is not recommended given the normally small size of the emerging market. One first consequence of enhanced asymmetric information problems is that the financial system is less developed because the cost of setting up markets that work well is higher. Arm's-length financing just does not work. One consequence is that the role of the banking system, in particular the monitoring of entrepreneurial projects, is much more crucial. Indeed, for most companies in an emerging market, the only possible source of financing besides earnings is bank loans. Banks and their monitoring capacity are therefore at the center of economic development and their potential fragility may dramatically worsen downturns. The crises in Mexico, East Asia and Russia are good examples, as is the more recent crisis in Argentina.

Why are banks fragile?

The essence of banks is that they create liquidity, which is what makes them vulnerable to bank runs. Banks protect entrepreneurs who need financing from the liquidity needs of depositors/investors. There are different versions of the story, but this is the cornerstone of modern banking theory (Diamond and Dybvig 1983; Diamond and Rajan 2001; Holmström and Tirole 1997, 1998).³ Firms may be unable to obtain funding because of asymmetric information, as they do not have enough pledgeable income (the fraction of their return that can be committed to be paid to outsiders). Banks sometimes come to the rescue by creating liquidity, holding collateral and committing to make payments (Holmström and Tirole 1997, 1998). In short, the standard deposit contract and loan provision to opaque entrepreneurial projects are complementary and key to the function of a bank.

Short-term debt (a deposit redeemable at par) leaves banks exposed to failure when returns are low. However, this possibility has desirable incentive properties because it can create an incentive to exert effort for self-interested bank managers who are, to put it simply, mostly interested in keeping their jobs. This is reasonable when private benefits of control loom large, as may well be the case in emerging economies with a weak institutional structure. In general, short-term debt has a disciplining effect in the presence of a moral-hazard problem. Indeed, in the extreme, repayment of long-term debt may not be enforceable and only the threat of

³ The demand-deposit contract, redeemable at par, either creates a coordination problem for investors that does not allow bankers to extort rents on their abilities to collect illiquid loans (Diamond and Rajan 2001) or disciplines bank managers subject to a *moral-hazard problem* (Calomiris and Kahn 1991; Gale and Vives 2002).

liquidation in an interim period may enforce payment to the creditor (Hart 1995; Bolton and Schafferstein 1990)⁴.

How does the theory relate to the trend in the banking industries of developed economies of moving from the traditional business of taking deposits and granting loans to rendering services for investors (investment funds, advice and insurance) and firms (consulting, insurance, mergers and acquisitions, underwriting equity and debt issues, risk management, etc.)? Banking in developed countries is in a process of transformation that is more advanced in the United States than in Europe, where the financial margin makes way for fee and commission revenue. Indeed, the share of assets held by banks compared with non-bank intermediaries is declining in developed economies (Allen and Santomero 2001). In contrast, in emerging economies the traditional role of banks remains key.

In summary, in emergent economies, the traditional function of banks is all the more important, given that financial markets are less developed and asymmetric information problems more acute.

2.2. Fragility, regulation and the safety net

The inherent fragility of the banking system, with asymmetric information at its root, leads to the failure of institutions, panic and systemic crises that potentially have a major impact on the economy. The Great Depression of the 1930s is a good example, and more recent episodes of financial crises in the United States, Scandinavia, Mexico, East Asia and Russia, to name but a few, remind us of the potential for economic disruption. The failure of a bank has adverse consequences on non-financial firms precisely because individual bank-firm relationships are valuable (Petersen and Rajan 1994). In fact, even a contraction of bank capital may induce a credit crunch with severe disruption to the private sector. This is even more evident in an emergent economy, which is more dependent on the intermediary services of banks.

At the base of the fragility of banking there is a coordination problem among depositors, who may decide to call back their short-term deposits and make a sound bank fail. The literature has presented two views of crises: the multiple equilibrium panic view (Diamond and Dybvig 1983) and the information-based view (Gorton 1985, 1988; Jacklin and Battacharya 1988). According to the first view, bank runs are triggered by sunspots, i.e., by events unrelated to the fundamentals, while the second view says that runs are triggered by bad news about the bank's assets. These views were recently reconciled by introducing asymmetric information and linking the probability of a run to the strength of fundamentals (Goldstein and Pauzner 2004; Morris and Shin 2000; Rochet and Vives 2004).⁵

Thus, a solvent bank may be subject to a purely speculative panic, with depositors withdrawing the funds invested and the bank being forced to quickly liquidate assets at a high cost. The cause of the problem is banks' dependence on short-term debt (or the standard deposit

⁴ Moral hazard may also arise from the entrepreneur who asks for credit to finance a project. If effort is devoted to the project, returns are ameliorated. If the entrepreneur takes a loan that is forcibly short term, then the incentive for effort in the project comes from the threat of liquidation if returns (which are not verifiable) are low and cannot cover the promised debt payment. Effort improves returns, but liquidation is costly.

⁵ Postlewaite and Vives (1987) provided an early model with a unique equilibrium where the probability of a crisis is determined by the realization of depositors' liquidity needs, which is private information.

contract). In addition, there is the danger of systemic risk owing to contagion from the failure of one entity, which may give rise to a strong negative externality both for the financial sector and for the real sector of the economy. For example, the failure of one entity may lead to the failure of others through inter-bank market commitments (Allen and Gale 2001). Similarly, large variations in the price of assets, such as an abrupt fall in the stock market or the failure of a major intermediary, may generate a domino effect and systemic crises affecting the payment system.

In general, competitive banking will be excessively fragile and LOLR facilities (Section 2.3) and prudential regulation (Section 2.4) will have to come to the rescue. The aim of regulation has been to provide the banking and financial systems with stability to avoid the negative effects associated with failing institutions and systemic crises. Other aims have been to protect the small investor and promote the competitiveness of the system.

2.3. The LOLR and the policy-commitment problem

In developed countries, the LOLR and deposit insurance are two of the basic instruments on which the stability of the banking system rests. However, there is a tendency in these countries to protect banks and depositors beyond the levels required by deposit insurance, particularly in accordance with the too-big-to-fail (TBTF) policy. One of the reasons the TBTF policy is in place is to protect against the potentially systemic consequences of the failure of a large institution, but more often help is a reflection of a problem of time-inconsistency. In the presence of a moral-hazard problem in the banking sector (such as bankers' level of effort in monitoring projects), a well-intentioned LOLR will find it optimal *ex post* to help whenever the value of projects can be saved. Bankers, anticipating the help, will tend to exert suboptimal effort. This is an instance of the time-inconsistency problem faced by a central bank. For example, *ex ante*, the central bank may want to commit to close the bank if returns are very low (signaling a solvency problem), while helping the bank if returns are only moderately low (signaling a liquidity problem). Such a commitment provides incentives for bank managers to monitor the projects they finance. The central bank may therefore implement the second-best solution in a competitive banking system.⁶ However, *ex post*, costly liquidation of the projects will not be optimal, so the central bank may hesitate to carry out its threat. The commitment problem is compounded by the interest of a bank manager in the continuation of the bank. Building a central bank with a "tough" reputation can alleviate the time-inconsistency problem.

