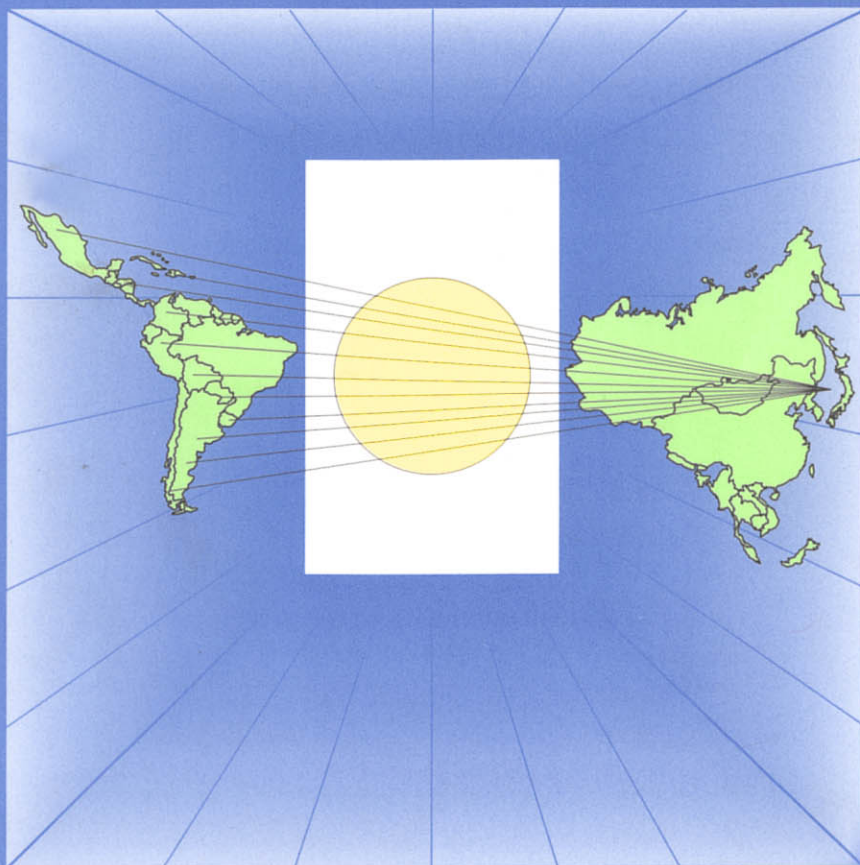


POLICY-BASED FINANCE AND MARKET ALTERNATIVES

East Asian Lessons for Latin America and the Caribbean



Kim B. Staking
Editor

Inter-American Development Bank

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INTER-AMERICAN DEVELOPMENT BANK

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PREFACE

On February 1-2, 1996, the Inter-American Development Bank (IDB) together with the Japan Development Bank sponsored a conference on “Policy-Based Finance and Alternatives for Financial Market Development: Application of the Lessons of East Asia to Latin America and the Caribbean.” The Banco Nacional de Desenvolvimento Econômico e Social, the national development bank of Brazil, hosted the conference. Held in Rio de Janeiro, the conference brought together more than 150 representatives of the private sector and government officials representing more than 25 countries. The Japan Special Fund, the Inter-American Development Bank, and the Banco Nacional de Desenvolvimento Econômico e Social provided funding. This book contains a selection of presentations prepared for this conference.

The original idea for the conference arose from discussions between the Inter-American Development Bank and the Japan Development Bank. The latter, together with the World Bank, had sponsored two similar conferences (in Tokyo and Beijing). Following detailed discussions of the structure and content of these conferences with the IDB, it was concluded that the countries of Latin America and the Caribbean would benefit from learning of these East Asian experiences. There was an early recognition that the political and economic realities of Latin America and the Caribbean, not to mention the environment of the global financial milieu in which they are operating in the 1990s, differ significantly from those environments that surrounded the creation of the Japan Development Bank and other East Asian experiments with policy-based finance. Likewise, many of the ventures of the governments of the Latin American and Caribbean region into the provision of direct credits to targeted sectors have been judged as failures (in contrast to the success reported in East Asia). The conference was therefore not intended to determine if the exact models of East Asia were appropriate, but to extract the universal lessons that can be applied to the financial sector restructurings that are taking place in the region today.

Many of the lessons arising from the East Asian experiences are well understood and recognized, yet are difficult to implement. Examples are the need for professionalism and independence at the government institutions responsible for the programs; development of a credit culture with a concentration on analysis, monitoring and collections; emphasis on keeping interventions limited in amount and time; and use of market signals—competitiveness in international markets in the East Asian experience—in the determination of eligibility for financial assistance. Other lessons, such as the establishment of policies for identifying critical sectors of the economy and targeting governmental resources to support these preferred

sectors, are less well understood and more controversial among academics and development practitioners. It was therefore deemed essential to juxtapose the East Asian experience against the more market-driven alternatives that are being implemented in the Latin American and Caribbean region. This served both to accentuate the universality of many of the East Asian lessons and to provide an additional paradigm for their analysis.

The structure of the conference allowed for an open discussion of the East Asian lessons and their implications for the developing countries of the region. In compiling the papers from the conference, this book attempts to represent the various viewpoints presented. While there was significant agreement on many points, there was not total agreement regarding how far the countries in the region could take the proposals at the current time.

Organization

This book is organized into four sections. The first section contains papers that review the generally positive experience of policy-based finance in East Asia and contrasts these to the generally negative outcomes associated with government intervention in Latin American and Caribbean financial markets. This section includes chapters written by Tsutomu Shibata of the Japan Development Bank, who presents the experience of policy-based finance in Japan; Yoon Je Cho, of the Graduate School of International Studies, Sogang University, who offers his view of the impact of policy-based finance in Korea; Armando Montenegro, who presents a critical analysis of the Latin American experience with government intervention in financial markets; and Dimitri Vittas, of the World Bank, who concentrates on how the lessons from policy-based finance in East Asia can be applied to Latin America.

The second section of the book focuses on the market alternatives to policy-based finance that are available to the economies of Latin America and the Caribbean. The presentations provide a careful examination of the role of innovation in financial markets, while reflecting on the lessons from East Asia. Anthony Santomero of the Wharton School, University of Pennsylvania prepared the first chapter, which examines the modern role of financial intermediaries in the allocation of credit. Franklin Allen, also of the Wharton School, wrote the second chapter, in which he discusses the impact of innovation on the structure of financial markets.

A third section examines specific innovations that may be useful to the development of modern financial markets (and the support of the financial markets for real sector activity) in emerging economies. Douglas Kruse provides an overview of the process of innovation in international financial markets; Bernel Stone of Brigham Young University examines the role of financial innovation in the financing of technology; and Augusto Iglesias evaluates the potential impact of private pension markets in the development of modern capital markets (based on the Chilean experience).

The final section attempts to draw some general conclusions from the Conference, with an emphasis on how the countries of the Latin American and Caribbean region can best incorporate the East Asian lessons into their development efforts. Antonio Vives, Division Chief, and Kim B. Staking, Senior Financial Economist, both from the Infrastructure and Financial Markets Division of the Inter-American Development Bank, prepared the final chapter of the book. Following an evaluation of necessary and sufficient conditions for government intervention in financial markets, they extract a summary of the minimum conditions for successful application of policy-based finance, examining both the economic environment and elements of policy design. They conclude that while the specific institutional structures of East Asia may be difficult to implement, the universal lessons from the East Asian experience with policy-based finance need to be taken into account as the governments of Latin America and the Caribbean continue to implement and deepen the market-based reforms that have characterized recent years.

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June 1997

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SECTION ONE

Policy-Based Finance in East Asia and Financial Market Intervention in Latin America and the Caribbean

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Policy-Based Finance in East Asia and Financial Market Intervention in Latin America and the Caribbean

This book begins with a description of how policy-based finance was developed and implemented in East Asia. This generally successful experiment is then compared with the experience of Latin America and the Caribbean, where there has been a long and seldom fully successful experience of government intervention in financial markets. The section introduces the concept of policy-based finance, explains how this differs from more general government interventions, and describes how policy-based finance was carried out in an East Asian context. This section also presents several general lessons that can be distilled from the East Asian experience—lessons that are applicable to the development efforts of Latin America and the Caribbean.

The first chapter, “Policy-Based Finance in Japan: Possible Lessons for the Americas,” was prepared by Tsutomu Shibata, Director General of the International Cooperation Department, Japan Development Bank. Mr. Shibata carefully reviews the circumstances surrounding the creation of the Japan Development Bank and its role in implementing the policy-based financial policies of the Japanese government. The Bank learned much from the experience of its less successful predecessor, the Reconstruction Finance Bank. In particular, it learned the important lesson that interventions in financial markets must be carefully limited. The Japanese Government had determined that macroeconomic stability was paramount and therefore rejected the use of inflation-inducing central bank liquidity as a funding source.

Mr. Shibata indeed notes that the strength of the government’s program of policy-based finance was due in large part to specifically designed characteristics of the Japan Development Bank. Success was due not only to the fact that the Bank had the size to undertake a lending program to targeted sectors, but to the fact that it had a source of low interest funds (the postal saving system); a funding source to which, he emphasizes, borrowings must be repaid. This placed an important constraint, akin to market discipline, on the Bank. As the Japan Development Bank must repay its borrowings, it must limit lending to those projects that are capable of repayment. While there may have been slight interest rate subsidies, the Bank’s culture demanded repayment from all its borrowers. The Bank has a strong capital base and has been careful to protect it.

To maintain this bank-like culture, the Japan Development Bank was set up as an independent and autonomous entity. The Bank is responsible for the appraisal of its lending portfolio and actively monitors its loan portfolio. It has developed significant expertise in project appraisal. Backing up the good performance of the Bank is the fact that it operates within a market economy and uses market signals to identify successful firms (often based on export performance or other measures of competitiveness). The success of the Japan Development Bank is also in part due to

the prevailing social, economic and political climates in Japan. Mr. Shibata also addresses a number of potential issues regarding policy-based finance, and indicates how they have been addressed in Japan.

Chapter 2, “Credit Policies and the Industrialization of Korea: Lessons and Strategies,” was prepared by Yoon Je Cho of the Graduate School of International Studies, Sogang University (Seoul, Korea). The political and economic environment surrounding the use of policy-based finance in Korea differed from that of Japan in many significant ways. The role of the Korean Government in credit allocation was notably more pervasive. The government developed a tight relationship with the banking and industrial sectors, effectively operating as a partner. It controlled more than half of all bank credit and directed the allocation of foreign loans. Interest rates were tightly controlled. Indeed, industrial, monetary and credit policies were all geared toward the goal of rapid industrialization. Since Korea lacked a well-developed savings system, this was only possible because of the significant level of capital inflows (especially from the United States and Japan). Nevertheless, policy-based finance also relied heavily on central bank credit, often threatening economic stability and forcing repeated devaluations of the currency.

The government’s use of policy-based finance can be considered successful in terms of industrial development, but this came at a heavy cost in terms of long-term economic growth—some costs are only now being recognized. Due to the history of severe financial repression, Korea’s banking system is underdeveloped and other financial markets have not developed fully. The lack of credit controls placed a heavy burden of non-performing loans on the banking system. There is a resultant high concentration of economic power. While Korea’s program of policy-based finance was successful in meeting the primary goal of industrial development (especially for heavy industry), given the costs and market distortions, it may yet be too early to draw clear conclusions from the experiment.

Armando Montenegro presents a review of “Directed Credit in Latin America” in Chapter 3. This comprehensive analysis reviews the rationale for government intervention, the structure of directed credit programs, and the scope of financial repression in Latin America over the past several decades. In contrast to the East Asian experience, little evidence of success can be observed in the directed credit programs of Latin America. Moreover, while the benefits of directed credit programs are fairly negligible, even to the supposed preferred creditors, the resultant cost has been very high. On a macroeconomic level, low or negative interest rates have affected savings. Quasi-fiscal costs associated with interest rate subsidies have been very high and the monetarization of credit losses has added to inflationary pressure and instability.

Much of the failure can be considered “government failure.” Interventions have too often been massive and disorderly, resulting in a general failure to target specific needs. An inward looking, protectionistic strategy often accompanied government interventions in financial markets—the opposite of the East Asian approach. Monitoring and control was weak, leading to abuse (and often capture of the

programs by powerful political or economic groups). Some efforts to limit and reform the programs of government interventions in financial and credit markets, often supported by the multilateral development banks, are underway in the Latin American and Caribbean region. Directed credit programs are more limited, but significant reforms are still required.

The final chapter of this section, “Policy-Based Finance: Application of East Asian Lessons to the Americas,” was prepared by Dimitri Vittas, Advisor, Financial Sector Development Department of the World Bank. His analysis attempts to explain the difference between the apparent success of policy-based finance in East Asia and the apparent failure in most other developing and developed countries. A variety of economic and institutional factors are considered. On the macroeconomic front, stability was maintained in East Asia. This prevented the emergence of highly negative real rates of interest. Likewise, the countries of East Asia maintained competitive product markets, an export orientation and effective coordination between credit and other development policies. Institutional factors were equally important. Effective monitoring systems were maintained—there was independent appraisal and effective project design (as opposed to the poor design and appraisal, uncontrolled disbursements and ineffective monitoring more common in the Americas).

The costs as well as the benefits of policy-based finance are addressed. It is noted that many current problems facing the financial sectors of Japan and Korea can be traced to a failure to adjust the “global vision,” taking account of changing needs. Chapter 4 contains a summary of both “good vision” and “good management” lessons that need to be incorporated into the financial sector reforms of the Americas. The chapter ends with a warning for the countries of the region against trying to adopt a policy-based financial approach to promote growth and development. Rather, the countries need to continue with the basic reforms and deepen nascent financial market reforms. Since the overall governmental and financial market infrastructure needed to overcome these problems does exist in the region, the chapter concludes that “any temptation to revive credit policies and assign them a big role should be resisted.”

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CHAPTER 1

Policy-Based Finance in Japan: Possible Lessons for the Americas

by Tsutomu Shibata

Policy-based finance or “directed finance” has a mixed record worldwide. It has often not been successful at raising the level of aggregate investment or at intermediating funds efficiently. It has also led to the accumulation of bad loans and expanded fiscal deficits. Yet, Japan’s experience with policy-based finance has been one of the most successful. In channeling funds to the private sector, the Fiscal Investment and Loan Program (FILP) and the Japan Development Bank (JDB) were instrumental in promoting the economic performance of Japan in the early postwar period.

How Policy-Based Finance Works

Policy-based finance in Japan is part of the government’s funding activities carried out to realize national policy objectives. Each year, a funding allocation for working toward these objectives is set in the Fiscal Investment and Loan Program (FILP), an account established in tandem with the overall General Account. The major financial resources for FILP are procured from postal savings and pension funds managed by the government; their distinctive characteristic is that they must be repaid. By using these funds for projects where the recovery of investment is possible, FILP supplements the General Account and has a fairly substantial weight in the Japanese economy. FILP currently accounts for approximately 8 percent of GNP and 50 percent of the General Account.

It is important to understand that Japan’s policy-based finance supplements private financing. While its content has changed over time, the proportion of overall loans outstanding, including those of private financial institutions, has remained steady at 10 percent. Policy-based finance has gradually de-emphasized its industry-related focus as private finance has matured and enterprises have grown. Its relation to private finance also shifted from providing quantitative supplements to providing qualitative supplements.

Policy-based finance is designed to guide the financial resources of the government and private finance into areas that are most desirable from the point of view of the national economy. To function effectively, the loan conditions of policy-based financial institutions must often be more favorable than those of private financial institutions. The most favorable interest rate offered by policy-based

financial institutions at the beginning of the 1950s was lower than the private sector long-term prime rate by 3.5 percentage points; the least favorable was the same as the prime rate. It should be noted that, with few exceptions, the postwar inflation rate in Japan has been almost always in the one-digit range, and real interest rates have been positive for most of the period.

Guarantees and Interest Subsidies vs. Policy-Based Finance

Some argue that guaranteeing loans made by private financial institutions (PFIs) and/or providing interest subsidies to them could replace the functions of policy-based finance. I do not share this view. The lending operations of financial institutions are composed of the following four functions: (a) credit analysis (*ex ante*); (b) monitoring (*ex post*); (c) credit risk sharing; and (d) disbursement. A guarantee scheme, in essence, performs the credit risk sharing function only.

There are seven problems with loan guarantees. First, if the credit risk sharing function is completely separated from credit analysis and monitoring, loan guarantees can give rise to moral hazard. That is, private financial institutions may make loans too casually if they are able to shift all the risk to the government. The making of loan decisions without due caution will result in many defaults, and the guarantee institutions will have to undertake numerous payoffs. Some guarantee schemes address this issue by guaranteeing less than 100 percent of the loan, forcing financial institutions to exercise some degree of caution.

Second, standards for project appraisal and monitoring functions carried out by guarantee institutions should at least meet those of the banks charged with extending the loans. However, when guarantee institutions take on responsibility for these functions, they duplicate organizational and administrative costs. Consequently, costs to borrowers become excessively high. This, in turn, may weaken the effectiveness of the low interest rate aspect of policy-based finance.

Third, allowing private financial institutions to identify and select loan projects autonomously makes it difficult to ensure that policy is applied comprehensively and fairly.

Fourth, a guarantee cannot create funds when mobilization of financial resources itself is at issue. In order to function, a guarantee needs available funds. Thus, additional credit in the aggregate economy cannot be generated by the guarantee system.

Fifth, as a related point, in an economy with a shortage of medium- to long-term funds, unless a financial intermediary provides such funds, guarantee institutions will not be able to function.

Sixth, a guarantee institution, as is inherent in its nature, is asked to guarantee once a financial institution is in the final stage of deciding to finance a project. Under this circumstance, the cow-bell or pump-priming effect, which is an important feature of policy-based finance, would not be realized.

Finally, it might be interesting to recall that at its inception in the 1940s, the World Bank was expected to be less a lender and more a guarantor. The concept, however, disappeared quickly. One of the reasons was that Bank staff were not of a mind to give blank guarantees to either the Lesser Development Countries (LDC) or commercial banks for lending on unknown or uncertain projects in which the Bank itself was not involved in the appraisal or monitoring process.

Nevertheless, a guarantee system can be an effective vehicle when used to channel external financial resources. With its established credit analysis and sound financial status, JDB was successful in providing financial guarantees to the US Export and Import Bank for loans to Japanese airlines at a time when foreign exchange was scarce in Japan.

In conclusion, a guarantee system cannot replace the functions of “directed credit.” The use of the guarantee scheme is primarily limited to acting as a supplement to “directed credit.”

Interest subsidies to PFIs face almost the same problems. In particular, they cannot address the third problem (whether policy is applied comprehensively and fairly), the fifth problem (shortage of medium- to long-term funds), or the sixth problem (the cow-bell or pump priming effect). Furthermore, there is serious doubt as to whether all PFIs in developing countries have equally advanced project analysis capabilities, as these are hard to obtain even for PFIs in advanced countries.

Lessons from the Early Postwar Experience in Japan

Japan successfully transformed its economy in the latter half of this century. From a war-torn, destitute country, it quickly became an economic giant. The emergence and importance of policy-based finance from the war's end in 1945 to the mid-1960s played a pivotal role in Japan's development into an advanced industrialized country. After the war, the government established the Reconstruction Finance Bank (RFB), a government-owned, term-lending institution that targeted its resources to certain sectors. Although these sectors successfully increased their production, the financing of RFB with bonds underwritten by the Central Bank accelerated inflation. As a result, the government was forced to suspend RFB's lending operations in 1949. However, in abolishing this inflation generating institution the government was still left with a major constraint against reconstruction: the lack of investment financing in an economy that was about to take off with a weak capital market. As the demand for capital from the industrial sectors grew, the government established JDB to provide policy-based investment financing.

Although RFB was, in a sense, the predecessor of JDB, it did not share JDB's managerial independence. In short, lending decisions were actually made beyond the purview of RFB, and they were not necessarily based on solid appraisal criteria.

At its inception, JDB learned the lessons of RFB. The government assured the first governor that he need not bend to political pressure for nonviable projects. JDB

also established a capable loan appraisal department. Thus, loan decisions were left to JDB's professional judgment, while the government was responsible for establishing the basic policies for the operation of funds. JDB continues to verify how project funds are spent and their impact. A government auditor also conducts a regular annual audit. Thus, a system of multiple checks prevents the inappropriate or illegal application of the policy-based financing funds. This overall framework has enabled JDB to keep its loan losses at a level much lower than that of the private financial sector. As noted in *The East Asian Miracle* (World Bank, 1993), JDB has made relatively few mistakes in selecting loan projects.

At the time of JDB's establishment, equity capital from the government accounted for a substantial portion of its funds. As the accumulation of statutory reserves increased in proportion to increases in its loan balance, JDB's financial composition remained favorable. As such, it could offer preferential interest rates as policy required, without being subsidized by public finance. Its strong financial position also guaranteed its managerial independence.

Behind the Good Performance of Policy-Based Finance

Given that the policy-based financial system in Japan (particularly JDB) was instrumental in spurring high economic growth in the postwar period, an understanding of the factors and background which made this system function effectively is extremely valuable for other countries that are considering establishing policy-based financial systems. Three characteristics of the Japanese system are most notable.

The first is a respect for the market economy. A precondition for a policy-based finance system is the existence of a private sector business structure and private finance that can be supplemented with policy-based finance. In Japan's case, its prewar experience as a market economy and its endeavor to establish postwar economic reforms created an environment that fostered private entrepreneurship.

The second characteristic (which became particularly evident in Japan as the high growth period unfolded) is the close relationship between the government's economic plans and policy-based finance. Through policy-based finance, the priority allocation of financing was implemented in line with government policies that incorporated the will of the private sector. The precondition for this relationship was the existence of a public savings system, and a vehicle for allocating funds efficiently, that is, the Fiscal Investment and Loan Program.

The third characteristic (particularly relevant to JDB) is a respect for managerial independence, given the existence of sound financial composition and management. While JDB had inherent limitations as a government-related financial institution, its neutral and fair appraisals enabled it to make funding decisions autonomously.

But beyond these characteristics of the system is a recognition of the prevailing social, economic and political climate. Japan's policy-based finance system functioned effectively because it was able to capture the tenor of the country's environment at that time.

Priority Sectors of Policy-Based Finance

JDB initially targeted its financing to basic industries (electric power, iron and steel, coal, and ocean shipping) in which plants and machinery were obsolete, and whose products and services comprised a large share of the cost component of other industries. Modernizing these industries with expansionary investment to crack production bottlenecks was indispensable for increasing exports, sustaining economic growth, and upgrading other industries. At the same time, JDB was instrumental in introducing foreign capital through World Bank loans and serving as the guarantor for private-sector foreign currency loans.

In the mid-1950s, funding areas were diversified into infant industries, such as machinery, and new industries, such as petrochemicals. JDB funding for these industries was instrumental in guiding private financing.

In response to the shifting objectives of the Japanese economy, at the onset of the high growth period of the 1960s, JDB began targeting its funding to areas meant to address the effects of trade liberalization and regional disparities. In 1961, as it diversified its funding procurement, JDB also issued foreign currency bonds, playing a pioneering role in introducing foreign capital.

In recent years, the major policy objective of the government has been to stabilize and enhance national life, develop social capital based on private-sector vitality, and revitalize regional economies. These new objectives have sought to respond to an excessive concentration around the Tokyo area, to address the dislocation created by the rapid appreciation of the yen after the Plaza Agreement, and to arrest trade imbalances and expanding international obligations. JDB has diversified its operations further to address three key policy activities:

- *Readjusting the Industrial Structure*: converting Japan's industrial structure smoothly into a vital force in harmony with the international economic environment.
- *Introducing Private-Sector Vitality into Developing Social Capital*: establishing a low-interest-rate loan program to promote private sector participation in special public facilities, and establishing financing programs for privatizing Japanese National Railways and Nippon Telegraph and Telephone Public Corporation.
- *Promoting Internationalization*: developing a loan program for accelerating direct investment in Japan by foreign-affiliated firms and developing an import system for manufactured goods.

Amid the debates about redefining the role of policy-based finance, JDB was granted new functions to augment its existing role in supplying funds for investment purposes. These new functions are:

- Equity participation, research, and development fund loans (nonfacilities funds). Established in 1985.

- Start-up support fund loans (nonfacilities funds), and ECU bond issuance. Established in 1989.
- Expansion of loans for developing social capital (special low-interest loans); loans to transfer-method projects; and Euroyen bond issuance. Established in 1991.

It should be stressed that the parties concerned paid great attention to ensuring that policy-based financial programs were established or expanded only in fields with a strong policy need and where private sector finance alone would be inadequate, due largely to market failures. However, with current loans outstanding of \$ 40 billion and an annual budget of \$ 25 billion, JDB has the necessary flexibility to respond to the changing needs of Japanese society.

Financial Intervention in East Asia

As Stiglitz (1996) states, East Asia provides an interesting test case, showing that mild financial repression, as implemented through interest rate regulations and state-owned banking, can improve the efficiency of financial intermediation. In the early stages of development, problems of asymmetric information may be especially serious due to rapid economic change, and are compounded by a paucity of institutions with sufficient credit information. In this setting, “market” interest rates could rise to very high levels in order to cover default risk, crowding out relatively low-risk projects. Interest rate ceilings might solve the problem by motivating intermediaries to ration credit to lower-risk projects and invest in information on borrowers.

East Asia’s mechanisms of financial intermediation have been remarkably varied. They ranged from highly regulated, state-controlled banking systems such as those found in Korea and Indonesia, to the competitive, private banking exemplified by Hong Kong, Malaysia and Thailand. Most East Asian governments addressed the need for long-term credit for industry by creating development banks. They have also created specialized institutions that provide credit to agriculture and small firms.

Industrial development banks have been substantial long-term lenders in Indonesia, Japan, Korea, and Taiwan, where credit regulations had been prominent. The Korean Development Bank made an average of a third of all loans and guarantees in the 1970s, and the development bank of Taiwan, the Bank of Communications, holds about half of the assets of the banking system. Conversely, Malaysia’s development financial institutions accounted for 2.9 percent of the assets of the financial system in the 1980s. Thailand’s industrial development bank has only one percent of the assets of the financial system, and private banks have even assumed a role in sectoral coordination by reconciling conflicts over protection. Hong Kong has no development bank.

