

FINANCIAL MARKET REFORM

by

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1. Introduction

Financial market reform has risen to the forefront of public policy debates in recent years. The burgeoning literature on economic growth has come to recognize the crucial role that well-operating financial markets play in promoting rapid economic growth.¹ Indeed, it is now well recognized that the structure of financial markets helps explain why many countries remain poor while others grow richer. Financial market reform to produce an efficient financial system is thus now seen as a key element in raising countries out of poverty.

The banking and financial crises of recent years in emerging market and transition countries (and even in industrialized countries like Japan) have also demonstrated that when things go wrong with the financial system, severe economic contractions can be the result. Thus another impetus behind the recent interest in financial market reform is the desire to prevent banking and financial crises so that the worst business cycle contractions can be avoided. Furthermore, banking crises impose substantial costs on taxpayers, often in excess of 10% of GDP.² Financial reform to avoid these costs has thus also become a central issue for public policy.

This paper examines financial market reform by first outlining an asymmetric information framework that provides a rationale for government intervention in the financial system. This framework is then used to outline what direction governments should take in financial market reform.

2. Asymmetric Information and the Rationale for Government Intervention in Financial Markets

¹See Levine (1997) for a recent survey of this literature.

²See Caprio and Klingebiel (1996).

In order to understand why there is a special need for the government to play a prominent role in financial markets, we must first examine how asymmetric information can interfere with the efficient functioning of the financial system. Then we can explore the two basic rationales for government intervention in the financial system: promoting economic efficiency and preventing financial crises.

2,1 The Role of Asymmetric Information in the Financial System

Financial markets and institutions are critical to the health of the economy because they perform the essential function in an economy of channeling funds to those individuals or firms that have productive investment opportunities. If the financial system does not perform this role well, then the economy cannot operate efficiently and economic growth will be severely hampered. A crucial impediment to the efficient functioning of the financial system is asymmetric information, a situation in which one party to a financial contract has much less accurate information than the other party. For example, borrowers who take out loans usually have much better information about the potential returns and risk associated with the investment projects they plan to undertake than lenders do. Asymmetric information leads to two basic problems in the financial system: adverse selection and moral hazard.

Adverse selection is an asymmetric information problem that occurs before the transaction occurs when potential bad credit risks are the ones who most actively seek out a loan. Thus, the parties who are the most likely to produce an undesirable (adverse) outcome are most likely to be selected. For example, those who want to take on big risks are likely to be the most eager to take out a loan because they know that they are unlikely to pay it back. Since adverse selection makes it more likely that loans might be made to bad credit risks, lenders may decide not to make any loans even though there are good credit risks in the marketplace. This outcome is a feature of the classic "lemons problem" analysis first described by Akerlof (1970). Clearly, minimizing the adverse selection problem requires that lenders must screen out good from bad credit risks.

Moral hazard occurs after the transaction takes place because the lender is subjected to the hazard

that the borrower has incentives to engage in activities that are undesirable from the lender's point of view: i.e., activities that make it less likely that the loan will be paid back. Moral hazard occurs because a borrower has incentives to invest in projects with high risk in which the borrower does well if the project succeeds but the lender bears most of the loss if the project fails. Also the borrower has incentives to misallocate funds for her own personal use, to shirk and just not work very hard, or to undertake investment in unprofitable projects that increase her power or stature. The conflict of interest between the borrower and lender stemming from moral hazard implies that many lenders will decide that they would rather not make loans, so that lending and investment will be at suboptimal levels.³ In order to minimize the moral hazard problem, lenders must impose restrictions (restrictive covenants) on borrowers so that borrowers do not engage in behavior that makes it less likely that they can pay back the loan; then lenders must monitor the borrowers' activities and enforce the restrictive covenants if the borrower violates them.

Another concept that is very important in understanding the impediments to a well-functioning financial system is the so-called free-rider problem. The free-rider problem occurs because people who do not spend resources on collecting information can still take advantage of (free ride off) the information that other people have collected. The free-rider problem is particularly important in securities markets. If some investors acquire information that tells them which securities are undervalued and then buy these securities, other investors who have not paid for this information may be able to buy right along with the well-informed investors. If enough free-riding investors can do this, the increased demand for the undervalued securities will cause their low price to be bid up to reflect the securities' full net present value given this information. As a result of all these free riders, investors who have acquired information will no longer be able to earn the entire increase in the value of the security arising from this additional information. The weakened ability of private firms to profit from producing information will mean that less information is produced in securities markets, so that the adverse selection problem, in which overvalued securities are

³Asymmetric information is clearly not the only source of the moral hazard problem. Moral hazard can also occur because high enforcement costs might make it too costly for the lender to prevent moral hazard even when the lender is fully informed about the borrower's activities.

the those most often offered for sale, is more likely to be an impediment to a well-functioning securities market.

More importantly, the free-rider problem makes it less likely that securities markets will act to reduce incentives to commit moral hazard. As we have seen, monitoring and enforcement of restrictive covenants are necessary to reduce moral hazard incentives for borrowers to take on risk at the lenders expense. However, because monitoring and enforcement of restrictive covenants are costly, the free-rider problem discourages this kind of activity in securities markets. Once some investors know that other securities holders are monitoring and enforcing the restrictive covenants, they can free ride on the other securities holders' monitoring and enforcement. When these other securities holders realize that they can do the same thing, they also may stop their monitoring and enforcement activities, with the result that not enough resources are devoted to monitoring and enforcement. The outcome is that moral hazard is likely to be a severe problem for marketable securities.

One important feature of financial systems explained by the asymmetric information framework is the prominent role played by banking institutions and other financial intermediaries that make private loans. These financial intermediaries play such an important role because they are well suited to reduce adverse selection and moral hazard problems in financial markets. They are not as subject to the free-rider problem and profit from the information they produce because they make private loans that are not traded. Because the loans of financial intermediaries are private, other investors cannot buy them. As a result, investors are less able to free ride off financial intermediaries and bid up the prices of the loans which would prevent the intermediary from profiting from its information production activities. Similarly, it is hard to free ride off these financial intermediaries monitoring activities when they make private loans. Financial institutions making private loans thus receive the benefits of monitoring and so are better equipped to prevent moral hazard on the part of borrowers.

Banks have particular advantages over other financial intermediaries in solving asymmetric information problems. For example, banks' advantages in information collection activities are enhanced by their ability to engage in long-term customer relationships and issue loans using lines of credit arrangements. In addition their ability to scrutinize the checking account balances of their borrowers may

provide banks with an additional advantage in monitoring the borrowers' behavior. Banks also have advantages in reducing moral hazard because, as demonstrated by Diamond (1984), they can engage in lower cost monitoring than individuals, and because, as pointed out by Stiglitz and Weiss (1983), they have advantages in preventing risk taking by borrowers since they can use the threat of cutting off lending in the future to improve a borrower's behavior. Banks' natural advantages in collecting information and reducing moral hazard explain why banks have such an important role in financial markets throughout the world.

The asymmetric information framework explains why banks play an even more important role in the financial systems of emerging market and transition countries because of the greater difficulty of acquiring information on private firms in these countries.⁴ When the quality of information about firms is worse, asymmetric information problems will be more severe, and it will be harder for firms to issue securities. Thus the smaller role of securities markets in emerging market and transition countries leaves a greater role for financial intermediaries such as banks.⁵

2.2 Promoting Economic Efficiency

As we have seen, minimizing adverse selection and moral hazard problems requires production of information through screening and monitoring, and yet not enough information will be produced because of the free-rider problem. Thus the existence of asymmetric information problems provides a strong rationale for the government to both regulate and supervise the financial system. By imposing regulations on the financial system which encourage information production, the government can reduce asymmetric

⁴Rojas-Suarez and Weisbrod (1994) document that banks play a more important role in the financial systems in emerging market countries than they do in industrialized countries.

⁵As pointed out in Edwards and Mishkin (1995), the traditional financial intermediation role of banking has been in decline in both the United States and other industrialized countries because of improved information technology which makes it easier to issue securities. Although this suggests that the declining role of traditional banking which has been occurring in the industrialized countries may eventually occur in the developing countries as well, the barriers to information collection in developing countries are so great that the dominance of banks in these countries will continue for the foreseeable future.

information and improve the efficiency of financial markets and thus overall economic efficiency. For the securities markets, these regulations can take the form of requiring firms issuing securities to adhere to standard accounting principles and to publicly disclose information about their sales, assets and earnings.

In addition, the presence of asymmetric information provides a rationale for the government to directly engage in ensuring the safety and soundness of financial institutions, particularly banks. As we have seen, financial institutions that make private loans such as banks have a special role in promoting efficiency of the financial system because they are especially well suited to minimize adverse selection and moral hazard problems. If there is a large number of bank failures, then the information capital residing in these institutions disappears and asymmetric information problems in the financial system become worse.

One way for the government to promote safety and soundness of these institutions is to require that they disclose a wide range of information that helps the market assess the quality of the financial institution's portfolio and the amount of the institution's exposure to risk. More public information about the risks incurred by financial institutions and the quality of their portfolios can better enable stockholders, creditors, policyholders and depositors to monitor these institutions, and so act as a deterrent to their engaging in risky activities that might lead to failure.