This commitment problem because of inter-temporal inconsistency is aggravated in emerging markets where institutions are weak and suffer from a lack of credibility and independence. In emerging markets it will be difficult for central banks to build a reputation for disciplining banks because central bankers' effective horizon is short due to political instability. For example, in Argentina in the 1980s the average term in office for a central bank governor was less than a year, despite the fact that the legal term was four years (see Cukierman (1992,

⁶ In the presence of a *moral-hazard problem*, efficiency (of the second-best type due to incentive considerations) requires that the expected utility of investors/depositors be maximized subject to the condition that the bank manager exerts effort. This can be accomplished by liquidating the project when observable interim returns are lower than a certain threshold (this is the minimal threshold that induces the manager to exert effort; a higher threshold would then just increase the costs associated with liquidation). The issue is how to achieve or approximate this second-best outcome. We will return to this point in the following sections.

Chapter 19)). A related problem is the lack of legal protection for bank supervisors when attempting to impose discipline (as in Argentina). Then, even if the perceived problem is serious, the bank may be allowed to continue or even be granted help (World Bank 1998). A weak institutional structure allowing regulatory capture also explains why a change of management in the face of failure is not implemented when needed. The case of “crony capitalism”, where the government helps firms that are considered friends, is an extreme form of capture.

The consequence of the inter-temporal inconsistency and/or regulatory capture is that the central bank of an emergent economy that has a commitment problem will have incentives to inflate to reduce the real value of nominal debt commitments when the banks or entrepreneurs are in trouble. This will avoid liquidation, but destroys incentives to exert effort and, in turn, devalues foreign investments in domestic currency. The outcome will be a lack of foreign investment. As I argue in Section 3, foreign-denominated short-term debt may be crucial for the access of an emergent economy to the international capital market because it protects foreign investors from the devaluation of their claims caused by actions of the government.

2.4. Prudential supervision

The TBTF policy, the deposit insurance system, and, in the extreme, blanket protection and bailouts introduce distortions into the decisions of financial entities. They reduce the incentive of depositors to monitor bank performance and, coupled with the bank’s limited liability, give rise to excessive risk-taking. Bailouts eliminate the disciplining effect of closures and exacerbate risk-taking and inadequate provision of effort by bank managers.

The need for regulation is particularly acute when charter values are low (and therefore incentives to take risk are high) and the social cost of failure is high (and therefore banking failure has a great impact). See the right column in Table 1.⁷ With either very high disclosure requirements or risk-based insurance, banks pay for taking more risk and capital requirements may be sufficient to control risk-taking (see Diamond and Rajan (2000) for the role of bank capital to control excess fragility). Otherwise, capital requirements may need to be complemented with restrictions on the investments of banks in order to check risk-taking.

The general trend in banking regulation is to check risk-taking with capital requirements and appropriate supervision. Both risk-based (deposit) insurance and disclosure requirements have been proposed to limit risk-taking behavior. That is, developed economies tend to move towards the top and the bottom lines of Table 1. This movement is accompanied by a reform of the 1988 Basel Accord on capital requirements to adjust them better for risk (Basel II). Capital requirements, together with supervision and market discipline, are the three pillars on which regulatory reform is based. Basel II stated with respect to capital requirements that banks can adopt either a “standardized” approach in which external rating agencies will be used to set the risk weight for the different kinds of loans (say, corporate loans, bank loans and sovereign claims) or an internal-rating-based approach in which banks estimate the probability of default and also the loss, given default in an advanced version of the method. The idea is to calibrate the capital requirement so that it covers the (expected and unexpected) Value at Risk from the loan given some assumptions.

⁷ Table 1 is based on Matutes and Vives (2000), as well as Cordella and Yeyati (2002) and Hellman *et al.* (2000).

It must be noted, however, that transparency has its limitations. While it is feasible to introduce disclosure requirements on banks' market positions, it is more difficult to assess the risk level of a bank's illiquid loan portfolio. Furthermore, increased disclosure may in fact induce information-based runs of investors, thus generating instability.

Table 1

Possible banking regimes, the incentives to take risk on the liability and asset sides, and the necessary regulatory instruments when charter values are low and the social cost of failure is high.

Banking regimes	Risk-taking incentives		Regulation
	Liability (rates)	Asset (investment)	
Free banking (observable risk/high disclosure)	Medium-low	Absent	Capital requirements
Free banking (unobservable risk/low disclosure)	Medium-high	Maximal	Capital requirements and asset restrictions
Risk-insensitive insurance	High	Maximal	Capital requirements and asset restrictions
Risk-based insurance	Low	Absent	Capital requirements

2.5. Regulation in an emerging market

Table 1 shows that if it is feasible to introduce risk-based insurance and/or disclosure requirements that eliminate moral hazard, capital requirements (which are risk-based themselves) may be a sufficient instrument to check risk-taking and improve welfare. However, the characteristics of an emergent economy cast doubt on the feasibility of this strategy.

First of all, an emerging economy is likely to face high uncertainty as a result of high economic volatility, high direct and indirect exposure to exchange-rate risk, high maturity and currency mismatch, and high non-diversifiable risk in a typical loan portfolio. Two sources of increased risk for an emerging economy are the higher proportion of foreign-currency debt and short-maturity debt (the reasons for this are explained in Section 3). The risk of high (and variable) inflation is initially the basis for the use of these instruments. Furthermore, higher levels of risk are hidden behind the (false) security of a pegged exchange rate. For example, a bank feels protected because it has matched a dollar liability with a dollar-denominated loan without realizing that if the borrower earns income in pesos, a collapse of the peso will provoke a default. The currency match has a hidden credit risk. If the bank does not match a dollar deposit with a dollar-denominated credit, then it becomes exposed directly to exchange-rate risk.