Many other developing economies have also attempted, unsuccessfully, to remedy the perceived failure in long-term capital markets by creating development banks. A representative sample of eighteen industrial development banks in developing economies showed on average nearly 50 percent of the value of their loans in arrears, according to the World Bank. The most commonly cited causes of development bank failures have been political pressure to finance bad projects and the poor incentives for and capability of financial institutions to screen and monitor projects.

Development banks have performed much better in the successful East Asian countries, especially those banks in the northern tier economies concentrating on industrial finance. Successful development banks in East Asia have applied commercial criteria in selecting and monitoring projects and firms, even within the constraints set by government priorities. Taiwan introduced a control mechanism in the early 1960s when it required borrowers receiving funds from the U.S. Agency for International Development to put up matching funds and made lending to a nonperformer a criminal offense, imposed on the loan officer.

Most East Asian governments have devised means to contain willful political interference in development banks. In addition, Japan, Korea and Taiwan have appointed senior officials from ministries of finance as chairmen, so they may withstand pressure from other parts of government. The type of lending extended has been controlled in other countries. Thailand simply disallowed its development bank from lending to state enterprises. The high professionalism and institutional identification of staff, which is characteristic of successful development banks, is a positive factor as well.

Lessons for Other Countries

As pointed out by the World Bank, many developing countries lack “appropriate” macroeconomic management and policy (planning) designs or do not enforce monitoring rigorously. Thus, for example, when preferential measures such as low-interest loans from the government (institutions) are freely adopted, it is quite possible that they will have several adverse effects on the overall economy. But the Japanese case indicates that several points can be made about this contention. The comments that follow center on the questions raised by the World Bank about the desirability of such preferential measures as low-interest government lending.

- *Do such measures encourage the substitution of credit for the borrowers' own funds and promote excessive indebtedness?*

In an environment such as that of postwar Japan, where private household savings were small, some academics believe that savers tend to prefer secure and highly liquid assets and avoid holding stocks and bonds. As a result, capital markets cannot develop sufficiently, and it becomes necessary to rely on loans

(in Japan, banks were also important investors in the capital market). Although one of the reasons for offering low interest rates is to support projects that, despite their policy necessity, may not be particularly profitable, it is clear that depending excessively on borrowing, even at low interest rates, will harm the project's profitability. With the existence of sufficient project appraisal capabilities, this type of project does not become a funding target. JDB sometimes stipulated that loan recipients had to invest their own funds as a condition for funding.

- *Do such measures skew incentives in favor of capital-intensive techniques of production?*

Without a doubt, the issue here is whether targeting capital-intensive industries as a part of the industry-fostering policies of the government is appropriate given a certain level of development within a given industry in a given country. But this problem is not inherent to low-interest "loans"—other policy measures for promoting capital investment (subsidies, preferential tax measures, and so forth) face the same problem. From the standpoint of being able to check the profitability of such investments with appraisal procedures, such "loans" are superior when compared with other means.

- *Do such measures encourage corruption and the rationing of credit in favor of already favored groups?*

Assuming that the overall framework for the scale and targets of loans is set clearly by the government (diet or parliament) and that a system has been established to carry out lending decisions based on the professional appraisals of the institutions that handle these loans, it is possible to prevent corruption and favoritism. But the institutions must be able to strictly verify the payment of project expenses and actual completion, and regular audits must be enforced by the institutions internally or through a third party (as with the Board of Audit in Japan). This type of system was established when JDB was founded. Moreover, JDB policy is to hire staff who have high ethical standards, and to rotate staff every 2 to 3 years.

- *Do such measures weaken the incentives of both borrowers and lenders for recovering debt?*

This is not a matter that, as it pertains to low interest rates, can be explained by economic theory. Rather, this issue requires solutions based on the social and institutional conditions in the country.

- *Do such measures add to the fiscal deficit?*

To begin with, low interest loans are not the only measure associated with expanding the deficit. Subsidies and other measures also add to the fiscal burden. In addition, when the interest rate for low interest loans is set at a level slightly lower than the market interest rate, a fiscal deficit does not always occur. (Indeed, government financial institutions are able to raise funds more easily than private institutions based on differences in creditworthiness). Second, even if low interest loans reduce fiscal revenues for a period of time, if viable projects are funded,

future profits will increase and, in turn, tax revenue will also increase. Third, when the financial resources for loans in developing countries come from external sources whose interest rates are fairly low (such as the International Development Association), a fiscal deficit will not occur when the final loan interest rate is set using the low interest rate as a base.

The role of the Assistance Goods Fund in the postwar period was considerable, since it provided a large portion JDB's capitalization. The Fund derived its proceeds from the sale of goods provided as U.S. aid; JDB obtained its capital by inheriting repayments for debts from the Reconstruction Finance Bank and Assistance Goods Fund Special Account (by 1950 RFB's debts had been repaid by the Assistance Goods Fund). Thus, JDB could provide low interest funds without the infusion of additional fiscal funds. Although the method was different, it is one example of how aid from an external source can be used effectively.

- *Do such measures reduce returns to savers?*

If the difference between the low interest rate and the market interest rate can be narrowed, the impact on savers becomes less severe. But, regardless, in developing countries in which savings alternatives are limited, savers would probably opt for a savings method that is secure and reliable, despite its low interest rate.

- *Do such measures increase the costs of borrowing by others?*

The answer differs depending on how the financial resources for low interest rates are obtained. It is possible that low interest rates might increase these costs if financial resources are shouldered by the same domestic financial system. Yet, to the extent that low interest rates are deemed to be a policy necessity, the increase should be accepted. In any case, when these financial resources are introduced from outside the financial system, the costs to other borrowers will not inevitably increase.

As also recognized by the World Bank, low interest rates can indeed work effectively, under three conditions: that a financial institution does not bend to political pressure to fund nonviable projects; that it make financing decisions independently, based on sufficient appraisal capabilities; and that it implement a strict *ex post facto* audit. In this sense, the Japan Development Bank has been this type of institution.

In sum, with reasonable macroeconomic management, articulated priorities reflecting the different stages of the economy, and qualified institutions equipped with independence, policy-based finance can be an effective tool, in East Asia as well as in Latin America and the Caribbean.

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CHAPTER 2

Credit Policies and the Industrialization of Korea: Lessons and Strategies*

by Yoon Je Cho

The remarkable success of East Asian economies has resuscitated old debates on the government's role in economic development. Government intervention in credit markets has formed the core of this debate—whether or not directed credit policies can be helpful for promoting industrialization and growth in the early stage of economic development. Among the most successful East Asian economies, Korea's government has played a particularly pervasive role, especially in credit markets. In Korea, more than half of bank credit was directed by the government; all major banks were directly owned by the government; and interest rates were tightly controlled. Furthermore, the government controlled the allocation of foreign loans. Did this approach contribute to the rapid industrialization and growth of Korea during the last three decades?

Korean experience has many implications for other developing countries. Korea started the industrialization process in the early 1960s with a small industrial base and little accumulated capital or technology. Many observers regarded the Korean economy as hopeless in the 1950s. It was an aid-dependent economy. Per capita income lagged behind that of many sub-Saharan countries until the early 1960s, including those of Kenya and Ghana, not to mention most Latin American countries. Korea, perhaps along with Taiwan, is one of the few countries which grew from poverty to industrial strength comparable to that of the advanced OECD countries.

The Korean finance and development experience suggests that the government can play an important role in laying the ground work for rapid industrialization in the early stage of economic development. If government involvement in the allocation of credit is based on close consultations with industry, and if it is implemented in a competitive business environment, it can be reasonably successful in overcoming financial market imperfections, and thereby contribute to rapid industrialization. When the risk capital market was poorly developed, the Korean government coordinated a close relationship between banks and industry and became an

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effective risk partner of private industries. This implicit co-insurance scheme among government, industry and banks allowed the credit-based economy and its highly leveraged corporate firms to explore risky investment opportunities and operate without falling into a major financial crisis. It is perhaps this risk partnership between government and private industries that contributed to rapid industrialization, more so than the sheer size of the selective credit programs or the interest rate subsidies.

Nevertheless, the Korean experience also suggests that the cost of this approach could be substantial and would increase as economic development advances. The Korean approach has been effective in achieving rapid industrialization, but it interfered with the efficient development of the banking system. The government's risk partnership with industrial firms placed a heavy burden of nonperforming loans on the banking system, and raised social equity issues. Extensive government intervention in finance, especially low interest rate ceilings, slowed the growth of savings. Korea was only able to overcome this negative impact of government intervention through heavy foreign borrowing. Its special relationship with the United States and Japan provided the country ready access to foreign borrowing and contributed to the success of this approach. However, the government's continued involvement in credit allocation beyond the point when the industrial sector matured and economic organizations became sophisticated increased the risk of distortions. Despite its contribution to the development of entrepreneurship and the expansion of industrial investment, the co-insurance practice also fostered moral hazard at banks and firms.

Overall, the Korean experience suggests that the case for government intervention in credit markets in the early stage of development could be made. However, it carries with it a substantial cost. To strike an adequate balance between the roles that the government and the market should play in the allocation of credit, the initial conditions of the financial credit market, the industrial structure, and the political and international environment should be taken into consideration. Moreover, as economic development advances, the role and scope of government intervention needs to be reassessed and re-focussed toward a greater reliance on market forces.

Political Economy of Korea's Financial Sector Policy

The Korean approach to economic development can be better understood in light of the dominant views of the country's political leaders and technocrats who shaped the development strategy in the 1960s. Korean policy makers formed their view of the role that the government should play in economic development from the experience of prewar Japan. However, the design of specific policy measures was heavily influenced by American advisers mobilized by U.S. development agencies. The modern financial system was introduced during the Japanese colonial period and

some industrial base was built, but this was mostly destroyed during the Korean war. Korea's strategic position in the postwar world security structure enabled it to receive a large amount of grants-in-aid and technical assistance from the United States. Postwar Korean institution building and the shape of the political and economic system was strongly influenced by the U.S. As part of the development strategy of the 1960s, Korea implemented price reforms to get the relative prices right. Nevertheless, the economic management style continued to resemble that of Japan, that is, the government was closely involved in economic activity and monitored the business sector.

As with prewar Japan, Korea's concept of national welfare rested on strong industries and a strong army. From the beginning, economic development was identified with industrialization, particularly given the country's poor land and resource endowment. Political leaders and economic policy makers did not really understand market forces or modern economic theory. When they thought of industrialization, their immediate concern was how to use the government to mobilize funds and support industrial investment. They wanted to control the behavior of industrialists so that their economic activities conformed to national interests. Consequently, they needed governance control tools; "control over finance" was a major tool in this respect.

The pursuit of this approach (i.e., financial repression) was possible only with ready access to foreign capital, since domestic savings were well below desired investment levels. The special relationship of Korea with the U.S. and Japan, and the recycling of oil money through Eurobanks in the 1970s, was crucial in this respect. Otherwise, Korean policy makers would have had to rely more on market-driven financial policies so that the financial sector could mobilize greater domestic funds, or contend with lower economic growth.

The turning point of Korean economic development was the 1960s. Park Chung-Hee, a military general trained in a Japanese military academy, took over the government in 1961 and remained in power until 1979. He mobilized national consensus and energy for "escape from poverty" and the "industrialization of the country." He motivated people, restlessly monitored the progress of every development project (both public and private), and governed the industrialists with a carrot and stick method. His authoritarian regime is criticized for delaying the political democratization of Korea, but he effectively protected the implementation and management of economic policies from being affected by the interests of political factions. Under his leadership, the management and implementation of economic policies, including credit policies, shifted from the 1950s model, when Korea had equal or even more pervasive government control over credit allocation. Under Park, government control over finance had clear goals and was well-coordinated with other policy measures. The economic management he led resembled that of Korea, Inc.

Industrial and Macroeconomic Policy Environment

Credit policy is formulated as part of a development strategy. Therefore, its effectiveness is determined in the context of overall industrial and macroeconomic progress. Korea's credit policies were well-coordinated with its industrial policies. Koreans wanted industrialization, and they realized that, given the country's small domestic market and relatively well-trained human resources, this could only be achieved through growth. Credit, industrial, and macroeconomic policies were all geared toward this goal. Compared to many other developing countries where credit policies are used mainly for redistributive purpose (or without clear focus so that almost all sectors are targeted, which is equivalent to targeting none), Korean credit policies had a clear focus and were well-coordinated with industrial policy goals.

Unlike Japan, however, Korea's directed credit policies relied heavily on central bank credit, and thereby often threatened macroeconomic stability. Nevertheless, when they seriously jeopardized the competitiveness of Korean exports, monetary and fiscal control were strengthened to restore price stability and/or the exchange rate was revalued. Korea was not particularly successful in maintaining macroeconomic stability as were Japan or Taiwan. Still, inflation was moderate and the real effective exchange rate was kept stable most of the time. Policy emphasized industrial growth rather than price stability. The cost of selective support and the required adjustments were often borne by depositors, consumers, and non-priority sectors, but they put up with this under tight capital controls. They would later be compensated (although not always evenly) through increased job opportunities and wages.

Overall, relative prices were mildly distorted in Korea. Exchange rates were kept competitive and domestic price controls were limited. Export orientation and the avoidance of state monopolies provided a competitive environment for industrial firms. Interest rates were repressed and accompanied substantial subsidies especially for export loans, but they too did not remain significantly negative for long, since inflation was moderate in most periods. A comprehensive economic reform program during 1964-66 included trade, tax and financial reforms which reduced price distortions, and laid the foundation for high economic growth. However, this "getting prices right" effort was matched by an equally strong effort to monitor and manage the allocation of resources through strengthened government control over banks.

Evolution of Credit Policies in Korea

Korean credit policies have adjusted to the changes in the industrial policy focus over time. Directed credit programs were flexible enough to adjust to meet the business sector's needs. Following close consultation with industrial leaders, new credit programs were created to channel financial resources toward new industrial opportunities while old programs were de-emphasized.

In the early 1960s, the government undertook a series of measures to strengthen state control over finance. These included the nationalization of commercial banks and the amendment to the Central Bank Act which subordinated the Bank of Korea to the government. In addition, interest rate reform, which doubled the level of bank interest rates, was undertaken in 1965 to mobilize financial savings through government-controlled banks. This resulted in rapid growth of bank deposits, shifting funds away from informal credit markets. It also enabled the government to enhance the scope of its control over financial allocation as the funds shifted from the unregulated to the regulated sector. Credit supports in the 1960s were structured toward promoting exports without much sectoral biases.

In terms of the level of interest rates and the degree of credit control, credit policies in the 1960s (take-off stage) were no more pervasive than those of 1950s. But the difference was the way the policies were used and managed. In the 1950s, they were often used without clear industrial policy goals. In the 1960s, they were geared toward export support and better linked with other policy measures. Furthermore, the government initiated a close consultation with the business sector and monitored the performance of supported firms. The “Monthly Export Promotion Meetings” and “Monthly Briefings on Economic Trends,” which were chaired by the President, constituted a forum both among ministries and between the government and the private sector. In these meetings, the progress towards achieving policy goals was closely monitored and consensus could be mobilized on ways to deal with emerging problems. Economic management in this way resembled the management of a corporation. Under these circumstances, banks, in a sense, were used as a treasury unit, the industrial sector as the production and marketing units, and the government as a central planning and control unit. Korean credit policy thus resembled the internal transactions of an organization.

In the 1970s, development credit policies shifted toward supporting investment in heavy and chemical industries (HCIs). In the 1980s, the government intended to reduce policy interventions in credit, but in practice, it continued to intervene in the restructuring of industrial firms. Government became a captive of the intervention. With political democratization in the late 1980s, the structure of directed credit programs changed, giving greater emphasis to social programs and the redistribution of income.

Size, Structure and Sources of Policy Loans

In Korea, the share of policy loans was substantial. It was about half of total credit by domestic financial institutions in the 1970s, but gradually decreased to about 30 percent of total credit as nonbank financial institutions (which were free from policy loans) expanded in the 1980s. However, for deposit money banks (DMBs), policy loans ranged about 60 percent of their total loans throughout this period.

Policy loans were extended mainly to manufacturing firms in the 1960s and 1970s. As a result, in 1970 and 1980, for example, the manufacturing sector received

46 and 54 percent, respectively, of total bank loans, while the service sector received 29 and 24 percent, respectively. This indicates that the manufacturing sector's share in bank credit was more than twice of its share in GDP, while the service sector's share was only about 60 percent of its share in GDP. Within manufacturing, export and heavy and chemical industries received more credit than domestic sector and light industries, compared to their share in GDP.

A significant difference in Korea's selective credit policies when compared to those of Japan and Taiwan lies in the source of policy loans. Korea depended heavily on central bank credit and deposits mobilized by DMBs, and much less on fiscal funds or funds mobilized through the government (such as postal savings). In contrast, Japan and Taiwan depended mainly on fiscal funds and postal savings. In Korea, among total policy loans extended by DMBs, only 7 to 8 percent were financed by fiscal funds. In contrast, about 35 percent of total DMB policy loans were financed through central bank credit. This implies that the central bank's discount policy was the major tool for guiding commercial bank loans to strategic sectors, and in Korea, policy directed loans relied heavily on money creation. This is the main reason why Korea had less price stability than Japan and Taiwan.

Role of Foreign Capital

Many observers overlook the role of foreign capital in shaping Korea's economic policies (including financial sector policies) and the country's development course. Nevertheless, foreign capital made a big difference in Korean economic development because domestic savings were far below desired investment levels. The average economic growth rate during 1962-82 was 8.2 percent. According to a rough estimate, if investment depended entirely on domestic savings, the average growth rate during that period would have been reduced to 4.9 percent. This indicates that high rates of economic growth were possible through heavy reliance on foreign savings. Without ready access to foreign capital, Korea could not have continued repressive financial policies that limited the mobilization of financial resources, or it might have posted significantly lower rates of economic growth.

As with domestic credit, foreign loan allocation was also tightly controlled by the government to support industrial policy goals. All foreign loans had to be authorized by the government and their allocation was determined in accordance with industrial policy goals. In 1965, the government revised the Foreign Capital Inducement Act to allow the government-controlled banks to provide guarantees for the repayment of foreign borrowing by firms, which facilitated inflows of foreign capital and technology. This, however, also resulted in the continuation of government intervention in the banking system. External shock to domestic firms, which made foreign debt service difficult, often had to be absorbed via a rescheduling of domestic bank loans, since a default on foreign loans could lead to major disruptions in the financing of development projects. The cost of government intervention in domestic banks, in turn, had to be shared by depositors.

Effectiveness of Credit Policies in Korea

The effectiveness of credit policies for economic growth can be evaluated by looking at two broad aspects: first, their contribution to the growth of industries or sectors through cost subsidies and favorable access to capital; and second, their contribution to industrialization by motivating private entrepreneurship through the government's risk partnership with the private sector.

The data indicates that Korean credit policies were effective in reducing the cost of funds and enhancing access to funds to priority sectors. Export-oriented firms enjoyed greater access to credit and lower borrowing costs than firms that produced mainly for domestic markets. HCIs also enjoyed greater access to credit than the light manufacturing industry. Despite its high risk, the borrowing cost of HCIs was significantly lower than that of light industry owing to large credit supports, including various policy loans. In general, this helped the rapid expansion of these sectors, especially during the take-off stage.

However, this does not necessarily imply that selective credit supports were essential for rapid economic growth in Korea, since we cannot estimate the opportunity cost of such support. For this, we need a general equilibrium analysis. General equilibrium analysis of the Korean experience is limited because a substantial proportion of input and output prices were controlled during the early stages of development. At the same time, it is too early to provide a full answer to this question, since Korean economic development is still in progress, and the cost of past financial policies may not have been fully realized. Therefore, we can only provide a partial evaluation.

There seems to be little controversy that export growth was the main engine of growth in Korea in the 1960s and 1970s. To the extent that credit support was indispensable for export growth, which seems to have been the case, credit support must have contributed to rapid economic growth, although one may remain doubtful whether so great of a subsidy was necessary to kick off export growth. In the case of the drive to develop the HCI sector, however, the effect of credit subsidies on growth remains controversial. Although the credit supports contributed to the rapid development of HCI, it might have been used more efficiently if the allocation had been better balanced between HCI and light industry, given the labor endowment in the 1970s. But the HCIs became the leading export industry in Korea starting in the mid-1980s. Many analysts also doubt that Korea would have been able to take full advantage of the appreciation of the Japanese yen and world economic boom in the second half of 1980s if HCI growth had not been promoted in the 1970s. A solid answer to this question cannot, however, be provided.

The impact of credit policies on industrialization is not limited to its effect on the cost and access to credit. In an economy like Korea, where initial capital accumulation was poor and rapid investment growth had to be financed mainly by bank credit and foreign loans, firms had highly leveraged financial structures. In such a credit-based economy, financial crises would occur with major economic

downturns unless some risk sharing schemes existed between creditors and borrowers. By controlling finance, the Korean government could become an effective risk partner of industrialists and motivate venture capital investment and entrepreneurship. It could induce businessmen to take a long-term perspective in their business. In other words, by controlling finance, the government established an implicit government-industry-bank co-insurance scheme. Without such implicit risk partnership Korea might not have been able to establish large industrial firms with an international reputation within such a short period of time. This indirect impact of government credit policies may have been a more important factor than the credit subsidies as such for explaining rapid industrialization in Korea.

Cost and Legacy

Control of finance strengthened the government's hand in implementing industrial policy, and helped foster the quick establishment of industrial firms with international reputations. But this was not costless.

As Korea relied too heavily and for too long on credit interventions as an instrument of industrial policy, banking institutions and depositors bore the costs. Commercial banks in Korea were involved so heavily in directed credit programs that they almost functioned as development banks. In the process, management efficiency and quality of services were sacrificed. They also had a large amount of non-performing loans. Non-bank financial intermediaries, which operated more freely, expanded rapidly and superseded the banks' share in the intermediary market. To some extent, the expansion of these "non-banks" contributed to the improvement of financial market operations by keeping competitive forces alive in the financial system, which otherwise could have been overly repressed.

The problem of moral hazard for commercial banks has been no less serious. As long as the government was willing to rescue firms, banks did not have to pay much attention to screening projects and monitoring firms. The government-supported firms became too large and dominant to go bankrupt. This made it increasingly difficult for the government to break out of the vicious circle of financial repression. When the expansion of the Korean economy and increasing sophistication of the industrial structure called for a more innovative and market-oriented financial sector, this legacy became a constraint for liberalization.

As the industrial policy emphasized the economies of scale to maintain international competitiveness, it led to overwhelming economic concentration within the Chaebols and raised the social equity issue. It was not uncommon for the Chaebols to triple the number of their affiliates with new acquisitions in heavy and chemical sectors during the period of HCI drive. In the face of growing public discontent with economic concentration, the government had to redirect policies to emphasize the redistribution of income, which often involved increased regulation of the activities of large firms.

Comparative Perspective and Possible Lessons

The use of financial policies and directed credit to support industrial development has not been unique to Korea, but rather is common in almost all developing countries (and even industrial countries). However, the experience in most developing countries has not been encouraging. What made credit policies more effective in Korea than in other developing countries? Although we do not have a full answer to this question, several explanations are possible.

Korean credit policies were implemented with clear goals consistent with long-term economic development plans. They were also subject to less political abuse than those in other countries. In Korea, various policy measures including credit supports, tax incentives, and foreign loan allocations, were well structured to support the industrial policy goals. In many other developing countries the credit programs are often used for political ends, and as a result, their sheer size and heavy subsidy simply provide opportunities for rent-seeking. In Korea, a positive macroeconomic environment was also conducive to policy goals, something that has often been lacking in other developing countries. Exchange rate policies in general provided competitive and stable real exchange rates, which have been critical to Korea's export-led growth strategy. Wage policies ensured that the real wage was in line with productivity growth. Inflation was not low due to the large central bank's support of directed credit programs, but thanks to a reasonably balanced fiscal budget, the government did not lose monetary control.

Korean economic success also was due to strong market competition among private firms. Unlike other developing countries, the Korean government, while strictly controlling finance, imposed few regulations on business activities. Specifically, the export-oriented growth strategy provided an effective performance test for firms. Korea could discipline domestic firms by pushing them to international competition, and linking credit support to their success in foreign markets. This tactic reduced the risk of an "interventionist approach," and brought tremendous externalities and learning effects which accelerated growth. The strategy to keep competitive forces alive in some segment of the financial system (e.g., non-bank financial institutions) when the government had to continue the repression of the banking sector might also have provided a safety valve. When the government interventions were excessive, this less-regulated sector expanded.

Perhaps most importantly, the political leadership, management skills in the administration, and appropriate institution building bolstered the operation of credit and industrial policy. Credit policies and specific programs were structured and adjusted frequently as a result of close government consultation with the private sector. The government did not simply establish a credit program; it ensured that the supported firms and projects operated successfully through close monitoring and consultation, and a risk partnership with the private sector.

Korean economic success is also due to good luck. Korea had good access to foreign loans and financed a substantial part of her investment through foreign

capital. A favorable external environment and Korea's special relationship with the United States and Japan contributed to its easy access to foreign borrowing. When U.S. aid declined in the early 1960s, the Vietnam War and the rapprochement with Japan supplemented the foreign exchange needed for industrialization. Rapprochement with Japan in 1965 brought a large influx of capital and technology when the international commercial loan market was functioning poorly. Recycling of oil funds since the mid-1970s also allowed Korea to pursue risky, capital intensive industrial projects despite relatively low domestic savings and a heavily repressed financial system. As mentioned earlier, without such access to foreign loans, Korea might not have continued its repressive credit policies, or would have experienced much lower economic growth with lower domestic investment. Consequently, most developing countries might not be able to follow this approach given the current international financial market environment.

The Korean experience also suggests that the cost of this approach could be substantial and would increase as economic development advances. The Korean approach has been effective in achieving rapid industrialization, but it interfered with the efficient development of the banking system. The government's risk partnership with industrial firms put a heavy burden on the banking system with large nonperforming loans, and raised social equity issues. The extensive government interventions in finance, especially the low interest rate ceilings, slowed the growth of the financial sector. Korea was able to overcome this negative impact of government intervention through heavy foreign borrowing. Furthermore, the continuation of strong government intervention in the allocation of credit when the industrial sector is well established and economic organizations are more sophisticated, increases the risk of distorting the overall allocation of economic resources. The costs of this approach are still being borne by the economy and its legacy remains a burden for future economic management. In this respect, the Korean approach to credit policies has not gone through a full cycle yet, and it may be too early to draw a lesson from it.