Although disclosure requirements of this type help increase market discipline of these institutions, the free-rider problem will result in insufficient monitoring of financial institutions by the individuals who provide them with funds. Thus, governments can play a role in imposing restrictions on the asset holdings of these institutions to prevent them from taking on too much risk. One such restriction is capital requirements, particularly for banking institutions, which can reduce the incentives of these institutions to take on risk. When a financial institution is forced to have a large amount of equity capital, it has more to lose if it fails and is thus less likely to engage in risky activities. In addition, equity capital in itself reduces the probability of failure because it provides a cushion to withstand adverse effects on the institution's balance-sheet.

In addition, governments need to guard against the adverse selection problem arising from the fact that people who are inclined to take on risks or engage in fraud at the depositors expense are the most

eager to get their hands on a banking franchise. Chartering (licensing) banks is one method for preventing this adverse selection problem; through chartering, individuals who want to buy or set up a bank can be screened to prevent undesirables from controlling banks.

However, even these measures may be insufficient to prevent excessive failures of financial institutions, thus requiring the government to provide a safety net. This is especially important for banking institutions that have demandable deposits and private loans which are difficult for depositors to monitor. Without a safety net, a bad shock to the economy can cause depositors to withdraw funds not only from insolvent banks but also from healthy institutions because asymmetric information prevents depositors from sorting out the good from the bad banks. Indeed, because banks operate on a first-come-first-served basis (the so-called sequential service constraint), depositors have a very strong incentive to show up at the bank first because if they are last in line, the bank may run out of funds and they will get nothing. Therefore, uncertainty about the health of the banking system in general in the face of an economy-wide shock can lead to "runs" on banks, both good and bad, and the failure of one bank can hasten the failure of others, leading to a contagion effect. If nothing is done to restore the public's confidence, a bank panic can ensue in which both solvent and insolvent banks go out of business.

A government safety net for depositors can short circuit runs on banks and bank panics. Deposit insurance is one form of the safety net in which depositors, sometimes with a limit to amount and sometimes not, are insured against losses due to a bank failure. With fully insured deposits, depositors don't need to run to the bank to make withdrawals -- even if they are worried about the bank's health -- because their deposits will be worth 100 cents on the dollar no matter what. Even with less than full insurance, the incentive for depositors to run to withdraw deposits when they are unsure about the bank's health is decreased.

Deposit insurance is not the only way in which governments provide a safety net to depositors. Governments often stand ready to provide support to domestic banks when banks face runs even in the absence of explicit deposit insurance. This support is sometimes provided by lending from the central bank to troubled institutions, and is often referred to as the lender-of-last-resort role of the central bank. In other cases, funds are provided directly by the government to troubled institutions, or these institutions are taken

over by the government and the government then guarantees that depositors will receive their money in full.

Although a government safety net can be quite successful at protecting depositors and preventing bank panics, it is a mixed blessing. The most serious drawback of a safety net stems from moral hazard which arises because depositors expect that they will not suffer losses if a bank fails. Thus, depositors are less likely to impose the discipline of the marketplace on banks by withdrawing deposits when they suspect that the bank is taking on too much risk. Consequently, banks that are provided with a safety net have incentives to take on greater risks than they otherwise would. The existence of a government safety net thus creates an additional impetus for governments to impose regulations to restrict risk taking by financial institutions.

Therefore, not only are government regulations needed to restrict risk taking, but supervision is required as well. Regular bank examinations, which allow regulatory authorities to monitor whether the bank is complying with capital requirements and restrictions on asset holdings, also function to limit moral hazard. In addition, bank examiners can assess whether the bank has the proper management controls in place to prevent fraud or excessive risk taking. With this information about a bank's activities, bank examiners can enforce capital requirements and force a bank to revise its management practices if these practices are jeopardizing the safety and soundness of the bank. Not only must supervisors enforce regulations, but they must be ready to close down insolvent institutions promptly because the incentives for insolvent institutions to take huge risks in order to get themselves out of the hole become extremely high.

An important impediment to successful government regulation and supervision of the financial system is explained by recognizing that the relationship between voters-taxpayers on the one hand and the regulators and politicians on the other creates a particular type of moral hazard problem, the principal-agent problem. The principal-agent problem occurs because the agent (a politician or regulator) does not have the same incentives as the principal (the taxpayer they work for) and so act in their own interest rather than in the interest of the principal.

To act in the taxpayer's interest, regulators have several tasks, as we have seen. They must set restrictions on holding assets that are too risky, impose sufficiently high capital requirements, and close down insolvent institutions. However, because of the principal-agent problem, regulators have incentives

to do the opposite and engage in regulatory forbearance. One important incentive for regulators that explains this phenomenon is their desire to escape blame for poor performance by their agency. By loosening capital requirements and pursuing regulatory forbearance, regulators can hide the problem of an insolvent bank and hope that the situation will improve, a behavior that Kane (1989) characterizes as "bureaucratic gambling". Another important incentive for regulators is that they may want to protect their careers by acceding to pressures from the people who strongly influence their careers, the politicians.

2.3 Preventing Financial Crises

Not only is there a need for the government to improve the efficiency of financial markets by intervening to promote information production and to restrict financial institutions from taking on too much risk, but there is also a need for government intervention to prevent financial crises. To understand what role the government can play in preventing financial crises, we must first understand what a financial crisis is and why it is so damaging to the economy. In recent years, an asymmetric information theory of financial crises has developed which provides a definition of a financial crisis [Bernanke (1983), Calomiris and Gorton (1991), and Mishkin (1991 and 1996a).] A financial crisis is a nonlinear disruption to financial markets in which asymmetric information problems of adverse selection and moral hazard become so much worse that financial markets are unable to efficiently channel funds to economic agents who have the most productive investment opportunities. A financial crisis thus prevents the efficient functioning of financial markets, which therefore leads to a sharp contraction in economic activity.

In most financial crises, and particularly in the recent Mexican and East Asian crises, the key factor that caused asymmetric information problems to worsen and launch a financial crisis is a deterioration in balance sheets, particularly those in the financial sector. An important precipitating factor in these crises has been financial liberalization that resulted in the lending boom. Once restrictions are lifted on both interest-rate ceilings and the type of lending allowed, lending increases rapidly. The problem is not that lending expands, but that it expands so rapidly that excessive risk-taking is the result, with large losses on

loans in the future.

There are two reasons that excessive risk-taking takes place after financial liberalization. The first is that managers of banking institutions often lack the expertise to manage risk appropriately when new lending opportunities open up after financial liberalization. In addition, with rapid growth of lending, banking institutions can not add the necessary managerial capital (well-trained loan officers, risk-assessment systems, etc.) fast enough to enable these institutions to screen and monitor these new loans appropriately. The second reason is that the rapid credit growth in the lending boom stretches the resources of bank supervisors. Bank supervisory agencies are also unable to add to their supervisory capital (well-trained examiners and information systems) fast enough to enable them to keep up with their increased responsibilities both because they have to monitor new activities of the banks, but also because these activities are expanding at a rapid pace. The inadequacy of bank supervision both because of the rapid credit growth and also because of the principal-agent problem discussed above, exacerbates the loan loss problem. With inadequate bank supervision, banks have increased incentives to take on greater risk because they know that the government safety net makes it unlikely that depositors and other creditors would sufficiently monitor the banks to prevent them from excessive risk taking.

The outcome of the lending boom arising after financial liberalization are huge loan losses and a subsequent deterioration of banks' balance sheets. In the case of Mexico, the share of nonperforming loans to total loans rose from less than 5 percent in 1990 to over 15% by 1996, while in the East Asian crisis countries, this ratio has risen recently to between 15 and 35 percent.⁶ The deterioration in bank balance sheets is the key fundamental that has driven emerging market countries into their financial crises, and this was particularly true for both Mexico and East Asia recently. One way this deterioration in bank balance promotes a financial crisis is that it leads banks to restrict their lending in order to improve their capital ratios or it can even lead to a full-scale banking crisis which forces many banks into insolvency, thereby directly removing the ability of the banking sector to make loans.

Although Japan has not yet experienced a full-fledged financial crisis, the story leading up to the financial instability that country has been experiencing in the 1990s is a similar one. With the liberalization

⁶See Mishkin (1996a) and Goldstein (1998).

of Japanese financial markets in the 1980s, Japanese banks suddenly found themselves in a more competitive environment. In an attempt to maintain adequate profit levels, a natural response was to take on riskier loans with high profit margins, such as those in the real estate sector.⁷ The incentives to do this were also enhanced by the presence of a government safety net which protected depositors and even large creditors if these risky loans turned sour and led to bank insolvencies.

The second way that the deterioration in bank balance sheets can lead to a financial crisis is that it can promote a currency crisis because the deterioration in bank balance sheets makes it very difficult for the central bank to defend its currency against a speculative attack. Any rise in interest rates to keep the domestic currency from depreciating has the additional effect of weakening the banking system further because the rise in interest rates causes additional damage to banks' balance sheets. This negative effect of a rise in interest rates on banks' balance sheets occurs because of their maturity mismatch and their exposure to increased credit risk when the economy deteriorates. Thus, when a speculative attack on the currency occurs in an emerging market country, if the central bank raises interest rates sufficiently to defend the currency, the banking system may collapse. Once investors recognize that a country's weak banking system makes it less likely that the central bank will take the steps to successfully defend the domestic currency, they have even greater incentives to attack the currency because expected profits from selling the currency have now risen. Thus, with a weakened banking sector, a successful speculative attack is likely to materialize and can be triggered by any of many factors, a large current account deficit being just one of them. In this view, the deterioration in the banking sector is the key fundamental that causes the currency crisis to occur.

In emerging market countries, a devaluation in the aftermath of a currency crisis can help trigger a financial crisis because of two special institutional features of credit markets in these countries. Because of past experience with high and variable inflation rates these countries have little inflation-fighting credibility and debt contracts are therefore of very short duration and are often denominated in foreign currencies. This structure of debt contracts is very different from that in most industrialized countries, which have almost

⁷A similar phenomenon has occurred in the United States and in other countries. See Edwards and Mishkin (1995).

all of their debt denominated in domestic currency, with much of it long-term, and it explains why there is such a different response to a devaluation in emerging market countries than there is in industrialized countries. While a devaluation in emerging market countries can be disastrous because it triggers a financial crisis, in industrialized countries a devaluation often benefits the economy as occurred in the United Kingdom after the September 1992 foreign exchange crisis. Thus, the debt structure in emerging market countries leaves them far more vulnerable to financial crises.

There are three mechanisms through which the currency crisis causes a financial crisis to occur in emerging market countries. The first involves the direct effect of currency devaluation on the balance sheet of firms. With debt contracts denominated in foreign currency, when there is a devaluation of the domestic currency, the debt burden of domestic firms increases. On the other hand, since assets are typically denominated in domestic currency, there is no simultaneous increase in the value of firms' assets. The result is that a devaluation leads to a substantial deterioration in firms' balance sheets and a decline in net worth, which, in turn, worsens the adverse selection problem because effective collateral has shrunk, thereby providing less protection to lenders. Furthermore, the decline in net worth increases moral hazard incentives for firms to take on greater risk because they have less to lose if the loans go sour. Because lenders are now subject to much higher risks of losses, there is now a decline in lending and hence a decline in investment and economic activity.

The damage to balance sheets from devaluation in the aftermath of the foreign exchange crisis has been a major source of the contraction of the economies in East Asia, as it was in Mexico in 1995. This mechanism has been particularly strong in Indonesia which has seen the value of its currency decline by over seventy-five percent, thus increasing the rupiah value of foreign-denominated debts by a factor greater than four. Even a healthy firm initially with a strong balance sheet is likely to be driven into insolvency by such a shock if it has a significant amount of foreign-denominated debt.

An additional mechanism linking currency crises with financial crises in emerging market countries occurs because the devaluation can lead to higher inflation. Because many emerging market countries have previously experienced both high and variable inflation, their central banks are unlikely to have deep-rooted credibility as inflation fighters. Thus, a sharp depreciation of the currency after a speculative attack that

leads to immediate upward pressure on prices can lead to a dramatic rise in both actual and expected inflation. Indeed Mexican inflation surged to 50% in 1995 after the foreign exchange crisis in 1994 and we are seeing a similar phenomenon in Indonesia, the hardest hit of the East Asian crisis countries. A rise in expected inflation after the currency crisis exacerbates the financial crisis because it leads to a sharp rise in interest rates. The interaction of the short duration of debt contracts and the interest rate rise leads to huge increases in interest payments by firms, thereby weakening firms' cash flow position and further weakening their balance sheets. Then, as we have seen, both lending and economic activity are likely to undergo a sharp decline.

A third mechanism linking the financial crisis and the currency crisis arises because the devaluation of the domestic currency can lead to further deterioration in the balance sheets of the banking sector, provoking a large-scale banking crisis. In emerging market countries, banks have many liabilities denominated in foreign currency which increase sharply in value when a depreciation occurs. On the other hand, the problems of firms and households mean that they are unable to pay off their debts, also resulting in loan losses on the assets side of the banks' balance sheets.⁸ The result is that banks' balance sheets are squeezed from both the assets and liabilities side and the net worth of banks therefore declines. An additional problem for the banks is that many of their foreign-currency denominated debt is very short-term, so that the sharp increase in the value of this debt leads to liquidity problems for the banks because this debt needs to be paid back quickly. The result of the further deterioration in bank balance sheets and their weakened capital base is that they cut back lending. In the extreme case in which the deterioration of bank

⁸An important point is that even if banks have a matched portfolio of foreign-currency denominated assets and liabilities and so appear to avoid foreign-exchange market risk, a devaluation can nonetheless cause substantial harm to bank balance sheets. The reason is that when a devaluation occurs, the offsetting foreign-currency denominated assets are unlikely to be paid off in full because of the worsening business conditions and the negative effect that these increases in the value in domestic currency terms of these foreign-currency denominated loans have on the balance sheet of the borrowing firms. Another way of saying this is that when there is a devaluation, the mismatch between foreign-currency denominated assets and liabilities on borrowers balance sheets can lead to defaults on their loans, thereby converting a market risk for borrowers to a credit risk for the banks that have made the foreign-currency denominated loans.

balance sheets leads to a banking crisis that forces many banks to close their door, thereby directly limiting the ability of the banking sector to make loans, the affect on the economy is even more severe.

The asymmetric information analysis of financial crises also provides a rationale for government intervention in the financial system. As argued above, a key factor leading to financial crises is the deterioration of balance sheets in the financial sector, particularly in banks. Emerging market countries are particularly prone to financial crises if there banking sectors are weak because, as we have seen, a banking crisis can provoke a currency crisis which tips the economy into a full-fledged financial crisis. The fact that the deterioration of bank balance sheets can promote a financial crisis provides an even stronger rationale for the government to provide adequate regulation and prudential supervision to limit the risks that banks and other financial institutions take, especially in emerging market countries.

The asymmetric information analysis of financial crises also provides an additional rationale for why the government should provide a safety net to the banking system. A government safety net whether it is provided by deposit insurance or by a lender-of-last-resort operation by the central bank or government can help stop a financial crisis by preventing a run on financial institutions.

Although it sees an important role for bank panics, an asymmetric information view of financial crises, does not see bank panics as the only financial disturbances that can have serious adverse effects on the aggregate economy. Financial instability can have negative effects over and above those resulting from banking panics, and analysis of such episodes as the Penn Central bankruptcy in 1970 and the stock market crash in October 1987 suggest that a financial crisis that has serious adverse consequences for the economy can develop even if there is no threat to the banking system (Mishkin (1991)). The asymmetric information analysis thus suggests that a lender-of-last-resort role may be necessary to provide liquidity to nonbanking sectors of the financial system in which asymmetric information problems have developed.

Although a government safety net or a central bank standing ready to exercise its role as a lender of last resort has the benefit of preventing financial crises, it does create the moral hazard problem described earlier. If a bank's depositors expect that the government or the central bank will come to its rescue, then they have less incentive to monitor the bank and withdraw their deposits if banks take on too much risk, thus providing banks with incentives to take on excessive risk. This moral hazard problem is

most severe for large banks if they are the beneficiaries of a somewhat misnamed "too big to fail" policy in which depositors at a large bank in trouble are protected from any losses by a lender-of-last-resort policy. (The "too big to fail" policy is somewhat misnamed because, although depositors are completely protected from losses, the bank is in fact allowed to fail with losses to the equity holders.)⁹

Similarly, the lender-of-last-resort role to prevent a financial crisis arising outside of the banking sector may encourage other financial institutions and borrowers from them to take on too much risk. Knowing that the central bank will prevent a financial crisis if it appears imminent will encourage them to protect themselves less against systemic risks, i.e., those that occur system-wide that will trigger a lender-of-last-resort response. There is thus a tradeoff between the moral hazard cost of the lender-of-last-resort role and the benefits of a lender-of-last-resort role in preventing financial crises.

3.

Recommendations for Financial Market Reform

Now that we have developed a framework for understanding why government role government intervention should take in financial markets we can look at what direction governments should take in financial market reform. We examine eleven basic areas of financial reform: 1) banking supervision, 2) accounting and disclosure requirements, 3) restrictions on connected lending, 4) legal and judicial systems, 5) market-based discipline, 6) entry of foreign banks, 7) capital controls, 8) inappropriate government interventions in financial markets, 9) restrictions on foreign-denominated debt, 10) financial liberalization, 11) monetary policy, 11) and choice of exchange rate regimes.

3.1 Banking Supervision

⁹There is evidence which suggests that the cost of the "too big to fail" policy has indeed been quite high in the United States after it was put into force with the failure of Continental Illinois in 1984. See Boyd and Gertler (1993).

As we have seen, banks play a particularly important role in the financial systems of both industrialized and particularly emerging market and transition countries' financial systems, and thus problems in the banking sector are a particularly important source of financial instability. Indeed, we have seen that deterioration in banks' balance sheets are an important precursor of financial crises, especially in emerging market countries. There, problems in the banking sector can make a foreign exchange crisis more likely, which in turn leads to a full blown financial crisis. Our asymmetric information framework suggests that there is an important need for a government safety net for the banking system in order to prevent bank panics. However, a safety net nonetheless increases the moral hazard incentives for excessive risk-taking on the part of the banks. All governments therefore need to pay particular attention to creating and sustaining a strong bank regulatory/supervisory system to reduce excessive risk-taking in their financial systems.

Encouraging a strong bank regulatory/supervisory system takes six basic forms.

1. Adequate Resources and Statutory Authority for Bank Regulators/Supervisors. Bank regulatory/supervisory agencies need to be provided with adequate resources and the statutory authority (the ability to issue cease and desist orders and to close down insolvent banks) to do their job effectively. Without these resources, the bank supervisory agency will not be able to monitor banks sufficiently in order to keep them from engaging in inappropriately risky activities, to have the appropriate management expertise and controls to manage risk, or to have sufficient capital so that moral hazard incentives to take on excessive risk are kept in check. Indeed, this inability to monitor banking institutions sufficiently not surprisingly has occurred in many emerging market and transition countries (Mexico and East Asia being recent examples), but it has also been a very serious problem in industrialized countries. The resistance to providing the savings and loan supervisory agencies with adequate resources to hire sufficient bank examiners by the U.S. Congress was a key factor in making the S&L crisis in the United States in the 1980s much worse. The inadequacy of bank supervision in Japan and the problems it has caused are well-known, with the lack of resources for bank supervision exemplified by the fact that the number of bank

examiners in Japan is on the order of 400 in contrast to around 7,000 in the United States.

2. Prompt Corrective Action. Quick action by bank supervisors to stop undesirable bank activities and, even more importantly, to close down institutions that do not have sufficient capital is critical if banking crises and financial crises are to be avoided. Regulatory forbearance which leaves insolvent institutions is disastrous because it dramatically increases moral hazard incentives to take on excessive risk because an operating but insolvent bank has almost nothing to lose by taking on colossal risks and "betting the bank". If they get lucky and the risky investments pay off, they get out of insolvency. On the other hand, if, as is likely, the risky investments don't pay off, insolvent institutions' losses will mount, weakening the banking system further and leading to higher taxpayer bailouts in the future. Indeed, this is exactly what occurred in the savings and loan industry in the United States when insolvent S&Ls were allowed to operate during the 1980s and has been a feature of the situation in East Asia and Japan recently.

An important way to ensure that bank supervisors do not engage in regulatory forbearance is through implementation of prompt corrective action provisions which require bank supervisors to intervene earlier and more vigorously when a bank gets into trouble. Prompt corrective action is crucial to preventing problems in the banking sector because it creates incentives for banks not to take on too much risk in the first place, knowing that if they do so, they are more likely to be punished.

The outstanding example of prompt corrective action is the provision in the FDICIA (Federal Deposit Insurance Corporation Improvement Act) legislation implemented in the United States in 1991. Banks in the United States are classified into five groups based on bank capital. Group 1, classified as "well capitalized," are banks that significantly exceed minimum capital requirements and are allowed privileges such as insurance on brokered deposits and the ability to do some securities underwriting. Banks in group 2, classified as "adequately capitalized," meet minimum capital requirements and are not subject to corrective actions but are not allowed the privileges of the well-capitalized banks. Banks in group 3, "undercapitalized," fail to meet risk-based capital and leverage ratio requirements. Banks in groups 4 and 5 are "significantly undercapitalized" and "critically undercapitalized," respectively, and are not allowed to pay interest on their deposits at rates that are higher than average. Regulators still retain a fair amount of

discretion in their actions to deal with undercapitalized banks and can choose from a smorgasbord of actions, such as: restrictions on asset growth, requiring the election of a new board of directors, prohibiting acceptance of deposits from correspondent depository institutions, prohibiting capital distributions from any controlling bank holding company, and termination of activities that pose excessive risk or divestiture of non-bank subsidiaries that pose excessive risk.¹⁰ On the other hand, FDICIA mandates that regulators must require undercapitalized banks to submit an acceptable capital restoration plan within 45 days and implement the plan. In addition, the regulatory agencies must take steps to close down critically undercapitalized banks (tangible equity capital less than 2% of assets) by putting them in receivership or conservatorship within ninety days, unless the appropriate agency and the FDIC concur that other action would better achieve the purpose of prompt corrective action. If the bank continues to be critically undercapitalized it must be placed in receivership, unless specific statutory requirements are met.

A key element of making prompt corrective action work is that bank supervisors have the financial resources to close down institutions when they become insolvent. It is very common that politicians and regulatory authorities engage in wishful thinking when their banking systems are in trouble, hoping that a large injection of public funds into the banking system will be unnecessary.¹¹ The result is regulatory forbearance with insolvent institutions allowed to keep operating which ends up producing disastrous consequences. The Japanese authorities have engaged in exactly this kind of behavior, but this was also a feature of the American response to the S&L crisis up until 1989.

Not only must weak institutions be closed down, but it must be done in the right way: Funds must not be supplied to weak or insolvent banking institutions to keep them afloat. To do so will just be throwing away good taxpayer money after bad. In the long-run, injecting public funds into weak banks does not deliver a restoration of the balance sheets of the banking system because these weak banks continue to be

¹⁰See Sprong (1994) for an a more detailed discussion of the prompt corrective action provisions in FDICIA.

¹¹In addition, banking institutions lobby often lobby vigorously to prevent the allocation of public funds to close down insolvent institutions because this allows them to stay in business and hopefully get out of the hole. This is exactly what happened in the United States in the 1980s as is described in Mishkin (1998).

weak and have strong moral hazard incentives to take on big risks at the taxpayers' expense. This is the lesson learned from the U.S. experience in the 1980s. The way to recapitalize the banking system is to close down all insolvent and weak institutions and sell off their assets to healthy institutions with public funds used to make the assets whole. If this is not possible, a public corporation, like the Resolution Trust Corporation (RTC) in the United States, needs to be created which will have the responsibility to sell off the assets of these closed banks as promptly as possible, so that the assets can be quickly put to productive uses by the private sector.

It is also imperative that stockholders, managers and large uninsured creditors be punished when banks are closed and public funds are injected into the banking system. Protecting managers, stockholders and large uninsured creditors from the consequences of excessive risk-taking increases the moral hazard problem immensely and is thus highly dangerous although it is common. The FDICIA legislation also has addressed this issue by

providing new legislative guidelines for the resolution of bank failures to minimize costs to the taxpayer and to impose costs on large uninsured creditors, as well as on stockholders and managers. FDICIA generally requires that the FDIC resolve bank failures using methods which produce the least cost to the deposit insurance agency. In its report to the Comptroller General, it must document the assumptions used in evaluating the different alternatives for resolution of the failure and show that it chose the least-cost method. This has resulted in substantial changes in the resolution methods pursued by the FDIC. As pointed out in Kaufman (1995), in 1991 the FDIC imposed losses on uninsured depositors of only 17 percent of failed banks undergoing costly resolutions (which held only 3 percent of total assets in failed banks). By 1993, the percentage of failed banks with costly resolutions in which uninsured depositors suffered losses had climbed to 88 percent (with the percentage of total assets of failed banks equaling 95 percent). In 1990, uninsured depositors at all large banks that failed were fully protected, while in 1993 all of uninsured depositors at the largest of the banks that failed -- none were particularly large -- were subject to losses.

These changes in resolution methods do appear to alter the incentives for uninsured depositors (with over \$100,000 in an account) to monitor banks because they are now subject to losses. This may in part

help explain why U.S. banks have increased their capital in recent years and appears to be a successful feature of FDICIA. On the other hand, the FDIC did not have lower losses as a percentage of failed bank assets in 1992 and 1993, possibly because of losses incurred by the banks before the establishment of these new procedures. Thus, the jury is not completely out on whether the least-cost-resolution provisions substantially reduce moral hazard incentives substantially in the future.

3. Focus on Risk Management. The traditional approach to bank supervision has focused on the quality of the bank's balance sheet at a point in time and whether the bank complies with capital requirements. Although the traditional focus is important for reducing excessive risk-taking by banks, it may no longer be adequate. First is the point that capital may be extremely hard to measure. Furthermore, in today's world, financial innovation has produced new markets and instruments which make it easy for banks and their employees to make huge bets quickly. In this new financial environment, a bank that is quite healthy at a particular point in time can be driven into insolvency extremely rapidly from trading losses, as has been forcefully demonstrated by the failure of Barings in 1995 which, although initially well capitalized, was brought down by a rogue trader in a matter of months. Thus an examination which focuses only on a bank's position at a point in time may not be effective in indicating whether a bank will in fact be taking on excessive risk in the near future.

For example, bank examiners in the United States are now placing far greater emphasis on evaluating the soundness of bank's management processes with regard to controlling risk. This shift in thinking was reflected in a new focus on risk management in the Federal Reserve System's 1993 guidance to examiners on trading and derivatives activities. The focus was expanded and formalized in the Trading Activities Manual issued early in 1994, which provided bank examiners with tools to evaluate risk management systems. In late 1995, the Federal Reserve and the Comptroller of the Currency announced that they would be assessing risk management processes at the banks they supervise. Now bank examiners give a separate risk management rating from 1 to 5 which feeds into the overall management rating as part of the CAMEL system. Four elements of sound risk management are assessed to come up with the risk management rating: 1) The quality of oversight provided by the board of directors and senior management,

2) the adequacy of policies and limits for all activities that present significant risks, 3) the quality of the risk measurement and monitoring systems, and 4) the adequacy of internal controls to prevent fraud or unauthorized activities on the part of employees. Bank examiners get to see what best practice for risk management is like in the banks they examine, and they can then make sure that best practice spreads throughout the banking industry by giving poor rankings to banks that are not up to speed.

This shift toward focusing on management processes is also reflected in recent guidelines adopted by the U.S. bank regulatory authorities to deal with interest-rate risk. As required by FDICIA, U.S. regulators were contemplating requiring banks to use a standard model to calculate the amount of capital a bank would need to allow for the interest-rate risk it bears. Although bank examiners will continue to consider interest-rate risk in deciding on the bank's capital adequacy, the regulatory agencies decided to adopt guidelines for how banks manage interest-rate risk, rather than a one-size-fits-all formula. These guidelines require the bank's board of directors to establish interest-rate risk limits, to appoint officials of the bank to manage this risk and to monitor the bank's risk exposure. The guidelines also require senior management of a bank to develop formal risk management policies and procedures, to ensure that the board of director's risk limits are not violated and to implement internal controls to monitor interest-rate risk and compliance with the board's directives. Clearly, bank supervision in countries outside the United States need to adopt similar measures to ensure that risk management procedures in their banks are equal to the best practice in banking institutions elsewhere in the world.

4. Independence of Bank Regulatory/Supervisory Agency. Because prompt corrective action is so important, the bank regulatory/supervisory agency needs sufficient independence from the political process so that it is not encouraged to sweep problems under the rug and engage in regulatory forbearance. One way to ensure against regulatory forbearance is to give the bank supervisory role to a politically independent central bank. This has desirable elements as pointed out in Mishkin (1991), but some central banks might not want to have the supervisory task thrust upon them because they worry that it might increase the likelihood that the central bank would be politicized, thereby impinging on the independence of the central bank. Alternatively, bank supervisory activities could be housed in a bank regulatory

authority that is independent of the government.

5. Accountability of Bank Supervisors. It is also important to make bank supervisors accountable if they engage in regulatory forbearance in order to improve incentives for them to do their job properly. For example, as pointed out in Mishkin (1997a), an important but very often overlooked part of FDICIA which has helped make this legislation effective is that there is a mandatory report that the supervisory agencies must produce if the bank failure imposes costs on the Federal Deposit Insurance Corporation (FDIC). The resulting report is made available to any member of Congress and to the general public upon request, and the General Accounting Office must do an annual review of these reports. Opening up the actions of bank supervisors to public scrutiny makes regulatory forbearance less attractive to them, thereby reducing the principal-agent problem. In addition, subjecting the actions of bank supervisors to public scrutiny reduces the incentives of politicians to lean on supervisors to relax their supervision of banks.

6. Limiting Too-Big-To-Fail. Because the failure of a very large bank makes it more likely that a major, systemic financial disruption will occur, bank supervisors are naturally reluctant to allow a big bank to fail and cause losses to depositors. The result is that most countries either explicitly or implicitly have a too-big-to-fail policy in which all depositors at a big bank, both insured and uninsured are fully protected if the bank fails. As we have seen, the problem with the too-big-to-fail policy is that it reduces market discipline on big banks and thus increases their moral hazard incentives to take on excessive risk. How can bank supervisors deal with the quandary of not wanting to allow a large bank failure to destabilize the financial system, while keeping the moral hazard problem created by too-big-to-fail under control?

One proposal outlined in Mishkin (1998b) is for the supervisory agencies to announce that there is a strong presumption that when there is a bank failure, uninsured depositors would not be fully protected unless this is the cheapest way to resolve the failure. It is important to recognize that although large banking institutions may be too big to liquidate, they can be closed with losses imposed on uninsured creditors. Indeed this is exactly what FDICIA suggests should be done by specifying that, except under very unusual circumstances when the a bank failure poses "serious adverse effects on economic conditions or financial

stability", a least-cost resolution procedure will be used to close down the bank. Ambiguity is created about the use of this systemic-risk exception to the least-cost-resolution rule because to invoke it requires a two-thirds majority of both the Board of Governors of the Federal Reserve System and the directors of the FDIC, as well as the approval of the secretary of the Treasury.

An important concern is that the systemic-risk exception to least-cost resolution will always be invoked when the failing bank is large enough because the Fed, the FDIC and the secretary of the Treasury will be afraid to impose costs on depositors and other creditors when a potential financial crisis is looming. Thus too-big-to-fail will still be alive, with all the negative consequences for moral-hazard risk-taking by the largest institutions. One way to cope with this problem is for the authorities to announce that although they are concerned about systemic risk possibilities, there will be a strong presumption that the first large bank to fail will not be treated as too-big-to-fail and costs will be imposed on uninsured depositors and creditors when the bank is closed. Rather than bail out the uninsured creditors at the initial large bank that fails, the authorities will stand ready to extend the safety net to the rest of the banking system if they perceive that there is a serious systemic risk problem.

The advantage of announcing such a stance is that it creates constructive ambiguity for the large banks because their uninsured depositors and creditors now have to worry that if this bank is the first one to fail, they will not be bailed out. (The phrase "constructive ambiguity" may have a somewhat negative connotation because it seems to imply advocacy of randomness in the supervision process. The constructive ambiguity advocated here is closer to a contingent rule, but one in which some judgement needs to be applied by supervisors.) As a result these depositors and creditors will now have an incentive to withdraw their funds if they worry about the soundness of the bank, even if it is very large, and this will alter the incentives of the bank away from taking on too much risk. Clearly, moral hazard still remains in the system because the authorities stand ready to extend the safety net to the rest of the system after the initial large institution fails if its failure creates the potential for a banking crisis. However, the extent of moral hazard is greatly reduced by the use of this form of constructive ambiguity. Furthermore, the cost of this remaining moral hazard must be balanced against the benefits of preventing a banking crisis if the initial bank failure is likely to snowball into a systemic crisis.

One potential criticism of a presumption towards allowing the first large bank to fail is that there is a substantial risk of contagion through the payments system.¹² The payments system relies on substantial extensions of intraday, overnight and longer-term credit between banks. Failure of a large bank or one that is intimately involved in the large-dollar payments system could then lead to a systemic shock that could cause the payments system to freeze up or, at a minimum, lead to substantial losses at other banks. Thus attention needs to be paid to reduction of potential payment system and contagion problems.

Indeed, the FDICIA legislation of 1991 has done exactly this by taking important steps to deal with these problems through several provisions. FDICIA directed the Board of Governors of the Federal Reserve to develop a regulation which would limit interbank credit exposure, and the Board of Governors responded with Regulation F, which restricts the interday exposure to a not adequately capitalized correspondent to less than 25% of the bank's capital. To prevent a systemic liquidity problem from developing because other financial institutions might not have immediate access to their funds at a failed bank, FDICIA also authorizes the FDIC to make a final settlement with creditors when it assumes receivership of a failed bank. The settlement rate is based on the FDIC's average recovery experience. In addition, FDICIA explicitly recognizes contractual netting agreements and holds them legally binding, thereby reducing short-term credit exposure and making the clean up after a bank failure substantially easier.

Not only do these FDICIA provisions to limit interbank risk make it more likely that a large bank failure will not produce a systemic problem, but they also improve the incentives for the regulatory agencies to allow the first large bank to fail because the failure has less potential to do damage to the banking system.

¹²Another potential criticism of a presumption that only the first large bank to fail will impose costs on uninsured depositors and creditors is that creditors have incentives to pump capital into a failing institution to prop it up just long enough so that it will not be the first one to fail. There are several reasons to discount this criticism. First is that the free-rider problem strongly mitigates the incentive for creditors to prop up the bank: each creditor individually is quite happy to let the other creditors pump funds into the bank in order to delay the failure, and so the incentive of creditors to prop up the bank is greatly weakened. Second, is that constructive ambiguity does not guarantee that delaying the failure of the bank will do any good. If the regulatory authorities decide that failure of a second bank does not present the financial system with systemic risk, they may not decide to protect the creditors. Thus the incentive for creditors to prop up the bank temporarily will be further weakened.

Thus, provisions of this type increase the credibility of the presumption that the first big bank will be allowed to fail and incur costs on the depositors and creditors, an essential feature of constructive ambiguity.

3.2 Accounting Standards and Disclosure Requirements

Accounting standards and disclosure requirements for financial institutions, which are often particularly lacking in emerging market and transition countries but also in a number of industrialized countries (Japan being the most prominent example), need to be beefed up considerably. Without the appropriate information, both markets and bank supervisors will not be able to adequately monitor the banks to deter excessive risk-taking.¹³ One prominent example is that accounting and supervisory conventions in many countries, Japan being an example, allow banks to make nonperforming loans look good by lending additional money to the troubled borrower who uses the proceeds to make the payments on the nonperforming loan, thus keeping it current, a practice known as "evergreening".¹⁴ The result is that nonperforming loans are significantly understated which makes it harder for the markets to discipline banks or for supervisors to decide when banks are insolvent and need to be closed down. Many countries also do not require the reporting of key financial data by individual financial institutions, including their consolidated financial exposure, which makes it hard to sort out healthy from unhealthy banks. Implementing proper accounting standards and disclosure requirements is an important first step in promoting a healthy financial system.¹⁵

¹³The importance of disclosure is illustrated in a recent paper, Garber and Lall (1996), which suggests that off-balance-sheet and off-shore derivatives contracts were used by Mexican banks before the Tequila crisis to get around regulations that were intended to prevent them from taking on foreign-exchange risk, and this played an important role in the Mexican crisis.

¹⁴Poor accounting and supervisory conventions in Japan are one reason that nonperforming loans have been grossly understated: currently, official estimates of nonperforming loans in Japan are between \$500 and \$600 billion, while private estimates range as high as \$1 trillion.

¹⁵See Goldstein and Turner (1996) and Goldstein (1997) for a further discussion of what steps need to be taken to beef up accounting standards and disclosure requirements.

An interesting example of an attempt to beef up disclosure requirements and raise their prominence in prudential supervision is the system put in place in New Zealand in 1996.¹⁶ New Zealand scrapped its previous system of regular bank examinations and replaced it with one based on disclosure requirements that uses the market to police the behavior of the banks. Every bank in New Zealand must supply a comprehensive, quarterly financial statement that provides among other things, information on the quality of its assets, capital adequacy, lending activities, profitability, and its ratings from private credit-rating agencies and whether it has one. These financial statements must be audited twice a year, and not only must they be provided to the central bank, but they must also be made public, with a two-page summary posted in all bank branches. In addition, bank directors are required to validate these statements and state publicly that their bank's risk management systems are adequate and being properly implemented. A most unusual feature of this system is that bank directors face unlimited liability if they are found to have made false or misleading statements.

The New Zealand example illustrates that disclosure requirements can be strengthened appreciably. However, suggesting that relying solely on disclosure requirements to police the banking system is a workable model for other countries is going too far. Depositors are unlikely to have the sophistication to understand fully the information provided and thus may not impose the necessary discipline on the banks. Furthermore, unlimited liability for directors might discourage top people from taking these positions, thereby weakening the management of the banks. Although disclosure requirements might be sufficient in New Zealand because almost all New Zealand banks are foreign owned, so that bank supervision has been in effect outsourced to the supervisors of the foreign banks that own the New Zealand banks, it is unlikely to work in countries where most of the banking system is domestically owned.

3.3 Restrictions on Connected Lending

A particular problem in the banking sector, particularly in emerging market and transition countries, is connected lending, lending to banks' owners or managers or their business associates. Banks clearly

¹⁶See Mortlock (1996) and Nicholl (1996) for a more extensive discussion of the New Zealand system.

have less incentives to monitor loans to their owners or managers, thus increasing the moral hazard incentives for the borrowers to take on excessive risk, thereby exposing the bank to potential loan losses. In addition, connected lending in which large loans are made to one party can result in a lack of diversification for the bank, thus increasing the risk exposure of the bank.

Regulations against connected lending are clearly necessary to reduce banks risk exposure. These can take several forms. One is that there needs to be necessary disclosure of connected lending. Indeed, one prominent feature of New Zealand's disclosure requirements is that the amount of lending to connected persons is mandatory. In addition, there need to be limits put on the amount of connected lending as a share of bank capital. Indeed, although New Zealand has gotten rid of much of the traditional regulatory guidelines it still has chosen to have prudential limits on the amount of connected lending. Most countries have regulations limiting connected lending and many emerging market countries have stricter limits than in industrialized countries. However, a key problem in emerging market and transition countries is that connected lending limits are often not enforced effectively. Folkerts-Landau, et al. (1995) have pointed out that bank examiners in Asia have often not been able to assess the exposure of banks to connected lending because of the use of dummy accounts or the lack of authority for the examiners to trace where the funds are used. Strong efforts to increase disclosure and increased authority for bank examiners to examine the books of the banks to root out connected lending is crucial if this source of moral hazard is to be kept under control.

3.4 Legal and Judicial Systems

The legal and judicial systems are very important for promoting the efficient functioning of the financial system and the inadequacies of legal systems in many countries are a serious problem for financial markets.

If property rights are unclear or hard to enforce, the process of financial intermediation can be severely hampered. Collateral can be an effective mechanism to reduce adverse selection and moral hazard problems in credit markets because it reduces the lender's losses in the case of a default. However, in many developing countries, the legal system prevents the use of certain assets as collateral or makes

attaching collateral a costly and time-consuming process, thereby reducing the effectiveness of collateral to solve asymmetric information problems.¹⁷ Similarly, bankruptcy procedures in developing countries are frequently very cumbersome (or even nonexistent), resulting in lengthy delays in resolving conflicting claims. Resolution of bankruptcies in which the books of insolvent firms are opened up and assets are redistributed can be viewed as a process to decrease asymmetric information in the marketplace. Furthermore, slow resolution of bankruptcies can delay recovery from a financial crisis because only when bankruptcies have been resolved is there enough information in the financial system to restore it to a healthy operation.

3.5 Market-Based Discipline

There are two problems with relying on bank examiners to control risk-taking by banks. First, banks have incentives to keep information away from bank examiners so that they are not restricted in their activities. Thus even if bank examiners are conscientious they may not be able to stop the banks from engaging in risky activities. Second, is that because of the principal-agent problem, bank supervisors may engage in regulatory forbearance and not do their jobs properly.

An answer to these problems is to have the market discipline financial institutions if they are taking on too much risk. We have already mentioned that disclosure requirements can help provide information to the markets which may help them monitor financial institutions and keep them from taking on too much risk. Two additional steps may help increase market discipline. One is to require that banks have credit ratings. As part of the BASIC (which stands for bonds, auditing, supervision, information and credit ratings) supervisory system implemented in Argentina in December 1996 is the requirement that every bank have an annual rating provided by a rating agency registered with the central bank.¹⁸ Institutions with more than \$50 million in assets are required to have ratings from two rating agencies. As part of this scheme, the Argentinean central bank is responsible for performing an after the fact review of the credit ratings to

¹⁷For example, see Rojas-Suarez and Weisbrod (1996)

¹⁸See Banco Central de la Republica Argentina (1997) and Calomiris (1998) for a description of the Argentine BASIC system.

check if the rating agencies are doing a reasonable job. As of January 1998, these credit ratings must be published on billboards in the banks and these ratings must also appear on all deposit certificates and all other publications related to obtaining funds from the public. As part of New Zealand's disclosure requirements, all banks must prominently display their credit ratings on their long-term senior unsecured liabilities payable in New Zealand, or alternatively, indicate if they do not have a credit rating. Clearly, the lack of a credit rating or a poor credit rating is expected to cause depositors and other creditors to be reluctant to put their funds in the bank, thus giving the bank incentives to reduce its risk taking and boost its credit rating. This has a higher likelihood of working in Argentina and New Zealand because both countries do not have government deposit insurance.

Another way to impose market discipline on banks is to require that they issue subordinated debt (uninsured debt that is junior to insured deposits, but senior to equity). Subordinated debt, particularly if it has a ceiling on its the spread between its interest rate and that on government securities, can be an effective disciplining device. If the bank is exposed to too much risk, it is unlikely to be able to sell its subordinated debt. Thus, compliance with the subordinated debt requirement will be a direct way for the market to force banks to limit their risk exposure. Alternatively, deposit insurance premiums could be charged according to the interest rate on the subordinated debt. Not only would the issuance of subordinated debt directly help reduce incentives for banks to engage in risky activities, but it can also provide supplemental information to bank examiners that can help them in their supervisory activities. In addition, information about whether banks are successful in issuing subordinated debt and the interest rate on this debt can help the public evaluate whether supervisors are being sufficiently tough on a particular banking institution, thus reducing the scope of the principal-agent problem.

Argentina has implemented a subordinated debt requirement in its BASIC program, although without an interest rate cap, which took effect on January 1998. As reported in Calomiris (1998), initially about half of the banks have been able to comply with this requirement. Interestingly, as expected, it is the weakest banks that have had trouble issuing subordinated debt. Thus, the subordinated debt requirement looks like it will have the intended effect of promoting discipline on the banks. However, it still remains to be seen how the Argentinean authorities will respond to the fact that many banks are not in compliance with

this regulation. Thus it is too early to tell how successful the subordinated debt requirement will be.

3.6 Entry of Foreign Banks

Many countries have restrictions on the entry of foreign banks. Rather than seeing foreign banks as a threat, their entry should be seen as an opportunity to strengthen the banking system. In all but a few large countries, domestic banks are unable to diversify because their lending is concentrated in the home country. In contrast, foreign banks have more diversified portfolios and also usually have access to sources of funds from all over the world through their parent company. This diversification means that these foreign banks are exposed to less risk and are less affected by negative shocks to the home country's economy. Because many emerging market and transition economies are more volatile than industrialized countries, having a large foreign component to the banking sector is especially valuable because it helps insulate the banking system from domestic shocks. Encouraging entry of foreign banks is thus likely to lead to a banking and financial system that is substantially less fragile and far less prone to crisis.

Another reason for encouraging entry of foreign banks is that this can encourage adoption of best practice in the banking industry. Foreign banks come with expertise in areas like risk management. As mentioned earlier, when bank examiners in a country see better practices in risk management, they can spread these practices throughout their country's banking system by downgrading banks who do not adopt these practices. Having foreign banks to demonstrate the latest risk management techniques can thus lead to improved control of risk in the home country's banking system. Clearly, there are also benefits from the increased competition that foreign bank entry brings to the banking industry in the home country. Entry of foreign banks should thus be encouraged because it will lead to improved management techniques and a more efficient banking system.

3.7 Capital Controls

In the aftermath of the recent financial crises in Mexico and East Asia, in which the crisis countries experienced large capital inflows before the crisis and large capital outflows after the crisis, much attention has been focused on whether international capital movements are a major source of financial instability. The asymmetric information analysis of the crisis suggests that international capital movements can have an important role in producing financial instability, but as we have seen this is because the presence of a government safety net with inadequate supervision of banking institutions encourages capital inflows which lead to a lending boom and excessive risk-taking on the part of banks.¹⁹ Consistent with this view, Gavin and Hausman (1996) and Kaminsky and Reinhart (1996) do find that lending booms are a predictor of banking crises, yet it is by no means clear that capital inflows will produce a lending boom which causes a deterioration in bank balance sheets. Indeed, Kaminsky and Reinhart (1996) find that financial liberalization, rather than balance of payments developments inflows, appears to be a more important predictor of banking crises.

Capital outflows have also been pointed to as a source of foreign exchange crises, which as we have seen, can promote financial instability in emerging market countries. In this view, foreigners pull their capital out of country and the resulting capital outflow is what forces a country to devalue its currency. However, as pointed out earlier, a key factor leading to foreign exchange crises are problems in the financial sector which lead to the speculative attack and capital outflows. With this view, the capital outflow which is associated with the foreign exchange crisis is a symptom of underlying fundamental problems rather than a cause of the currency crisis. The consensus from many empirical studies [see the excellent survey in Kaminsky, Lizondo and Reinhart (1997)] provides support for this view because capital flow or current account measures do not have predictive power in forecasting foreign exchange crises, while a deeper fundamental such as problems in the banking sector helps predict currency crises.

The analysis here therefore does not provide a case for capital controls such as the exchange controls that have recently been adopted in Malaysia. Exchange controls are like throwing out the baby with the bath water. Capital controls have the undesirable feature that they may block funds from entering a country which will be used for productive investment opportunities. Although these controls may limit

¹⁹See Calvo, Leiderman and Reinhart (1994) for a model of this process.

the fuel supplied to lending booms through capital flows, over time they produce substantial distortions and misallocation of resources as households and businesses try to get around them. Indeed, there are serious doubts as to whether capital controls can be effective in today's environment in which trade is open and where there are many financial instruments that make it easier to get around these controls.

On the other hand, there is a strong case to improve bank regulation and supervision so that capital inflows are less likely to produce a lending boom and excessive risk taking by banking institutions. For example, banks might be restricted in how fast their borrowing could grow and this might have the impact of substantially limiting capital inflows. These prudential controls could be thought of as a form of capital controls, but they are quite different than the typical exchange controls. They focus on the sources of financial fragility, rather than the symptoms, and supervisory controls of this type can enhance the efficiency of the financial system rather than hampering it.

3.8 Reducing Inappropriate Government Interventions in Financial Markets

A feature of many countries' financial systems, particularly in emerging market and transition countries, is government interventions to direct credit either to themselves or to favored sectors or individuals in the economy. Governments either do this by setting interest rates at artificially low levels for certain types of loans, by creating development finance institutions to make specific types of loans, by setting up state-owned banks that can provide funds to favored entities, or by directing private institutions to lend to certain entities. Private institutions clearly have an incentive to solve adverse selection and moral hazard problems and lend to borrowers who have productive investment opportunities. Governments have less incentive to do so because they are not driven by the profit motive and so their directed credit programs or state-owned banks are less likely to channel funds to those borrowers who will help produce high growth of the economy. This type of government intervention in the credit markets is therefore likely to be result in less efficient investment and slower growth and should be curtailed.

The absence of a profit motive also means that state-owned banks are less likely to manage risk

properly and be efficient. Thus it is not surprising that state-owned banks usually end up having larger loan loss ratios than private institutions, and countries with the highest share of state-owned banks, on average, are also the ones with a higher percentage of non-performing loans and higher operating costs.²⁰ Thus the presence of state-owned banks can substantially weaken the banking system. The inefficiency of state-owned banks and their higher loan losses strongly argue for privatization of the banking sector. However, even privatization must be managed properly or it can lead to disaster. If purchasers of banks are those who are likely to engage in excessive risk taking or even fraud, the possibility that banking problems will arise in the future are high. Also if purchasers of banks are allowed to put in very little of their own capital into the bank, they may also have strong incentives to engage in risky activities at the depositors and taxpayers expense. These potential downsides of privatization do not indicate that privatization should be avoided, but rather that the chartering or licensing process should be sufficiently stringent to screen out bad owners, making sure that bank ownership goes to individuals who will improve bank performance over the previous government managers.

3.9 Restrictions on Foreign-Denominated Debt

The asymmetric information view of financial crises indicates that a debt structure with substantial foreign-denominated debt, as is typical in many emerging market countries, makes the financial system more fragile. Currency crises and devaluations do trigger full-fledged financial crises in countries with foreign-denominated debt, while this is not the case for countries whose debt is denominated in domestic currency.

The presence of foreign-denominated debt also makes it far more difficult for a country to recover from a financial crisis. Industrialized countries with debt denominated in domestic currency can promote recovery by pursuing expansionary monetary policy by injecting liquidity (reserves) into the financial system. Injecting reserves, either through open market operations or by lending to the banking sector, causes the money supply to increase, which in turn leads to a higher price level. Given that debt contracts are

²⁰See Goldstein and Turner (1996).

denominated in domestic currency and many debt contracts and are often of fairly long duration, the reflation of the economy causes the debt burden of households and firms to fall, thereby increasing their net worth. As outlined earlier, higher net worth then leads to reduced adverse selection and moral hazard problems in financial markets, undoing the increase in adverse selection and moral hazard problems induced by the financial crisis. In addition, injecting liquidity into the economy raises asset prices such as land and stock market values, which also cause an improvement in net worth and a reduction in adverse selection and moral hazard problems. Also, as discussed in Mishkin (1996b), expansionary monetary policy promotes economic recovery through other mechanisms involving the stock market and the foreign exchange market.

A second method for a central bank to promote recovery from a financial crisis is to pursue the so-called lender-of-last-resort role in which the central bank stands ready to lend freely during a financial crisis. By restoring liquidity to the financial sector, the lender of last resort can help shore up the balance sheets of financial firms, thereby preventing a systemic shock from spreading and bringing down the financial system. There are many instances of successful lender of last resort operations in industrialized countries (e.g., see Mishkin, 1991); the Federal Reserve's intervention on the day after the October 19, 1987 stock market crash is one example. Indeed, what is striking about this episode is that the extremely quick intervention of the Fed resulted not only in a negligible impact on the economy of the stock market crash, but also meant that the amount of liquidity that the Fed needed to supply to the economy was not very large (see Mishkin (1991)).

However, if the financial system has a large amount of foreign-denominated debt it may be far more difficult for the central bank to promote recovery from a financial crisis. With this debt structure, a central bank can no longer use expansionary monetary policy to promote recovery from a financial crisis. Suppose that the policy prescription for countries with little foreign-denominated debt, that is expansionary monetary policy and reflation of the economy, were followed in a country with a large amount of foreign-denominated debt. In this case the expansionary monetary policy is likely to cause the domestic currency to depreciate sharply. As we have seen before, the depreciation of the domestic currency leads to a deterioration in firms' and banks' balance sheets because much of their debt is denominated in foreign currency, thus raising

the burden of indebtedness and lowering banks' and firms' net worth.

The net result of an expansionary monetary policy in a country with a large amount of foreign-denominated debt is that it hurts the balance sheets of households, firms, and banks. Thus, expansionary monetary policy has the opposite result to that found in industrialized countries after a financial crisis: it causes a deterioration in balance sheets and therefore amplifies adverse selection and moral hazard problems in financial markets caused by a financial crisis, rather than ameliorates them as in the industrialized country case.

For similar reasons, lender-of-last-resort activities by a central bank in an emerging markets country with substantial foreign-denominated debt, may not be as successful as in an industrialized country. Central bank lending to the financial system in the wake of a financial crisis which expands domestic credit might lead to a substantial depreciation of the domestic currency, with the result that balance sheets will deteriorate making recovery from the financial crisis less likely. The use of the lender-of-last-resort role by a central bank is therefore much trickier in countries with a large amount of foreign-denominated debt because central bank lending is now a two-edged sword.

The above arguments suggest that the economy would be far less prone to financial crises and could recover far more easily if the issuance of foreign-denominated debt was discouraged. Because much foreign-denominated debt is intermediated through the banking system, regulations to both restrict bank lending and borrowing in foreign currencies could greatly enhance financial stability. Similarly, restrictions on corporate borrowing in foreign currency or tax policies to discourage foreign-currency borrowing could help make the economy better able to withstand a currency depreciation without undergoing a financial crisis.

3.10 Financial Liberalization

Deregulation and liberalization of the financial system have swept through almost all countries in recent years. Although deregulation and liberalization are highly desirable objectives, the asymmetric information framework in this paper indicates that if this process is not managed properly, it can be

disastrous. If the proper bank regulatory/supervisory structure, accounting and disclosure requirements, restrictions on connected lending, and well-functioning legal and judicial systems are not in place when liberalization comes, the appropriate constraints on risk-taking behavior will be far too weak. The result will be that bad loans are likely, with potentially disastrous consequences for bank balance sheets at some point in the future.

In addition, before liberalization occurs, banks may not have the expertise to make loans wisely, and so opening them up to new lending opportunities may also lead to poor quality of the loan portfolio. We have also seen that financial deregulation and liberalization often lead to a lending boom, because of both increased opportunities for bank lending and financial deepening in which more funds flow into the banking system. Although financial deepening is a positive development for the economy in the long run, in the short run the lending boom may outstrip the available information resources in the financial system, helping to promote a financial collapse in the future.

The dangers in financial deregulation and liberalization do not mean that countries should not pursue a liberalization strategy. To the contrary, financial liberalization is critical to the efficient functioning of financial markets so that they can channel funds to those with the most productive investment opportunities. Getting funds to those with the most productive investment opportunities is especially critical to emerging market countries because these investments can have especially high returns, thereby stimulating rapid economic growth. However, proper sequencing of financial deregulation and liberalization is critical to its success. It is important that policymakers put in place the proper institutional structure before liberalizing their financial systems, especially if there are no restrictions on financial institutions seeking funds abroad or issuing foreign-denominated debt. Before financial markets are fully liberalized, it is crucial that the precepts outlined above be implemented: provision of sufficient resources and statutory authority to bank supervisors, adoption of prompt corrective action provisions, an appropriate focus on risk management, independence of bank regulators/supervisors from short-run political pressure, increased accountability of bank supervisors, limitations on too-big-to-fail, adoption of adequate accounting standards and disclosure requirements, sufficient restrictions on connected lending, improvements in the legal and judicial systems, encouragement of market-based discipline, and encouragement of entry of foreign banks.

Because the above measures are not easy to install quickly and because of the stresses that rapid expansion of the financial sector puts on both managerial and supervisory resources, policymakers probably need to restrict the growth of credit when financial liberalization is put into place. This can take the form of putting upper limits on loan-to-value ratios, or for consumer credit, setting maximum repayment periods and minimum downpayment percentages. Banks could also be restricted in how fast certain types of their loan portfolios are allowed to grow. In addition, at the beginning of the liberalization process, restrictions on foreign-denominated debt and prudential controls that might limit capital inflows may be necessary to reduce the vulnerability of the financial system. As the appropriate infrastructure is put into place, these restrictions could and should be reduced. The bottom line is that, although eventually a full financial liberalization should be the goal, financial liberalization needs to proceed at a measured pace, with some restrictions imposed along the way.

3.11 Monetary Policy

Although, this paper's focus is on financial reform, it is also important to recognize that monetary policy can play an important role in promoting financial stability. Indeed, I have argued elsewhere (Mishkin, 1997b) that central bankers need to focus as much on financial stability as on price stability. Price stability is a worth goal in its own right. Not only do public opinion surveys indicate that the public is very hostile to inflation, but there is also mounting evidence from econometric studies that inflation is harmful to the economy.²¹

The asymmetric information analysis of financial crises provides additional reasons why price stability is so important. As was mentioned earlier, when countries have a past history of high inflation, debt contracts are often denominated in foreign currencies. As we have seen, this feature of debt contracts makes the financial system more fragile because currency depreciation can trigger a financial crisis.

²¹Inflation, particularly at high levels, is found to be negatively associated with growth. At lower levels, inflation is found to lower the level of economic activity, although not necessarily the growth rate. See the survey in Anderson and Gruen (1995) and Fischer (1993), one of the most cited papers in this literature.

Achieving price stability is a necessary condition for having a sound currency and with a sound currency, it is far easier for banks, nonfinancial firms and the government to raise capital with debt denominated in domestic currency. Thus another method for reducing an economy's dependence on foreign-denominated debt and enhancing financial stability is the successful pursuit of price stability.

Furthermore, central banks which have successfully pursued price stability have sufficient credibility so that expansionary monetary policy or a lender-of-last-resort operation in the face of a financial crisis is less likely to result in a rise in inflation expectations and a sharp depreciation of the currency which would harm balance sheets. Thus countries which have successfully pursued price stability have an enhanced ability to use monetary policy tools to promote recovery from a financial crisis.

3.12 Choice of Exchange Rate Regimes

Although we have seen that the pursuit of price stability can enhance financial stability and is thus desirable, some methods of pursuing price stability can unfortunately promote financial instability. One commonly used method to achieve price stability is to peg the value of its currency to that of a large, low-inflation country. In some cases, this strategy involves pegging the exchange rate at a fixed value to that of the other country's currency so that its inflation rate will eventually gravitate to that of the other country. In other cases, a currency the strategy involves a crawling peg or target in which one country's currency is allowed to depreciate at a steady rate against that of another country so that its inflation rate can be higher than that of the country to which it is pegged.

Although adhering to a fixed or pegged exchange rate regime can be a successful strategy for controlling inflation, the asymmetric information framework in this paper illustrates how dangerous this strategy can be for an emerging market country with a large amount of foreign-denominated debt. Under a pegged exchange-rate regime, when a successful speculative attack occurs, the decline in the value of the domestic currency is usually much larger, more rapid and more unanticipated than when a depreciation occurs under a floating exchange-rate regime. For example, during the Mexican crisis of 1994-1995, the value of the peso fell by half in only a few months time, while in the recent Southeast Asian crisis, the worst-

hit country Indonesia saw its currency decline to less than one-quarter of its pre-crisis value, also in a very short period of time. The damage to balance sheets after these devaluations has thus been extremely severe. In Mexico, there was a several-fold increase in the net debtor position of business enterprises from before the devaluation in December 1994 till March 1995, while in Indonesia the over four-fold increase in the value of foreign debt arising from the currency collapse has made it very difficult for Indonesian firms with appreciable foreign debt to remain solvent. The deterioration of nonfinancial firms' balance sheets leads to a deterioration in bank balance sheets because borrowers from the banks are now less likely to be able to pay off their loans. The result of this collapse in balance sheets were sharp economic contractions. In Mexico, real GDP growth in the second and third quarters of 1995 fell to rates around -10 percent, while current forecasts predict similar rates of decline for Indonesia over the coming year.

Another potential danger from an exchange-rate peg is that by providing a more stable value of the currency, it might lower risk for foreign investors and thus encourage capital inflows. Although these capital inflows might be channeled into productive investments and thus stimulate growth, they might promote excessive lending, manifested by a lending boom, because domestic financial intermediaries such as banks play a key role in intermediating these capital inflows [Calvo, Leiderman and Reinhart (1994)]. Indeed, Folkerts-Landau, et. al (1995) found that emerging market countries in the Asian-Pacific region with the large net private capital inflows also experienced large increases in their banking sectors. Furthermore, if the bank supervisory process is weak, as it often is in emerging market and transition countries, so that the government safety net for banking institutions creates incentives for them to take on risk, the likelihood that a capital inflow will produce a lending boom is that much greater. With inadequate bank supervision, the likely outcome of a lending boom is substantial loan losses and a deterioration of bank balance sheets and a possible financial crisis.²²

A flexible exchange rate regime has the advantage that movements in the exchange rate are much

²²Gavin and Hausman (1996) and Kaminsky and Reinhart (1996) do find that lending booms are a predictor of banking crises, yet it is less clear that capital inflows will produce a lending boom which causes a deterioration in bank balance sheets. Kaminsky and Reinhart (1996), for example, find that financial liberalization, rather than balance of payments developments inflows, appears to be a more important predictor of banking crises.

less nonlinear than in a pegged exchange rate regime. Indeed, the daily fluctuations in the exchange rate in a flexible exchange rate regime have the advantage of making clear to private firms, banks, and governments that there is substantial risk involved in issuing liabilities denominated in foreign currencies. Furthermore, a depreciation of the exchange rate may provide an early warning signal to policymakers that their policies may have to be adjusted in order to limit the potential for a financial crisis.

The conclusion is that a pegged exchange rate regime may increase financial instability in emerging market and transition countries. However, this conclusion does not indicate that fixing or pegging an exchange rate should never be used to control inflation. Indeed, countries with a past history of poor inflation performance may find that only with a very strong commitment mechanism to an exchange rate peg (as in a currency board) can inflation be controlled.²³ However, the analysis does suggest that countries using this strategy to control inflation must actively pursue policies that will promote a healthy banking system. Furthermore, if a country has an institutional structure of a fragile banking system and substantial debt denominated in foreign currencies, using an exchange rate peg to control inflation can be a very dangerous strategy indeed.²⁴

4.

Conclusions and Directions for Future Research

Getting the financial system to do its job properly of channeling funds to those with productive investment opportunities is crucial to the well-being of the economy. This paper has outlined a large number of financial market reforms that can help achieve this goal. Clearly, there is much further research to be done on additional reforms that can help make the financial system more efficient and stable. An extremely active area of research is on how to improve bank supervision. A particular challenge here is

²³See Mishkin (1998b).

²⁴See Obstfeld and Rogoff (1995) for additional arguments as to why pegged exchange rate regimes may be undesirable.

that the traditional forms of bank supervision that have focused on bank capital may be less relevant in the future because of the speed with which banks can lose capital in today's world with financial instruments that make it easy for financial institutions to make huge bets quickly. Research is therefore needed to refine risk management procedures and to help supervisors assess whether appropriate risk management procedures are in place. In addition, research on how to make greater use of the market to discipline financial institutions so that they do not take on excessive risk is also needed. The use of subordinated debt is one way to provide market discipline, and research on how subordinated debt requirements might work to deter excessive risk taking will be very valuable. Indeed, subordinated debt requirements are being tried out in Argentina, and important research will almost surely result to see whether this experiment will succeed or fail.

Although the basic outline of what reforms are needed in emerging market countries is reasonably clear, it is striking how difficult it is to get these countries to adopt them. Indeed, no matter what regulations are written down on paper, they are unlikely to succeed if political institutions do not support their working effectively. We have seen that the principal-agent problem created by the political process has often resulted in inadequate bank supervision that has led to disaster. Thus an extremely important direction for future research is to focus on the political economy of financial sector reform to see which institutional setups are likely to promote and sustain reforms that promote financial stability.

This paper has tried to demonstrate that implementing the right set of financial market reforms is crucial to the health of the economy. Recent events demonstrate that not implementing these financial market reforms at a minimum can retard growth, but can also leave the economy susceptible to financial disasters that can impose extreme hardship on the public. Therefore, although implementing these reforms successfully is far from a trivial task, governments must put the highest priority on doing so.

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