Second, we have seen (Section 2.1) that financial markets are less developed and the monitoring role of intermediaries is enhanced in emerging markets. The production of information on private-sector activities and the general contracting environment is problematic. The background of these problems is the lack of economies of scale in the production of information and severe moral hazard and adverse selection problems. This implies, at the same time, that markets are thin and that the generation of information and contract-enforcement roles rely relatively more on financial intermediaries. A further

consequence of the thinness of financial markets is that banks have high exposure to public debt (e.g., government bonds) and are therefore vulnerable to the government's inflationary strategies and may be less able to match long-term investments by issuing appropriate liabilities (maturity mismatch). Short-term debt exposes banks and firms to sharp interest-rate increases in response to currency devaluations. At the same time a bank may have a harder time diversifying its portfolio because default probabilities on different projects may have a high correlation. An obvious case in point is the collapse of the exchange rate.

All of the factors point to a riskier environment for banks. A currency crisis leads to a financial crisis and to strong effects in the real sector. As we have seen, a depreciation of the currency will lead to a deterioration of balance sheets for firms and banks and to a decline in the net worth of the private sector. In the presence of asymmetric information problems, this decline in net worth will lead to a credit crunch, and banks with a weak balance sheet will cut back on lending, which in turn will feed back into exacerbated moral hazard and adverse selection problems (see Bernanke and Gertler (1989) for the general mechanism and Mishkin (1999a,b) for an application to the Tequila crisis in Mexico). In fact, a weak banking sector can also lead to a currency crisis. Kaminsky and Reinhart (1999) found that banking-sector trouble typically precedes a currency crisis and that the currency crisis aggravates the banking crisis in a self-reinforcing way. Finally, the lack of development of financial markets and of a sound contracting environment increases the social cost of project failure and liquidation. This means that the real effects of financial crises are multiplied.

Third, an emerging economy will tend to have a weak supervisory structure. The reasons are rooted in the same factors that keep financial markets underdeveloped: the difficulty of producing information and enforcement problems, aggravated by the lack of protection for supervisors. Supervisors are either more easily corrupted, because of the lack of resources and low salaries, and/or more vulnerable to retribution if they do not acquiesce to the demands of lobbies, because of the lack of effective legal protection. Symmetrically, some banks may see how expropriatory regulatory decisions are made because of their weaker political position and this will induce a high rate of discounting, implying low charter values (even with relatively weak competition). The consequence will be enhanced incentives to take risk.

The characteristics of an emerging market in a highly uncertain environment, the increased likelihood and incidence of financial and currency crises, the increased role of banks and a weak supervisory structure lead to the policy conclusion that the regulatory strategy needs to be adapted to the conditions of the emerging market and to protect the fundamental role that banks play. Indeed, the scenario depicted above implies that it may be much more difficult to follow the developed-country regulatory strategy in an emergent economy. First, it is more difficult to move towards a disclosure strategy because information problems are more acute and the production of information is more problematic. Second, risk-based deposit insurance can only work when it is based on objective indicators of bank risk and pricing insurance. Those indicators may be more difficult to obtain in the emergent economy (in fact, they are even difficult to obtain in a developed economy). This makes the move towards the risk-based insurance strategy more difficult. Furthermore, the application of Basel II to emergent economies may be problematic. Indeed, as argued by Powell (2001), given the difficulties of implementing the internal-rating approach (one of which is that the new standards have not been calibrated for the environment of an emerging economy), emerging countries will tend to adopt the standardized approach. The problem is that, because of the limited number of rated institutions in emergent economies, this will mean that there is little change from the present

situation. The problem of building a better link between risk and capital is, if anything, more acute in emerging economies.

The corollary is that regulation of banking and financial markets must be adapted to emerging economies. Reliance on transparency and disclosure requirements as well as risk-based insurance and capital requirements is limited. This means, in particular, that capital requirements will need to be adapted to the conditions of emerging economies (for example, public debt is risky due to inflation) and will most likely need to be complemented by other kinds of restrictions on the activity of financial institutions. At the same time, given the high cost of project liquidation and the social cost of failure in emergent economies, competitive pressures and market discipline should not be set at the same level as in developed economies.

A broader consequence of the weak institutional structure of emerging countries is that the policy-commitment problem (Section 2.3) becomes key in order to attract foreign capital. In the next section we will consider this problem and how external discipline can help an emergent country.

Argentina was coping with the policy-commitment problem of importing external discipline with the currency board's "hard peg" and adopted a market-discipline model (high disclosure levels, subordinated debt, limited deposit insurance and risk-based capital requirements). Argentina was basically moving towards the top line of Table 1 (free banking with disclosure), that is, it was following a modern developed-country strategy anchored in the currency board. The obvious question is whether this model is feasible once the currency board has collapsed and the anchor has disappeared. The banking and currency crises were derived from the non-sustainability of the currency board in a recessionary context and the underlying problems in Argentina, such as the lack of credibility of institutions and protection of property rights. The crisis was more like an informed run (like the one after the Tequila crisis) than a crisis derived from the moral hazard of bank managers or a coordination failure among depositors. The financial system was reasonably well regulated and the currency board, when credible, provided discipline by limiting excessive bailouts.⁸

3. The policy-commitment problem and external discipline

The government of an emergent country may devalue the claims of foreigners in domestic currency in order to protect the domestic private sector. This lack of policy-commitment capacity derived from a weak institutional structure is a key problem for an emergent economy that needs access to the international capital market. In a similar vein, Tirole (2002) argues that the central market failure in external borrowing for an emergent country is the lack of contracting capacity between the government of the emerging country and foreign investors.

We have seen how short-term debt has a disciplining effect in the presence of a moral-hazard problem, be it from the entrepreneur who asks for credit to finance a project or the banker who monitors a loan. This gives scope for a central bank in a competitive banking system to provide help in a range of realizations of returns while keeping incentives by denying help when returns fall below the optimal critical threshold. A central bank that can commit not to help

⁸ See Calvo *et al.* (2002) for further details on the development of the crisis.

when returns are low will be able to implement the second-best solution. The problem arises, however, that while *ex ante* it is optimal to commit not to help when returns are low, once effort decisions have taken place, *ex post*, it is optimal to help to avoid costly liquidation. A central bank with no policy-commitment capacity will have incentives to inflate in order to reduce the real value of nominal debt commitments when the banks or entrepreneurs are in trouble. This will avoid liquidation but destroy incentives to exert effort, and will discourage foreign lenders who may see their claims devalued.

External discipline may come to the rescue (Vives 2002). An extreme form of importing external discipline, which we will now consider to gain some insight and provide an illustration, is “dollarization” (adopting a stable currency).

Dollarization represents a commitment to a limited use of the LOLR facilities. In a dollarized regime, help for the banking system (bailouts) must be arranged in advance, via stabilization funds and/or tax schemes, or pre-contracted on the international market. For example, in Argentina, after a currency board was adopted in 1991–2001, a contingent liquidity facility with international banks was in place. This was complemented by a liquidity requirement and holdings of excess reserves, given that the LOLR activity of the central bank was severely restricted by the Convertibility Law of 1991 and charter of 1992 (Calomiris and Powell 2000). Most currency boards have established limited LOLR facilities. A stabilization fund can be built to provide liquidity when needed, but it can be diverted (as in the cases of Mexico and Thailand).

Dollarization represents a commitment because it is costly to reverse. Indeed, once the domestic currency has been replaced by the dollar, it may be very expensive to go back. A currency board (or “hard peg” where a fixed exchange rate is backed by foreign reserves), as the recent experience of Argentina suggests, represents a lesser commitment than dollarization. Typically, the parliament establishes the currency board with a law (as in Argentina) and repealing it therefore calls for legislative change, but this just raises the cost of doing away with the arrangement.

What are the costs and benefits of dollarization in a small open economy? Dollarization means that banking contracts are in “real” (i.e., dollar) terms. In a competitive banking environment, liquidation of projects occurs when the returns of the bank cannot cover the promised payment to depositors (which is not contingent on the returns obtained by the bank). However, in this competitive banking solution, there is typically excessive liquidation. The reason is that the liquidation threshold imposed by a competitive banking environment is stricter than the (second-best) optimal threshold because of risk sharing (a competitive bank has to promise a relatively high return to depositors that want to withdraw early to insure themselves despite the fact that returns are higher in the long term) and/or because of a failure of coordination among investors that induces a run on the bank. The excessive liquidation problem may be particularly acute if the coordination problem among investors is severe (Gale and Vives 2002).

The result is that dollarization provides a commitment not to help at the cost of not helping in circumstances where it would be *ex ante* optimal to do so. Therefore, dollarization is a third-best solution. Refusing help to the private sector creates incentives for bank managers to exert effort, but the probability of default implicitly chosen by the market may be much higher than the incentive-efficient level required to encourage managerial effort.

Partial dollarization can be a risky strategy. A bank may acquire dollar-denominated debt by accepting domestic dollar deposits and/or issuing dollar-denominated certificates of deposit

(CDs) on the international market. This opens the door to partial dollarization. In theory such an arrangement could deliver an optimal allocation of risk while providing incentives for bank managers to exert effort (Gale and Vives 2002). However, in practice partial dollarization will suffer from credibility and instability problems. Indeed, convertibility of dollar deposits from domestic residents can be suspended in a crisis situation. Furthermore, once banks accept dollar deposits, they are likely to make dollar-denominated loans to domestic residents (to avoid exchange-rate risk and because they have a comparative advantage when serving domestic customers). However, credit risk will resurface as domestic residents earning pesos have trouble returning dollar-denominated loans if the peso depreciates. In fact, in trying to help by inflating, the central bank may cause a devaluation of the currency and may bankrupt dollar-indebted households. The problem may be compounded by self-fulfilling expectations of a banking crisis.

Another way of importing external discipline is acquiring foreign short-term debt. Short-term debt denominated in domestic currency will lose its disciplining effect if the central bank can inflate and devalue the currency in case of trouble. This is not the case with short-term debt denominated in foreign currency. Entrepreneurs in the small open economy may then want to commit to high effort by borrowing in foreign debt. They will do so if the lower interest rate obtained with foreign debt more than compensates for the expected cost of liquidation (Jeanne 2000). Similarly, short-term debt ameliorates the default problem of an opportunistic populist government that repays debt only if it is in its short-term interest to do so and default is costly. Acquiring foreign short-term debt may be good in a country prone to populist governments (Rodrik and Velasco 1999).

Consider then an emergent economy that has acquired foreign-denominated short-term debt to alleviate moral-hazard and commitment problems in order to access the international capital market. This short-term debt serves the purpose of disciplining the private sector to exert effort to improve returns and of preventing the government from devaluing the claims of foreign investors. This allows access to the international capital market beyond the country's reserves.⁹ When returns are low (below a certain threshold), project restructuring should happen in order to provide incentives to exert effort. The market may provide excessive liquidation of entrepreneurial projects, for example, because of the coordination failure among investors. This will always happen when the moral-hazard problem in the country is moderate (implying a low restructuring threshold for returns). In this case, and to preserve incentives, projects should not be foreclosed when the country is insolvent and not too far from the solvency threshold. In other words, the market will foreclose unless the country is well above the solvency point. However, when the moral-hazard problem in the country is severe (implying a high restructuring threshold for returns), then a solvent country may need to "restructure" when returns are close to but still above the solvency threshold. Then the coordination failure among international investors may be a blessing in disguise because it may enforce the optimal restructuring threshold. In other words, it may provide optimal incentives *ex ante*, though it need not necessarily do so (Rochet and Vives 2004).

Foreign short-term debt is indeed a two-edged sword. It works as a disciplining device but at the same time leaves the door open to systemic risk, speculative attack and a sudden reversal of

⁹ Although the borrowing capacity of the emergent country is still limited by its international collateral (Caballero and Krishnamurthy 2002, 2003).

capital flows. This means that, in a country facing a moral-hazard problem, overexposure to foreign short-term debt is possible, but its optimal amount will not be zero, in general, provided there is not an extreme moral-hazard problem in the country. Obviously, the optimal amount of foreign-denominated debt will also depend on the size of the tradable sector in the economy, which determines the amount of effective international collateral the country can pledge.

Another reason to issue foreign short-term debt is risk-sharing when foreign investors are averse to risk. This is akin to the risk-sharing role of the standard deposit contract that a bank offers to its risk-averse depositors. In this case the issuing countries absorb part of the risk and can obtain more favorable terms with respect to expected repayment than borrowing long term. Broner *et al.* (2004) provide a model where the maturity structure of the debt arises as the solution to a risk-sharing problem between the government and bondholders. By issuing long-term debt, the government of an emerging economy lowers the probability of a liquidity crisis and shifts risk to bondholders. This risk is reflected in the equilibrium between a higher risk premium and the cost of borrowing. In consequence, the government faces a trade-off between safer long-term borrowing and cheaper short-term debt. The authors also provide evidence of this effect, particularly in times of crisis when the term premium increases and issuance shifts towards shorter maturities.

Empirical results are mixed. Sachs *et al.* (1996) and Frankel and Rose (1996) found either weak evidence or no statistical effect of short-term debt on crises. Eichengreen and Rose (1998) actually found that higher levels of short-term debt decrease the probability of banking crises. Radelet and Sachs (1998) and Rodrik and Velasco (1999) found that the ratio of short-term debt to reserves is a robust predictor of financial crisis (sharp reversal of capital flows).¹⁰ Finally, Detragiache and Spilimbergo (2001) found that short-term debt increases the probability of a (debt) crisis (although, obviously, this could also be interpreted as more fragile countries having to borrow short term).

It is also worth noting that a potential alternative to external discipline is financial indexation to some domestic price level. This was tried in Chile with the *Unidad de Fomento*. The problem is that any index is bound to be very imperfect when the economy faces large swings in relative prices (Calvo and Talvi 2005).

In summary, external discipline (in the form of a relatively large amount of foreign short-term debt) will be good in the economies of emerging and less-developed countries (LDC) with a policy-commitment problem in which:

- there is a significant but not extreme moral-hazard problem;
- monitoring effort by bankers and entrepreneurs is important in improving returns; and
- the cost of liquidating projects is not very high.

One can conjecture that the optimal amount of foreign short-term debt will increase with the size of the tradable sector and the effectiveness of effort by managers in improving returns, and will decrease with the cost of liquidating projects.

¹⁰ Rodrik and Velasco (1999) also found that greater short-term exposure aggravates the crisis once capital flows reverse.

Candidate countries for external discipline are countries with a long way to go in terms of political stability, rule of law, contract enforcement and institutional development and supervision, as well as relying on bank monitoring to make finance available for entrepreneurial projects. At the same time the moral-hazard problem cannot be hopeless and liquidation costs cannot be very high. The analysis points to an intermediate range of countries with a weak institutional structure but without an extreme agency problem. Politically stable countries with a modern institutional structure and deep financial markets need not import external discipline.

4. Assessing the trade-offs of external discipline

This section will provide a summary of very rough indicators for a range of emerging countries, based on Gale and Vives (2002), as well as an overview of the policy-commitment problem and the determinants of the welfare analysis of importing external discipline: moral hazard, the importance of effort for returns and the cost of liquidation of projects.

The countries considered are: Argentina, Brazil, Chile, Colombia, Ecuador, Mexico, Peru, Uruguay and Venezuela in Latin America; Hong Kong, Indonesia, Malaysia, the Philippines, Singapore, South Korea, Taiwan and Thailand in East Asia; and Turkey. The focus will therefore be on Latin America and Southeast Asia (although Turkey is also considered to be in the periphery of Europe).

An indicator of the extent of the *commitment problem* is given by the credibility of the central bank. To assess the overall credibility/reputation of a central bank, we can use a combined index (see Cukierman (1992, Table 21.1)) of legal independence, the actual turnover of the governors and a response by experts to a questionnaire. The combined index (weighting the three indexes according to their relative contribution to explaining variations in the rate of depreciation of the value of the currency) provides a ranking of central-bank independence in 46 countries during the 1980s. At the bottom of the ranking appear countries such as Argentina, Brazil, Chile, Turkey, Venezuela, Mexico, Peru, Uruguay, South Korea and Indonesia. Above those we have the Philippines and Thailand. However, the Philippines has the same level of overall central-bank independence as Kenya, and Thailand has the same level as Greece. Developments since the 1990s may qualify the picture for some countries (for example, Chile). If we only look at the actual turnover of the governors (for the 1950–1989 period) as an index of credibility, the picture is not very different (see Cukierman (1992, Table 19.4)).

The severity of the *moral-hazard problem* for bankers and/or entrepreneurs can be proxied by a battery of legal indicators reflecting the rule of law in different countries (La Porta *et al.* 1998). These include indicators of the efficiency of the judiciary system, the country's tradition of "law and order", corruption, risk of expropriation and risk of contract repudiation by the government, as well as a rating of accounting standards. Low scores on these indicators would suggest a severe moral-hazard problem for the banker. For example, in countries with poorly defined or poorly defended property rights, some of the bank's marginal returns will be captured by others, which increases the marginal cost of ensuring high returns. We classify the scores given in La Porta *et al.* (1998) as low, medium and high (see Gale and Vives (2002, Table 1)). Under this classification, Peru, Indonesia and the Philippines (and perhaps Venezuela and even Uruguay) have a severe moral-hazard problem. Argentina, Brazil, Chile, Colombia, Ecuador, Mexico, South Korea, Taiwan, Thailand and Turkey have a significant but not extreme

moral-hazard problem. Hong Kong, Malaysia and Singapore have a moderate moral-hazard problem.

There is also a link between the (indirect) moral-hazard indicators given (related to the rule of law and accounting standards) and the *importance of effort* by the bank manager to obtain returns. In countries with a severe or major moral-hazard problem with the firms in the private sector, suggested by low scores in the rule-of-law indexes, effort by the bank manager to obtain returns will also be important. This means that, perhaps with the exception of Hong Kong, Malaysia and Singapore, moral hazard is bound to be a problem in our set of countries. We could also proxy the importance of monitoring effort by the private sector (bank managers and/or entrepreneurs) to obtain project returns based on the relevance of banks in the financial system. This can be measured by the amount of bank assets to total financial assets. In the countries in our sample (with no data for Hong Kong, Indonesia or Singapore) only South Korea is below a ratio of 50%.

The *cost of liquidation* of projects can be approximated based on the level of rights of creditors (high creditor rights linked with a lower cost of project liquidation) and the level of development of the financial system (more developed financial systems can cope better with adverse selection problems at the root of costly liquidation). The level of development of the financial system can be approximated in turn based on the amount of credit to the private sector over GDP, stock market capitalization over GDP and accounting standards. A combination of these indicators yields the following classification for the cost of liquidation:

High: Peru, Uruguay and Venezuela.

Medium-high: Argentina, Brazil, Colombia, Mexico and Turkey.

Medium-low: Ecuador, the Philippines and Indonesia.

Low: Chile, Hong Kong, Singapore, South Korea, Malaysia, Thailand and Taiwan.

It is worth noting the regional difference between Latin America (with the exception of Chile) and East Asia. This is consistent with the better-than-expected recovery of Southeast Asia from the last financial crisis.