CHAPTER 3

Directed Credit in Latin America

by Armando Montenegro

One of the best ways to comprehend the scope of change in Latin American policy-making in the past decades is to study the issue of directed credit. Until the seventies, directed credit, along with price controls and extensive protection of domestic markets, was indisputably one of the pillars of import-substituting industrial policy. Thereafter, for more than a decade, credit interventions and financial repression in general began to be challenged both on theoretical and practical grounds. Initial experiences with financial liberalization in the Southern Cone ended up as resounding failures. Nevertheless, it was only after the launching of massive economic liberalization in the mid and late eighties that directed credit programs began to be rationalized, and in some cases dismantled.

The survival and recurrent use of numerous forms of directed credit also prove the continuity of Latin American traditions. Today, even after significant financial liberalization, which undoubtedly has reduced and transformed directed credit policies, various mechanisms and institutions remain active in channeling financial resources to targeted groups and sectors. In a few cases, directed credit maintains its old traditional features, such as subsidies and arbitrary allocations, allegedly to promote selected sectors. But in many cases, it is adapting to respond to the demands and fashions of the new times. Directed credit is no longer an instrument of the grandiose industrial and agricultural policies of the past. Instead, it is turning into a more modest instrument for supporting small and medium enterprises and small farmers, and is frequently associated with social policy. Subsidies have either been eliminated or greatly rationalized. However, despite these changes, directed credit has yet to find its place in today's Latin America.

This chapter describes the changing views and practices on directed credit in Latin America. More concretely, it takes up the following questions: What were the foundations of the central role of directed credit in the previous model of Latin American policy-making? What were its procedures, tasks and responsibilities? What were the economic effects of directed credit? How deep was the reform to eliminate directed credit? What is the current role of directed credit in the region? But first, two limitations must be noted. This study concentrates on directed credit for selected groups of the private sector. It does not deal with the various forms of channeling financial resources to bridge fiscal gaps and support public enterprises. Second, the paper looks with special attention at the experiences of Brazil, Argentina, Chile, Mexico, and Colombia. The cases of other Latin American countries are only briefly described.

Directed Credit Model

Directed credit was one of the most important economic policy tools in Latin America because it was considered essential for achieving numerous sector and social goals. Credit was not directed by a few isolated governmental agencies. Rather, it was a systemic task that, in one form or another, involved all components of the financial sector. The majority, and in some cases the totality, of the assets of this sector were affected by directed credit regulations. In the mid eighties, the proportion of total credit that was directly or indirectly allocated by the government reached 80 percent in Brazil, 85 percent in Colombia, 70 percent in Argentina, 90 percent in Costa Rica, and almost 100 percent in Peru and Mexico, where the banking sector was nationalized.¹ Moreover, this credit benefited a wide range of groups and sectors of society.

To explain the structure and functioning of directed credit, the following questions are answered next: What was its justification? How did it operate? Who benefited? What kind of resources did it use? What were the results?

The Rationale For Directed Credit

From the thirties to the late eighties, when state intervention (especially regarding price fixing, regulation, public investment and, more generally, in the allocation of resources) was deemed to be indispensable for economic development, directed credit was in center stage. First, policymakers felt that financial markets by themselves were incapable of achieving the best allocation of resources, and that massive government intervention could improve over market results. In this respect, a well known study by the Economic Commission for Latin America (ECLA) noted that:

“Experience shows that the intermediation systems with a neutral function aggravates certain unfavorable trends or does not help to solve problems . . . such as inequalities between social groups, regional imbalances, and the lag in the production of consumer goods that are essential for the bulk of the population or to maintain economic growth. Such a situation may have an unfavorable effect on the allocation of resources and the rate of savings and investment, and may increase the existing sectoral, regional and social disparities in the different countries.”²

¹ The extent of intervention varied from country to country and, within each country, from government to government. Nationalizations, extremely high reserve requirements, and forced investments by financial institutions, for some periods, made credit control almost total.

² Economic Commission for Latin America (1972).

Government planning and government guidance were therefore considered necessary to promote strategic sectors and benefit socially deprived groups. Hence, credit direction was a central element in economic policy-making. In this respect, the same ECLA article insisted that “it is essential to give the financial system a function that enables it to respond immediately to the basic needs of economic and social development.” To achieve this goal, “the first prerequisite is that financial policy should be part of economic policy. For this purpose, it is essential that development plans should go into the planning of the financial sector explicitly and in some detail.”³

Within this vision of strong state intervention, detailed regulation of the financial sector was considered necessary to force the sector to contribute to the goals of industrialization, rural development, regional equilibrium, and support for small and medium enterprises. As credit was often considered an “input” (similar to physical capital or labor), its amount and distribution had to be assured by the government. Because small and underdeveloped financial markets were incapable of providing long-term credit, it was the role of government to secure its existence and distribution. Moreover, achieving production goals required coordinating credit policies with other policies such as tariff protection, public investment, and foreign exchange allocation. This meant that not only public banks but the whole financial sector had to follow the direction of government.⁴ Two radical, but not unused, options to facilitate state goals of directing financial activities were the complete management of credit by the Central Bank and the nationalization of the banking sector. The first option was used in Argentina from 1946 to 1955 and again in 1982; the second was followed by Chile in 1970-72, Mexico in 1982, and Peru in 1987.⁵

The creation of credit and the management of savings were considered to be a public service, such as the distribution of water or electricity, which conveyed delicate social implications. Therefore, banking and financial intermediation, in general, were not considered to be on an equal footing as other profit-making private activities. The alleged social responsibilities, derived from credit creation and credit distribution, had to be carefully monitored, intervened, and regulated by government.⁶

³ *ibid.*

⁴ The structuralist vision of the financial sector is aptly summarized by José Pablo Arellano (1985). Earlier versions are offered by García (1951), Márquez (1951), and Urquidí (1951).

⁵ Economic Commission for Latin America (1971) and (1972) discusses the rationale of various forms of government intervention in financial sectors.

⁶ The argument offered by President López Portillo to nationalize the Mexican banks in 1982 was that the public concession of banking had been misused by private speculators.

Main Modalities

Directed credit was organized and managed in similar ways in most Latin American countries. In general, directed credit was a responsibility imposed on all institutions of the financial sector. It was intended to control and allocate the majority of financial institutions' portfolios among chosen sectors. To do this required an activist, development-oriented central bank, as the coordinator of a financial sector specialized in serving different groups and sectors of society. Moreover, directed credit involved numerous public and private development institutions; in many instances it was supported by the treasury.

"Developmental" Central Banks. In Latin America, central banks were considered powerful instruments for economic development.⁷ Traditional central bank neutrality was abandoned in the region as early as the thirties and forties.⁸ In addition to their well-known and generous financial support of governments, Latin American central banks used four instruments for directing credit to private agents.⁹ The first instrument was development funds. The central banks gathered resources from foreign loans, from mandatory investments by financial institutions and, sometimes, from money creation to form second tier rediscount funds (*fondos de fomento*), which financed the flow of credit extended by the network of banks and other financial institutions. To do this, central banks sometimes created separate satellite institutions that also extended technical assistance and other services to industrialists, farmers, and other groups. The second instrument was strong credit regulations to force directed credit. A high and costly (sometimes 100 percent) zero interest rate reserve requirement was established, which the financial intermediaries could only avoid by lending to preferred sectors under subsidized conditions (but less onerous than the reserve requirement) established by the central banks. The third instrument was direct loans, guarantees, and rediscounts for credits to the private sector, financed by printing money. The fourth and final instrument was participation in the capital and management of specialized development institutions.¹⁰

⁷ On the "developmental" roles of the Latin American central banks, see, for example, Tamagna (1963), Chapter IX.

⁸ For many years *Banco do Brasil* performed both the role of central bank and of a development agency. Later, when a separate central bank was created in 1964, this institution maintained a number of heterodox, development-oriented functions. Colombia's central bank was assigned development functions as early as 1951. By the same token, Argentina's central bank was nationalized in 1946 and assigned a variety of activist functions. The official view was that "the central bank supports any businessman needing financial aid to produce goods and services to cover the population's needs" (Canavese and Montuschi, 1985).

⁹ For a general discussion, see Chandavarkar (1987).

¹⁰ Those institutions were important beneficiaries of central banks' resources, and an intimate relationship was created among them. For example, Colombia's central bank was owner and co-administrator of *Banco Central Hipotecario* (BCH), a public mortgage development bank.

Extreme Specialization of the Financial Sector. Credit direction was not only the goal of separate specialized financial entities. It was a policy that required the specialization and fragmentation of the financial system in carefully regulated compartments.¹¹ Specialization took various forms. Because the needs of various sectors of the economy had to be met by different financial institutions, the role of the government was to impose upon them a division of labor, leading to the creation of banks specialized by sector such as, for instance, banks for industry and agriculture. In some instances, specialized entities (*fondos de fomento*) were created to serve subsectors or distinct activities within agriculture or industry. For example, in Brazil *fondos* were created to finance industrial inputs, shipbuilding, alcohol production, machine and equipment investment, mechanical firms, and other types of enterprises.¹² Regional specialization was attained when certain entities, such as the *Banco del Nordeste del Brasil* (established in 1952) and the *Corporación Venezolana de Guayana* (1960), were created to promote the economic development of particular states or regions. Specialization extended to the deposit and savings markets where only selected institutions were allowed to use certain types of deposits. For example, indexed deposits in inflationary environments were only allowed for chosen development institutions (housing and loan corporations in Brazil and Colombia). Functional specialization involved the assignment of new financial functions, such as investment banking, leasing, and fiduciary activities, to specialized institutions. Commercial banks were initially prevented from providing these services in Brazil, Mexico, and Colombia.

Given this concept of specialization, financial competition was often regarded as unnecessary or even damaging because it could bring about duplication of functions and would permit independent entities to deviate from their established social roles.¹³ Moreover, the need for specialization was commonly based on a strong distrust of commercial banks and private financial firms because of their alleged tendency to engage in speculative activities.¹⁴ In consequence, specialized financial institutions and carefully regulated market compartments had to serve strategic sectors according to the conditions established by regulators, among which subsidized interest was predominant. In most cases, strong prohibitions were imposed on various institutions to avoid their lending outside the prescribed sectors.

Credit extended by specialized banks and development agencies. A number of public investment banks were created in Latin America in the forties and fifties with the express purpose of supporting the development of strategic sectors (especially industry and agriculture), reducing regional imbalances, and reaching the poor.

¹¹ On the advantages and disadvantages of financial specialization in developing countries, see Khatkhate and Riechel (1980).

¹² See Lees, Botts, and Penha Cysne (1990). In Brazil, Gleitzer (1995) notes that in the eighties the central bank administered eighteen development funds, most of which were made up of dozens of separate sub-funds.

¹³ See, for example, Economic Commission for Latin America (1971).

¹⁴ For the United States, see Benston (1994).

These institutions usually made medium- and long-term loans and invested in equity. Institutions such as the *Nacional Financiera, S. A. (NAFINSA)* in Mexico (established in 1934), *Corporación de Fomento de la Producción (CORFO)* in Chile (1939), and *Banco Nacional de Desenvolvimento Econômico e Social (BNDES)* in Brazil (1951) had the broad purpose of stimulating economic development, albeit with a priority on industrial development. Often these institutions had a wide range of responsibilities. They were involved in equity investments, in the management and promotion of specialized development funds, and, as second-tier banks, in rediscounting credit to be channeled to various sectors.

In the fifties, investment banks (*corporaciones financieras*), which in some instances were private firms, were created to extend long-term financing by intermediating the resources of multilateral agencies, development funds, and central banks, especially in the form of rediscounts.¹⁵ A 1967 OECD study reported that more than 130 development institutions operated in Latin America. Moreover, because their activities were considered crucial for furthering economic development agencies, they received external loans that were on-lent to chosen agents, usually with significant subsidies.¹⁶

Credit by Public Banks. Apart from the variety of public development institutions, public commercial banks maintained a considerable participation in most Latin American countries. Moreover, nationalizations in Mexico, Peru, the Southern Cone countries, and Colombia increased public participation in the financial sector in the eighties. (In Brazil, public banks extended 67 percent of total credit in 1987. This proportion reached 58 percent in Argentina in 1987, 75 percent in Colombia in 1985, and 22 percent in Chile in 1985.) Although the role of public banks has not been precise and well-defined, it permitted governments to carry out numerous policies and solve a variety of social and regional problems, as well as to take care of sensitive political issues. In general, these institutions were active in providing short-term credit and extending a variety of financial services to selected groups, some of which involved considerable subsidies.¹⁷ Frequently, the non-performing assets of public banks were high because their clients had a hard time distinguishing credits from grants (Fry, 1991). For example, in the late eighties the World Bank estimated that 52 percent of Argentina's public bank loans were sub-standard.

¹⁵ In some instances, these corporations were established at the suggestion of the World Bank in order to on-lend resources for industrial development. This was the case for the *corporaciones financieras* in Colombia.

¹⁶ See Eshang (1983), especially chapter 5.

¹⁷ As a compensation for their development activities, public banks often enjoyed regulatory exceptions such as lower reserve requirements and favorable capital standards. Likewise, they often enjoyed a monopoly in managing public deposits. Private institutions often complained of unfair competition by public banks.

Examples of public banks in the region include *Banco do Brasil*, which ranked among the world's twenty largest banks in the early eighties, provided more than 30 percent of total credit in the fifties and early sixties, and even today extends more than 12 percent of total credit. *Banco de la Nación Argentina* extends nearly 13 percent of total credit, and *Banco del Estado* in Chile extends 16 percent of total credit. *Caja Agraria* was the largest bank in Colombia in the fifties and sixties. Some notorious examples of public banks are the provincial and state banks of Brazil and Argentina, which have generously contributed to financial and fiscal disorder.

Credit by commercial banks and other institutions. As already stated, private commercial institutions were not thought to be able to produce the best social outcomes on their own. Regulations were therefore imposed on their portfolios to force them to lend to selected strategic sectors, under conditions determined by the government. These regulations included earmarked liabilities, forced credit allocations and forced investments. Earmarked liabilities refers to a percentage of the resources raised by bank deposit or savings accounts that had to be directed to lending in certain sectors.¹⁸ Forced credit allocation means that a percentage of new credits had to be directed to specified sectors under regulated, subsidized terms.¹⁹ Finally, forced investment refers to the fact that a percentage of the resources raised by a specific type of deposit or saving instrument had to be invested in public bonds, or other instruments, to finance a directed credit facility (within the central bank or in the realm of public banks.)

Credits or guarantees, extended by the treasury and other agencies of the national government. These instruments were sometimes directed towards chosen sectors, either directly or by using the intermediation of financial institutions. Frequently, these types of support were granted to strategic, large investments in industrial sectors. In Brazil, treasury loans have also been used for financing short-term agriculture price support programs.

Finally, the existence of all these mechanisms for directing credit did not mean that this was an organized and well-planned activity. On the contrary, the system was very often messy. Various instruments for directing credit were used by different policymakers (central bank, treasury, the board of the development banks) with different objectives, some of which contradict each other. In addition, credit creation often responded to the pressures of private interest groups and was sometimes "captured" by its beneficiaries.

¹⁸ In Brazil, compulsory allocation of deposits has been one of the main instruments of directed credit. For example, the resources raised through saving deposits have to be directed to agriculture and real estate. By the same token, demand deposits were to go to financing credit for industry and agriculture. See World Bank (1990), Annex 3.

¹⁹ This procedure was used in Colombia in the seventies and eighties to finance agricultural loans.

Beneficiaries

Directed credit was intended to benefit a number of sectors and groups, depending on a variety of economic, ideological, or political justifications. The main beneficiaries of directed credit were “strategic” economic sectors (in which public enterprises were usually actively involved), deprived groups, backward regions, and a number of groups affected by natural disasters and economic problems.

Strategic sectors. Historically, industrial or agricultural sectors were the first and the most important beneficiaries of directed credit in the region. When the system was generalized, and all its tools developed, directed credit reached housing, mining, export promotion, and virtually all significant sectors of the economy. In all of this, the amount of credit and the magnitude of the subsidies were in direct relationship with the economic importance and the political muscle of each sector. It is interesting to note, moreover, that separate credit lines were established within sectors to reach a variety of agents and subsectors. For example, in the case of agriculture, producers of the most important crops were granted larger credit limits with higher levels of subsidy. It is no surprise that small and new firms, that were unable to lobby effectively, were frequently excluded from the benefits of directed credit.

Deprived groups and regions. Although initially these were not the main target of directed credit, political demands and severe fiscal constraints forced governments to use it to attain income redistribution and regional equilibrium goals. To this end, housing banks, student loans, a number of credit cooperatives, and various regional banks were created. Credit for small farmers was also considered a priority. Moreover, commercial banks were often forced to extend credit for social and regional programs.

Public enterprises. Financing and providing special conditions for public enterprises, many of them involved in industrial and mining activities, was often considered a priority. For example, in 1987, 94 percent of the credit extended by Mexico’s *Nacional Financiera, S. A.* (NAFINSA) benefited state-owned enterprises (Aspe and Gurria, 1992). Likewise, in the early nineties, 70 percent of the credit extended by the *Banco de la Nación Argentina* was directed to the public sector.

Groups affected by natural disasters and economic problems. As a consequence of fiscal weakness, directed credit was the most expeditious instrument used by governments to meet the needs of reconstruction and attention of groups affected by natural disasters such as earthquakes, floods, and droughts. Similarly, it was used to refinance and support economic agents afflicted by problems such as low demand and disruption in supply.²⁰ In the eighties, Latin American central banks generously financed a variety of debt rescheduling schemes of domestic firms to facilitate fulfillment of their international obligations.

²⁰ CORFO was created in Chile in 1939 by the Popular Front government as a reconstruction agency in charge of dealing with the problems created by a series of earthquakes.

Political constituencies. Finally, directed credit has been used as a political instrument to serve electoral purposes and to respond to the demands of a variety of constituencies. To explain its political goals, it has been argued that cheap, directed credit has been a “way of rewarding those in the society who help to sustain governments” (Blair, 1984). Moreover, Fry (1991) notes that the Brazilian provincial banks have been used to finance political campaigns, and that Venezuelan public banks have been openly involved in the electoral process.²¹ Similar stories could be found in virtually all countries of the region.

Funding for Directed Credit

Financing a wide, massive, and non-voluntary system of directed credit that reached almost the entire financial sector required gathering a variety of funds. In addition to inflationary resources, directed credit used numerous forms of domestic and foreign savings, most of which were secured by government decisions.

Monetary creation. In many instances, central banks created money and sometimes used their profits for funding development facilities, financing rediscounts, and capitalizing development banks.²²

Domestic deposits and financial savings. Public financial institutions channeled the resources raised in the markets to carry out their credit and equity operations. The funds obtained by commercial institutions (deposit and saving instruments) were introduced into the system of directed credit by the regulations that created mandatory investments or forced credits. As already mentioned, in some cases, demand deposits and savings accounts were simply earmarked to provide cheap credit to chosen sectors.

Social security savings. These resources, managed by public and centralized social security systems, were also used to finance directed credit and equity investments in various countries. This was the case of the *Banco Nacional de Desenvolvimento Econômico e Social* in Brazil, and the *Instituto de Fondo Industrial* and *Banco Central Hipotecario* in Colombia. In this way, workers' savings were used to finance a variety of industrial and housing projects in these countries.

Taxes and budget transfers. Governments earmarked some revenues to finance directed credit operations. In Brazil, for example, earmarked import, sales, and payroll taxes financed various development funds. In Chile, the *Corporación de Fomento de la Producción* received an earmarked tax on the profits of copper firms;

²¹ Fry notes that after elections, the Brazilian state banks usually end up in critical condition due to the extremely poor quality of the politically created assets. For an interesting discussion of the relationship between Brazilian politics and directed credit, see Armijo (1993). “Capture” of directed credit by industrialists in Chile, before 1973, is discussed by Hastings (1993).

²² A description of the various development instruments used by Latin American central banks is provided by Tamagna (1963), Chapter IX, especially Table IX.

Colombia's *Caja Agraria* received the proceeds of a surcharge on imports.²³ In many cases, directed credit institutions received budget transfers to fund either past losses or current credit operations.

Insurance premiums. Regulations forced insurance companies to use their reserves to buy bonds issued by development banks. For example, this was the case of the National Development Fund in Brazil.

Foreign loans. Agencies such as USAID and multilateral institutions such as the World Bank and the Inter-American Development Bank have supported various directed credit schemes in the region for many years, especially those managed by central banks and specialized development agencies. These credits have been used for on-lending to selected groups, under conditions such as medium- and long-term maturities, and under the supervision of selected lending agencies. For many years the loans financed by multilateral agencies involved significant subsidies. It has only been in the last few years that multilateral institutions have used their financial loans to support market-friendly financial reforms.

Evaluating Directed Credit in Latin America

Economic theory justifies a role for directed credit.²⁴ However, this policy should not be evaluated on theoretical or doctrinal grounds. Because the experience of various countries proves that credit direction can be successful, or at least not detrimental for economic development, directed credit in Latin America should be evaluated in purely practical ways.²⁵ In particular, this evaluation has to take into account the effects of directed credit on the targeted sectors and groups and has to examine carefully the pertinent government decisions. Because it has been shown that there is a role for government intervention in this area, the failure (success) of a policy of directed credit necessarily has to be interpreted as a government failure (success).

An evaluation of directed credit has to focus initially on two elements. First, on its direct impact on the targeted sectors and groups, such as industry, small farmers, and backward regions, and second, on its impact on monetary institutions, macroeconomic and fiscal policy, the financial sector, and the political system. The former might be viewed as the benefits, and the latter the costs, of such a policy.

There is a consensus that the direct effects of directed credit in Latin America are negligible or even negative.²⁶ This view is held despite the fact that, in most

²³ The Brazilian Caixa Econômica Federal administered lotteries, which have been considered as a form of taxation.

²⁴ Stiglitz (1991) presents a summary of seven market failures that can justify directed credit.

²⁵ The Asian experience with directed credit has been discussed recently by Vittas and Kawaura (1995), Vittas and Yoon Je Cho (1995), and Calomiris and Himmelberg (1995).

²⁶ As an exception, Gleizer (1995) surveys various studies that argue that directed credit was beneficial in modernizing Brazilian agriculture after the sixties. He also affirms that the set of subsidies for exports effectively supported Brazilian exports. However, in this case it is clear that the marginal contribution of

cases, careful country and industry studies have not been done.²⁷ In order to carry out careful evaluations of directed credit in Latin America, serious technical problems have to be resolved.²⁸ Directed credit was only one of several import substitution policies, and it was often carried out in the midst of monetary and fiscal disorder. As a result, it is difficult to identify its marginal contribution to the performance of various economic sectors, and distinguish it from the contribution of other policies such as tariff and quota protection, price controls, or tax incentives.

Various explanations are offered for the low effectiveness of directed credit. The first reason given is the highly unsatisfactory performance of the industrial sector—the main target of directed credit policies—after the sixties.²⁹ Unlike the experience of various Asian countries, directed credit was often concentrated on heavy, protected public enterprises, thus inducing an additional element of inefficiency.³⁰ Second, the impact of directed credit programs on agriculture, another priority sector, in various countries has also been questioned.³¹ Very often, rural credit programs did not meet their goals, and funds were diverted to other uses.³² It has also been argued that some programs used rural savings to subsidize wealthy urban firms (World Bank, 1990, p. 28). Third, firms promoted and supported with directed credit in Latin America were often inefficient, oligopolistic, oriented to the domestic market, and incapable of competing in international markets. Fourth, it has been argued that directed credit made income distribution more uneven in Latin America, because wealthier and powerful agents had greater access to cheap credit lines (Fry, 1991). In fact, they often captured for their benefit the entities of credit allocation.³³

credit subsidies is difficult to determine. Finally, he emphasizes the extremely high costs and disorder of the government intervention in the Brazilian financial markets.

²⁷ Few detailed analyses of directed credit find negative results regarding its effectiveness. See, for example, Jaramillo, Schiantarelli, and Weiss (1993) for Ecuador. Likewise, Lagos and Díaz (1995), after analyzing the case of Chile, using a different methodology find that “an increase in the share of credit does not have a statistically significant effect on the investment share of agriculture and mining and is only marginally significant in the manufacturing sector.” Additionally, they conclude that the system of directed credit had a negative effect on economic growth.

²⁸ See, for example, Gleizer (1995).

²⁹ The participation of industry as a percent of GNP at the end of the eighties in Mexico, Chile, and Argentina, and the contribution of industry to total output was comparable to what it had been during the sixties. Moreover, industrial exports as a percentage of GNP stagnated during the sixties and seventies (Bulmer-Thomas, 1994).

³⁰ This was the case in Mexico and Brazil, in particular. However, as already mentioned, it is difficult, if not impossible, to separate out the contribution of directed credit from other policies such as import protection and price controls. It has been noted that directed credit might have made a significant contribution to the industrialization of countries such as Mexico and Brazil during the forties and fifties, when industry grew at high rates of over 8 percent per year and directed resource credits were provided.

³¹ For the case of Colombia, see Vogel and Larson (1984).

³² For example, in Colombia it was shown that half of the funds of a leading agricultural program were directed to other use (World Bank, 1979, p. 59).

³³ This point is carefully discussed by Adams, Graham, and von Pischke (1984) and González-Vega (1984). For the case of Costa Rica, see World Bank (1979); for Chile, see Hastings (1993).

While the benefits of directed credit were negligible, its costs were certainly significant.

At the *macroeconomic* level, the maintenance of low or negative real interest rates created serious distortions and had a negative effect on financial savings. High reserve requirements and forced investments crowded out private borrowing on voluntary market terms. However, one of the most pernicious effects of directed, subsidized credit was its high fiscal cost. For example, the World Bank (1979, p. 59) reports that, in Brazil, the cost of interest rate subsidies was around 3 percent of GDP in the mid-eighties, and reached between 4 and 6 percent of GDP in 1987. The quasi-fiscal losses of Argentina's central bank, from the administration of the massive rediscount system, were estimated at 1 percent of GDP in 1986.

Repressed financial sectors were small, fragmented, weak, extremely vulnerable to economic cycles, and unable to support the expansion of economic development.³⁴ The *already low quantitative indicators of financial repression* hid many problems resulting from the proliferation of small, poorly managed financial institutions that were unable to properly carry out their functions of selecting, screening, and monitoring projects. Moreover, forced investments, high reserve requirements, and subsidized interest rates were equivalent to onerous taxes and, therefore, weakened the solvency of banks (Fry, 1991). Many directed loans were often of poor quality and added to banks' solvency problems. Periodic capitalizations and government bailouts placed a drain on the government's resources.

The major cost of "*developmental*" *central banks* was their disregard for stabilization and its logical consequence: high inflation. As mentioned, Latin American central banks had conflicting objectives, and monetary order was not their main preoccupation. However, another major cost of their involvement in promoting economic development was their lax vigilance of financial sector stability, which made banks especially vulnerable to financial crises.³⁵

Abundant subsidized credit slowed or even reversed the development of the *stock market* and other mechanisms for the long-term financing of firms (Edwards, 1995). When abundant and cheap credit was available, firms stopped tapping domestic capital markets; instead, they lobbied to obtain subsidized credit provided by development financial institutions.³⁶ Moreover, cheap long-term public loans undermined the creation of a voluntary long-term credit market.

³⁴ It is interesting to note that the expected positive relationship between the size of the financial sector and economic growth is not found in Latin America. There, the rapid expansion of the financial sector, without proper regulation, has been usually followed by financial crises that have affected economic expansion. See de Gregorio and Guidotti (1995).

³⁵ It has also been argued that excessive government regulation did not permit commercial domestic bankers to develop banking skills to study, monitor, and control banking operations. As a result, when the financial sector was liberalized, it was poorly equipped to carry out their day-to-day operations.

³⁶ An additional cost of directed cheap lending was very high interest rates for purely voluntary loans and often, the development of curb markets.

Even though it has been pointed out that directed credit is a consequence of *fiscal weakness* (Stiglitz, 1993), it could be argued that the inverse relationship holds. Because directed credit easily provided governments with resources to respond to a number of political and social demands, it stimulated fiscal laziness. When confronted with problems, it was easier for the government to impose new regulations on banks (such as forced investments or mandatory allocations of credit) to satisfy the new demands than to seek the approval of new taxes in congress.

The allocation of public resources and subsidies in closed rooms, without budgets, and without the approval of congress, far from the scrutiny of public opinion, created a *traffic in favors and transfers*. Corruption was often rampant. In some countries, all of this has certainly had a considerable cost in terms of institutional and political development.

Responsibility of Government

Directed credit failed in Latin America for several reasons. First, it failed because it was part a development strategy that was based on the substitution of imports and the protection of domestic markets adopted in the post-war years and not appropriate when the world economy and world trade were booming (Bulmer-Thomas, 1994). This strategy did not force local producers to attain world productivity standards and in fact encouraged inefficiency. In contrast, in Asia, credit direction was only a component (and not the most important) of export-led growth, exactly the opposite strategy, which proved to be successful.

Second, the policy failed because it was set up in a way that made it impossible to attain its goals. Because it was too massive and disorderly, directed credit could not be efficiently targeted and controlled. It was not accompanied by proper mechanisms to monitor its real impact on economic development, that is, on output, export growth, or the use of new technologies. Directed credit programs involved significant subsidies for firms, in exchange for which policymakers made no demands. It is no surprise, therefore, that this system encouraged diversion of resources, was frequently captured by powerful lobbies and, in some instances, afflicted by corruption. In addition, it contributed to macroeconomic and financial instability. Again, the Asian experience often shows exactly the opposite elements: simpler systems, lower subsidies and, above all, targets that are clear and can be monitored. Additionally, the Asian experience confirms the importance of macroeconomic stability for promoting growth, exports and, in general, economic development.

In conclusion, the story of directed credit in most countries of Latin America is one of government failure. It shows how a modest instrument that, in some cases, could be used to promote development in other continents was wasted in unnecessary subsidies and unfair transfers to powerful groups. Clearly, when governments are weak, discretionary policies, such as the distribution of cheap credit,

are used as tools for gaining political support and not for promoting economic development. It also shows that the proliferation of credit distribution agencies, the disorder in the allocation and management of credit, and the lack of control and monitoring favor the appropriation of credit policies by privileged beneficiaries.

Reform of Directed Credit

Today, in the mid-nineties, financial repression, of which directed credit is a vital element, has been reduced in most countries of Latin America. The proportion of total credit allocated by governments now rarely reaches 50 percent, and the majority of it is done by public banks. Subsidies have been reduced, and the allocation of credit has been rationalized. The complicated web of institutions and regulations put in place to feed the system of credit allocations has been dismantled. The number of beneficiaries has been streamlined and the goals of the system are now more realistic, and certainly more modest, than they were in the past. Many public banks have been privatized, and the terms of most loans are now determined by market players. Moreover, a consensus is emerging on the advantages of private pension funds over directed credit for creating long-term financing for firms.

The road to financial reform, however, has not been smooth. On the contrary, it has been characterized by trials, errors and reversals. The first attempts at financial liberalization, carried out in the Southern Cone at the end of the seventies, ended in financial crises. These experiences showed that financial failures were mainly related to two factors without which liberalization could not proceed successfully: strong and prior prudential regulation and macroeconomic, especially foreign exchange, stability.³⁷ Although structural economists took these crises as proof of the impossibility of liberalizing financial markets in Latin America, most analysts learned from the mistakes and realized that financial reform could not be undertaken in isolation. Financial reform has to be part of a coherent and well-designed program of economy-wide structural reform.³⁸ This is precisely what has happened in recent years. Financial liberalization has been carried out only as a component of ambitious structural reforms, which included reforms of trade and labor and capital markets, and has been accompanied by macroeconomic stabilization within an environment of reinforced prudential regulation.

The next section, whose primary objective is to describe briefly the reforms of directed credit in Latin America, takes up the following questions: What was the scope of reforms? What were the elements of reform? What was transformed? What are the characteristics and challenges faced by directed credit in the nineties?

³⁷ See, for example, Díaz-Alejandro (1985).

³⁸ In large part as a consequence of thoughtful consideration on these experiences, an ample and interesting body of literature on the sequencing, timing, consistency and sustainability of reforms emerged in the second half of the 1980s. See Edwards (1984) and World Bank (1989).

Elements of Directed Credit Reform

The reform effort was extended to all components of the system of directed credit in most Latin American countries. It required the suspension of development activities by central banks and the reduction of financial sector specialization. It also meant reducing compulsory regulations that captured the resources raised in the market by financial institutions, the privatization of many public institutions, and the rationalization of the remaining development agencies.

More Orthodox Central Banks. To cope with chronic fiscal and monetary instability, many Latin American countries have undertaken deep reforms of their central banks to shift their focus toward maintaining monetary stability and reducing inflation, and minimize the ability of governments to engage in deficit financing by raising the money supply. A corollary of these reforms in most countries has been the abandonment of central bank development functions. Consequently, central bank trusts (*Fondos de Fomento*, *Fondos de Garantía*) have been dismantled in many countries. Similarly, the compulsory appropriation of bank deposits by central banks to be allocated through rediscount windows to chosen sectors has also been suspended.

These reforms started in Chile in 1975 when reserve requirements, forced investments and other interventions of the central bank were suspended. This was followed by the adoption of the constitution of 1986 which established the autonomy of the central bank from the government. In Brazil, the gradual reforms adopted since 1986 have suspended the intervention of the central bank in financing the *Banco do Brasil* (suspending the *conta de suprimento especial*) and the network of development institutions. Colombia's new constitution of 1991 established the independence of the central bank and prohibited developmental operations favoring private agents. The massive and costly intervention of Argentina's central bank in allocating credit was curtailed by the Convertibility Plan of 1991, which imposed severe restrictions on central bank loans to commercial banks and, in general, to private agents. In Mexico, the autonomy of the central bank was established by a constitutional reform in 1993. Venezuela adopted a similar policy in 1991.

Central bank reform has been crucial for the fate of directed credit. With central banks deprived of their development functions, directed credit lost its coordinator, regulator, and financier. In other words, without an activist central bank, directed credit allocation cannot be a systemic task to be carried out by the whole financial sector. Moreover, without the resources of central banks, the remaining directed credit institutions have to rely on their own financial capacity and on transfers from public budgets. Given scarce fiscal resources, directed credit institutions have been forced to rationalize interest rates, thus reducing subsidies.

Less Specialized Financial Sectors. Fragmentation and compartmentalization of financial sectors, originally intended to avoid competition and secure financial resources for specific sectors, have also been greatly reduced in most countries of the region. Departing from the extreme and chaotic forms of specialization, many

countries have moved their financial sector closer to the multipurpose or multibank model. Most intermediaries are now allowed to raise funds in the market through a variety of savings instruments, extend loans, and create other assets, without restrictions as to sectors, prices or terms.

As a result of the reforms of the seventies, the Southern Cone countries early on simplified the organization of their financial sectors. In Chile, for example, 37 banks now carry out most functions of intermediation and furnish loans and other services to all sectors.³⁹ The operations of seven other more specialized institutions amount to less than 10 percent of total assets. Similarly, Argentine banks, which hold 99 percent of financial sector assets, are allowed to provide a wide range of financial services.⁴⁰ However, 29 provincial and municipal public banks still serve specific regions and finance public institutions at great costs and considerable inefficiency.

In Brazil and Colombia, steps have been taken to increase competition among financial institutions, thus greatly reducing the scope of specialization. Multibanks were permitted to operate in Brazil in 1988, offering a wide number of financial services (Lees, Botts and Penha Cysne, 1990). The assets of Brazilian multibanks as a percentage of total financial assets have increased from 8 percent in 1988 to 51 percent in 1995.⁴¹ However, 34 commercial banks specializing in short-term lending and a variety of other institutions (*bancos de investimento, caixas, sociedades de crédito*) remain active in the system.

Likewise, sector and term specialization of Colombian financial institutions was greatly reduced by the reforms undertaken after 1990 (Montenegro, 1995). Although bank assets amount to only 52 percent of total assets, and savings and loan institutions still maintain considerable market share (23.3 percent), sector and deposit specialization have been reduced, and the differences among financial institutions have been blurred. For example, savings and loan institutions can now make loans to any sector, even with short-term maturities, and banks can lend long term for industry or construction. Similarly, banks are no longer prevented from issuing index bonds or other types of saving instruments.

In Mexico, the Financial Groups Law of 1990 adopted the financial conglomerate model which allows different financial functions to be conducted by separate subsidiaries of a common holding company. In 1993, this law was amended to allow commercial banks to extend a number of services, including leasing and factoring. In today's Mexico, there are two clearly specified groups of financial intermediaries: commercial, market oriented institutions and development public banks.

³⁹ If not indicated otherwise, the information included herein is provided by the countries' central banks.

⁴⁰ After the reform of 1977, institutions such as finance companies, credit unions, and saving and loan agencies merged or were converted into banks to take advantage of a larger scope of operations. In this process, the number of financial institutions declined from 721 in 1977 to 294 in 1987.

⁴¹ In calculating these percentages, *Banco do Brasil* is not considered a multibank.

Financial Deregulation. An important component of most financial reforms in Latin America has been extensive deregulation of the operations of intermediaries. Most interest rates have been freed from government controls, and banks and other institutions can now voluntarily allocate their portfolios and attract deposits and savings with a wide variety of instruments. In particular, in the case of directed credit, financial reform has meant three measures. First, elimination or reduction of forced investments by which the central bank and government agents captured the resources raised in the market by financial intermediaries. Second, elimination or reduction of mandatory allocations of credit to certain sectors. Third, elimination or reduction of credits created by earmarked taxes. Like other components of reform, these initiatives have been carried out with different degrees of intensity in the various countries of the region.

The most ambitious reforms were undertaken in Chile and Argentina, where all forms of mandatory capturing of resources in order to finance directed credit were simply abolished. In Chile, the reform was carried out early in the mid-seventies and has been sustained ever since. In Argentina, a country where the central bank had a long tradition of appropriating bank resources to be then directed to chosen sectors, this reform coincided with the Convertibility Plan of 1991.

In contrast, Brazil still maintains several regulations to channel resources to selected sectors. Savings accounts are directed to agricultural loans (those of *Banco do Brasil*) and real estate. Commercial bank demand deposits are applied to loans for industry and agriculture. Forced investments for pension funds, insurance companies, and mutual funds are still in place. Moreover, earmarked taxes still are used for financing long-term investment. Finally, the federal treasury still maintains its window for extending credit to some sectors, especially agriculture.

Colombia's extremely complicated system of credit allocations and forced investments has been eliminated. The only obligation that exists for banks is designed to benefit agriculture. Banks are forced to lend to this sector an amount equivalent to 6 percent of their deposits. If, for any reason, they are not willing to do this, they have to devote the same amount of money to purchase public bonds issued by FINAGRO, a second-tier specialized agricultural bank.

Similar reforms have been undertaken in Mexico over the last ten years. Forced investments and mandatory allocations of credit (*cajones de crédito*) have been eliminated. Although a significant number of directed credit institutions survive, they do not rely on the rest of the financial sector for funding.

Reduction of Public Banking. Recent economic reforms in the region have deregulated private institutions and liberated them from mandatory allocations of credit and have also reduced the creation of credit by public institutions. This result has been mainly achieved through liquidations, mergers, and especially, privatizations. In addition, the elimination of various sources of funds has also contributed to the reduction of the public financial sector in Latin America.

During the last few years, Argentina's public banking sector has been undergoing a difficult process of contraction and rationalization. Its participation in

total credit has fallen from about 60 percent in 1990 to around 40 percent in 1994. To achieve this, various institutions have been closed, merged and privatized. For example, between 1991 and 1994, the *Banco Nacional de Desarrollo* (BANADE) and *Banco de la Provincia de La Rioja* were liquidated, while the *Caja Nacional de Ahorro y Seguro* was privatized. Four other provincial banks have since followed the same process, and a program to privatize fifteen additional provincial banks is in progress. In addition, efforts are being made to improve the efficiency and rationality of the remaining public banks. Branches have been closed and redundant employees have been dismissed. In addition, links between these institutions and public deficits have been severed. Now, for instance, 86 percent of *Banco de la Nación Argentina's* credit goes to the private sector (years ago only 14 percent of its loans went to private borrowers).

The situation in Chile is completely different. As a result of the reforms advanced by the military government and the privatizations carried out after the crises of the early eighties, the only remaining public bank is *Banco del Estado*, which is one of the country's most important financial sector institutions. This bank provides 16 percent of total credit (21.5 percent in 1985), and maintains a reputation of competent, commercially-oriented management.

In Brazil, the participation of public institutions in the financial sector decreased from 63 percent in 1987 to 45 percent in 1995. This reduction is not only explained by liquidations and privatizations but by a more dynamic growth of private sector institutions and by controls and restrictions imposed by the federal government on state and federal banks. The problems posed by Brazilian state banks are more severe than those experienced by Argentina's provincial banks (Novaes Filho and Da Costa Werlang, 1994). Most state banks have been involved in politics and in financing state deficits (as of 1993, 73 percent of their loans went to state and local governments). Their solvency has been seriously undermined; during the first few years of this decade, their net worth decreased from \$2.9 billion to \$1.9 billion (Novaes Filho and Da Costa Werlang, 1994, p. 15-16). The process of getting state banks under control is already underway. The federal government has intervened in *Banco do Estado de São Paulo*, *Banco do Estado do Rio de Janeiro*, *Banco de Rondônia*, *Banco de Mato Grosso*, and others. Other banks will be privatized in the near future. Apart from the problems posed by state banks, the role of other troubled public financial institutions, such as *Banco do Brasil*, has to be examined.

In Colombia, the participation of public financial institutions fell from almost 75 percent in the mid-eighties, when as a consequence of a severe financial crisis several banks were nationalized, to 42 percent in 1995. This reduction was basically the consequence of the re-privatization of banks and financial corporations, among which *Banco de Colombia*, *Banco del Comercio*, and *Banco Tequendama* were the most important.⁴² The expected privatization of traditional public institutions, such

⁴² The slow growth of *Caja Agraria*, a public agricultural bank, also contributed to this result. This bank has lost market share because of lack of capital, improved regulation, and problems derived from bad loans.

as *Banco Popular* and *Banco Central Hipotecario*, as well as the culmination of this process in the case of *Banco Cafetero*, will reduce public participation close to 20 percent.

In Mexico, lending by public institutions fell from almost 100 percent in the eighties after the 1982 bank nationalization, to 43 percent in December 1994. As in other countries, this reduction is largely explained by reprivatization and, to a much lesser extent, by the contraction of lending by development banks. After the constitution was amended in 1990 to remove banking from the list of activities reserved for the state, all banks owned by the government were reprivatized. As a result, financial markets experienced a dynamic expansion fueled by massive inflows of foreign resources. Public development institutions lost market share as a result of the elimination of forced investments and improvements in monetary and fiscal management. Unfortunately, the Mexican story concludes with a policy reversal: the current financial crisis brought some institutions, at least temporarily, back to the control of government.

Directed Credit After the Reforms

What is left of the once heavy and all-encompassing Latin American apparatus for directed credit? In spite of its perceived failure, and of all the reforms that have sought its reduction, directed credit is alive in the region. It still mobilizes resources that amount to relatively large shares of the financial markets. Many groups and important constituencies still depend on the decisions of old institutions such as *Nacional Financiera, S.A.*, *Corporación de Fomento de la Producción*, *Banco do Brasil*, and *Banco de la Nación Argentina*.

However, in some respects, directed credit is today different from what it was in the past. It is provided only by specialized institutions, namely development and public banks, and only in certain cases, by old-fashioned *fondos de fomento*. The rest of the financial sector is now free from the compulsory obligation to participate in the system. In many instances, directed credit is provided by second-tier institutions, which rediscount loans of participant intermediaries on a voluntary basis. Most directed credit interest rates have been rationalized; in those cases where they remain subsidized, they are at least positive in real terms. Finally, directed credit is funded basically with voluntary market resources, stemming from domestic savings and foreign loans from multilateral agencies, and other countries' export agencies. Only in a few cases do earmarked or compulsory mechanisms of appropriation still survive.

One of the most remarkable characteristics of today's directed credit is that its goals and ambitions are more focused, and certainly more modest than they were in the past. With a few exceptions, in most countries the emerging beneficiaries of rationalized and reduced directed credit are small and medium-sized enterprises, small farmers, and exporters. The justifications for continuing to intervene in the

credit markets are usually lack of long-term market resources for investment, and lack of access of small firms to formal markets. In the case of exports, the most common justification is the need to compete with countries that aggressively use directed, sometimes cheap, credit as a commercial tool. However, long-term directed loans for industry, housing and other old-fashioned uses of directed credit are still found in some countries.

Although today's directed credit in the region can be characterized by the foregoing elements, this does not mean that this instrument is already fully defined nor that it has found its niche in Latin America. First, because of the failures of the past and the consensus on financial liberalization, the surviving forms of directed credit have yet to gain intellectual legitimacy among politicians, policymakers and economic agents. In other words, even after their rationalization, there remain many lingering doubts about their effectiveness, orientation, and management. Second, because directed credit is often still provided by public institutions, with recognized inefficiency and with the support of powerful conservative lobbies, its survival is perceived as a failure or at best a compromise made in the course of the reform process. Third, because the role of public banks is not altogether defined in the region's new economic model, some of the functions assigned to directed credit are seen as the second or third-best use of those institutions, until the first-best use is found. Fourth, as explained before, the process of financial reform has hardly been concluded in most countries, and additional changes in public banks and development institutions are expected. In conclusion, several of the remaining institutions for directed credit are in a situation similar to that of Pirandello's characters, searching for an author, and for a topic, of course.

More specifically, the main features of directed credit today in various countries are the following.

In Argentina, directed credit is basically the responsibility of three public institutions (provincial banks can be fairly considered a separate problem and not a component of a system of directed credit). *Banco de la Nación Argentina* extends credit to the rural sector and to small and medium-sized enterprises, on commercial terms. *Banco de Comercio Exterior* (BICE) is a second-tier institution, specializing in foreign trade, which extends loans and guarantees and uses resources from the budget, from multilateral institutions, and from development agencies and export-import banks of other countries. *Banco Hipotecario Nacional*, also a second-tier bank, furnishes housing credits, and raises funds from the domestic saving market.

Given that the *Banco del Estado de Chile* operates under commercial conditions, the only remaining development financial institution is the *Corporación de Fomento de la Producción*. This is a second-tier bank that uses foreign resources from multilateral agencies and loans from other countries to make long-term investment loans and finance exports, without a predetermined sector allocation. Some of its resources are auctioned off to bidding intermediaries. Consequently, its interest rates reflect market conditions.

Remaining directed credit in Brazil is carried out by many institutions, both at the federal and the state levels, and maintains a certain degree of complexity and disorder. Directed credit is furnished by the *Banco Nacional de Desenvolvimento Econômico e Social*, *Banco do Brasil*, the treasury, and a variety of credit lines and funds administered by those institutions, FINSOCIAL, and FND, among them. Moreover, other institutions such as the *Caixa Econômica Federal* and various state institutions also provide directed credit for a number of uses. In general, these institutions are funded with a variety of market and nonmarket resources, serve wide-ranging constituencies, and still provide some subsidies for long-term and short-term loans. As there is ample room for improvement in this system, streamlining directed credit could be the subject of a second or third generation of financial reforms in Brazil (reforming state banks is clearly the priority today.)

In Colombia, the most important sources for long-term finance are public second-tier institutions, formerly central bank funds: FINAGRO, FINETER, FEN, and BANCOMEXT. These entities specialize in lending to agriculture, municipal development, power companies, and exporters, respectively. They use market funds and multilateral resources and charge market or near market interest rates. Other traditional development institutions are still active: *Instituto de Fomento Industrial*, a financial corporation, provides long-term funds for industry; and *Caja Agraria* and *Banco Cafetero* specialize in providing a variety of short-term services in rural areas. These last two banks have posted significant losses and employ large bureaucracies.

In Mexico, directed credit is the responsibility of several agencies, including seven development banks, (the most important of which is *Nacional Financiera*, S.A., and many trust funds (*Fondos de Garantía y Fomento*) operating at the second-tier level. Although some rationalization has been observed, there still exist a variety of credit lines, objectives, and overlapping responsibilities among the various entities. Additionally, subsidies and lack of focus are still prevalent in these institutions. As in Brazil, the Mexican system of directed credit could be improved in many areas.

Conclusions

This long review has shown that directed credit has not had a life of its own in Latin America. Rather, it has been an outgrowth of the development strategies that were adopted in the region in the last five decades. Directed credit was most prevalent when import substitution policies were the rule. During that time, directed credit expanded, reaching many sectors, gaining economic and institutional legitimacy, and become a key tool to support industrial, agricultural and social policies. Directed credit policies were challenged when the local economies were liberalized. Although reduced and rationalized, it still mobilizes a significant volume of resources, and many of the traditional development institutions are still active in ex-

tending loans for a variety of uses, among which small and medium-sized enterprises, small farmers, and low-income housing are frequent beneficiaries.

However, the legitimacy of directed credit, Latin American style, has been deeply diminished by its failure to achieve its targets and by economic liberalization. Because financial repression was one of the earliest issues to be raised against the previous strategy of state intervention, directed credit has been continually criticized for more than two decades. In the seventies, financial liberalization and deregulation were also one of the first reforms to be recommended to amend the import-substitution model. Ever since, ending credit compartmentalization and curtailing subsidies have been components of virtually all economic reforms on the continent. As a consequence, remaining directed credit in the region is, to a certain degree, a legacy of the previous model, which is sustained and supported by its beneficiaries and strong bureaucracies, but which is, nevertheless, a survivor that has yet to find a place in today's economies.

In certain respects, policymakers have learned from the many mistakes of the past when it comes to directed credit. In particular, credit subsidies have been reduced or eliminated and the funding of directed credit has ceased to contribute to macroeconomic instability. However, its transformation has not been deep enough to answer many criticisms related to its lack of monitoring, control, and organization. In a few countries, massive, chaotic, and dispersed credit programs still resemble those of the past. Additionally, the fate of directed credit in the region is closely related to public banking, an activity that in most cases is still grossly inefficient, plagued by losses, and lacking in transparency and purpose.

From economic theory and the experience of East Asia, we know that well-managed, limited directed credit programs could, in a few cases and under specific conditions, work well. We also know that political forces and economic pressures will keep alive some forms of directed credit in Latin America. Because of these realities, the challenge in Latin America is to fully transform directed credit by learning from the experiences of other countries and by avoiding the mistakes of the past. Only in this way will directed credit finally be able to find a role in a market oriented Latin America and, at last, contribute to economic and social development.

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CHAPTER 4

Policy-Based Finance: Application of East Asian Lessons to the Americas*

by Dimitri Vittas

Directed credit programs involving loans on preferential terms and conditions to priority sectors were a major tool of development policy in both developed and developing countries in the 1960s and 1970s. But in the 1980s, their usefulness was reconsidered. The experience of most countries showed that credit programs distorted incentives among both lenders and borrowers. They stimulated capital intensive projects, suffered from abuse and misuse of preferential funds for nonpriority purposes, increased the cost of funds to nonpreferential borrowers, involved a decline in financial discipline that resulted in low repayment rates, and contributed to a swelling of budget deficits. Moreover, once introduced, directed credit programs proved difficult to remove.

This general assessment of the adverse effects of directed credit programs has contrasted with the experience and views of government officials in Japan and Korea who have long advocated the merits of such programs if they are well-managed and focused.¹ According to this view, government involvement in directing credit is warranted when there is a significant discrepancy between private and social benefits, when the investment risk of particular projects is too high, and when information problems discourage lending to small and medium-sized firms. Use of policy-based lending, in addition to other forms of industrial assistance (e.g., lower taxes, grants, etc.), is premised on the argument that the main constraint facing new or expanding enterprises is their limited access to external finance at reasonable terms and conditions.

The external finance constraint that affects new or expanding firms emanates from the problems for credit allocation caused by asymmetric information, uncertainty about project returns, and the existence of dynamic externalities. In the absence of full information, banks and other financial institutions tend to allocate

*This chapter draws on the findings of a World Bank research project on the "Effectiveness of Credit Policies in East Asian Countries." For a fuller discussion and a list of references, see Vittas and Cho (1995).

¹ See Overseas Economic Cooperation Fund (1991); JDB/JERI (1994); and Cho and Kim (1995).

credit to firms with adequate internal funds, good collateral and a reliable track record even if they are not the ones with the best investment opportunities. Informational asymmetry is exacerbated in countries where objective and reliable information disclosure on corporate performance is seriously lacking, while the usefulness of collateral security is undermined by deficiencies in its registration and realization.

Given these institutional shortcomings, it is not surprising that, historically, developing countries have resorted to directed credit programs and policy-based banks for providing term finance to firms in priority sectors. Government action has been stimulated by the high uncertainty of project returns in developing countries, which discouraged commercial banks from lending on a long-term basis, and by the existence of dynamic externalities, which private agents could not take into account in their project calculations. Government intervention has also been motivated by the potentially superior information on sectoral prospects enjoyed by government agencies and their alleged comparative advantage in monitoring behavior, verifying outcomes, and enforcing contracts.

Economic and Institutional Factors

Given the alleged advantages of government involvement in credit allocation, what explains the pervasive failure of directed credit programs in most developing countries and their relative success in Japan and Korea?

Both economic and institutional factors seem to be important. Economic factors include the maintenance of macroeconomic stability, export orientation, domestic competition, reliance on the private sector, and a bias toward industrialization. Institutional factors cover the creation of effective monitoring systems, the use of extensive consultation arrangements, and the development and propagation of credible visions.

Of major importance were also the size of the credit programs and the level of subsidy involved. In Japan, directed credit programs absorbed less than 20 percent of the total funds mobilized by the financial system and the level of subsidy was quite small, no more than a few percentage points. In Korea, policy-based loans were more ambitious. They accounted for 50 percent of total funds in the 1970s, but declined to 30 percent in the 1980s. The level of subsidy was also greater and was affected by fluctuations in the rate of inflation.

Economic Factors

Macroeconomic Stability. Japan and Korea were able to maintain macroeconomic stability, with small exceptions now and then. Macroeconomic stability in itself does not, however, seem to be a sufficient condition. Several other countries in other parts of the world, such as the Middle East and North Africa, Southern Europe, and South Asia, also avoided the high inflation rates of some Latin American

and African countries. Yet, neither their economic performance nor their credit policies were as successful as those of Japan and Korea. Nevertheless, macroeconomic stability seems to be very important for encouraging the growth of financial savings.

A related issue concerns the reliance on long-term funds, and especially postal savings in the case of Japan. This clearly mitigated the inflationary effects of the “overloan” position of commercial banks in Japan, but other countries (e.g., Greece) had a similar reliance on postal savings without the same positive experience with directed credit programs. Macroeconomic stability also prevented the emergence of highly negative real rates of interest on policy-based loans, a feature that characterized credit programs in many countries in Latin America, Africa and, more recently, Eastern Europe.

Competitive Product Markets and Export Orientation. The main difference between Japan and Korea and most other developing countries lied in the fact that macroeconomic stability in Japan and Korea was combined with intense domestic competition, strong export orientation, and reliance on the private sector. Even in the economically stable countries of the Middle East and North Africa, Southern Europe and South Asia, industrial production was often oriented toward the domestic market, was sheltered from both domestic and foreign competition, and was in the hands of state-owned enterprises.

Export orientation forced domestic firms in Japan and Korea to be internationally competitive and attain high levels of efficiency. The strong export orientation also provided objective criteria for monitoring the performance of individual firms and assessing the effectiveness of credit support. For example, good performance in export markets implied continuing access to policy-based finance.

Product market competition and the link between market performance and credit support limited the risk of government failure. In most other developing economies, import substitution policies and public firms monopolies limited domestic competition. The latter enjoyed economic rents and were often the major recipients of credit support for industrial development.

Effective Policy Coordination. The goals of credit policies were narrowly focussed and were well-coordinated with other policies. In Japan and Korea, the main goals of credit policies were industrialization and export promotion. Other policy measures, such as foreign exchange, tax, and fiscal policies, were also geared toward these same goals. In Japan the allocation of foreign exchange, and in Korea the approval of foreign loans, were coordinated with domestic credit policies to support industrial policy goals effectively.

In contrast, credit policies in many other developing countries (e.g., India) focused on redistribution of income and wealth (with large emphasis on small farmers and firms). Credit programs to support manufacturing and exports were largely offset by the emphasis on redistribution. This often resulted in an implicit taxation of large industries that affected their efficiency and international competitiveness.

Institutional Factors

Effective Monitoring Systems. Highly effective monitoring systems have been a distinguishing feature of credit policies in Japan and Korea. Loan approval was preceded by careful design and independent appraisal, while monitoring of fund utilization was very strict. Fund disbursement was based on adequate documentation. Moreover, continued access to policy-based loans depended on attainment of objective targets, mostly in internationally competitive export markets.

The importance of this factor cannot be overemphasized, since what matters for economic development is not really the mobilization and allocation of financial resources but their efficient utilization. After all, any country can mobilize resources by printing money which can then be allocated to priority sectors. Although such money creation will increase inflationary pressures, if the resources are utilized well and lead to higher and more efficient levels of production, unit costs may be lowered and may offset the inflationary impact.

Poor project design and appraisal, uncontrolled disbursement, and ineffective monitoring were among the greatest weaknesses of credit programs in most developing countries. This contributed to poor repayment records and low recovery rates that inflated the size of nonperforming loans for both development and commercial banks in most countries.

Effective Consultation and Coordination Arrangements. Participatory government intervention, based on the deliberative councils and numerous industrial associations that characterize Japan and Korea, can play an important part in avoiding the pitfalls of credit policies (such as adverse selection, moral hazard and low recovery rates), and ensure the allocation of scarce resources to activities with positive externalities and long-term benefits. Both Japan and Korea developed effective networks that contributed to the relative success of their credit policies.

Government-led internal organizations provided an improved mechanism for risk-sharing with the providers of finance, resulting from the backing of governments for preferred activities. In addition, they were able to overcome to some extent the uncertainty facing particular firms through the implicit or explicit commitment of governments to particular enterprises. Through monthly economic briefings and deliberative councils, they stimulated the collection and exchange of information and facilitated more effective monitoring.

Through these arrangements, governments promoted consensus among the different participants not only through moral suasion but also through the provision of direct incentives (both “sticks” and “carrots”) to achieve cooperation and coordination. However, such organizations are confronted with risks of moral hazard, manipulation and inefficient implementation. They can improve the allocation of credit over market solutions only if there are strong safeguards against abuse.

Credible Visions. Economists have generally paid little attention to the importance of credible and consistent visions. These are not equivalent to detailed quantitative plans, but are rather concerned with broad aspects of strategy.

Both Japan and Korea had coherent visions of industrial policy. These emphasized a clear priority of industrialization and economic development ahead of financial sector development. In both countries, industrialization and economic growth took precedence over the development of an efficient and modern financial sector. To be sure, the authorities were committed to ensure the safety of deposits and the solvency of financial intermediaries, but were less concerned to allow banks and other financial intermediaries to innovate and develop new services aiming at reducing the cost of financial intermediation. There were many controls on bank spreads and interest rates, on branching and bank mergers, and on bond issues, while administrative guidance discouraged lending for consumer credit and housing finance and encouraged the creation of large industrial/financial groupings.

Government policies supported the creation of industries, such as steel, oil refining, petrochemicals, automobiles, aircraft, industrial machinery of all sorts, and electronics, including computers, where the income elasticity of demand is high, technological progress is rapid, and labor productivity rises fast. The strategy emphasized dynamic comparative advantage rather than static cost considerations (Ojimi 1972, Johnson 1982, Yotopoulos 1991).

They also placed emphasis on the complementarities in production for both the domestic and export markets. This supported the income doubling plan of Japan in the 1960s as well as the Korean heavy and chemical industry (HCI) drive in the late 1970s. Promoting both exports and domestic sales allowed a shift of resources to exports when problems in the international balance of payments forced the government to curtail domestic demand. But when the problems of paying for imported raw materials eased, the focus was shifted to expanding sales at home. Thus, factories could keep operating throughout all phases of the business cycle and could thus achieve a higher scale of production and lower operating costs (Johnson 1982, Yotopoulos 1991).

Both Japan and Korea were also characterized by a continuous shift in the focus of industrial policy. In Japan, industrial strategy first emphasized the recovery of priority production, then the modernization of equipment in heavy industries, and then the development of new industrial sectors with high potential externalities, such as the machine tools industry. The strategy also included the smooth adjustment of declining industries and covered the restructuring of companies that faced difficulties and the rationalization of whole sectors of industry that suffered from overcapacity. In Korea, industrial policy first emphasized exports and industrial investment and later, during the HCI drive, became geared toward promoting specific industries. In the 1980s, there was a reorientation toward smaller firms.

Credible visions also emphasized other instruments of industrial policy that complemented policy-based finance. Extensive use was made of accelerated depreciation allowances and tax-free special reserves. These allowed profitable and successful firms in the promoted sectors to retain and reinvest a larger part of their profits than firms in nontargeted sectors. Particularly important because of their link with the overall strategy of export promotion were the special reserves that were

linked to past export performance. These noncredit-incentives reinforced the impact of credit policies and helped to stress the credibility of the programs.

The existence of a coherent and credible vision also lent credibility to the consultation processes and deliberative councils. Many other countries around the world tried to promote close consultation between government and the private sector but, in the absence of a coherent vision, such exchanges became little more than forums for special pleading or ineffective talk.

An important contribution of government was the compilation and dissemination of information about longer term sectoral prospects, an activity that is not readily undertaken by the private sector and private securities markets (these focus on collecting data with short-term payoffs such as price discovery in futures markets). Again the existence of a credible vision and the “carrot and stick” approach that were used to encourage cooperation resulted in the collection and analysis of broadly reliable data about the prospects of particular industrial sectors. These reinforced the signaling effect of policy-based finance.

Long-Term Costs

The credit policies pursued in Japan and Korea appear to have achieved their industrial and growth objectives, but not without some important long-term costs.

In the case of Japan, rapid industrialization to enable fast growth and a catch-up with the more advanced OECD countries was pursued at the expense of service industries, private consumption, and a modern and sophisticated financial sector. There was also environmental pollution and other similar costs, although government policy was often changed to address these problems. But in the case of the financial system, it appears that financial liberalization was delayed too long, which may have contributed to the problems currently faced by Japan.

The main problem in Japan may have been a failure to adjust the global vision for the country (Vittas and Kawaura, 1995). With industrial success came the accumulation of large trade and current account surpluses. Instead of using these surpluses to finance an expansion of domestic sectors, such as housing and other infrastructure, Japan continued to promote industrial exports and to accumulate foreign exchange reserves, which were used to finance foreign investment in both financial and real assets. While this policy was pursued, there was resistance to a major liberalization of the financial system. The latter progressed very slowly and erratically.

It is ironic that the current problems of Japanese banks derives from bad loans made following the relaxation of credit policies in the 1980s and the massive expansion of real estate loans. The lesson that should be drawn from the current experience of Japanese banks is not, however, that the liberalization of the 1980s was ill-advised. The industrial success of Japan made inevitable a reorientation of its financial system toward real estate lending, housing finance and consumer credit. What clearly made the situation worse was the delayed recognition of the

accumulated problem loans and the failure to take early measures to address their impact on the banking system. There should be little doubt that financial market inefficiency was one of the most important long-term costs of Japanese policy during the high growth era.

In Korea, the industrial policies of the 1970s emphasized expansion of heavy and chemical industries and creation of large conglomerates that could reap economies of scale and compete internationally. The long-term costs of this approach were a weakened commercial banking sector (partially offset by the development of nonbank financial intermediaries), a large concentration of economic power, and a penalization of smaller firms and firms in the service sectors. Although government policies have tried to redress the balance in the 1980s in favor of smaller firms, the large industrial groups continue to play a dominant role in the Korean economy.

Although credit policies in Japan and Korea entailed significant long-term costs, it is unlikely that these costs will offset the benefits of higher growth or undermine the achievements of rapid industrialization and overall economic development. The net outcome will depend on how fast and how effectively government policies are adjusted to new economic realities.

Lessons for other Countries

Ten main lessons can be drawn from the experience of Japan and Korea. The first six reflect “good vision,” while the last four are associated with “good management.”

“Good Vision” Lessons

- Credit programs must have a small size and a narrow focus and be of limited duration with clear “sunset” provisions.
- They must involve a low level of subsidy (if any) to minimize distortions in incentives and also to minimize the tax on financial intermediation that all credit programs necessarily entail.
- They must be financed by long-term funds to avoid inflation and macroeconomic instability. In particular, recourse to central bank credit should be avoided, except in the very early stage of development when selective credit programs supported by central bank credit might help jump-start economic growth and development. But even in these cases, care must be taken to prevent high rates of inflation and loss of macroeconomic stability.
- They should aim at achieving positive externalities (or avoiding negative ones). Thus, they should focus on overcoming the external finance constraint facing small or rapidly expanding firms as well as on financing firms in declining industries. In the latter case, credit programs should be accompanied with clear plans to phase-out declining industries in an orderly and timely fashion.

- They should promote industrialization and export orientation and should be based on a competitive private sector with internationally competitive operations. (Industrialization is relevant for large countries. For small countries, a focus on rapid industrialization may not be appropriate. Small countries can thrive by relying on primary production or on service industries, provided they are efficient and internationally competitive.)
- They should form part of a broader credible vision of economic development, promoting growth with equity, and involving a long-term strategy to develop a sound financial system operating on economic criteria.

“Good Management” Lessons

- Policy-based loans should be channeled through well-capitalized, administratively capable and autonomous financial institutions. Professional management and managerial autonomy are essential.
- They should be based on criteria that are clear, objective and easy to monitor. Detailed project appraisals, close supervision of disbursement, and monitoring of performance and repayment records are key to the success of such programs.
- They should aim for a good repayment record and low loan losses.
- They should be supported by effective mechanisms for consultation between the public and private sectors, including the collection and dissemination of basic market information.

Implications for Financial Policy in the Americas

Although the lessons outlined in this study are important, it should be stressed that replicating the Japanese and Korean experience may be more difficult in today's financial environment. The advent of high technology coupled with the globalization of financial markets has substantially reduced the effectiveness of foreign exchange controls on capital movements and limited the ability of the authorities to set interest rates at substantially below market levels. Moreover, the use of credit policies will become more limited under the new World Trade Organization. But the greater challenge facing other developing countries in using policy-based finance stems from the absence of the very institutional factors (“good vision” and “good management”) that explain the success of these policies in Japan and Korea.

There are some countries for which the lessons of Japan and Korea may still be relevant. For instance, for countries with heavily-subsidized large credit programs, one lesson is clear: reduce the size of these programs as well as the level of subsidy. Useful lessons may also be drawn for countries with large nonviable sectors that need to organize an orderly retrenchment. The importance of international competitiveness and reliance on the private sector are highly relevant for many middle-income countries.

For Latin American countries, where credit policies produced adverse results in the past, an interesting question is whether such policies should be given another chance. Could credit policies in Latin America be more successful in the future if they are better managed and the lessons of Japan and Korea are heeded?

In my view, the market reforms that have been under way in the region over the past 15 years or so suggest that any temptation to revive credit policies and assign them a big role in the financial system should be resisted. On the contrary, if there are obstacles to the financing of small and expanding firms, policymakers should focus their efforts on taking all appropriate measures to remove those obstacles.

There is one fundamental reason for this. Several Latin American countries have implemented (or are about to implement) a decisive reform of their pension systems. The details differ from country to country. Except for Chile, the reforms are very young and pretty fluid in some countries (e.g., Argentina, Colombia and Peru) and are imminent but not yet operational in others (e.g., Bolivia, Ecuador and Mexico). But the reforms have one feature in common, that is, the expected generation of large pools of long-term financial resources and the transformation in the functioning of financial markets that they imply.

In Chile, the combined resources of institutional investors (pension funds, insurance companies and mutual funds) exceed 60 percent of GDP. It is clear that countries with reformed pension systems can no longer complain about a shortage of term finance. If anything, the problem may be the exact opposite: an overabundance of term funds. The challenge is to find ways to allocate these funds in highly profitable investments that achieve positive externalities and overcome the informational and other problems of financial markets.

There are several measures that countries need to take in this respect. First, they need to maintain macroeconomic stability because this is a fundamental precondition for the success of pension reform as well as all other economic and social reforms. Second, they need to facilitate the creation of vehicles that will enable pension funds and other institutional investors to finance new and expanding firms. Such vehicles include leasing, factoring, venture capital, and project finance companies as well as special institutions that may have a basic endowment capital but are otherwise required to raise additional funds on market terms and conditions. Third, they need to strengthen their regulatory and supervisory systems to ensure that pension funds and other institutions are safe and operate in the best interests of their members. Fourth, they need to take legal measures to facilitate the development and use of asset-backed securities. Fifth, they need to streamline their legal systems to permit the creation of collateral security interests, their public registration and their speedy realization. And, finally, they need to improve the flow of reliable credit information, not only through better accounting, auditing and disclosure standards for larger corporations, but also through the creation of credit reporting systems and credit information exchanges that will allow smaller firms to establish a market reputation of a good credit record and timely payment of debts.

This is not the place to elaborate on the importance of these measures or on how they can be achieved. But in concluding this chapter I think it is important to bear in mind the historical context in which different policies are formulated and different reforms are pursued. There was clearly a time when well-designed and executed credit policies could have achieved great economic benefits. Also there was a time when unfunded or partially funded social security systems made economic sense. But in today's world, the role of credit policies as well as social pension systems is severely limited. Financial markets are now more robust and can support the creation and growth of funded pension systems, which can in turn contribute to the further modernization and greater efficiency of financial markets. The dynamic interaction between pension funds and financial markets can be exploited to create new instruments and institutions that will facilitate the financing of small and expanding firms as well as other sectors or segments of the economy that have positive externalities but suffer from informational problems. Measures that reinforce the functioning of markets seem to be more promising than measures to supplant them.

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SECTION TWO

Effective Intermediation and Innovation: The Effect of Government Intervention and Institutional Structure

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Effective Intermediation and Innovation: The Effect of Government Intervention and Institutional Structure

Section Two provides an analysis of the role of government oversight and institutional structure in determining the effectiveness of financial markets. In Chapter 5, “Effective Financial Intermediation,” Anthony Santomero of the Wharton School, University of Pennsylvania, examines the case for government intervention in financial markets. While there is a consensus that extreme levels of financial repression are harmful to markets, he notes that questions have been raised regarding the appropriate role of the government *vis-à-vis* private financial markets. Given the information problems extant in financial markets and the experience of East Asia with policy-based finance, several noted scholars have called for more active government involvement. Dr. Santomero examines the role of government intervention in financial markets in East Asia and concludes that there is little evidence that these interventions had any real impact on economic growth. The underlying emphasis on macroeconomic stability (together with societal structure) was more responsible for economic growth than financial interventions. It appears that the government’s policy-based interventions did not harm the economy, unlike more traditional interventions. Indeed, policy-based finance may be considered a well-conceived attempt by the governments of East Asia to approximate a market solution—many of the interventions instruments utilized embedded market elements.

Following a discussion of the appropriate role and costs of government intervention, Dr. Santomero concludes that “there is no substitute for proactive promarket regulation . . . It appears unlikely that [centralized controls] have much merit for Latin America. The governments should be supporting innovation, disclosure and transparency, and constructive regulation—using market signals where appropriate and maintaining market discipline.”

Chapter 6, “The Impact of Institutional Structure on Financial Innovation and Risk Sharing: A Comparison of the United States, Germany and Japan” was prepared by Franklin Allen, also of the Wharton School, University of Pennsylvania. This chapter addresses the question of what kind of financial system should be adopted in Latin America and the Caribbean. To answer this question, Dr. Allen looks at the structure of financial markets in the U.S. (market-based), Germany (bank-based) and Japan (government-influenced). He analyzes the historical context of financial markets in the three countries and develops a theoretical framework to explain the key differences among the systems and explore the strengths and weaknesses of each. These relative strengths and weaknesses are examined in terms of the allocation of resources, risk sharing, and corporate governance.

Several lessons for Latin America and the Caribbean emerge from Dr. Franklin’s analysis, including the desirability of a mixture between organized financial markets (for equities, bonds, commodities and derivative products) and financial intermediaries; the need to encourage equity, bond and other markets; the

need for a strong banking system (adequately capitalized with a limited probability of destabilizing banks runs); the importance of developing active markets for corporate control; and the need to keep direct government involvement to a *minimum*.

CHAPTER 5

Effective Financial Intermediation

by Anthony Santomero

The ongoing transformation of the Latin American and Caribbean economies is taking place against the backdrop of the rapid and successful development of economies throughout Asia. The experiences of these nations, beginning with Japan, and followed by Korea and the so called “Asian Tigers,” are inevitably used as points of comparison and contrast for the Latin American and Caribbean experience. This is perhaps nowhere more true than in the area of financial sector development. As Latin American and Caribbean countries restructure their financial markets, change their institutions and redesign their regulations, there is a natural tendency to look to the Asian miracle for role models and advice.

This tendency has been supported by recent retrospectives on the Asian markets by, for example, the World Bank (1993), Horuchi (1995) and Demetrades and Luntel (1995), in which the authors analyze the development of the miracle economies and the role that financial markets played in their success. Central to their analysis is the role of financial intermediaries in these economies and government’s involvement in these institutions. In all, there appear to be two key questions that must be addressed by Latin American policymakers. Should the governments of Latin America use proactive intervention in financial institutions as their Asian counterparts did during their rapid development phases? If so, what is the best type of intervention to enhance growth and minimize the cost of government involvement in the financial sector?

These questions might appear unusual to economists who have not kept up with the debate raging in the development literature. Most would have assumed that the seminal work of McKinnon (1973) and Shaw (1973) had laid these issues to rest. These authors’ treatment of financial repression and its negative effect on real growth and development clearly illustrated the undesirable effects of intervention, interest rate controls, and credit allocation schemes. Subsequent empirical work by Fry (1988) supported the view that financial repression and government intervention in the financial markets hampered development, and certainly did not enhance it. And, finally, the work of King and Levine (1993a, 1993b), although focused on a somewhat different part of the story, likewise offered little hope for those who harkened back to Prebisch’s view that rapid development required the control of the financial sector, including both credit availability and interest rates in general (Prebisch, 1947).

Yet, the interventionist view has reemerged as a result of the recent work on information theory, or rather, the effects of imperfect information on financial markets and credit allocation. Contributions such as Diamond and Dybvig (1983), Dewatripont and Tirole (1993), Merton and Bodie (1992), and Santomero (1991) show a clear connection between information problems and the need for appropriate government regulation. Researchers have used the existence of such imperfections as a rationalization for government intervention in the financial markets, making clear reference to the role of information as a public good.

Most notably, Stiglitz (1994) has used this theme to argue in favor of selective government intervention in the financial structure of developing economies, including the use of various types of credit allocation schemes, as well as expanded government oversight of credit institutions. As Edwards (1995) characterizes the Stiglitz perspective, information problems in the credit market have two central consequences:

“First, since financial institutions know it is difficult to monitor them when information is limited, they are tempted to act recklessly, either undertaking excessively risky actions or committing fraud. And, second, since the public is aware of the incentive problem facing financial institutions it entrusts them with fewer resources than it would under the hypothetical case of full information” (Edwards, 1995, p. 202).

In short, in the presence of imperfect information, financial institutions assume excessive risk and provide insufficient funds for development. If one adds the perspective of Bernanke and Gertler (1989, 1990), economic growth is lower, capital is constrained, and entrepreneurship is thwarted as a result of the financial institution sector's structural problems.

All of this is particularly troublesome for economies that are primarily bank or, more correctly, financial institution dependent. In such cases, the distortions associated with information problems in the capital markets are likely to translate into large macroeconomic effects and substantially lower economic growth. Unfortunately, most of the Latin American and Caribbean countries are of this type. In fact, as a broad generalization, it can be asserted that for most Latin American countries, indirect lending through the financial intermediary sector is the dominant source of resources. This view of the region has recently been bolstered by a review of these countries in the *Economist* that asserts: “Latin America has an overwhelming bank dominated financial system. Except in Chile, banks provide virtually the only mechanism through which people can formally save and borrow . . .” (*Economist*, 1995, p. 6). Therefore, proper regulation of and intervention in the Latin American and Caribbean intermediation sector is central to enhancing the performance of the financial markets and the real economy.

Approaches to Regulation

How should such intervention take place? This is the key question to be addressed here. Two answers quickly emerge. The first argues in favor of broad intervention and increased centralized control of credit allocation and the interest rates charged for such credit. The second offers a more constructive, market-based regulatory regime, favoring the remediation of market failure problems and/or information imperfections without centralization of both credit allocation and its pricing.

Proponents of the first approach look to the Asian development experience to guide policymakers in both Central and South America. To them, the East Asian model argues in favor of credit allocation, and both the regulation and control of interest rates. In fact, it has been offered as the most successful version of central control of the credit market. Yet, the recent, perhaps revisionist, perspective of the Asian Tigers' experience (see, for example, World Bank, 1993), does not support their views. Rather, it argues that the key determinant of the success of these economies was sound fundamental macroeconomic policies. These enhanced the working of the market, increased the aggregate amount and quality of information, and fostered domestic, as well as international, competitive discipline.

Yet, proponents of this latter view do admit that financial market intervention did seem to be of some help. "Our judgment is that in a few economies, mainly in Northeast Asia, in some instances, government intervention resulted in higher and more equal growth than would otherwise have occurred . . ." (World Bank, 1993, p. 6). They go on to emphasize, however, that the intervention was of a unique kind. Notwithstanding the rhetoric, the portions of the regulatory structure which were centralized did not work particularly well in their judgment. On the other hand, regulations which fostered market-type solutions proved to be supportive and constructive. They enhanced allocational efficiency and the role of the financial sector. In the end, they argue that the Asian experience was, in fact, not an experiment with centralization and nonmarket mandates. Rather, it was a carefully crafted attempt by knowledgeable regulators and policymakers to develop rules and regulations that supported market solutions. It was identical to the market-remediation approach that some have viewed as the antithesis of the Asian Tiger model.

It is this approach that they have proposed to apply elsewhere and is proposed here for Latin America. Exactly how can this be done? The answer appears to be that either the regulatory structure needs to replicate the first best allocative functions of the financial sector or enhance its ability to achieve this allocative efficiency by offsetting structural impediments to this goal. In the first approach, centralized allocation of resources requires that the government structure essentially act "as if" it were the market. This, in turn, presumes that the government sector, or the professional bureaucracy, has the information, ability, and will to impose market solutions on an inherently political process of industry and firm selection. Not surprisingly, therefore, proponents of this approach frequently call for the increased

professionalism of the government sector, and reviews of the Asian experience often make reference to their success in this area (World Bank, 1993).

Yet, such a transformation of the government bureaucracy cannot be achieved on demand, as it is as much a cultural attribute as it is a technical requirement of the government sector (World Bank, 1993). Proponents of centralized credit allocation in the Latin American context will find that a transference of the Asian experience may be quite difficult. In fact, the *Economist* summed up their problem this way:

“The financial sector has played a notable role in perpetuating Latin America’s economic ills in three ways. First, the continent’s short-termist people have saved too little, preferring to consume today rather than put money away for tomorrow. But, thanks to inflation, even those who have saved, notably the rich, have done so abroad rather than at home. Second, savings (whether local or imported from foreigners) have been too easily scooped up by profligate governments. And third, the financial markets and institutions through which savings are transformed into investments have been depressingly thin. Banks are weak because no one trusts them with their money, and because they have been the object of continual government interference. As a result of these weaknesses, any loss of confidence (among foreigners or locals) has tended to develop into a fully-fledged crisis rather than a bout of manageability. That has given Latin America its tendency towards boom and bust” (Economist, 1995, p. 4).

This realization has led some experts to foster policies which improve the functioning of the market, rather than replacing it with a government bureaucracy and its attendant shortcomings. This point of view is neatly captured by Edwards:

“In designing regulatory legislation for the financial sector, it is important to recognize that, to a large extent, the inadequate availability of information can be reduced significantly through actions mandated by the government but undertaken by the private sector itself. The use of credit-rating agencies and outside auditors to monitor the accounts of financial institutions are only two examples of quasi self-regulation. The long history in Latin America strongly suggests that over regulating the financial sector, especially intervening through direct government actions, can be disastrous. It can negatively affect the efficiency of the capital market, while at the same time creating rent seeking and heightening corruption” (Edwards, 1995, p. 202).

To accomplish this, however, requires an appreciation of the role played by financial institutions in the capital market and how it can be enhanced by a supportive regulatory regime. Toward this end, let us review current understanding

of the functions performed by financial institutions with an eye toward enhancing their ability to perform these functions through an appropriate regulatory regime.

Role of Financial Intermediaries

The current view of the role of financial intermediaries is that they serve two primary functions. First and foremost, they are generators or creators of assets. These assets are obtained from either the government, to finance deficits, or from the private sector. In the latter case, they are expected to screen the set of borrowing opportunities presented to them, using an expertise and specific capital that is unique to this sector (Diamond, 1984; Bhattacharya and Thakor, 1993). Projects found worthy are financed and monitored until repayment. This subsequent phase of the lending function, ongoing servicing and monitoring is critical for a number of reasons. First, once the loan is made, it is frequently illiquid and difficult to value without substantial effort (Gorton and Pennacchi, 1990). Second, such oversight by firms that are responsible for financing the investment project often leads to higher returns from the endeavor, as investors respond to ongoing monitoring by increasing effort and closer adherence to the proposed purpose of the loan (Allen and Gale, 1988). In both cases, the existence of a monitoring institution improves the performance of the project returns accruing to the stakeholders of the intermediary itself.

The second function of the intermediary sector is the channeling of savings resources to a higher purpose. This is achieved in two distinct ways. For transaction balances, the financial sector has developed the capacity to use idle balances, even while the payment system functions efficiently. From the perspective of the institution, it provides depository services in order to finance the lending activity outlined above. Yet, the fact that financial institutions are central to the clearing process suggests a need for regulatory concern and oversight, viz., the integrity of the payment system (Goodfriend, 1989). For standard savings balances, return must warrant risk and delayed consumption. The institutions offer standard financial assets to the public which must be priced efficiently. The benefits offered to the savings sector include (hopefully) positive returns for deferred consumption, a return to risk-taking, and perhaps some liability transfer services, i.e., payment-clearing services.

As an intermediary, the financial institution provides both of these functions simultaneously; i.e., it makes loans and assumes liabilities. In fact, it often does so with assets that have maturity lengths that differ substantially from the average maturity of its liabilities. In so doing, the standard asset transformation function includes maturity transformation, as well as resource mobilization. While these can be viewed as mostly complementary services, at times the use of relatively liquid liabilities to finance illiquid and longer-term risk assets generates an inherent instability in the system (Diamond and Dybvig, 1983; Gorton, 1988). Yet, it is central to providing the economy its value-added activity of mobilizing savings

assets into productive real investment. Regulation and market intervention aimed at encouraging appropriate risk-taking and risk-evaluation activity must be imposed in a way that supports its two key functions and improves the sector's ability to provide needed capital to capital-constrained firms. However, given the above description of functions performed by the sector, it should be transparent that some regulatory oversight is appropriate.

Why Financial Institutions Warrant Oversight

As noted above, financial institutions are structurally vulnerable because they finance holdings of imperfectly marketable direct claims with short-term liabilities that are viewed as redeemable at par. In addition, they provide the valuable service of maturity transformation which is mutually beneficial to borrowers and savers but which may, nonetheless, place the financial institution itself in jeopardy (Kareken and Wallace, 1978; Jacklin, 1987; Santomero, 1992).

In so doing, imperfect marketability is likely a fundamental characteristic of most of the direct claims held by these institutions. The imperfect marketability of most of the nongovernment direct claims held by financial institutions means that the market does not provide direct information about the value of a financial firm's assets. Therefore, holders of indirect claims (liability holders) cannot readily evaluate the solvency of the institution to affirm that the market value of its assets exceeds the promised value of its aggregate liabilities (Allen and Udell, 1993; Santomero and Trester, 1997).

Depositors and many other liability holders place funds in these institutions fully expecting to be able to withdraw their deposits whenever they choose. Frequently, their horizon of investment is uncertain and cannot be clearly established at the outset. Accordingly, the financial institution is left in the awkward position of investing in long-term, imperfectly marketable assets funded by liabilities with a perceived short, but uncertain maturity. If withdrawals are purely random, as they are likely to be most of the time, they may be statistically predictable. However, if liability holders become concerned about the solvency of the institution, withdrawals may become systematic and jeopardize the liquidity and solvency of the entire institution (Gorton, 1988; Jacklin and Battacharya, 1988).

For this very reason, the management of an institution which holds imperfectly marketable assets may wish to be less than completely forthcoming. It may attempt to exercise control over information critical to estimating the value of its assets, and it may be tempted to conceal information regarding the deterioration of value. This may be done in the hope that delaying the release of information will give assets time to recover and thus avert giving liability holders an incentive to run.

Investors, of course, are aware that the financial institution's management has both the incentive and capacity to conceal a decline in the value of its imperfectly marketable direct claims. They are also aware that these same institutions are usually

highly leveraged, so that a relatively small percentage decline in the value of the institution's direct claims results in a much larger percentage decline in its net worth. For this reason, as Calomiris and Kahn (1991) illustrate, many depositors require that much of their deposits be held in demand form. And, the same is true for other puttable liabilities at nonbanking financial institutions. If bad news casts doubt on the value of the institution's direct claims, these creditors have a mechanism to withdraw their resources from the troubled firm. This may be accomplished quickly, as soon as they observe an action which reduces their estimate of the institution's net worth, despite assertions by the institution's management that the firm is solvent.

If creditors could not demand immediate repayment of their claims at par, the institution would not be seriously damaged by the loss of liability holders' confidence. With time to make a convincing case, the financial institution might be able to persuade creditors that its net worth is truly positive. Even if it cannot, a solvent institution can liquidate direct claims without suffering loss. But if investors can present their claims for immediate redemption at par, they may force the financial institution to make a hurried liquidation of imperfectly marketable direct claims at a loss. Alternatively, they may force the institution to borrow at rates sharply higher than it customarily pays or call in loans before the borrower's investment matures.

Runs, once begun, tend to be self-reinforcing. News that the depository institution is selling direct claims at distressed prices or is borrowing at very high rates will further undermine the confidence of current and potential depositors. Even those who believe that, with sufficient time, the financial institution would be able to redeem all of its liabilities, have a motive to join the run. They have reason to fear that the costs from the hurried liquidation of direct claims in response to the run by other creditors might render such an institution insolvent. This is the story that Diamond and Dybvig (1983) relate so forcefully.

Sophisticated investors know that illiquidity losses tend to get larger as the run goes on because the most marketable direct claims are sold first. They also know that as an institution's net worth approaches zero, the depository institution's managers may be tempted to take increasingly desperate gambles to stay in business (Herring and Vankudre, 1987). Thus, the perception of possible insolvency resulting from a decline in asset quality, whether true or not, can become a self-fulfilling prophecy by inducing creditors to take actions which erode the institution's net worth.

This vulnerability to runs is more than the strictly private concern of an individual depository institution and its customers. It becomes a public policy concern when a loss of confidence in the solvency of one institution may lead to a contagious loss of confidence in other institutions. Contagion may occur through three channels: (a) financial institutions lose reserves because cash drains from failing institutions are not redeposited in other institutions; (b) institutions that have or are suspected to have claims against failing institutions are then vulnerable in the second tier of the crisis; and, (c) creditors at other institutions suspect that their institutions are exposed to the same shocks as the failing institution, and run without

concern other than the legitimacy of their suspicion. This danger is particularly acute for commercial banks operating in the payments-clearing system in some countries where intra-day extensions of interbank credits are sometimes very large relative to the settling depository institution's capital (Humphrey, 1987).

This potential for contagion in the interbank market is heightened by the lack of timely data on interfirm exposures. When one institution gets into trouble, it is often very difficult for another institution to determine its own aggregate exposure to this institution, let alone the exposures to this institution or other institutions on which it may hold claims. Nonbank creditors do not have access to timely information. Hence, any existing concerns about a particular institution's solvency would be heightened if another institution were to fail and it was suspected that the two institutions had substantial interbank dealings (Faulhaber, Phillips and Santomero, 1989).

Finally, a failure may also be contagious if other financial institutions are believed to have positions similar to the failing depository institution and therefore to have been weakened by the same economic disturbances (Gorton, 1988). This is a particularly serious problem when a large depository institution fails. The larger the institution, the greater the likelihood that its failure will attract public attention and undermine confidence in the financial system in general, and in similar large financial institutions in particular. Moreover, failures of large institutions are usually attributable to economic disturbances which affect the value of large categories of assets rather than to embezzlement or other idiosyncratic causes. Since large institutions compete in the same national and international markets, they face generally similar cost and demand conditions and tend to have similar portfolios (Mayer, 1975).

The Role of the Regulatory Structure in Financial Stability

While the potential for contagion is clear, it does not necessarily follow that it has been a significant factor in financial crises—especially in recent years. The financial safety net, an elaborate set of institutional mechanisms for protecting the financial system, has largely succeeded in preventing contagious runs in the financial sector. Most countries have developed a regulatory structure that prevents the amplification of shocks through the financial system. This safety net can be viewed as a set of preventive measures that can and should be triggered at various stages in the evolution of a financial crisis.

The earliest stage of a financial crisis involves a financial institution's exposure to a shock which could jeopardize its solvency. This may occur because adverse changes in the economy have increased the probability of a shock. Alternatively, this may be the result of a sudden decline in value of assets which were forced upon the institution or chosen by its managers who had made conscious decisions to accept greater risk. In any case, the institution's capital position has declined. If the

occurrence of a shock causes creditors to question the solvency of an institution, a run may occur which can lead to the contagious transmission of liquidity problems, and perhaps solvency problems, throughout the financial system as discussed in the preceding section.

This chain of events has motivated the construction of the financial safety net. An appropriate regulatory structure is designed to stop this sequence of events at a number of points, and preserve the integrity of the financial structure and the health of the real economy. The components of a safety net are best described in terms of functions, because the agencies which perform a particular function vary across countries and some functions are shared among agencies within a particular country.

- The *Chartering Function* may screen out imprudent, incompetent or dishonest financial institution managers who would be likely to take on excessive insolvency exposure.
- In the event that some financial institution managers do attempt to expose their institutions to shocks that could jeopardize their solvency, the *Prudential Supervision Function* may prevent it.
- In the event that prudential supervision does not prevent an institution from assuming excessive insolvency exposure and a damaging shock occurs, the *Termination Authority* may terminate the license of the institution before it becomes insolvent and causes loss to creditors.
- Even if the Termination Authority acts too late to prevent losses, the explicit or implicit *Insurance Function* provided by official or private sources may prevent creditors, most often depositors, from running.
- Even if the depository institution closes abruptly, the *Insurance Function* may prevent contagion by sustaining the confidence of the creditors at other institutions which are thought to be similar.
- Even if runs occur at other institutions, the *Lender of Last Resort Function* may enable solvent institutions to meet the claims of liability holders, avoiding forced asset liquidations and depressed prices.
- Even if other failures occur, the *Monetary Authority* may prevent a shift in the public's demand for cash from reducing the volume of reserves available to the financial system as a whole, thereby confining the damage to the institutions affected directly by the original shock.

In the major industrialized countries, the various circuit breakers that comprise financial safety nets have been generally successful in preventing a problem at one institution from damaging the system as a whole. In the United States, for example, the safety net which was constructed in the 1930s has virtually eliminated the contagious transmission of shocks from one depository institution to the rest of the system. In the crisis associated with the 1987 market decline, the central bank made it clear that this security would also be offered to other members of the financial industry.

Governments clearly have an interest in maintaining the integrity of the financial sector, its assets, its unique capabilities, and, last but not least, its clearing and settlement system compatibility. They can clearly play a useful role in improving the stability of the system through structures and support mechanisms that enhance the depth of the market.

Costs of the Regulatory Structure

In an important sense, however, any regulatory regime can be too successful. An overly broad safety net which *de facto* replaces private sector assurances with government guarantees has three very negative effects on the integrity of the financial sector. First, if liability holders are confident that they will be protected against any loss, they have less incentive to monitor and discipline the behavior of institutions that hold their resources. Second, if government officials have any substantial impact on the fundamental lending decisions, they may view this as an opportunity to allocate credit to unworthy borrowers. They may do so because of their interest in political expediency or plain corruption. In any case, the effect is that the integrity of the credit process deteriorates, as does the quality of the assets held by the financial sector. This is further complicated by a third side effect of such overzealous government intervention, i.e., an erosion of the accountability of the firm's management. These individuals find that decisions are predetermined by an essentially political process for which they cannot realistically be held accountable. In addition, since liability holders do not demand greater compensation when their institutions take greater risks, management will feel free to assume positions of greater risk in the hope of achieving even higher expected returns.

The preceding section emphasized the rationale for regulating and supporting financial institutions, namely, a concern over the possibility of damaging externalities. The possibility that a liquidity shock could become contagious and damage the banking system led policymakers worldwide to consider social costs that no individual institution could be expected to take into account in making decisions. However, there are equally dangerous effects from excessive government involvement in financial sector decisions. By definition, as soon as the government begins to play a role in the sector, it reduces the accountability of management and the institution itself to the capital markets. In the name of the public good, the state of these institutions is frequently obfuscated and lending decisions are sometimes influenced by political considerations. At the limit, this type of government involvement completely removes decisions from the marketplace and reduces market discipline. Indeed, the intervention makes matters worse by removing all market response functions. In essence, regulation itself generates a need for regulation by eliminating market discipline from the concern of managers (Kareken and Wallace, 1978). It is often contended that the public interest is best served by politically motivated lending to specific firms or industries. However, here again

market forces are being thwarted and market discipline removed. There is little incentive for rational allocation of resources if reference can be made to externalities. There is little reason to demand repayment if loans are the result of government decisionmaking and not economics. Finally, there is little cause to worry if management knows that the institution itself is supported by government subsidy, oversight and safety net.

The result is a bad institutional structure. Lending is not made for the public good, but for political expediency. Everywhere in the process, incentives are set up to prevent the efficient utilization of society's scarce capital. And, in the end, the government must intervene to guarantee the creditors of the ill-fated institutions. This is the story of virtually every governmentally supported financial sector, from Portugal to Italy, Norway to Sweden. Government intervenes because the financial sector, broadly defined, has not devoted sufficient attention to asset quality. This is true throughout the lending process from the loan approval procedures used, to loan monitoring and collection. In many cases, loan concentration in allegedly key sectors has been fostered by public policy, so the lack of diversification has not been viewed as alarming. If large borrowers were having financial difficulties, these same firms were often granted extensions and concessions. It was, after all, a set of decisions that had been made for noneconomic reasons of public policy or political expediency.

The result is that the financial sector does not achieve the desired goal of efficient asset creation and fund allocation. The economy achieves subpar performance because scarce capital is being squandered on projects that may have had negative returns from the start.

Proponents of centralized decisionmaking would argue with this characterization. They have asserted that if the professional bureaucracy were properly trained, the outcome would exceed the private sector outcome. However, as was discussed above, the efficient allocation of financial resources is exceedingly difficult even in the best of circumstances. We have found, throughout history, that Plato's Philosopher-King rarely appears. It is equally unlikely that the all-knowing bureaucratic class will emerge. Such a class may be present in the Asian economies, defined today as the miracle economies or Asian Tigers. However, their performance was less due to efficient bureaucracy than to appropriate fundamental macroeconomic policies. The bureaucracy's reputation appears to have benefited from effects of those policies.

The challenge is to build a support system for the financial sector that ensures its stability but does not supersede its authority. The goal of regulation ought to be to offset negative externalities without creating too many new ones in the process.

Government's Role in Supporting Financial Innovations

There may also be a role for the government beyond its attempts to build an appropriate safety net around an inherently fragile system. It may, in fact, be able to foster improvement and innovation in a sector that has been virtually transformed in the last two decades. Advances in computer hardware and software, telecommunications, and financial theory have led to a rapid increase in the pace of innovation in the financial sector. Such change can be viewed as the result of attempts by the private sector to respond to opportunities that exist in the marketplace.

Altman (1987), Merton (1989), Santomero (1989) and others have identified several forces driving the innovation process. First, innovations have responded to market demands for risk-sharing, risk-pooling, hedging and intertemporal or spatial transfers of resources that are not currently available. Second, innovations have satisfied continuing needs for lower transaction costs or increased liquidity. Third, innovations have reduced asymmetric information between trading parties and improved the monitoring of the performance of principals by agents. Fourth, innovations have facilitated the avoidance of regulatory and accounting constraints and taxes.

Active investors in the world capital markets have seen substantial benefits from this period of change. They believe such innovations provide greater opportunities for entrepreneurs to obtain capital and offer a mechanism to ensure that corporate managers are more accountable to shareholders. They have, undoubtedly, increased the extent to which entrepreneurs have been able to raise capital and made corporate managers more accountable to investors.

Entrepreneurs generally introduce financial innovations but, in some important instances, governments have successfully taken an active role in the innovation process. For example, the U.S. government played a leading part in securitizing mortgages so that what had been a very segmented set of local markets became a highly integrated national market. And, in the United Kingdom, the government made an important contribution to the array of investment opportunities by issuing indexed bonds, thus providing investors with a hedge against the risk of general inflation which no private party could credibly supply. This role of the government within the financial system is often neglected, but it offers important potential benefits. Encouragement of financial innovations can add substantial value to both the financial sector and to the broader economy.

However, there are some cases where the government may need to play a role in slowing the speed with which innovations are introduced in order to assure the integrity of the market. The potential problem stems from the fact that innovations are introduced as soon as they are privately profitable, without regard to their effect on the financial infrastructure. This can be yet another variant of the public goods problem: although it is in everyone's interest to have a secure, reliable financial infrastructure, the entrepreneur who introduces a financial innovation will usually lack an incentive to consider the possible impact of the innovation on the financial infrastructure.

Here is an analogy. It is as if an inventor discovers a new, super-powerful truck which can carry ten times the load of normal trucks at a much lower per-unit cost. The invention is enormously profitable to the inventor; but, the super-powerful truck is very close to the weight limit of the bridge which connects two major cities. The inventor does not have an incentive to take this factor into account; but, when a competitor introduces a similar, super-powerful truck and the two trucks cross the bridge at the same time, the bridge may collapse, causing loss not only to the owners of the innovative new products, but also to the vital flow of normal traffic. The role of government in preventing such catastrophes is very important, but it requires a careful balancing of safety against efficiency. The easy solution for government is to ban all trucks above a certain weight limit. Indeed, in the short-run this may be the only workable remedy. But, if the invention offers sufficient efficiency gains, the government should also invest in improving the infrastructure to accommodate the innovation. Limits may occasionally be necessary; but they should be transient (Merton, 1990).

Regulatory attempts to constrain innovations should be made with extreme caution; indeed, innovation should be encouraged. To the extent that innovations are a response to market forces, attempts to prohibit them may simply cause foreign and domestic capital to flee offshore. Domestic firms and consequently the growth of the real sector may suffer. To the extent that these innovations are a response to the last factor listed above—distortions in the national regulatory, tax or accounting system—the best response is to correct the distortions. But if that is not feasible, the innovations may represent a second-best solution. Although some innovations waste resources and diminish social welfare, this is not inevitably the case. When regulatory constraints are inefficient, even innovations motivated by these factors may enhance the efficiency of the economy.

Price of Inefficient Regulation

Clumsily applied, any of the regulatory interventions described in the preceding sections can produce dysfunctional results and undermine the performance, competitive position or even viability of financial institutions. For example, if the prudential function is used as an asset allocation system, all of the ills addressed above will inevitably follow. This led Western Europe to retreat from this method of subsidized financing, which had been common prior to the 1970s. The procedure was rife with politics and special interest and ultimately did not appear to have the desired outcome. In the end, it transferred wealth from either the users of financial services or the government to the stakeholders of the preferred sector. Moreover, because the designated firms or industries are protected from new entrants, firms in these categories and the financial sector that supports them are likely to be less innovative in serving the changing needs of customers. The world has seen any number of such cases, including ill-conceived large scale government projects, or targeted industries which have resulted in staggering losses to lending institutions.

These, in turn, had to be covered by other participants in the financial markets and, in some cases, the government itself. The macroeconomic effects of such policies are a lower capital stock and standard of living for the economy as a whole.

Similarly, regulations that place restrictions on the kinds of assets in which financial institutions are permitted to invest require them to hold assets which they would otherwise avoid holding. Alternatively, they may be prohibited from acquiring assets which they would prefer. Overly restrictive enforcement of policies may also reduce the flow of risk capital to the real sector and reduce overall real sector investment. In each case, the allocation of capital will be distorted, relative to the competitive equilibrium, and the economy may be less productive than it could be.

In addition, the general level of supervision may also impose heavy direct costs on financial institutions in terms of auditing costs, filing requirements and examination fees. These side effects of regulation may reduce overall efficiency and cause regulated institutions to lose market share. Excessive regulation can and has rendered some financial services completely uneconomical in some jurisdictions.

Badly administrated termination and insurance policies may also have costs. Delays in terminating insolvent institutions may result in a misallocation of funds, as desperate managers take increasingly risky gambles in order to prevent closure. Because shareholders are protected by limited liability, they may perceive high-risk activities as their only hope of salvation. Likewise, ineptly administered government guarantees may distort incentives for risk-taking in both the real sector and its financial counterparts. Plus, it may result in enormous transfers of wealth from conservatively managed institutions to risky institutions, and potentially even from taxpayers to creditors of involved firms. The thrift crisis in the United States provides dramatic evidence of the enormous potential costs of a badly managed insurance system and a failure to close insured institutions when they become insolvent.

The provision of lender-of-last resort assistance to insolvent institutions also has potential costs. This activity may undercut what would otherwise be a favorable signal to the market, thus weakening the ability of the regulatory authority to deal with systemic shocks. It also may permit incompetently managed or excessively risky institutions to continue misallocating funds long after they would have been forced to close by market forces. And, perhaps worst of all, it may lead to expectations of future bailouts and intensify political pressures for such bailouts. This may be the legacy of the events in Norway and Sweden. By way of contrast, Denmark, by imposing market-based accounting and quick private sector resolution, avoided the crisis faced by other Scandinavian economies and has built a much stronger foundation for future growth.

There is no substitute for appropriate proactive pro-market regulation. Badly administrated support structures have ways of exacerbating an already difficult situation. And direct, centralized control of the financial structure and the lending process is doomed to failure because of the negative incentive effects that are

unleashed by such a system. Centralized controls have been tried and abandoned in Western Europe. They have been touted, but have been relatively ineffective, in Asia. It appears unlikely that they have much merit for Latin America or the Caribbean.

Some Final Comments

From the time of Adam Smith, policymakers have been looking for mechanisms to replace the market. Arguments have been offered that a market-based solution ignores important social factors, externalities as they are now called. However, the replacement must be better than the alternative. To be first-best it must be able to obtain and process all of the information absorbed in market prices and arrive at a socially desirable outcome. A bureaucratic structure must be knowledgeable and professional to obtain these results. In truth, this cannot really be expected from any human endeavor.

We are, therefore, left to a second-best world. Here, we must choose between one that is based on bureaucracies where markets are removed, or one that is based on markets, where bureaucrats try to affect outcomes and enhance or alter market signals. Experience from North America and Western Europe clearly favors the latter. Without doubt, both the U.S.S.R. and Chinese experiences do likewise. Whether the Asian miracles are a counter example is debatable. The result is much less clear cut.

In any case, the prudent course for Latin America and the Caribbean appears to be toward constructive regulation of the financial sector, not centralization. As is evident from the discussion above, even market-based regulation involves trade-offs between stability and market discipline. It would be a mistake to remove the latter. In the final analysis, no stability is offered by the removal of market signals and the discipline of the price system. The appearance of stability offered by centralization is only an illusion.

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CHAPTER 6

Impact of Institutional Structure on Financial Innovation and Risk Sharing: A Comparison of the United States, Germany and Japan

by Franklin Allen

One of the most interesting episodes in recent economic history has been the spectacular growth of many Asian countries during the last three decades. This high performing group includes Japan, which has one of the most advanced economies in the world, the Four Tigers (Hong Kong, Korea, Singapore and Taiwan), and the Newly Industrializing Economies of Indonesia, Malaysia and Thailand. A World Bank report published in 1993 discusses a number of factors that contributed to this success. Two of the crucial ones are macroeconomic stability, and an effective and secure bank-based financial system.

The most important macroeconomic factors were low inflation rates and competitive exchange rates, which appear to have been achieved through prudent fiscal policies. The financial systems in these countries were mainly bank-based. Governments intervened to ensure the soundness of institutions, to encourage savings and to channel funds to sectors where investment was regarded as important.

There were a number of other important factors identified in the World Bank report. Competition among exporting firms was encouraged by explicit contests for rights to export, with success being determined by the ability to compete in the world market. Good education systems provided a relative abundance of skilled workers. Price distortions were limited so that wages and interest rates reflected the scarcities of labor and capital. Domestic firms were open to the adoption of foreign technology. The bias against agriculture was limited. As a result, the sector continued to generate jobs and was not a source of displaced workers; rather laborers were attracted into manufacturing industries.

The success of the high performing group of East Asian economies in recent years contrasts with the experience of Latin America and the Caribbean. In the 1960s and 1970s, both groups of economies did well. According to Edwards (1995), between 1965 and 1980 Latin America and the Caribbean grew at a real annual rate of 6.0 percent, which was only slightly behind that of the East Asian countries of 7.2

percent (Edwards, 1995, Table 1-2, p. 4). However, since the early 1980s the Latin American countries have stagnated while the East Asian countries have continued to do well.

The earlier growth in Latin America and the Caribbean was achieved through policies that were significantly different from those of the East Asian countries. The Latin American and Caribbean development strategies were based on a high degree of protectionism and inward-looking policies, government-led industrialization, and broad intervention by governments in all aspects of economic life. This heavy state involvement was not built on a solid fiscal base. A significant proportion of government expenditures in many countries was provided through seigniorage. For example, 17.7 percent of Brazil's government revenue for the period 1971-1982 was provided by expanding the monetary base (Edwards, 1995, Table 4-4, p. 83). The comparable figure for Mexico during the same period was 21.2 percent. The practice of financing deficits through seigniorage led to high inflation rates and severe macroeconomic instability.

The high level of inflation became the focus of the financial system, and the traditional roles of allocating resources, sharing risks and corporate governance were to a large extent abrogated. For example, Brazil developed one of the most effective systems for clearing checks in the world. At the same time, raising investment funds became very difficult.

As a result of the problems of the 1980s, a new consensus is emerging in many Latin American countries. The need for macroeconomic stability and the desirability of outward looking policies is beginning to be recognized. One crucial issue that remains to be addressed is the type of financial system that should be adopted. Should the bank-based Asian model with a major degree of government intervention be emulated, or should the U.S. financial markets system be used as a model? The purpose of this chapter is to address this issue.

In the following section, the historical development of financial systems in the United States, Germany and Japan are considered. Next, an informal theoretical framework for comparing these three models is developed. Finally, the implications of this analysis are applied to identify the key structural elements for financial systems in Latin America and the Caribbean.

A Comparison of the United States, Germany and Japan

Allen and Gale (1995) characterize two extreme forms of financial systems. One is loosely modeled on the U.S. financial system and is referred to as "market-based." The other is loosely modeled on the German system and is referred to as "bank-based." Japan represents a third type of system where the government has played a more extensive role than in the other two. It might be termed as "government-influenced." In order to see which elements of these systems the countries of Latin America and the Caribbean might find it useful to adopt, it is helpful to look at the historical

development of each.

Financial crises in the form of banking panics and stock market bubbles have had an important influence on the development of financial systems in all these countries. Banking panics were endemic to most countries prior to the twentieth century. The development of a concentrated banking sector and central banking practices designed to increase liquidity in times of crisis (in particular by the Bank of England) in the nineteenth century meant that in most countries, banking panics did not become a severe problem. However, in the United States, which did not have a central bank until relatively late, and in Japan, which started its financial development only recently, these problems persisted into the twentieth century.

Dramatic examples of bubbles have not occurred as frequently as banking panics, but when they have occurred, they have had a significant effect on the development of financial systems. Both the South Sea Bubble in England in 1720 and the Mississippi Bubble in France at about the same time led to severe skepticism about the role of markets. In both cases stock prices rose dramatically and then collapsed in a very short period of time. Many people had borrowed to invest in these stocks during the rise, and with the collapse were forced into default. The resulting bankruptcies had an effect on the real economies and caused a disruption in economic activity. The English experience also had an effect on the United States which, at the time, was subject to British law. The French experience affected Germany because many German bankers were educated in France.

In England, the South Sea Act, which was passed in response to the South Sea Bubble, made it very difficult for firms to raise money in the capital markets. It was not until the heavy needs for capital for the railways spurred the repeal of the act that private capital markets were allowed to develop. France's experience with the Mississippi Bubble profoundly affected the subsequent development of the stock market and banks in Continental Europe. After the collapse, an official bourse was set up to allow for the regulation of the market in company shares. The advent of the French Revolution led to the closing of the bourse and the suppression of public companies. The bourse did subsequently reopen, but markets for company securities did not develop significantly throughout the nineteenth and twentieth centuries until fairly recently.

Although banking panics appear to have been eliminated, the U.S. stock market crash of 1987 and the early 1990s suggest that they remain very much problems of the present.

The United States

The characterization of the United States as a market-based system is, of course, a simplification. While banks have historically played an important role in the U.S. economy, and continue to do so today, the U.S. banking industry is significantly different from that of most other industrialized countries. As Roe (1994) and others have documented, the reasons for this are largely due to a different political history.

Alexander Hamilton was influenced by British experience with the Bank of England and after the American Revolution advocated a large federally chartered bank with branches all over the country. This led to the foundation of the First Bank of the United States (1791-1811) and later the Second Bank of the United States (1816-1836). However, there was considerable distrust of the concentration of power these institutions represented. In a report on the Second Bank, John Quincy Adams wrote "Power for good, is power for evil, even in the hands of Omnipotence" (Timberlake, 1978, p. 9). The controversy came to a head in 1832 during the debate on the rechartering of the Second Bank. Although the bill was passed by Congress, it was vetoed by President Jackson and the veto was not overturned. Since then, there has been a strong bias toward decentralization of the banking system and an aversion to powerful institutions of any kind. The resulting weakness of banks, compared to banks in other countries, has contributed to the development of sophisticated financial markets.

Throughout the nineteenth century the U.S. banking system was highly fragmented. Unlike other industrializing countries, the U.S. failed to develop nationwide banks with extensive branch networks. Prior to the Civil War there was no national system; states were free to regulate their own banking systems. Many states adopted a "free banking" system which allowed free entry. There were serious banking panics in 1837 and 1857, which were followed by depressions and significant economic disruption.

The advent of the Civil War in 1861 and the need to finance it significantly changed the role of the federal government in the financial system. The National Bank Acts of 1863 and 1864 set up a national banking system that granted limited powers to banks. In particular, the 1864 act was interpreted as confining each to a single location. When the question of whether banks could hold equity arose, the Supreme Court ruled that since the 1864 act had not specifically granted this right, they could not.

The creation of the national banking system did not prevent panics and associated economic disruptions and depressions. There were panics in 1873, 1884, 1893 and 1907. After the crisis of 1907, a European banker summed up European frustration with the inefficiencies of the U.S. banking system by declaring that the U.S. was "a great financial nuisance." Finally in 1913, the Federal Reserve System was created.

The Federal Reserve System differed from traditional central banks, like the Bank of England, in its regional organization and decentralized decisionmaking. During the years immediately after its creation, it did not develop the ability to prevent banking panics. A major crisis in 1933 led to the closing of banks for an extended period just after Franklin D. Roosevelt took office. The problems faced by the banking system led to the enactment of the Glass-Steagall Act of 1933, which introduced deposit insurance and required the separation of commercial and investment banking operations. The Banking Act of 1935 extended the powers of the

Federal Reserve System and changed the way it operated. These reforms finally eliminated banking panics almost seventy years later than in the United Kingdom.

Just as wars between England and France in the eighteenth century led to the development of the London capital markets, the U.S. Civil War helped develop New York's markets. In addition, because of the banking system's weakness and the ban on bank equity holding, stemming from the National Bank Act of 1864, the role of financial markets was strengthened. As a result of the role it played in financing the war effort, New York supplanted London as the world's leading financial markets center during the first World War.

The great crash of 1929, like the South Sea and Mississippi Bubbles two centuries before, promoted the development of U.S. financial markets, increased their importance, and led to the creation of the Securities and Exchange Commission (SEC) and the regulation of financial markets. The Glass-Steagall Act, together with continuing support for restrictions on interstate banking, ensured that banks were restricted even more. It can also be argued that the creation of the SEC helped ensure the integrity of the markets. Continued financial innovation in terms of the introduction of organized options and financial futures markets has helped to strengthen the market orientation of the U.S. financial system.

Although the crash of 1987 was of greater magnitude than that of 1929, it did not have a significant effect on the real economy. Nevertheless, it does illustrate that crises can still occur in financial markets even though banking panics appear to have been eliminated.

Germany

Unlike Britain and France, Germany was politically fragmented during most of the nineteenth century. As a result, its financial system did not develop until relatively late. When it did, it was heavily influenced by the French system. Prior to its unification in 1871, Germany was made up of at least 30 principalities, republics and kingdoms. These ranged in size from cities like Frankfurt to large states such as Prussia. At the beginning of the nineteenth century there were at least four major financial centers in Germany: Frankfurt, Cologne, Hamburg and Berlin. The most important financial institutions at this time were family-dominated private banks: the Rothschilds in Frankfurt, the Oppenheims in Cologne, Heine and Warburg in Hamburg and Bleichröder in Berlin.

Joint stock banks were not introduced to Germany until the middle of the nineteenth century when the Schaffhausen'schen Bank was created in Prussia in 1848 with wide powers. Building on this model, a wave of bank formation ensued from 1850-1857. Although halted by a financial crisis in 1857, a second wave of bank formations took place between 1866 and 1873, spurred by the unification of the country and the creation of a single currency. Many of the German bankers of this period had spent time in France and were influenced by the French experience with the *Crédit Mobilier*.

In 1838, Jacques Laffite, a former governor of the Bank of France, founded the Caisse Générale du Commerce et de L'Industrie. Its purpose was to lend long-term to industry. It failed in 1848, a year after Laffite's death, but the idea was resurrected by the Pereire brothers with the support of Louis Napoleon. In 1852, shortly after Louis Napoleon became emperor of the Second Empire, the brothers opened the Crédit Mobilier, which played a large part in financing French railways and other public works. Cameron (1961) has emphasized that it served as the prototype for industrial banks in Germany and the rest of Europe.

The Dresdener Bank, one of the major German banks, was specifically set up to pursue industrial lending. Other banks such as the Commerz Bank of Hamburg and the Deutsche Bank of Berlin were set up to help provide finance for foreign trade but soon turned to financing industry when they found it difficult to challenge British and French dominance in this area.

German financial markets were undeveloped at this time relative to those in Britain. Joint stock companies were rare in Germany prior to 1850. The markets that did exist, primarily in Frankfurt and Berlin, were mostly for various forms of government debt, for loans to princes, towns and foreign states. The financial market in Berlin did play some role in financing German railways, but this did not develop into extensive financing of industry.

Links between banks and industry which developed into the "Hausbank" system grew substantially during this period. Banks were represented on the boards of companies and industrialists held seats on the boards of banks. This interlinkage was widespread but not universal. Some firms, like Thyssen and Stinnes in the iron and steel industry, and some industries, such as chemicals, avoided this type of involvement. Most firms though, relied primarily on bank financing and internal finance. Presumably the existence of cartels in many industries (which were legal at this time) enhanced the profitability of firms and made internal finance that much easier.

From the second wave of bank formation around the time of unification until the beginning of the twentieth century, German banks formed national networks just as they did in England and France. If anything, this process went somewhat more quickly in Germany.

The great industrial banks were not the only ones that developed during the nineteenth century. The *Landschaften* (land companies) were created as mortgage banks in Prussia in the first decades of the century. Cooperative banks were set up around the middle of the century to provide rural credit for peasants and to help small shopkeepers and tradesmen. These institutions have formed a significant part of the German banking system ever since.

Considerable disruption was caused by the Allied attempt to break up the large German banks at the end of the Second World War. These attempts were not successful in the long run. The different units reunited after the end of the occupation and the links between big banks and industry, as well as the role played by financial markets in government debt financing, soon resumed. However, the isolation of Berlin meant that the financial center shifted from Berlin to Frankfurt.

As a result, the German financial system is now dominated by banks, and the banking industry is relatively concentrated. Banks that are operated in the public interest, such as the *Landschaften* and cooperative banks, as well as profit maximizing banks play an important role. Banks have little competition from financial markets, which are relatively unimportant. Households have access to a narrow range of investment vehicles. Banks are heavily involved in the control of industry and form long-term relationships with firms. There is little publicly available information about firms and there is no active market for corporate control.

Japan¹

The German and Japanese financial systems are often mentioned together as having typical bank-based financial systems when contrasted with U.S. style market-based systems. In fact, the historical development of the two countries' financial systems and the role of the government have been significantly different. In Germany, the *Hausbank* system developed in the private sector, whereas in Japan the government was instrumental in the development of the main bank system.

After the Meiji restoration in 1868, the Japanese government sought to establish a modern industrialized economy. As part of this strategy, western-style financial institutions were introduced. Entry into the banking industry was easy and there was little government regulation. Banking panics occurred three times in the 1920s: in 1920, 1923 and most seriously in 1927. A new banking law, administered by the Ministry of Finance, went into effect in January 1928 and was introduced to correct this problem. To reduce the large number of banks that existed then, the government adopted the principle of "one bank in one prefecture" giving banks a monopoly in a limited area. The necessary reduction in the number of banks was achieved through mergers, using public funds to facilitate the process. The government thus began to become directly involved in the financial system before the start of the war with China and the United States.

During the 1930s, financial markets, and particularly the issue of shares, played a relatively important role in funding industry. In the period 1931-1940, shares provided 31.7 percent of total funds, bonds 4.3 percent, loans from private financial institutions 27.3 percent and retained earnings 37.0 percent. After the war the proportion provided by shares was much smaller, of the order of 5-10 percent while the proportion provided by institutions and retained earnings increased substantially (Horiuchi, 1995, Table 2, p. 96).

During the early stage of wartime control, from 1937 to 1941, the Temporary Law of Fund Adjustment of 1937 extended government involvement further. The authorities' permission was required for all firms above a certain size to increase their equity base or merge. Perhaps more importantly, the law controlled loans to firms which were categorized as "favored permitted" or "proscribed." Major banks

¹ This section draws heavily on Horiuchi (1995).

belonging to the Zaibatsu groups resisted this government control because they did not want to concentrate their loans to (favored) munitions companies which they regarded as a poor risk. The government moved to counter this resistance and gradually introduced a system of central control of financial resources with the Bank of Japan playing a pivotal role. This process culminated in the Munitions Companies Designated Financial Institutions System in January 1944 under which each munitions company was assigned a major bank to take care of its financial needs. According to Hoshi, Kashyap and Loveman (1994), many of these relationships subsequently provided the foundations for the postwar “main bank” system.

The adjustment in the financial system after the war inevitably involved government intervention in deciding which assets and which liabilities could be written off by financial institutions. Economic reconstruction also led to substantial government involvement. The government became directly involved in allocating funds to industry through the establishment of the Reconstruction Financing Bank (RFB) in 1947, which allocated credit to industries perceived to be crucial to Japan’s postwar reconstruction. These included coal mining, electric power, iron and steel, and marine shipping. In 1951, the RFB’s role was assumed by the Japan Development Bank (JDB), which continued to lend to the same key industries as the RFB. After 1960, its role was extended to support the government’s industrial policy.

The General Headquarters of the Allied Occupation (GHQ) wanted Japan to develop a U.S. style securities markets which focussed on long-term lending, with banks undertaking short-term lending. However, as a practical matter, implementing this plan when a well-established banking system was already in place was very difficult.

The main problem the banking system faced at this time was the issue of maturity transformation. Firms needed long-term funds so that they could invest and grow without continually worrying about short-term factors. Investors, particularly households, wanted safe and liquid deposits. To help overcome this problem, the Long-Term Credit Banks Law was introduced in 1952. This allowed some special banks to raise funds by issuing long-term debentures rather than taking short-term deposits. These banks were then able to lend long-term.

As discussed above, the wartime system of credit allocation established a close relationship between firms and banks. This, together with the other post-war developments, led to the development of the main bank system. The main characteristics of this system are the long-term relationship between a bank and its client firm, the holding of both debt and equity by the bank, and the active intervention of the bank, should its client become financially distressed. It has been argued that this main bank relationship ensures that the bank acts as a delegated monitor and helps to overcome the agency problem between managers and the firm.

In addition to directly intervening in the allocation of capital through the RFB and JDB, the government also intervened in the financial system to keep interest rates low during the 1950s and 1960s. This had a number of effects, including

providing rents to banks and some transfer of income from banks to industrial firms. The rents to banks helped ensure their solvency and contributed to the stability of the system.

The Japanese government thus intervened much more in the financial system than was the case in the United States or Germany. Horiuchi (1995) argues that most of the direct allocation of funds was to industries such as coal mining, agriculture, forestry and fisheries, and marine transportation. These were not in the vanguard of Japan's industrial development. The JDB became involved in lending for the industrial policy promoted by the Ministry for International Trade and Industry (MITI). Although they succeeded in supporting some winners (such as numerical control machine tools), they also rejected many others, including requests for support from Toyota and Sony.

The majority of funds for investment were provided not by government-controlled banks such as the JDB, but by private banks. Although the government tried to affect the private sector's allocation of funds, there is not much evidence that it succeeded in altering what would have happened anyway, except in a few instances such as coal mining and shipbuilding.

In the middle of the 1960s, the Japanese government wanted to gain international recognition by, for example, joining the OECD. In order to do this it needed to relax its regulation of the financial system. During the years since, this relaxation has increased. Financial markets have steadily become more important as the restrictions on issuing bonds have been relaxed. At the same time main bank relationships have come under heavy strain and the system has begun to break down as large firms are increasingly able to rely on financial markets to raise funds.

A Theoretical Framework

The outline of the development of financial systems has illustrated three very distinct types. The next step is to outline a theoretical framework for considering the properties of each. It is usually argued that financial systems have three main roles, as follows: the allocation of resources across different sectors; risk sharing; and corporate governance. Each of these will be considered in turn.

Allocation of Resources

One of the basic functions of the financial system is to channel savings from households for investment in the most productive sectors of the economy and the most productive firms. It is traditionally argued that U.S.-style market systems provide the best incentives for the efficient use of resources. In the United States, extensive regulation by the SEC ensures that firms make large amounts of information available to the public. The wide availability of information helps firms make good decisions about investments and about whether to enter an industry.

In a bank-based system such as that of Germany, information is not as readily available. Relatively few firms are listed on stock exchanges, and those that are listed are not required to release much information. It would seem that firms would be at a significant disadvantage in terms of making investment and entry decisions. However, it can be argued that a German type of financial system, where a small number of banks play a prominent role, may permit some substitute mechanisms. If banks have a large amount of information about the profitability of firms, they can use this information either directly by advising firms or indirectly when they decide whether or not to grant loans to finance investments. Although substitute mechanisms allow duplication of many market functions, there remain some apparent disadvantages to reliance on intermediaries. Most importantly, without an active stock market it may be difficult to decide on appropriate risk-adjusted discount rates.

The Japanese financial system provides some insight into the operation of an alternative to banks and intermediaries, namely the allocation of resources to sectors by government-controlled institutions. As the discussion in the previous section showed, although this sometimes works, there are many cases where it has not. Moreover, other evidence from European countries, and in particular Eastern Europe, suggests this is not an effective means of allocating resources.

A standard assumption of traditional economic analysis is that production technologies are well known and managers are aware of the consequences of the actions they take. In traditional industries, such as agriculture, this is a reasonable assumption. In many modern, high-technology industries, it is not. An example is the biotechnology industry, where there is very little experience with the consequences of different managerial strategies.

Allen (1993) argues that bank-based systems, such as that of Germany, are much more suited to traditional industries, where there is consensus about policies; while financial market-based systems are more suited to dynamic industries where wide agreement is lacking. Stock markets provide an incentive for a wide range of people to undertake research and to check managerial actions. Some investors keep their information and views private. They buy and sell shares on the basis of this information and the profits they make compensate them for the expenses incurred in undertaking the research. Grossman and Stiglitz (1980) have shown how this information can be reflected in the firm's stock price. Firms that adopt managerial policies that are widely regarded to be good have a high stock price on average; firms which adopt policies that are thought to be bad have a low stock price on average. In addition to investors who keep their information to themselves and trade on the basis of it, there are also people who do research that is published in newsletters and distributed to clients in various other ways. This process encourages debate about how firms should be run. In general, the diversity of views and the process of debate can play an important role in checking the actions of managers. Even in industries where there are few firms and little past experience, this checking process favors consensus strategies and helps to reduce risk.

In contrast, when banks are responsible for monitoring firms, there is no equivalent to this broad-based checking process. The bank officers overseeing the loan will check what the firm managers are doing. When there is a well-established consensus concerning how the firm in question needs to be run, this monitoring by a limited number of bank officers may be adequate. In other cases, where departures are being made, monitoring by a limited number of outsiders may not be an adequate review of the activities of the firm's management. In the absence of disclosure associated with U.S. style stock markets, there is no public debate as to the appropriateness of various managerial strategies. In these circumstances, intermediaries may be a poor substitute for the market.

Risk Sharing

In addition to allocating resources between sectors, a major function of financial systems is to provide opportunities for risk sharing. Markets allow individuals to diversify portfolios, hedge idiosyncratic risks, and adjust the riskiness of portfolios to suit their risk tolerances. This can be termed *cross-sectional risk sharing*, because different individuals are exchanging risks at a given point in time. One of the important characteristics of the U.S. financial system is the enormous variety of financial products available to the average investor. The diversity of instruments and markets in the U.S. provides many opportunities for cross-sectional risk sharing.

In Germany, and until recently in Japan, the possibilities for cross-sectional risk sharing are more limited. Relatively few stocks are quoted on German stock exchanges and there are few mutual funds or other intermediaries which can provide direct ownership of stocks without high transaction costs. Trading futures and options is not a practical possibility for most investors. In short, investors have restricted opportunities to share risk cross-sectionally through markets. Most savings are in bank accounts which do not provide opportunities for hedging.

From the point of view of cross-sectional risk sharing, the U.S. model appears to offer a much richer menu of choices than the German model, and it is tempting to conclude that a market-based system provides superior risk sharing opportunities to an intermediary-based system. However, markets have their own limitations and if markets are incomplete or if participation in financial markets is incomplete, intermediaries may have some advantages in providing risk sharing or intertemporal smoothing.

When markets are incomplete or when market participation is incomplete, there may be a role for intermediaries to share risks that are too expensive to hedge through the market. However, it is not clear that investors will actually be worse off in an economy with highly developed financial markets. That is, one might expect that a larger set of alternatives, markets plus financial intermediaries, would make individuals better off than intermediaries alone. One could use markets to achieve optimal cross-sectional risk sharing and use intermediaries for other forms of risk

sharing. But this argument relies on a very broad *ceteris paribus* assumption and overlooks the fact that many other things will be different in the two economies.

An illustration of the differences between the two financial systems in terms of their ability to smooth risk is provided by the experience of the 1970s and 1980s. In the United States, the real value of the stock market approximately halved after the oil shock of the early 1970s and stayed at this level for the rest of the decade. Households that had invested their retirement funds in the stock market and needed to liquidate shares to pay for consumption were forced to reduce their standard of living substantially. By contrast, in the 1980s the real value of the stock market approximately doubled and the process was reversed; households whose savings were invested in the stock market were able to increase their consumption substantially. The important point is that these U.S. households bore substantial consumption risk over the two decades.

The U.S. experience can be contrasted with that of Germany over the same period. German households save for retirement and other purposes primarily in bank accounts and other debt-like instruments. Although Germany also experienced an oil shock, the value of these savings was not halved. German investors were able to consume the amount they had planned as banks drew on reserves to maintain payouts. In the 1980s there was a sustained boom in Germany as in the U.S. During this period the value of households' savings did not increase, since they were held in the form of fixed claims on the intermediaries. The intermediaries, however, were able to build up reserves. In contrast to the U.S. case, it can be argued that households did not bear as much risk because of intertemporal smoothing by intermediaries.

The interesting question is how this intertemporal smoothing can be achieved. One possibility is that it arises from intergenerational risk sharing. An intermediary can provide insurance against swings in asset prices by averaging gains and losses over time. The market cannot provide this insurance because the different "generations" in this story participate in the market at different points in time. This is an example of incomplete participation. In order for one generation to liquidate its holdings of assets, another generation must be willing to buy. The price at which this exchange takes place may introduce substantial consumption risk.

Another means by which intermediaries can achieve intertemporal smoothing is asset accumulation. A formal model is provided by Allen and Gale (1997). They contrast a market economy, in which individuals invest directly in a safe asset and a risky asset, with an intermediated economy in which a long-lived intermediary holds all the assets and offers deposit contracts to each generation. Because of the overlapping generational structure of the model, the price of the risky asset in the market economy is always low enough that its return dominates the safe asset, which is never held. As a result, each generation bears the full dividend risk on the risky asset. In the intermediated economy, on the other hand, intertemporal smoothing is provided to individual investors, who do better according to almost all welfare indicators, by accumulating reserves in the form of the safe asset. In fact, in a long-run-average sense, the intermediary can eliminate risk altogether. This is a form of

intertemporal risk pooling, analogous to the risk pooling that markets perform when they allow investors to diversify risks across many assets. However, unlike the cross-sectional risk sharing allowed by markets, intertemporal risk pooling requires the accumulation of large reserves of the safe asset. It may seem odd that holding a dominated asset can improve welfare, but this is simply a reflection of the market's mispricing of the safe asset. The market does not value the asset's contribution to future generations' welfare through risk reduction.

The importance of this example is that it shows that financial markets and intermediaries are not simply veils thrown over a fixed set of assets. They actually determine, in conjunction with other factors, the set of assets accumulated by the agents in the economy. By adopting one or another set of institutions, the economy is placed on a different trajectory, with important implications for the aggregate risks to be shared.

Corporate Governance

Manne (1965) has argued that an important aspect of U.S. style economies is the ability of different management teams to compete for the control of assets. In principle, the process of takeovers and acquisitions allows the most able teams to gain control of assets and to make investment decisions. In addition, it provides a mechanism for disciplining managements that squander the resources of their companies.

A large number of studies have indicated that takeovers in the United States in the 1970s and 1980s increased shareholder wealth substantially. Jensen (1993) gives the total increase in value of target firms from 1976-80 as \$750 billion. There has been an extensive debate as to what caused this increase in value. Some authors have found no evidence of an increase in efficiency after takeovers and mergers while others have found the reverse.

An alternative view of the market for corporate control has been provided by Mayer (1988) and Shleifer and Summers (1988). They stressed that intermediated systems allow implicit contracts and long-term relationships to be formed more easily than when hostile takeovers are possible. When contracting possibilities are incomplete, implicit contracts and long-term relationships may allow the realization of significant *ex ante* gains. For example, workers and suppliers may be willing to acquire firm specific skills and capital, whereas without an implicit contract or long-term relationship they would not be willing to do so. *Ex post*, a firm may be required to make payments to fulfill its obligations even though it is not legally required to. Banks are likely to encourage this type of arrangement *ex ante* in order to be able to share in the gains. *Ex post*, a desire to maintain their reputation will ensure that banks do not pressure firms into breaking their implicit contracts.

In contrast, for a firm that is listed on a stock exchange, there is an incentive for somebody to take it over and cease making the payments required under the implicit contract. Shleifer and Summers (1988) have suggested that the increase in stock value observed in the empirical studies of takeovers mentioned above could be due

to wealth transfers from employees, suppliers and others, but there appears to be little empirical evidence that this is the case.

In Germany and Japan, active markets for corporate control do not exist. Without an active market for corporate control, German and Japanese firms would at first sight appear to be at a disadvantage because of the absence of a mechanism for removing incompetent management. However, it can be argued that substitute disciplining devices are provided by concentrated share holding and cross-share holding and the power of banks to intervene. For example, Franks and Mayer (1992) found that in the largest 200 companies in Germany, 90 percent have at least one shareholder with a share of 25 percent or more of the equity. While concentrated ownership may overcome the free-rider problem, by giving owners adequate incentives to monitor, it remains to be seen whether their monitoring is effective. In both Germany and Japan, the banks' ability to hold equity and their close relationship with firms means that they have extensive powers.

The operation of the market for corporate control and the substitute mechanisms that exist in Germany and Japan are complex. The existing evidence for the superiority of either system does not appear overwhelming.

Lessons for Latin America

The United States, Germany and Japan provide a wide array of alternative features of financial systems. Designing financial systems is a complex issue and many factors need to be taken into account. However, it can perhaps be argued that the experiences of these three countries and other factors suggest five principles that should be considered when structuring financial systems of Latin American and Caribbean countries. These will be considered in turn.

- *A mixture of markets and banks is desirable.* Financial markets have an important role to play in terms of providing the information needed to allocate resources across sectors. They are also important in providing cross-sectional risk sharing. Given the diversity of Latin American and Caribbean countries, particularly in terms of income distribution, this is probably more important than the intertemporal smoothing that would be possible in the absence of markets. No modern financial system exists without banks and they will clearly continue to play an important role in Latin America and the Caribbean. Allowing both to exist will also allow competition between the two and permit the countries of the region to find the set of institutions that is appropriate for their own unique circumstances.
- *Equity, bond and other financial markets should be encouraged.* Laws and regulations which ensure the integrity of equity and bond markets should be adopted and enforced. These are a necessary prerequisite if the desirable features of markets are to be attained. In Latin America, foreign investment through

financial markets has the potential to become increasingly important. This will only happen if an adequate institutional framework is in place.

- *A concentrated universal banking system is desirable.* One aspect of the U.S. financial system which appears to work badly is the competitive nature of the banking system. Historically, this led to bank runs. In more recent times competition in the industry was at least partially responsible for the savings and loan crisis of the 1980s. Low profits means that banks have an incentive to take risks in the hope of doing well. In contrast, other countries such as Germany and Japan have not had this type of problem. Large profits ensure that the possibility of bank runs is minimized and incentives for risk taking by banks are low.

A concentrated universal banking system also provides incentives for corporate governance. The advantages of close long-term relationships seem substantial and it would be unfortunate for Latin American countries to lose out on these advantages.

- *An active market for corporate control should be developed.* As pointed out in the previous section, there is no wide agreement on the superiority of a U.S. style market for corporate control or the German and Japanese substitute mechanisms allowed by a concentrated universal banking system. Allowing both will again permit Latin American countries to find the particular mix of institutions that are optimal for their circumstances.
- *Direct government involvement should be minimal.* Japan's postwar experience illustrates that extensive government intervention can on occasion be helpful. However, even in the case of Japan it is not entirely clear how much was achieved because of intervention. A large part of Japanese success that can be attributed to the financial system is arguably due to the effectiveness of the main bank system. This arose out of the wartime government controls. However, government intervention is not essential for this type of system, as the development of the German Hausbank system illustrates.

Another important factor is that Japan is very different from most Latin American and Caribbean countries in terms of the professionalism of its civil service. Corruption, a problem in many Latin American and Caribbean countries, is not a major problem in Japan. This makes direct government intervention problematic.

Although direct government involvement may not be desirable, this does not imply that governments should abandon the financial sector to *laissez-faire*. Even in the United States the government is heavily involved in ensuring the integrity of the financial system by regulating markets and the banking sector. A similar kind of intervention will be necessary in Latin America and the Caribbean.

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SECTION THREE

Innovation in Financial Markets

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Innovation in Financial Markets

Section Three examines the role of innovation in financial markets and suggests some key innovations that should be adopted in the Latin American and Caribbean region. The three chapters explore very specific financial markets and discuss the appropriate role of government in establishing an enabling environment that will allow financial innovation to take place. Parallel to the successful experiences with policy-based finance in East Asia, there are some common threads to the discussions. First, policies need to be focused and interventions limited. Second, market discipline and the use of market signals is required. Finally, limited, indirect government interventions work best. Moreover, there is a consensus that governments should concentrate on creating an enabling environment by ensuring economic and financial stability, establishing pertinent legal and regulatory structures, and maintaining appropriate incentives.

Chapter 7, "Innovation in Financial Markets: The Experience of Japan from the Perspective of a Private Sector Financial Institution" by Douglas Kruse, begins with a discussion of the motivation for innovation in financial markets and the process by which such innovations takes place. The chapter emphasizes the motivations of private market participants and stresses the importance of an appropriate legal and regulatory environment. Mr. Kruse uses the example of three specific innovations in Japan, the introduction of money market mutual funds, the introduction of stock index futures, and the beginnings of the yen commercial paper market to demonstrate the role of competition *vis-à-vis* government regulation in determining the extent and velocity of financial innovation.

In Chapter 8, "Government Support and the Financing of Technology Development: Lessons for Developing and Developed Economies," Bernel Stone of the Marriot School of Management, Brigham Young University, explores the financial structures that are most conducive to the development of technology, and proposes some concrete guidelines on how governments can optimally provide incentives for developing and encouraging the financing of new technologies. This chapter provides a clear analysis of a variety of direct and indirect methods in which government support can be used to shorten the gestation period of new technological development. Nevertheless, caution is suggested regarding the limits to what governments can accomplish, especially with regards to their role in risk bearing.

One of the most interesting innovations taking place in Latin American and Caribbean financial markets is the privatization of social security pension systems. In Chapter 9, "The Reform of the Pension System and the Evolution of Capital Markets: The Chilean Experience," Augusto Iglesias argues that the development of private pension markets serves as a catalyst for the development of insurance and capital markets. By providing a source of long-term funds, private pension markets encourage the development of greater professionalism and create a demand for more comprehensive financial markets. In Chile, the government set up a mandatory, defined contribution, pension system (managed by the private sector) about 15 years

ago. This development, along with macroeconomic stability, produced a rapid increase in investable funds, which over time migrated from traditional government bonds and bank deposits to mortgages, capital market instruments, and even venture capital funds. While Mr. Iglesias does not find evidence of crowding out of the banking system (as these were concentrated in shorter-term markets), there has clearly been an impact on the competitiveness of banks which were forced to reach out to sectors of the economy which did not previously have access to the formal financial sector.

CHAPTER 7

Innovation in Financial Markets: The Experience of Japan from the Perspective of a Private Sector Financial Institution

by Douglas Kruse

This chapter examines innovation in financial markets, and specifically innovation in Japan, from the perspective of a private sector financial institution. Before turning to innovation in the specific context of Japan, it is useful to establish a framework to examine innovation in general. This framework will be used to examine in detail three examples of innovation in Japan and to explore some of the factors that influenced the pace and direction of innovation. To give a broader perspective and to suggest some conclusions about elements that promote innovation in financial markets, the Japanese experience will then be compared briefly with that of Eastern Europe.

A useful framework to look at innovation in financial markets is to see it as consisting of three elements which correspond to the classic financial services triangle of products, customers, and delivery mechanisms. The first form of innovation is introducing new products or services, by which I mean products or services not previously offered in the market being considered, which may be a country, a region, or the world, depending on the analysis. As we will see later, if we are considering a particular country, we would include products and services available elsewhere but not yet in that country. The second component of innovation is offering existing products or services to new types of customers. A good example is the securitization of receivables. For instance, securitized asset products¹ had been used extensively to provide finance for housing (as with collateralized mortgage obligations), but their application to corporate financing was new. The third component of innovation is the delivery of existing products or services through new channels, such as ATMs or home computers. Examples could include providing

¹ These are securities created by pooling a group of underlying assets, such as mortgages, automobile leases, or credit card receivables, and selling interests in the pool to investors. The interests can be structured as a share of the pool, as in the case of mortgage pass-through, or in various tranches, with different repayment and/or yield characteristics, as in the case of collateralized mortgage obligations.

corporate customers with computer linkages to their bank, so that they can manage cash positions on a daily or even hourly basis. The importance of technology to this third type of innovation is obvious, but it is also critical to the first two types. Technology not only affects how products are delivered; it may also determine whether they can be offered on an economically viable basis. Successful innovation, after all, requires that a financial institution deliver the products or services that individual customer segments want, at prices they are willing to pay, and in an efficient manner so as to make a profit.

What factors are required for innovation to occur? In financial markets, the pace and course of innovation is primarily determined by financial institutions and the government, broadly defined. The latter encompasses all the agencies (regulatory, tax, and so on) that define the environment in which innovation occurs, whatever institutional form they may take in a particular country. It is useful to look at these two groups separately. This distinction highlights an obvious and extremely important point: in the financial sector, financial institutions innovate; governments do not.² Successful innovation comes from financial institutions responding to their customers' needs. If the government sector tries to guide or manage the process of innovation, the invariable result is products or services that customers do not want, at prices they are not willing to pay and/or at which financial institutions are unable to make a profit.

Factors Required for Innovation: Financial Institutions

Five factors are essential for a financial institution to innovate successfully. The first is a focus on customer needs, including (importantly) an ability to identify unmet needs. Questions such as what the customer wants, what are his criteria for satisfaction, and what he is willing to pay are the touchstones against which new products, services, and delivery mechanisms are evaluated. A second key factor is an understanding of the capabilities, both existing and potential, of the financial institution. Can it deliver what the customer wants? If so, at what cost? A grasp of technological change and of the opportunities it creates can be particularly important here. The third factor is a willingness to take risks. Innovation is by its very nature risky, since not all new products and services will be profitable. It is useful for management to look at innovation in the same way it looks at the credit portfolio or the portfolio of businesses in which it is engaged. Because management cannot predict which loans, businesses, or innovations will be successful, it accepts the risk that some will fail because its goal is for the successes on balance to outweigh the failures.

² Governments *can* play an important role in stimulating innovation in their capacity as issuers of securities. Government debt issues have, in various countries, pioneered the introduction of new features, such as indexed debt, and in extending the maturity range. It is important to stress that they have been successful in doing so because they are major issuers of (debt) securities, not because they used their governmental authority.

This willingness to take risks leads naturally to the fourth factor, which is the ability to understand, assess, and control risks, one of the most challenging tasks facing financial institutions today. There are two principal sources of risk in innovation. One is the cost of the resources committed to innovation and the risk that they may result in losses, not profits. The second and more complicated are the risks inherent in a new product or service. Some of the more familiar are credit risk, interest rate or market risk, liquidity risk, funding risk, exchange rate risk, and settlement risk, but new products require particular vigilance because they often contain new risks or known risks in a new form.³ Identifying and quantifying risks, let alone managing or controlling them, can be extremely difficult. In many cases, it may not be possible to do so with precision. This is the case, for instance, with the residual tranches⁴ in certain types of mortgage securities, which is sometimes called “toxic waste.” Assessing and managing risk can be particularly difficult in the case of innovative products, where there is no past experience from which to draw. Many financial institutions have tried instituting procedures and institutional arrangements, such as credit committees, risk management units, commitment committees, and new product committees. While these help to reduce the likelihood of losses associated with innovation, managing risk remains a formidable challenge, as the experience on Wall Street over the past decade abundantly suggests.

The fifth essential factor for innovation is an institutional culture that encourages and rewards individuals for taking risks. Individuals are encouraged to think creatively and to prod the institution towards unexploited opportunities. Equally important, there is a premium on the staff's ability to judge the innovations on which they are working, and realistically assess the prospects, even if this means recognizing that a project should be terminated. Individuals who work on innovations that turn out to be unsuccessful are not tainted, so long as the failure was due to developments that could not have been reasonably anticipated, not to risks or problems that they failed to foresee.

Factors Required for Innovation: Government and Regulatory Agencies

The most important government agencies influencing innovation in the financial markets are the regulatory authorities, the central bank, the tax authorities, and economic policymakers. Here, four factors are essential to successful innovation. The

³ For example, sophisticated derivatives products may help to reduce exposure to interest rate or market risk, but these risks may reappear in a different guise as “knowledge” or “technology” risk, *i.e.*, the risk that a buyer or seller does not have the skills to manage the position properly to achieve the intended result.

⁴ These are the ownership interests in, for example, a pool of mortgages, that remain after the other, more senior tranches (typically structured like bonds with specified principal amounts, interest rates, and maturities) have been repaid. Their value can fluctuate dramatically — and unpredictably.

first is an environment of competition among financial institutions. Often an important component is competition between different *types* of financial institutions, such as banks, securities firms, and insurance companies. It is worth noting that government ownership generally results in reduced competition, although it does not necessarily do so in all cases. What matters is the degree to which government-owned financial institutions operate as independent, profit-seeking enterprises.

The second factor is a flexible approach, especially by regulators. The authorities accept the need for financial institutions to evolve in response to changes or opportunities in the marketplace, and consequently they are receptive to new ideas, new products, and new services. This flexibility is not achieved at the expense of compromising fundamental goals, such as maintaining a safe and stable environment for depositors and investors. On the contrary, being flexible in implementing rules and avoiding a slavish adherence to regulations no longer appropriate in a changed environment may, paradoxically, better achieve fundamental regulatory goals by promoting a dynamic, healthy financial system.

A third factor is an understanding of the innovations financial institutions want to introduce and the risks involved. This presupposes a sufficient number of regulatory staff, with appropriate qualifications, and a willingness to invest in building their knowledge of new products and services. Finally, the fourth factor is a strong, open relationship between financial institutions and regulatory authorities. Because of their differing goals and perspectives, these two groups may disagree on some issues, but this does not interfere with a good two-way flow of information. Financial institutions are, after all, an invaluable source of information about the characteristics, operational mechanics, and potential risks of new products and services.

One element, implicit in the foregoing discussion, merits explicit mention because of its importance. This is allowing financial institutions to reap the consequences of their efforts at innovation. Because financial innovation is risky, if profit-making institutions are to devote resources to it, the rewards must be commensurate. Reducing the profits from successful innovation has a chilling effect on innovation, whether it is brought about by imposing additional costs, such as complex or lengthy regulatory procedures, or through limiting revenues, as by delaying approvals until competitors have developed similar products. In innovation as in other aspects of banking and finance, attempting to shield institutions from the costs of their mistakes ultimately imposes far greater costs on the institutions and the financial system. Palliating losses from unsuccessful innovation, as from imprudent lending, erodes the discipline needed for strong, dynamic institutions, allows weak institutions to continue operating despite deteriorating financial conditions, and can place a burden on healthy institutions which may have to compete with institutions that are effectively being subsidized. Once again the result is to discourage innovation.

Innovation in Japan

On the basis of this set of factors essential to innovation, we can now look at three examples of innovation in Japan. In this discussion, we will focus on the key elements influencing the direction and pace of innovation in each case, especially those that provide insights into the process of innovation in Japanese financial markets. The examples chosen, it bears emphasizing, reflect the perspective of a foreign financial institution. Such institutions play a special role in innovation because they bring products or services they are already offering to customers in other markets, most importantly in their home country. This is the case in the first example, which examines an attempt to introduce money market funds into Japan. Since foreign firms usually concentrate on the wholesale or institutional sector, a mass market product may seem somewhat atypical, but it is included here in part to broaden the sample of innovation but also to demonstrate that foreign firms can play an important role in innovation in the non-institutional or “consumer” sector.

Money Market Funds

The case for introducing money market funds was compelling from the firm’s perspective. There was strong consumer demand, especially for yen money market funds. (As is typical of financial innovation, identifying customer needs and developing the appropriate products was easy. One just had to listen.) The resources required were known, the requisite capabilities existed, and based on experience in other countries, notably the United States, estimated incremental costs were expected to be well below anticipated revenues. The risks were understood and could be assessed and managed. What is remarkable is how little of this innovation was really new. To digress for a moment, this illustrates an important point: innovation, at least in financial markets, proceeds in very small steps. The risks of big steps into unknown territory are simply too great. How customers will react to a totally unfamiliar product is too uncertain; they may not understand it or be unwilling to invest the time to learn about it. The resources required may be greater or costlier than anticipated and may preclude the product’s economic viability. The risks may be of unfamiliar types and may elude attempts to analyze, let alone control, them. In contrast, incremental advances on existing products offer a higher return relative to the costs and risks involved.

One caveat is in order. Innovation does not necessarily proceed in small steps from the perspective of local institutions when products from foreign markets are introduced. If local firms have not had experience with similar products and consequently have not developed the capabilities to offer such products or to assess and manage the risks, this type of innovation can present special problems. Similarly, if the regulatory authorities do not have a knowledge base about related products, such innovation may be a particular challenge in terms of understanding the innovation and identifying potential issues. In the case of money market funds in

Japan, this caveat does not apply. Both Japanese firms and the regulatory authorities were already familiar with similar products, such as the medium-term government bond fund, introduced in January, 1980.

The crucial influence on innovation in this example was the role played by the regulatory authorities. Because selling an open-end foreign mutual fund in Japan required the approval of the authorities, the Ministry of Finance was approached in 1987 for permission to offer a dollar money market fund. (For a number of reasons, it made sense to propose the dollar fund first and then move on to the yen fund.) The authorities asked for extensive information about the proposed fund, the entity that would manage it, the type of customers to whom it would be marketed, and a host of other financial, administrative, and operational details. Given its characteristics—a fixed share price, low minimum initial investment, daily dividends, small minimum amounts for redemptions or additional investments, and immediate redemption—it was a direct challenge to bank deposit products. While the impact of a dollar money market fund in Japan would be limited, it would set a precedent for a yen money market fund. The authorities consequently proceeded carefully, aware that the growth of money market funds in the United States had led to massive disintermediation from the banking sector.

Progress had to await a resolution of the fundamental issue of allowing money market funds to compete with bank deposits. In the meantime, there were extensive discussions focussing on a number of technical points, which are mentioned not because of their intrinsic importance but because they illustrate the level of detail being discussed. For instance, if the money market fund was structured as a “foreign” mutual fund, what operational, administrative, and management functions would be performed in Japan? What proportion of the fund would have to come from investors outside of Japan? It took about three years for the fundamental issue to be resolved for non-yen money market funds, and in July, 1990, the dollar money market fund was first offered for sale in Japan. It was structured as a “foreign” mutual fund, organized in Luxembourg, with a minimum initial purchase of \$5,000, additional investments in increments of \$1,000 or more, and immediate redemption. It provided a yield of 7.8 percent, which was very competitive with bank deposit rates of roughly 7 percent on large deposits but appreciably less for smaller amounts. The dollar fund was, as expected, a limited success. Demand for an asset denominated in dollars was modest, and even though there was some interest from Japanese securities firms in offering the product to their customers, incremental revenues were limited, so that the return on the firm’s investment in securing regulatory approval was not high.

Stock Index Futures

A second example of innovation in Japan is stock index futures. Unlike money market funds, the primary impetus for stock index futures did not come from foreign securities firms, who believed their competitive advantage had already been

eroded. As with money market funds, there was strong customer demand for stock index futures. According to a survey conducted in February 1987, 94 percent of institutional investors were interested in trading stock index futures. Japanese and foreign firms had substantial experience with similar products, both in the United States and in Japan, where Japanese government bond futures had traded on the Tokyo Stock Exchange since October, 1985.

Once again, the major issues influencing the course of innovation were regulatory or governmental. Stock index futures faced two major impediments: Japanese securities laws did not permit cash settlement, and stock transactions were subject to a turnover tax of 0.2 percent. These did not, however, raise delicate, competitive issues: unlike money market funds, stock index futures did not pose a challenge to other types of financial institutions, and it was clear from the beginning that they were the preserve of securities firms. The only significant competitive issue was, in fact, on which exchanges stock index futures would be traded. It was SIMEX that first started trading a Nikkei futures contract, in September, 1986, but Japanese institutions and individuals were not allowed to trade on that exchange. In May 1987, the Ministry of Finance eased this restriction slightly and allowed Japanese financial institutions to trade futures instruments abroad, but only for their own account.

Stock index futures were introduced in Japan in June 1987, when the Osaka Stock Exchange started trading Stock Futures 50 contracts. Based on an index of 50 leading stocks, this contract was of limited use in hedging diversified portfolios, and was subject to a stock transaction tax, albeit at a reduced rate. In addition, if it was not liquidated prior to expiration, it required the physical delivery of the underlying securities. As a result interest was limited. During the first day, 5,563 contracts changed hands, representing a market value of roughly ¥390 billion, but by year end volume had declined to roughly half that level and about 80 percent of this came from securities firms trading for their own account. Since the potential for profits was limited, financial institutions were careful in committing resources. Only two foreign firms, for example, became members of the Osaka Exchange to have direct access to the floor.

Shortly after the start of trading in the Stock Futures 50 contract, the Osaka Exchange announced plans to introduce a futures contract based on the Nikkei 225, while the Tokyo Exchange countered with a planned contract based on the TOPIX index, which incorporated about 1,100 stocks. Almost a year later, in May 1988, the Securities and Exchange Law was modified to permit cash settlement of futures contracts, thus clearing the way for the new contracts. Activity in these new contracts was expected to be heavy, much heavier than in the Stock Futures 50, but it was not clear whether the Nikkei or TOPIX contract would predominate. Consequently, most firms prepared for both products, and a number of additional foreign securities firms became special members of the Osaka Stock Exchange. The Nikkei 225 contract took an initial lead when trading started on September 3, with daily volume of ¥2.1 trillion vs. ¥1.67 trillion for the TOPIX contract, but within

weeks TOPIX moved ahead with a total of ¥23 trillion traded in November as against ¥13 trillion for the Nikkei. The combined volume of ¥36 trillion in the new contracts dwarfed, by a factor of virtually ten to one, activity in the Stock Futures 50. Activity in the new contracts continued to grow, reaching ¥282 trillion in the first half of 1991, or roughly ¥45-50 trillion a month, substantially greater than the volume of transactions in the cash market. Most of this volume was in the Nikkei 225 contract, which passed the TOPIX contract in January 1989 and assumed a commanding lead.

An interesting feature is that the introduction of the new contracts itself created an opportunity for innovation. Foreign firms, in particular, took the lead in arbitraging Nikkei 225 contracts in Osaka and Singapore, as well as arbitraging those contracts against the TOPIX contract and the cash market. Since this did not constitute a new instrument, no approval from the regulatory authorities was necessary. By 1990, trading in futures and options, especially arbitrage, had become an important component of profits for foreign securities firms, and the most profitable of these were those that were most successful in the futures and options business.

Yen Commercial Paper

A third example of innovation was the introduction of yen commercial paper in Japan. As with stock index futures, the impetus for yen commercial paper came from Japanese securities firms. However, in this case foreign firms lost most of the interest they might have had in earlier years and assumed a purely defensive strategy. A high volume, low margin product, where expertise and know-how were easily acquired and close relationships with issuers were key, yen commercial paper was, in the late 1980s, no longer economically attractive for foreign firms.

Once again, the pace and direction of innovation were set by regulatory issues. Yen commercial paper was a clear competitive challenge to the banking industry, as it was a potential alternative to short-term loans and deposits. On the other hand, banks were keen to enter the commercial paper business as a way to establish a foothold in the securities arena. Since commercial paper was not defined as a security, it was not a permissible activity for securities firms, but it also was not classified as a banking activity. As a result, the authorities had to determine its legal status and decide which institutions would be allowed to deal in it. After intense lobbying by both banks and securities firms, the Ministry of Finance decided in early 1987 to follow a precedent set two years earlier when both banks and securities firms were allowed to deal in (non-yen) commercial paper abroad. In July 1987, the Ministry took a modest first step by allowing foreign corporations to issue yen commercial paper outside of Japan (euro-yen commercial paper), provided that the issuer was rated at least single A and that the paper was not sold into Japan for 90 days.

Four months later, at the end of November, yen commercial paper was allowed in Japan—but on strictly defined terms. Issuers had to meet stringent qualification

standards, which less than 200 corporations passed. The new instrument had to be issued in *minimum denominations* of at least ¥100 million and have a maturity of between one and six months. Once again it is worth noting the detailed nature of regulation, most notably in terms of who could issue yen commercial paper. Competition between banks and securities firms, each eager to establish dominance in the new market, was intense and was magnified because it was concentrated on less than 50 potential issuers. As a result, the first commercial paper issues, which amounted to about ¥720 billion in late 1987, were priced to yield 3.8-3.9 percent at a time when 3 month certificates of deposit were yielding 4.22 percent and bankers acceptances yielded 4.13 percent. Paper could not be sold at these levels, leading to losses for banks and securities firms trying to place the issues, and rates gradually rose to slightly over 4 percent. Even at these levels, demand was still restricted to those investors, mainly regional and *sogo* banks, for whom certificates of deposit and bankers acceptances were not alternatives.

Not surprisingly, a number of issuers took advantage of the anomaly in pricing, which enabled them to invest the proceeds from yen commercial paper in higher yielding instruments. As the volume of yen commercial paper outstanding grew steadily from ¥2.75 trillion at the end of March to over ¥8 trillion by year end, the capacity of the limited universe of investors willing to absorb paper at this pricing began to be reached. Further growth required more competitive yields. In December 1988, the authorities announced that they would expand eligibility to issue yen commercial paper to a wider group of corporations. This permitted the market to develop in terms of both size and pricing, although the detailed nature of regulation remained. Over the next several months, the volume of yen commercial paper outstanding increased to roughly ¥10 billion, and at the same time arbitrage activity declined, as opportunities to issue yen commercial paper and invest the proceeds profitably in other instruments decreased.

Environment for Innovation in Japan

What can we conclude from these three examples about innovation in Japan? Focusing on the factors in the government and regulatory agencies that create the environment for innovation, these cases suggest that all four factors discussed earlier were present. Competition was intense. The battle for customers and profits within and among different types of financial institutions, both domestic and foreign, encouraged firms to develop and try to introduce new products and services. