

# The Role of the Financial System in Development

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Economists have long recognized the importance of the financial system. In the year since the onset of the East Asian crisis we have increasingly heard that the financial system was one of the main causes of the crisis, that the financial system needs to be reformed in order to resolve the crisis, and that we need to pay attention to the effects of other reforms on the financial system. Many of these discussions treat the financial system in isolation or link it superficially to the macroeconomy. In my remarks today I would like to discuss the intricate links between the financial system and the macroeconomy. My starting point will be microeconomic models of finance developed over the past twenty-five years. The main result of these models has been to show just how different the financial sector is from other sectors, including the pervasiveness of non-market clearing and inefficient equilibria. I will then go on and apply these ideas to a discussion of finance-based macroeconomic models, using them to shed light on the causes of business cycle fluctuations and some of the determinants of growth. Finally, in the last part of my discussion I will respond more directly to developments in international capital flows, including the questions of capital account convertibility and the response to crises.

## **The Importance and Limitations of Financial Markets**

I would like to begin by discussing the role of the financial system and why it is different from other sectors of the economy. Individual entrepreneurs rarely have enough of their own capital to undertake investments themselves. Individual savers, without pooling their money, would not be able to take advantage of the potential increasing returns to scale of their investments, and would face a large degree of risk with little liquidity. The financial system – including banks and other financial intermediaries, equity markets, and debt markets – solves these problems by *agglomerating* capital from many smaller savers, *allocating* capital to the most important uses, and *monitoring* to ensure that it is being used well. At the same time, the financial system transfers, pools, and reduces risk, increases liquidity, and conveys information.

Well-functioning financial systems do a very good job of selecting the most productive recipients for these resources and ensuring that they are using them in high return activities. In contrast, poorly functioning financial systems often allocate capital in low-productivity investments. The differences in terms of growth and total factor productivity can be enormous.

In introductory economics courses we are taught to use demand and supply diagrams to analyze markets for apples and bananas. We are also taught that, provided there are no externalities, the competitive price is efficient. Some go on to apply this theory to financial markets, looking at the supply of funds, the demand for funds, and the market clearing interest rate. This simplistic theory is the basis for the belief that financial markets need to be fully liberalized from the "interference" of governments. Unfortunately, this framework makes little sense in approaching finance, which is concerned with the exchange of money today for the *promise* of repayment. Given the existence of uncertainty and the lack of complete futures markets, this intertemporal transaction entails risks, especially the risk of bankruptcy. Information about these risks – both about the type of borrower and the actions he or she undertakes after borrowing the money – is essential.

The fundamental theorems of welfare economics, which assert that every competitive equilibrium is Pareto efficient, provide no guidance with respect to the question of whether financial markets, which are essentially concerned with the production, processing, dissemination, and utilization of information, are efficient (Greenwald and Stiglitz 1986). On the contrary, economies with imperfect information or incomplete markets are, in general, not Pareto efficient; there are feasible government interventions that can make all individuals better off.

These are not just academic details. Governments play a large role in all of the most successful financial markets. Wall Street, the international emblem of free markets, is one of the most highly regulated markets in the United States. But let me also be clear: this observation should not be the basis for the government to take over the financial system. History does not offer many examples of highly successful economies that did not accord the market a central role in the allocation and monitoring of capital. Theoretically, the case for a government run economy rests on the same highly restrictive assumptions as the case for a purely free market economy, notably the assumption that there is perfect information (Stiglitz 1994b). Governments are often at an even bigger informational disadvantage than the market, and can suffer from more serious principal-agent problems.

I would like to illustrate the importance of these informational problems by discussing the three most important forms of capital: equity, long-term loans, and short-term loans. This discussion will form the basis of my discussion of the role of financial markets in macroeconomic fluctuations and growth.

### Equity

Equity has several advantages. It allows companies to share risks with their investors. There is no fixed obligation to repay and the value of the equity investment itself varies with the condition of the firm. Unlike debt, equity does not encourage companies to take excessive risks. With debt, a company gets the full benefit of the upside realization of the risk, while the marginal cost of bad realizations is limited. In contrast, the risk incentives are more aligned with equity.

Despite these advantages, in most countries equity is a trivial source of new finance, and net issuance of equity has actually been negative in the United States and United Kingdom over the past decades. While equity markets are a *relatively* more important source of finance in many emerging economies, they are still much smaller than bank finance or retained earnings. Equity also plays a smaller role in international flows. In 1997, \$33 billion worth of net long-term debt

flowed into Latin America compared to \$16 billion in portfolio equity investment (World Bank 1998).

The reason for the pervasiveness of what I shall call "equity rationing" is that the new issuance of equity tends to have a negative impact on the valuation of the firm (Asquith and Mullins 1986).

From the perspective of imperfect information, the reason for this is clear. Equity gives rise to serious adverse selection and moral hazard problems. The adverse selection problem is that those entrepreneurs who are most willing to sell shares in their firms include those who believe, or know, that the market has overvalued their shares. If I put up 1 percent of the contents of my wallet for auction, without showing you the wallet and while reserving the right to refuse low bids, there is no way you could end up making a profit. There are, of course, good reasons for issuing equities: risk averse individuals with good investment projects, requiring more capital than they have will also issue shares. But these individuals and firms are mingled together with those who see an opportunity to cash in on the markets' ignorance. And unfortunately, the market cannot easily distinguish among the two (see Greenwald, Stiglitz, and Weiss 1984).

The moral hazard problem results from the incentive of management to divert money from shareholders and majority shareholders to divert money from minority shareholders (see Jensen 1986). Takeovers and other market mechanisms provide only a limited discipline for managers and no market mechanism can protect minority shareholders (see Stiglitz 1982b and Shleifer and Vishny 1989).

The experience of one Central European economy shows what can happen if securities markets are left alone. In this country closed-end mutual funds were trading at 40 to 80 percent discounts, representing the market's assessment of the value taken away from assets by the manager. In addition, there are large differences in the price of a "control bloc" of a company and the price of individual shares. Both of these phenomenon happen because management and controlling shareholders are able to "tunnel" the assets out of the firms they control (Nikitin and Weiss 1997).

Government can help mitigate the adverse selection and moral hazard problems in securities markets by promulgating standard accounting procedures, creating and enforcing a legal structure that allows for well-designed contracts, establishing a securities and exchange commission, formulating laws to protect minority shareholders against majority shareholders, and all shareholders against fraud, and providing a balanced approach to bankruptcy. The experience of the United States shows, however, that even with all of these legal protections, the informational problems are so severe that equity will still play only a limited role in new finance.

#### Short-term Bank Loans

With debt, the *expected return* incentives of suppliers and users of capital are in some respects more closely aligned than they are with equity. Unlike with equity, an entrepreneur will not borrow if he has secret information that his project is worthless. And the entrepreneur gets the full marginal benefit of increased returns past the cost of repaying the loan, thus not creating any incentive to shirk or divert revenues.

Also, banks are often in a better position to monitor firms than are equity holders (Stiglitz 1985). Because they can threaten to withdraw credit, banks have management on a short leash,

giving them considerable influence over a firm's decisions (Stiglitz and Weiss 1983). The possibility of bankruptcy, however, can reverse this relationship, especially when the borrower has substantial debts to a lender, allowing the borrower to "coerce" the lender into rolling over existing credits or even extending new ones. This provides an incentive to monitor, something banks have a comparative advantage in, in part because there are usually only one or a few lenders, thus reducing the "public good" problems associated with monitoring.

Although bank loans suffer less from problems of monitoring and diversion, they do create selection and incentive problems with regard to risk. Entrepreneurs with risky projects will be attracted to debt finance because they enjoy the full benefits of the upside risk while the downside risk is limited to the value of their collateral. Crucially, the borrower may have more information than the lender about the *ex ante* riskiness of the project and the lender almost certainly cannot perfectly monitor the actions of the borrower to ensure that they are prudent.

As the interest rate charged increases, the "safer" applicants for loans drop out leaving a riskier and less desirable pool of applicants. Similarly, borrowers have more incentive to take risky actions. As a result, banks may not raise interest rates even when there is excess demand for credit. The interest rate does not perform its market clearing role and the market equilibrium may be – and frequently is – characterized by credit rationing (Stiglitz and Weiss 1981). This is the standard result when one instrument (the price) is being used to hit two targets (or possibly three: clearing the market, attracting the right mix of applicants, and inducing the right levels of risk-taking and effort). Although banks typically use another instrument, such as detailed covenants governing the behavior of the borrower, these may limit credit rationing but do not overcome it (Stiglitz and Weiss 1986). (In effect there are a large set of admissible actions, and even though the set of instruments is large, typically the later is insufficient to exercise perfect control.)

## Bonds

Bonds represent a halfway house between short-term loans and equity. With a bond, a firm has a fixed commitment. It must pay interest every year, and it must repay the principal at a fixed date. As a result, all the problems we have discussed above with loans arise with bonds.

Bonds have one significant advantage – and disadvantage. Because the lender cannot recall the funds, even if he is displeased with what the firm is doing, the firm is not on a "short" leash, the way it is with loans. This has the advantage of enabling the firm to pursue long-term policies – but has the disadvantage of allowing the firm to pursue policies which adversely effect the interests of bondholders. Bond covenants may provide some restrictions, but these generally only foresee a few of the possible contingencies facing firms. In addition, issuing bonds may send a signal that a firm does not want to be put on a short leash, that it is not willing to subject its actions to the scrutiny of bankers. This may further restrain bond issuances (Stiglitz 1982a).

## Primary vs. Secondary Markets

So far I have been discussing primary markets, the place where new finance is issued. But the majority of financial market activity is in the secondary market, where equity claims and debt are traded. Secondary markets are an important complement to primary markets, increasing liquidity and facilitating diversification. An important development in recent years has been the extension of securitization, which by standardizing and pooling loans has translated into lower

But secondary markets have other, less beneficial aspects. The volatility in secondary markets is well beyond what can be explained by movements in fundamentals (Shiller 1989). One of the most plausible explanations for this excess volatility is irrational market psychology and bubbles. Keynes put this well when he compared secondary markets to a beauty contest, in which each judge is not concerned with identifying the most beautiful contestant, but in figuring out who the other judges *think* speculative activity has zero or negative social value. The informational value of secondary markets is one of their most overrated benefits. Managers usually have both a better understanding of their own firm and private information that render the information contained in their stock price of relatively little value. Much of the investment by financial institutions concerns getting information earlier than other investors in order to "trick" the other investors into buying or selling shares (Stiglitz and Weiss 1990).

A parable due to Summers and Summers (1989) illustrates this nicely. Suppose that one were to drop \$100 bills on the floor in the middle of a large lecture. The equilibrium would be for everyone to bend down and pick up the \$100 bill at their feet, thus disrupting the lecture. A more efficient outcome, however, would be for everyone to wait until the lecture was over, which would allow them to pick up the same money without disrupting the lecture. This, however, is not an equilibrium because each person worries, correctly, that their neighbor will pick up their \$100 bill. As a result, everyone makes a costly investment in getting the \$100 bills earlier – with no social benefits. The implication is that taxes on speculative activity could, in some cases, increase the efficiency of the market by reducing transactions costs and rent seeking.

## **The Financial System and Macroeconomic Fluctuations**

The special nature of the financial system has important implications for how we understand macroeconomic fluctuations. Traditional Keynesian theory as well as other strands of macroeconomic theory that have not taken modern financial economics seriously suppress the entire financial system into a money demand equation. Increases in the money supply lead to decreases in the interest rate. Investment demand, in these models, depends only on the cost of capital (the interest rate) and the marginal product of capital. When the interest rate falls, investment rises.

Neither traditional Keynesian models nor the other strands which fail to integrate finance in a meaningful way, including new classical and real business cycle theories, can explain several important features of the economy. The most basic is the business cycle itself. Nothing in these theories explains the transmission, amplification, or persistence of shocks. In addition, they cannot explain why many supply shocks, the main impact of which should be redistribution, have such a large impact on the economy. The models also do not explain the relationship between interest rates and output over the cycle, and more broadly why output moves much more than interest rates. They do not explain movements in inventories which should smooth rather than exacerbate fluctuations. Finally, they do not explain why some sectors of the economy (e.g. residential house construction) are so much more cyclically sensitive than other sectors.

In addition to these empirical shortcomings, Keynesian economics had a number of undesirable theoretical properties. The assumptions were basically ad hoc and at variance with those used by microeconomists. Most importantly, the most important results in traditional microeconomics were the Fundamental Theorems of Welfare Economics which established the

efficiency of the market economy. These, however, are at variance with the motivation of Keynesian economics that the economy can suffer from prolonged periods of inefficient underutilization of resources. Paul Samuelson tried, unsuccessfully, to reconcile this difference by saying that the economy is efficient, except when it is in recessions. (The alternative approach, taken by some Chicago economists, is to deny that there ever are recessions or depressions – just workers deciding to enjoy more leisure – is even less convincing.) The more natural perspective is that recessions are only the visible tip of the iceberg, and that inefficiency is far more pervasive. This is the perspective that motivated the developments in microeconomics that I discussed in the first part of this talk, in particular the application of imperfect information to the study of financial markets. This reorientation of microeconomics provides the basis for building a sounder macroeconomics on the basis of microeconomic models.

### The Risk Averse Firm and Investment

These finance-based macroeconomic models (see Greenwald and Stiglitz 1993a,b) provide a way to understand business cycles with some important policy implications. The most important element of these models is the determinants of investment. In their investment decisions, firms are risk averse, rather than risk neutral as in the traditional neoclassical model (Greenwald and Stiglitz 1990a). Finance-based models explain why this is so, and empirical evidence corroborates the theoretical predictions. One explanation focuses on the fact that firms face equity rationing; because of the adverse selection and moral hazard issues I discussed earlier they are unable to raise all of the funds they need in equity markets. They thus need to turn to loans and bonds; if their cash flow is insufficient, they may go bankrupt, an outcome to which they are very averse.

When firms undertake the decision to produce they exchange a fixed cost today (investment) for an uncertain value in the future (e.g. the spot market value of their product when it is finished). New investment thus carries an additional cost, above the interest rate in the neoclassical model, which is the marginal cost of bankruptcy. Anything that effects this marginal cost of bankruptcy will affect investment. Several factors are important. One is the firm's equity position. The stronger the equity position, the lower the marginal cost of bankruptcy from additional investment. As a result, anything that increases a firm's equity will increase its investment.

Second, a firm's cash flow affects its borrowing needs. The lower its cash flow, the more it needs to borrow, and the greater the probability of bankruptcy and the marginal cost of bankruptcy. As a result, it will invest and produce less at any given set of prices and wages – that is, its supply curve will shift inward. These implications contrast strongly with the neoclassical model which says that investment should only depend on productive opportunities and the cost of borrowing, not on the current state of a firm's equity or cash flow. They are also consistent with the empirical literature which has found the relationship between investment and contemporaneous output, cash flow, and equity to be much more robust than its relationship with interest rates (e.g. Fazzari, Hubbard, and Petersen 1988).

Third, anything that increases risk increases the marginal cost of bankruptcy and thus reduces investment. In contrast, in the neoclassical model risk does not matter because it is efficiently distributed by equity markets, leading firms to act in a risk neutral manner.

The finance-based macroeconomic model can explain why fluctuations in output persist. The initial shock to a firm's output, whatever it is, lowers cash flow and thus equity. This leads

them to decrease investment and output, thus transmitting the shock to other firms. The increased uncertainty and lower net worth translates into lower desired inventory investment, thus leading to even deeper production cuts and exacerbating the downturn. (This explains the puzzle of procyclical inventories, which seems to contradict the production smoothing model.) It takes a long time for the firm to rebuild its net worth, thus leading to a prolonged period of slower investment. (Introducing a labor market with efficiency wages would translate this slowdown into increased unemployment. Hiring and firing costs provide further explanations of slow responses of employment to changing market conditions as in Greenwald and Stiglitz 1995.) This cycle can even be set off by a redistributive shock because investment is a concave function of net worth: the declines by the firms that are hurt by the shock will be larger than the increases by the firms that are helped by the shock.

These effects will be felt more in sectors like residential construction that face greater uncertainty about future demand, and that are more highly leveraged, more equity rationed, and in which the extent of credit rationing may vary greatly over the cycle.

### Banks and Credit Rationing

The risk averse firm, and the consequent multiple determinants of investment, is an important component of investment. The same factors that make firms risk averse also make banks – a special category of firms – risk averse. The consequence is that when their net worth declines, they will face the increased chance of bankruptcy and thus will shift their portfolio towards safer activities like investing in Treasury Bills. The result could be a reduced supply of funds, higher lending rates, and even greater credit rationing.

In addition to the conventional Keynesian "money channel" (an increase to the money supply leads to lower interest rates to induce people to hold the additional money, and thus to greater investment and output), monetary policy can work through the "credit channel" (see Blinder and Stiglitz 1983, Bernanke and Blinder 1988 and Stiglitz and Weiss 1992). Monetary policy also has effects on credit availability and thus investment. Take a decrease in the discount rate, which, among other things, raises the real wealth of banks, making them more willing to bear risk and therefore to make more loans. Because the ratio of loans to net worth is very large, even small changes in net worth can have a large impact on loans.

Parenthetically, not only has modern finance emphasized the relative importance of this credit channel, it has actually challenged the validity of the older "money" channel, as an increasingly large fraction of money bears interest, as the ratio of transactions involved in exchanges of assets to those related to income generating activities has increased, as it has been recognized that this relationship itself changes dramatically over time and over the cycle, and as new developments in financial markets make an increasingly large fraction of transactions not dependent on money, as conventionally defined.

The focus on the credit channel of transmission has several important implications for the conduct of monetary policy:

- i. The relationship between money and credit will change over the business cycle. Similarly, the relationship between interest rates and output will change over the business cycle. In particular, monetary policy may have little effect during recessions because the excess liquidity in the banking system will mean that it has little effect on the availability of credit, and can thus only operate through the conventional, and weaker, "money channel."

- ii. Movements in interest rates will not always be a good gauge of the effects of monetary policy. Monetary policy can have large effects even with little movement in the real interest rate.
- iii. Monetary policy will matter less as substitutes for bank lending, like commercial paper, are developed. But informational considerations, namely the bad signal of trying to avoid bank loans, will probably continue to ensure that bank loans are an imperfect substitute for other forms of borrowing.

## Financial Markets And Growth

Like traditional theories of fluctuations, traditional models of growth place little if any emphasis on the financial sector. The workhorse model of traditional growth theory, the Ramsey-Cass-Koopmans model, which is the Solow model with a consumption decision rather than an exogenous savings rate, treats the financial sector as the equilibrium of the supply of savings and the demand for investment. Capital is automatically allocated to all of the most efficient projects, that is, all of the projects with marginal returns greater than the equilibrium interest rate. The financial system matters essentially insofar as it influences the spread between deposit and loan rates. In this sense a more efficient financial system can lead to a slight increase in investment, and thus in growth (at least temporarily). In traditional growth models the most important source of growth, total factor productivity growth, is treated exogenously and is thus clearly unrelated to the financial system.

I have just argued, however, that investment depends on much more than just the interest rate. At the same time, "investment" can be broadened to include research and development, human capital, learning by doing, improved management, and other elements of "total factor productivity" – issues that have received renewed attention in recent endogenous theories of economic growth (see Lucas 1988 and Romer 1990). This opens up the possibility of studying how the financial system affects long-run growth.

There is a strong empirical basis for thinking that it does. Research by Ross Levine and others surveyed in Levine (1997) shows a strong link between economic growth and the depth of the banking system and liquidity of financial markets. The magnitudes of the results are striking: one study found that between 1976 and 1993, countries in the highest quartile of stock market liquidity in the beginning of the period saw GDP grow 3.2 percent annually, compared to 1.8 annual growth for countries in the lowest quartile of stock market liquidity. The difference in GDP growth between countries with high and low financial depth was even larger, 3.2 percent versus 1.4 percent.

I have extended the finance-based macroeconomic model I used to discuss economic fluctuations to the study of long-run growth (see Greenwald, Kohn and Stiglitz 1990 for a theoretical model and Greenwald, Salinger, and Stiglitz 1992 for some empirical evidence). As with capital investment, one of the most important implications of finance-based macroeconomic models is that investments in research and development – which often entail high risk – are sensitive both to the firm's cash flow and net worth, as well as to the perceived uncertainty of the economic environment. There is reason to believe that research and development is even more credit and equity constrained than physical capital investment because it is so difficult for an investor to predict its risks and returns and because it does not produce anything that can be used as collateral. One important implication is that a temporary shock can have a long-lasting effect on growth. An unexpected expansion will increase cash

flow and equity, raising investment in research and development, and thus increasing productivity growth.

Another implication is that mild financial restraints, that is deposit rate controls and limitations on competition in the financial sector, may be beneficial for growth (Murdock and Stiglitz, 1993). Let me be clear, major financial repression is very damaging to the economy. One of its common characteristics is that the government represses deposit rates in order to extract rents from the private sector to finance large budget deficits. Not surprisingly, the consequence is usually undercapitalized banks lacking commercial orientation and often engaging in unsound practices. Moreover, financial repression is associated with high (and volatile) inflation rates and low growth. In contrast, mild financial restraint requires low inflation with slightly positive and predictable real interest rates. Pooling the extreme cases of financial repression together with those of mild financial restraint led to the misleading finding that *financial restraint* is bad for growth (Gelb 1989). (The initial finding suffered from other problems, including simultaneity problems and the exclusion of high inflation as an explanatory variable. These are discussed in Murdock and Stiglitz 1993 and Stiglitz 1994a).

The basic principle of mild financial restraint is that the government does not extract rents from, but creates rents within, the private sector. The purpose of these rents is to create incentives for the private sector to undertake socially beneficial actions (prudential lending). It is the opposite of the government-directed approach where the government undertakes these actions itself. By lowering the cost of borrowing the government increases the profitability of firms and thus their investment. At the same time it offers lower interest rates to households, which could decrease household savings slightly, although most estimates suggest that the interest rate elasticity of savings is close to zero. Finally, lower interest rates mean that banks will attract a safer mix of applicants, thus lowering the probability of default and increasing the safety of banks. The resulting increase in their franchise value may lead to more prudent behavior by banks and thus a more efficient financial system (Caprio and Summers 1996). And the greater safety may induce more savings, more than offsetting the small direct effect. It has also been shown that increases in capital requirements are an inefficient substitute for the franchise value that is lost as a result of full liberalization; Pareto efficiency requires the use of both instruments, even in banking systems without deposit insurance (Hellman, Murdock, and Stiglitz 1997).

This analysis is but one example of a general principle: government intervention can help improve the performance of financial markets. One could go further: there are virtually no examples of successful financial markets in which governments do not play an important role. The discussion of a decade ago about deregulation of financial markets was thus totally misplaced. The question is not whether there is a role for government, but what that role should be. The crisis in Thailand, for instance, was due to too little government regulation, not too much. Had Thailand maintained the regulations that it had had during the period of the Asian Miracle, which restricted the flows of lending to speculative real estate, and not been influenced by outsiders suggesting that such restrictions interfered with the efficient allocation of resources (though how investing in empty office buildings is supposed to be more efficient than investing in productive plant and equipment is a source of puzzlement), then Thailand might well not be facing the crisis it is today, its first year of negative growth in more than three decades.

## **Responding to International Capital Flows**

Finally, I would like to discuss international capital flows. Many of the same principles that

apply in domestic capital markets also apply in international capital markets. The probability of default is essential to understanding international capital flows and exchange rate movements. Asymmetric information, for instance between foreign and domestic investors, can have important consequences. And, as in domestic markets, there is no presumption that the market, left to itself, is efficient.

Ironically, many of the strongest advocates of free markets also think that the government often is more efficient than the market in setting one key price, the exchange rate. Also, they advocate occasional but large "interferences" in the market, namely bailouts. I will leave the discussion of these two issues – and the seeming cognitive dissonance – to another time. Let me just point out, that once we accept government interference – or even if we just expect that it is likely that the government will interfere (and historical experience certainly is on that side) – then we are in the world of second best economics. The question then is not should the government intervene, but how best should the government intervene. The answer may be not at all or only minimally, but we should not allow our ideology to pre-empt our answer.

The financial system has become even more important with the increased flow of private capital to developing countries. Net long-term private capital flows to developing countries reached \$256 billion in 1997 – more than 6 times the \$42 billion level in 1990. Over that same period, official flows have drifted down from \$56 billion to \$44 billion (World Bank 1998). Substantial capital flows now reach more countries and come in a greater variety of instruments and forms than ever before. (It is important to put the private capital flows themselves in perspective. Developing countries saved roughly \$1.4 trillion in 1997, also dwarfing the contribution of private and public flows to capital accumulation from developed countries.)

Today, developing countries are more vulnerable to international capital flows than ever before. What would have been a mistake with minor consequences in a closed economy can become magnified into a major crisis in an open economy. This is the lesson many people draw from East Asian crisis which has struck some of the most successful economies in the world. Inadequate financial supervision and regulation, problems with macroeconomic management, and a general lack of transparency certainly contributed to the problems. But without volatile international capital flows, the East Asian financial crisis of 1997 would probably have been no more memorable than the Korean crisis in 1980 or the Thai crisis in 1983.

But even with the best economic management, small open economies remain vulnerable. They are like small rowboats on a wild and open sea. Although we may not be able to predict it, the chances of eventually being broadsided by a large wave are significant no matter how well the boat is steered. Though to be sure, bad steering probably increases the chances of a disaster, and a leaky boat makes it inevitable, even on a relatively calm day.

### Capital Account Liberalization

As recently as 10 years ago there was a fierce debate about multinational enterprises. Some saw them as exploiting developing countries, and others saw them as a valuable source of capital, jobs, and technology. Almost everyone now agrees about the value of foreign direct investment. Partly this is because the world has changed. The days of monopolistic international firms that can extract all of the rents from the process of foreign investment, which is the economic term for exploitation, are over. Today, developing countries benefit from fierce competition from international investors, all of which would potentially be interested in producing in them. You can choose the ones offering the most attractive benefits. By taking

advantage of this competition, developing countries can benefit enormously from multinational enterprises.

Today, the discussion has shifted to capital account liberalization, and whether governments should strive for free movement of capital across borders analogously to the push for free movements of goods across borders. In this, too, there are important areas of consensus. Almost everyone believes the international capital flows play an important role, and that countries with highly closed systems would benefit greatly by opening up to the world. At the very least, trade credits and current account convertibility are necessary for trade, and trade promotes growth. And almost everyone agrees that it would be foolhardy to push full and immediate capital account liberalization in countries which have, for instance, very weak financial sectors (although 9 months ago views were more diverse). There is no easy answer, however, to the question of how to pace reforms and what the ultimate goal should be.

Rather than offering prescriptions, I would like to discuss some of the economic evidence. Experience had led many people to the belief that financial liberalization made crises more likely. A recent study done jointly by a researcher at the World Bank and a researcher at the International Monetary Fund found strong evidence for this belief based on a systematic study of a cross section of countries (Demirgüç-Kunt and Detragiache 1998). They also found that the instability engendered by crises could be, to some degree, mitigated by institutional development.

I think the statement that capital market liberalization increases risk is uncontroversial. In U.S. Deputy Treasury Secretary Lawrence Summers' memorable metaphor, in a world of internationally mobile capital the airplane crashes will be that much larger. But many believe that the overall gains from flying far outweigh the occasional crash, regardless of the headlines which that crash might receive. But is that the case? What is the evidence?

We must weigh these costs of capital market liberalization against the benefits that it brings. What does research tell us about these benefits? A very large literature has documented the positive consequences of trade liberalization, including faster growth, higher wages in exporting jobs, and lower prices for consumers. We do not have anything resembling this body of research establishing the positive effects of capital account liberalization. One recent study, a paper by Dani Rodrik (1998), showed that there is no statistically significant relationship between growth or investment and capital account liberalization. I do not think that this one study is definitive. What it does show, however, is that the positive benefits of capital account liberalization do not jump out from the data.

Why might this be? One contributing factor is that full capital account liberalization often means larger short-term borrowing. Unlike foreign direct investment, short-term capital does not bring with it ancillary benefits. Some short-term capital, especially trade credits, is essential for the economy to run. But when the saving rate is already high, and when the marginal investment is being misallocated, the main effect of additional short-term capital flows is to increase the vulnerability of the economy. The most productive investments are long term, and the mismatch between the maturity of assets and liabilities can give rise to serious problems. The *net* benefits appear even smaller when the reserves set aside to protect against the volatility of short-term capital are taken into account. From the consolidated balance sheet of the borrowing country, it may appear as if they are borrowing from the developed countries at higher rates, only to relend a large fraction back in the form of Treasury bills and other low rate-of-return instruments. These problems are very clear in the crisis countries in East Asia where external debt levels were relatively low, but the levels of short-term debt relatively high.

The crises were precipitated in part by the refusal of lenders to roll over these short-term loans. Moreover, there is a high cost – beyond the budgetary cost of the almost inevitable bailouts – associated with the economic disruption that follows from financial crises: the evidence is that for a substantial period after the crisis, countries grow substantially more slowly.

We do, however, have well-documented evidence that foreign direct investment brings with it not just capital but also knowledge and market access. Our goal should be to encourage stable, productive capital flows, especially foreign direct investment, while discouraging rapid roundtrips of short-term money. There are several components to such a strategy:

First, we need to eliminate the tax, regulatory, and policy distortions that may, in the past, have stimulated short-term capital flows. Examples of such distortions are evident in the case of Thailand, where the Bangkok International Banking Facilities effectively encouraged short-term external borrowing, but subtle examples exist almost everywhere. More subtly, other measures, like capital requirements that are not adjusted for risk, also distort incentives by imposing the same "price" for assets and liabilities with very different degrees of risk attached to them. Appropriate bank regulatory structures may provide incentives for banks to charge interest rates to corporates to induce them to take into account more fully the risks associated

Second, several countries have imposed prudential bank regulations to limit the currency exposure of their institutions or even the exposure of corporations to whom they lend.

But these measures may not go far enough, especially because they do not fully address the issue of corporate exposure. Among the ideas currently under discussion are policies dampening short-term capital inflows, especially of the Chilean type. Chile has imposed a reserve requirement on all short-term capital inflows – essentially a tax on short-maturity loans. While these controls have been the subject of much discussion, even most critics of the Chilean system acknowledge that the reserve requirement has significantly lengthened the maturity composition of capital inflows to Chile without significantly adversely affecting overall flows. This, together with solid fundamentals and a sound financial system, may be the reason that Chile was one of the few countries in Latin America that was relatively unaffected by the contagion from Tequila crisis in 1994-95.

Still other possibilities use tax policies by, for example, limiting the extent of tax deductibility for interest in debt denominated or linked to foreign currencies. The problems of implementing these policies may in fact be less than those associated with the Chilean system.

### Managing Crises: How to Restore Confidence

So far, I have discussed the benefits of capital inflows, especially certain types, and some of the steps emerging markets could take to encourage them. I have also discussed the rationale for measures to *prevent* crises by discouraging the buildup of vulnerability and excessive volatility of short-term flows. If there is one lesson that the history of capitalism has taught us, however, it is that further crises are inevitable. I would briefly like to discuss how countries should respond to a currency or balance of payments crisis in which there is large-scale withdrawal of funds and domestic capital flight.

There is a consensus that countries in the midst of a crisis need to restore confidence. How can this be done? This is a very hard question to approach theoretically or empirically. Confidence is an elusive concept. One is tempted to define it as a successful outcome, but then all we are

left with is the unhelpful tautology that successful policies lead to successful outcomes. We often see this tautology whenever someone says that attempts to stem the outflow of capital failed because "the government did not show adequate resolve." The problem is that all governments issue some qualifying statements or are less vigorous in some policies than in others. If *ex post* the crisis continues, then these statements or policies will be trotted out to demonstrate lack of resolve. If, however, the situation stabilizes, they will be forgotten.

I prefer to approach the question of restoring confidence from an *economic* perspective. From this view, confidence will be restored if the aggregate economy is kept as strong as possible and if widespread bankruptcies and bank closures are avoided. This puts the question on much firmer ground; after all we do know a lot about economic relationships between policies and outcomes.

Our understanding of these economic relationships has been improved greatly by the research I have been discussing today, especially the finance-based macroeconomic models. In the traditional macroeconomic models, raising the interest rate would increase the rate of return and thus create an additional incentive to invest in a country. There was a trade-off between wanting to keep interest rates low and wanting to maintain the strength of the currency. In the new finance-based macroeconomic models, there need not be a trade-off. The reason is that potential investors consider not just the *promised* nominal interest rate, but also the probability that loans will not be repaid. The recognition that loans may not be repaid is central to understanding credit markets. If there were no concern about loans being repaid, then of course there would have been no hesitancy by foreign banks in rolling over their loans to Korea or Indonesia. The probability of being repaid depends on the overall state of the economy and the interest rate charged. Raising interest rates may lower the probability of being repaid, both because it induces actions by the borrower that lower the repayment probability (for example, more risk taking) and because it may weaken the macroeconomy. Thus although higher interest rates entail a higher *promised* return, they also decrease the probability of being repaid, and thus may even decrease the *expected* return. Strengthening this consideration is the fact that risk averse lenders care not about the expected return, but the risk-adjusted expected return. If raising interest rates increases uncertainty about the economy, then it will make investing in a country even less attractive.

Which of these effects – the direct effect on the promised return or the indirect effect through the default probability – predominates is an empirical question and may vary depending upon the features of the country. In a country with high debt-equity ratios, for instance, higher interest rates are more likely to lead to bankruptcies and defaults. As a result, the country would not face the traditional trade-off between interest rates and exchange rates, but would instead be left with higher interest rates and a weaker exchange rate. It is also possible that at lower interest rates the "direct effect" dominates, but at higher interest rates the "indirect effect," the increased bankruptcies become very large.

The issue of how to restore confidence becomes even more complicated when we ask whose confidence? Often we think of "the market" ignoring the fact that there are different groups – domestic investors, outside investors, speculators, etc. – that have systematically different information, initial portfolio compositions, and risk preferences. Steps like higher interest rates might restore the inflow of foreign capital, at the same time that it heightens uncertainty and increases the chances of a weaker economy, leading prudent domestic investors to diversify by moving their own money out of the country. Again, which of these effects is stronger is an empirical question.

In East Asia, there is strong evidence that these are not simply theoretical possibilities; they are absolutely central. Raising interest rates did not "restore confidence"; exchange rates continued to fall; and capital flight from at least some of the countries continued. In two of the cases, only when a form of debt moratorium was announced (though not necessarily with these words) was the decline arrested.

Ultimately, however, the goal of confidence restoring measures is maintaining a strong economy, not maintaining the strength of the exchange rate or restoring the inflow of capital (although these may be important means toward that end). Finance-based macroeconomic models also shed light on this issue. They point out that higher interest rates deplete net worth, raising the risk of bankruptcy directly, but also exacerbating the problems posed by relatively sound firms. Since outsiders may not know the extent to which different firms are adversely affected, they may ration credit to all firms. Moreover, high interest rates and depleted net worth may induce firms to undertake more risk, and thus may increase "credit rationing" – whereby access to credit is diminished at the same time that the cost of credit increases. The extent of credit availability may also be adversely affected by bank closures, which result in the destruction of relevant informational capital. Breakdowns anywhere in the credit system can have large systemic effects. While it is absolutely essential to deal with mismanaged and undercapitalized banks, how this is done can make an enormous difference for the sustenance of the informational and organizational capital of the economy, and for the maintenance of credit flows, all of which are absolutely essential to the quick resolution of a crisis. There has now emerged a consensus that the way it was done in Indonesia did not take these lessons into

Finally, I would like to address the role of structural reforms in the response to crises. In particular, I would like to caution against trying to solve every alleged and genuine structural problem in a country in the midst of crisis. Indeed, raising issues not directly related to the crisis undermines market confidence by making the solution of the crisis itself seem more difficult. However genuine the problems are (e.g. impediments to international trade), they are often unrelated to solving the crisis at hand. Furthermore, structural reform is a long and difficult process. Attempting to undertake these reforms quickly and in the midst of the crisis is unlikely to lead to good policies, and will often lead to "quick fixes" that increase problems over the longer term.

At the same time, it may be perceived as imposing reforms from outside, giving rise to resistance and making it less likely that reforms will stick after the immediate problems have passed. Equally important, even if the reforms are done well, so that they enhance the long-run productivity of the economy, they may do so at the expense of its short-run recovery. For example, if the United States had reduced agricultural subsidies, which are generally seen as a serious distortion, in the midst of the savings and loan crisis, the result would have been falling land prices, exacerbating the banking crisis. The bottom line is that in the midst of crises we need to avoid the temptation to try to solve every problem.

The converse of the caveats about undertaking far-reaching structural reforms in the midst of the crisis is that there is no better time for reform than when the economy is doing well. Many Latin American countries have been growing strongly in recent years. Economically, this is an opportune time to forge a comprehensive development strategy to address the major challenges that stand in the way of even better economic performance.

## Concluding Remarks

We have come a long way since the time when many viewed the financial system simply as a sideshow, or a passive channel that allocated scarce resources to the most efficient uses. Today, almost everyone agrees that the financial system is essential for development. Improving the financial system can lead to higher growth and reduce the likelihood and severity of crises. It is essential in understanding the causes of business cycles and the working of monetary policy. In thinking about financial reform, we need to treat liberalization as a means rather than an end. Instead of pushing for immediate deregulation, we should be trying to understand the important role government plays in financial markets. These steps will not only result in the better and more stable allocation of domestic capital, but also help countries to manage international capital flows.

## References

- Asquith, P. and David Mullins. 1986. "Equity Issues and Stock Price Dilution." *Journal of Financial Economics*.
- Bernanke, Ben, and Alan Blinder. 1988. "Credit, Money, and Aggregate Demand." *American Economic Review* 78(May): 435-439.
- Blinder, Alan, and Joseph E. Stiglitz. 1983. "Money, Credit Constraints and Economic Activity." *American Economic Review*, 73(2), May: 297-302.
- Caprio, Gerard, and Lawrence Summers. 1996. "Financial Reform: Beyond Laissez Faire." In Dimitri Papadimitriou, ed., *Stability of the Financial System*. Macmillan.
- Demirgüç-Kunt, Asli, and Enrica Detragiache. 1998. "Financial Liberalization and Financial Fragility." Paper presented to the Annual World Bank Conference on Development Economics, Washington, D.C., April 20–21.
- Fazzari, Steven, Glenn Hubbard, and Bruce Peterson. 1988. "Financing Constraints and Corporate Investment." *Brookings Papers on Economic Activity* 1: 141-195.
- Gelb, Alan. 1989. "Financial Policies and Growth." Policy Research Working Paper 202. World Bank, Washington, D.C.
- Greenwald, Bruce, and Joseph E. Stiglitz. 1986. "Externalities in Markets with Imperfect Information and Incomplete Markets." *Quarterly Journal of Economics* 101(May): 229–64.
- . 1990a. "Asymmetric Information and the New Theory of the Firm: Financial Constraints and Risk Behavior." *American Economic Review* 80(2): 160-65.
- . 1990b. "Macroeconomic Models with Equity and Credit Rationing." In *Asymmetric Information, Corporate Finance, and Investment*. R. B. Hubbard (ed.), University of Chicago Press: 15-42.
- . 1993a. "Financial Market Imperfections and Business Cycles." *Quarterly Journal of Economics* 108(1): 77–114.

———. 1993b. "New and Old Keynesians." *Journal of Economic Perspectives* 7(1): 23–44.

———. 1995. "Labor-Market Adjustment and the Persistence of Unemployment." *American Economic Review* 85(2,May): 219-225.

Greenwald, Bruce, Meir Kohn, and Joseph Stiglitz. 1990. "Financial Market Imperfections and Productivity Growth." *Journal of Economic Behavior and Organization* 13: 321-345.

Greenwald, Bruce, Michael Salinger, and Joseph Stiglitz. 1992. "Imperfect Capital Market and Productivity Growth." Manuscript, April.

Greenwald, Bruce, Joseph E. Stiglitz, and Andrew Weiss. 1984. "Informational Imperfections in the Capital Markets and Macroeconomic Fluctuations." *American Economic Review* 74(2): 194-99.

Hellman, Thomas, Kevin Murdock, and Joseph E. Stiglitz. 1997. "Liberalization, Moral Hazard in Banking, and Prudential Regulation: Are Capital Requirements Enough?"

Jensen, M. 1986. "Agency Costs of Free Cash Flow, Corporate Finance and Takeovers." *American Economic Review* 76(May): 323-329.

Levine, Ross. 1997. "Financial Development and Economic Growth." *Journal of Economic Literature* 35(2): 688–726.

Lucas, Robert Jr. 1973. "On the Mechanics of Economic Development." *Journal of Monetary Economics* 22(July): 3-42.

Murdock, Kevin, and Joseph E. Stiglitz. 1993. "The Effect of Financial Repression in an Economy with Positive Real Rates." Background paper for World Bank, *East Asian Miracle*. World Bank, Washington, D.C.

Nikitin, Georgiy, and Andrew Weiss. 1997. "Performance of Czech Companies by Ownership Structure."

Rodrik, Dani. 1998. "Who Needs Capital-Account Convertibility?" *Essays in International Finance* 207(May), Princeton: 55-65.

Romer, Paul. 1990. "Endogenous Technological Change." *Journal of Political Economy* 98(October, Part II): S71-S102.

Shiller, Robert. 1989. *Market Volatility*. Cambridge, Mass.: MIT Press.

Shleifer, Andrei, and Robert Vishny. 1989. "Management Entrenchment: The Case of Manager-Specific Investments." *Journal of Financial Economics* 25(1): 123–39.

Stiglitz, Joseph E. 1982a. "Information and Capital Markets." In *Financial Economics: Essays in Honor of Paul Cootner*, William F. Sharpe and Cathryn Cootner (eds.), Prentice Hall: 118-158.

———. 1982b. "Ownership, Control and Efficient Markets: Some Paradoxes in the Theory of Capital Markets." In *Economic Regulation: Essays in Honor of James R. Nelson*. Kenneth

Boyer and William Shepherd (eds.), Ann Arbor, Michigan State University Press: 311-341.

———. 1985. "Credit Markets and the Control of Capital." *Journal of Money, Banking, and Credit*, 17(2), May: 133-152.

———. 1989. "Using Tax Policy to Curb Speculative Short-term Trading." *Journal of Financial Services Research* 3(2/3): 101-115.

———. 1991. "Capital Markets and Economic Fluctuations in Capitalist Economies." *European Economic Review* 36: 269-306.

———. 1992. "Banks versus Markets as Mechanisms for Allocating and Coordinating Investment." In *The Economics of Cooperation: East Asian Development and the Case for Pro-Market Intervention*

*Proceedings of the World Bank Conference on Development Economics 1993*. Washington, D.C.: World Bank.

———. 1994b. *Whither Socialism?* Cambridge, Mass.: MIT Press.

Stiglitz, Joseph E., and Andrew Weiss. 1981. "Credit Rationing in Markets with Imperfect Information." *American Economic Review* 71(3).

———. 1983. "Incentive Effects of Termination: Applications to the Credit and Labor Markets." *American Economic Review*, 73(5), December: 912-927.

———. 1986. "Credit Rationing and Collateral." In *Recent Developments in Corporate Finance*. Jeremy Edwards, et al. (eds.), New York: Cambridge University Press: 101-135.

———. 1990. "Banks as Social Accountants and Screening Devices for the Allocation of Credit." *Greek Economic Review*, 12(0): 85-118.

———. 1992. "Asymmetric Information in Credit Markets and Its Implications for Macroeconomics." *Oxford Economic Papers* 44(4): 694-724.

Summers, Lawrence and Victoria Summers. 1989. "When Financial Markets Work Too Well: A Cautious Case for a Securities Transaction Tax." In *Regulatory Reform of Stock and Futures Markets: A Special Issue of the Journal of Financial Services Research*. Boston, Mass.: Kluwer Academic Publishers.

World Bank. 1998. *Global Development Finance 1998*. Washington, D.C.