The indicators point to a middle range of countries where external discipline may be a good idea. These countries are at the intersection of a significant or moderate moral-hazard problem with medium-low or low cost of liquidation. Among them we find some Latin American countries, such as Chile and Ecuador, as well as some East Asian tigers, such as Hong Kong, Malaysia, South Korea, Singapore, Taiwan and Thailand. Peru, Indonesia and the Philippines (Venezuela and even Uruguay) are ruled out because of the severity of the moral-hazard problem, to which a potentially high cost of project liquidation is added for Peru, Uruguay and Venezuela. A medium-high cost of project liquidation is found in Argentina, Brazil, Colombia, Mexico and Turkey. These countries would be candidates for a high dose of external discipline because of the potential benefit to be derived, but the cost would also be high. At the same time Hong Kong, Malaysia and Singapore would derive less benefit from external discipline because the monitoring of projects is relatively less important and the moral-hazard problem less severe.

5. A catalog of proposals

A series of proposals is recurrently made to solve the banking and regulatory problems of emerging economies. Here I briefly survey narrow banking, currency unions, the role of foreign

banks, public banks and offshore banking, and argue that none of them is a panacea that can provide the desired solution.

5.1. Narrow banking

Narrow banking has been proposed as a solution to the instability problem and to limit the exposure of insurance funds/taxpayers to banking trouble. The extreme of a narrow bank is a bank that has 100% reserves. Friedman (1959) advocated in its favor (and proposed that reserves be remunerated). Other proposals would have the bank invest only in safe short-term securities (such as U.S. Treasury bills). Deposit insurance would then only serve to protect against fraud and non-banks would not be insured. In this scheme a financial holding company could have two separate subsidiaries: a narrow-bank arm (mutual fund) and a finance-company arm that would grant loans and fund them with uninsured liabilities (Litan 1987). Other proposals would allow the bank to take even greater risk. The basic idea is to convert the bank into a mutual fund that provides liquidity. This should dominate the traditional bank in the deposit dimension. Indeed, there is no incentive to run in a mutual fund where the investor is promised a share of the value of the fund, and deposit insurance is not needed (except perhaps to protect against fraud) and need not generate moral hazard. The case for the narrow bank is therefore buttressed by pointing to the increasing process of securitization of credits, with some studies concluding that economies of scope between deposit and lending are small (Pulley and Humphrey 1993), and with advantages in the control of the money supply (however, the last two conclusions are disputed by Benston in his discussion (Fernandez and Schumacher (1997))).

With sufficiently developed financial markets, the criticism that a narrow bank may not have enough safe assets available to invest or that there would be insufficient funds left to finance long-term projects is unlikely to hold, but it does have force in emerging economies with an underdeveloped capital market. However, there is a deeper criticism of the proposal: narrow banking throws out the baby with the bathwater. In other words, it destroys the financing of illiquid loans by liquid liabilities (see Wallace (1996) for a version of this argument). These are mostly business loans, which are opaque and non-securitizable, in contrast to mortgages and consumer credit. We have seen in Section 2.1 how the fragile structure of banks allows them to create liquidity for business. There is evidence that deposit taking and loan provision go together. Nakamura (1988) finds informational economies of scope between the two functions (for example, in many instances the first thing a bank requires to give a credit is that the firm opens an account so that the bank can monitor the firm's operations). In fact, one can regard deposit-taking and a loan commitment/credit line as essentially the same operation: liquidity provision on demand. Imperfect correlation in these activities therefore leads to synergies (empirically documented by Kashyap *et al.* (2002)).

Most narrow banking proposals just push the fragility problem *cum* liquidity creation for firms to another level. For example, finance companies (for long-term projects) will provide liquidity financed by negotiable CDs, but this means that the coordination problem among investors is present. Narrow banking does therefore not address the basic problem towards which safety nets are geared: the adverse consequences of banking fragility in terms of credit supply and externalities for the private sector of the economy. A potential implication is that the commitment to not insure those finance companies that take the functions of banks may not be credible. In fact, one may think the opposite. Narrow banking may encourage discretionary bailouts because it limits explicit insurance to the narrow bank, which is politically unrealistic given the need of a safety net for the banking system.

In conclusion, the narrow banking proposal, in its strictest form, does away with the main function of banks and, therefore, it will probably be particularly detrimental to emergent economies where financial markets are less developed, meaning that securitization is less advanced. In contrast, narrow banking in its softer forms may be appropriate for economies with well-developed financial systems such as the United States, where liquidity is abundant. In fact, money-market funds are providing more and more transaction services in the United States. Put another way, emergent economies have a greater need for bank monitors to finance and elicit returns from entrepreneurial projects. It is also true that emergent economies with a market-discipline problem may need to set up some asset restrictions on banks' balance sheets in order to control risk-taking. Restrictions may be minimum diversification levels, limitations on concentration of risks, growth capacity of loans in new areas, and so on. This goes some way towards the narrow-banking proposal, in the sense of restricting risk-taking on the asset side, but without terminating the financing of illiquid loans with deposits.

At the same time there are more limited forms of narrow banking that allow informational economies of scope between deposits and loans to be preserved. For example, banks could be allowed to offer "narrow bank accounts", essentially money-market funds insured only for fraud reasons, on top of their "standard" uninsured deposits and loan-provision facilities (Mishkin 1999a,b). This proposal apparently limits the cost of deposit insurance, but incentives would still remain to bail out the non-narrow-bank part because of the adverse consequences of a failure for the economy.

It may help to think counterfactually about what would have happened if narrow banks had been in place in Argentina during the currency-board regime. Would the banking crisis have been averted? I do not think so. Consider first the orthodox form of a narrow bank as a separate institution investing deposits in safe short-term assets (such as U.S. Treasury bills). In this situation, there would be a bank run only if there were a fear of confiscation (for example, with forced conversion of dollar deposits into depreciated pesos). The rational reason for the fear is that with an unsustainable currency board, banks and/or finance companies that provide loans to firms and consumers will be in trouble anyway. Narrow banking may make this confiscation more difficult, or more evident, but may not be able to prevent it. In a crisis situation with weak property rights, the pressure to capture the sound assets of the narrow bank may be just too great. A softer form of narrow banking with narrow accounts in a multipurpose bank may be more vulnerable. However, even if depositors had not run on narrow banks, the collapse of the currency board would have caused dollar-indebted agents to default, which would therefore have brought down the financial institutions that lent to them. At best, the crisis is transferred to another level, which means that the cost of the crisis is shifted to the investors/depositors in the financial companies that lend to the private sector.

The preceding discussion points to the fact that the first problem to be solved in an emergent economy is, in many instances, political: to insure property rights so that depositors are confident that the contract with their bank will be respected and the rules of the game will not be changed in the middle of play. Narrow banking may help somewhat, but need not solve this problem.

Second, an emergent economy needs both an efficient payment and transaction system and good facilities for credit that help to sustain long-term growth. The banking system should focus on both functions. This rules out "strong" forms of narrow banking where deposit

institutions are separated from credit institutions. An emergent country needs the classical function of banks.¹¹

5.2. A currency union?

Another way to import discipline is by transferring political sovereignty and forming a monetary union with other countries (such as Mercosur in trade) and establishing an independent central bank. However, this solution is likely to be problematic, mainly because it is not clear how to build an independent central bank from the monetary union of countries whose central banks have questionable reputations. For example, European Economic and Monetary Union (EMU) would probably not have arisen if the Bundesbank had not had such strong anti-inflationary credentials. A second issue is that the organization of the LOLR in a monetary union with no central political authority is likely to be contentious as, again, EMU shows. A decentralized organization for the LOLR raises serious issues of effectiveness while a centralized organization needs to clarify the fiscal issue (e.g., who will pay for helped institutions that end up becoming insolvent?) and the central LOLR may not help in a situation where a national central bank would have helped (indeed, a systemic problem in a small country may not be systemic after all in the larger area of the monetary union). (See Vives (2001)) for a discussion of these issues in the European context.) The experience of EMU points to the difficulties that advanced economies with well-developed institutions face in establishing a common central bank. At the present stage in Latin America, a monetary union does not seem to be a realistic option.

5.3. The role of foreign banks

It may be thought that with external discipline and a banking system mostly in foreign hands, stability should be guaranteed because of the support provided by strong international banks supervised abroad and with the backing of their respective central banks. The Argentinean crisis dispels this notion. While it is true that the headquarters of foreign banks would provide help to a subsidiary if a specific problem developed (because the bank's brand name and franchise value are at stake), this need not hold true when a systemic problem develops. This is even truer if the systemic problem arises due to the non-sustainability of the currency-board arrangement and then is compounded by confiscatory measures. Furthermore, even if foreign-bank headquarters are willing to help, they need not do so at the optimal level from the social point of view, since they will not take into account the external effects of their help. For example, the headquarters of foreign banks may want to limit the exposure of a country, which may face a currency crisis, and may therefore tighten the liquidity provision to the branches/subsidiaries of the bank in the country in question. In any case, there is an important distinction between a branch and a subsidiary: headquarters have to back the deposits in a branch, but need not do so for a subsidiary.

Furthermore, the incentives of the foreign LOLR and supervisor are not necessarily in line with local interests. Indeed, a foreign supervisor will not take into account the consequences (systemic or otherwise) for domestic residents of restructuring a local branch or subsidiary. The

¹¹ See Fernandez and Schumacher (1997) for a more positive view of narrow banking in Argentina.

foreign supervisor will only care about how a crisis in a subsidiary affects systemic stability at home.

Foreign banks are no panacea to solve LOLR and supervisory problems in an emergent country. This solution has been successful in countries such as Panama, where there is no LOLR facility except, it seems, a large U.S. bank (Chapman, 1999; Moreno-Villalaz, 1999). However, Panama is not a typical emerging country.

Furthermore, some research with data from Argentina claims that large foreign-owned institutions concentrate on large-scale projects and may have trouble providing relationship loans to opaque small firms (Berger *et al.* 2001). If this is confirmed, it may call for an appropriate balance of foreign and local institutions, or at least for foreign banks to open local subsidiaries rather than branches. Opening a local subsidiary is typically possible when a foreign bank acquires a local bank and, therefore, at least part of the local bank's informational capital is incorporated into the new or transformed entity.

5.4. A role for public banks?

There is agreement according to standard criteria that public banks have been the worst performers in Argentina (see, for example, Berger *et al.* (2001)) and that they were the main inducers of the bank run in 2001. The question is what role public banks play in an emergent economy. A theoretical case could be made of their potential role in extending credit where the market fails due to acute asymmetric information problems. However, once we put the political economy factor into the balance and the fact that public banks are the main culprits in the excessive bailout problem because of their destabilizing influence, the case for privatization is strong. At the end of the day, the public sector cannot provide what the private sector has failed to provide.

Mandating a narrow bank charter for public banks limits their exposure but at the same time removes their only potentially redeeming value: the provision of loans to informationally opaque business. It is worth noting that private banks can provide subsidized credit to families and firms, as well as “universal service” for transaction accounts, if deemed necessary. The proper way to do this is just to auction off the service to well-capitalized private institutions. If the privatization route is taken, attention should be paid to ensure that prospective bidders have enough capability and local knowledge to provide the required relationship-based banking services so crucial to small business.

5.5. Offshore banking

Offshore banking consists of the provision of financial services and cross-border intermediation of funds to non-residents by banks residing in offshore financial centers. Offshore financial centers are characterized by low levels of regulation and information disclosure, and tend to be tax havens.

During the Tequila crisis, offshore establishments of Argentinean banks also suffered a run parallel to the one “on shore”. Several offshore institutions and their onshore parents failed and investors on shore were left in a very weak position to claim assets, because the offshore institutions were in different jurisdictions (Errico and Musalem, 1999).

As with narrow banking, in the case of offshore banking, the institutional credibility/confiscation problem is alleviated, in this case more substantially, but it is not

completely solved. The question is whether offshore arrangements can be designed so that it becomes very difficult to confiscate monies once they reach national soil. A benefit of offshore banking is then to alleviate the confiscation problem. However, with offshore banking, the benefit of a banking system close to business would be lost and there would also be the additional cost of operations in a different jurisdiction.

6. The role of an international agency

There are two types of market failures that an international agency such as the IMF may help overcome. The first is the coordination problem faced by international investors in a crisis situation. The second is the commitment problem of domestic institutions such as a national central bank. The two are intertwined and, as we will see, the first may help alleviate the second. The reason is that an *ex post* coordination failure may help create *ex ante* incentives.

I will argue that an international agency, combining the functions of crisis lender and crisis manager, may be helpful, provided it is implemented in conjunction with a policy of *prompt corrective action* and facilities for *orderly failure resolution*.

The IMF has typically relied on *ex post* policy conditionality for granting help to a country, that is, the need for a country to commit to following certain policies in order to be helped after a crisis. Although the IMF could ask for collateral, it rarely does so. The reason is that the IMF is seen as a preferred creditor and therefore not repaying the IMF means essentially being denied access to the international capital market. At the same time the IMF has also played a role as crisis manager in negotiating the way out of crises and helping to set up financial packages (Fischer 1999).

An international LOLR (ILOLR) can follow a policy of injecting liquidity into international financial markets, going from the proposal of establishing a global central bank that issues an international currency to the mere coordination of the intervention of the three major central banks (see Eichengreen (1999) for a survey of the different proposals), or can act by helping countries in trouble in much the same way as a central bank acts to help individual banking institutions. The second approach is developed in several proposals that adapt Bagehot's doctrine to international lending. The International Financial Institution Advisory Commission (IFIAC) of the U.S. Senate, headed by Meltzer, recommended that the IMF lend according to Bagehot's rules by lending at a penalty rate with collateral only to a set of countries that meet certain requirements in their banking systems (adequate capitalization of domestic banks, free entry of foreign banks), and that make a commitment to fiscal standards and to reporting accurate financial information. A major difference between these two approaches is the required size of the ILOLR (Jeanne and Wyplosz 2001). In the first case, an issuer of international currency is needed, while in the second the intervention is bounded by the difference between the short-term foreign-exchange liabilities of the banking sector and the foreign reserves of the country in question.

Let us consider here the more realistic second approach. The main tension identified in the debate is between those who put emphasis on the crisis-prevention effect of liquidity support (Fischer 1999) and those who are worried about generating moral hazard in the country being helped (IFIAC 2000). This reflects the tension between providing *ex ante* incentives to the country to limit moral hazard and the need to provide help once the crisis occurs.

The conceptual framework is like the one described in Section 3 of an emergent economy that has acquired foreign-denominated short-term debt to alleviate the moral hazard and commitment problem in order to access the international capital market (Rochet and Vives (2004)). We know that when returns are low and below a certain threshold, projects should be restructured in order to provide incentives to exert effort. This (second-best) optimal solution can be implemented with the help of an international agency. The following scenarios can be considered.

- *No bail-in, no bailout.* With no IOLR and interrupted access to the international capital market, country projects are liquidated whenever withdrawals by foreign fund managers are larger than foreign reserves. This limits investment.
- *Bail-in, but no bailout.* With no IOLR but access to the international capital market, we are in the situation described in Section 3: some costly project liquidation is avoided with fire sales of assets, but excessive liquidation of entrepreneurial projects will still typically occur.
- *Bail-in and bailout.* An international agency with crisis-lender and crisis-manager roles can complement the country's access to the international capital market in order to enforce an optimal (second-best) solution. The appropriate policy should depend on the extent of the moral-hazard problem in the country considered.

When the moral-hazard problem in the country is severe, a policy of prompt corrective action is needed whenever the country is close to insolvency, as a way of complementing the IOLR facility. A solvent country may need to “restructure” when returns are close to the solvency threshold.

When the moral-hazard problem in the country is moderate, besides the IOLR help for a solvent country, an orderly resolution of failure process or help is needed for an insolvent country when it is close to the solvency threshold. This may be interpreted as a mechanism similar to the sovereign-debt-restructuring mechanism of the sort studied at some point by the IMF with the objective of restructuring unsustainable debt.¹²

An IOLR that follows a modified Bagehot's prescription and that is complemented with prompt corrective action and orderly failure-resolution facilities can implement a second-best solution, provided it is well informed about country returns. One possibility is that the IOLR does in-depth country research and has supervisory knowledge of the banking system of the country where the crisis occurs. At the same time, this IOLR should have a statute that provides independence (along the lines of, for example, De Gregorio *et al.* (1998)) and allows for reputation building to avoid granting help when it is not *ex ante* efficient to do so and therefore contributing to moral hazard. *Ex ante* conditionality in terms of rule of law and accounting standards makes sense because they contribute to assessing the extent of the moral-hazard problem in the country and, therefore, the appropriate policy. Furthermore, the IOLR should only provide a loan when the country has enough international collateral. The critical amount of collateral should be determined by the financial position associated with the critical

¹² Bolton (2003) discusses sovereign-debt-restructuring mechanism-type facilities from the perspective of corporate bankruptcy theory and practice.

return below which help should not be provided. Obviously, to determine the minimum required amount of collateral (and the range where help has to be provided), a supervisory knowledge of the economy is needed and therefore the ILOLR should have supervisory capacity. A minimum amount of collateral is not needed to secure the loan, but to impose a threshold below which help is not given.

7. Policy recommendations and issues for further research

The basic underlying problems of regulation are the same in developed countries and LDCs. However in an LDC, asymmetric information problems are more acute and institutions are weak. Several consequences follow from this.

First of all, regulation must be adapted because reliance on transparency and disclosure requirements, as well as risk-based insurance, is limited. This particularly means that capital requirements will need to be tuned to the emergent-economy context and complemented by other types of restrictions on the activity of financial institutions. At the same time, the cost of project liquidation or the social cost of failure may be greater in emergent/LDC economies. This calls for moderating competitive pressure and market discipline.

A second consequence is that the policy-commitment problem of domestic institutions becomes key. From this it follows that emergent/LDC economies need to import external discipline. This can be accomplished by acquiring foreign short-term debt. The analysis provides a rough guide to the optimal amount of external discipline that is good for a country as a function of the severity of the moral-hazard problem and the cost of liquidating projects. The result is that there is a middle range of countries (where the moral-hazard problem is significant but not extreme and where the cost of liquidating projects is moderate) where importing external discipline is worthwhile.

A corollary of the analysis is that emerging and LDC economies need different treatment not only from developed economies but also among themselves. Indeed, different emerging countries will need different levels of external discipline.

Finally, international institutions such as the IMF may be instrumental in helping emerging economies overcome the commitment problem. However, several requirements are needed for this to happen: they should be independent, they should lend conditionally based on the institutional structure of the country (not on policy) and they should require collateral (not to ensure repayment, but for incentive purposes).

Many issues need further research:

- The optimal regulatory policy mix for every stage of development and quality of the institutional structure.
- The interplay between the coordination problem that causes fragility in the banking and financial system, and the moral-hazard problem caused by bailouts in response to fragility.
- The factors that determine the optimal level of short-term foreign debt for a small open economy with a policy-commitment problem.

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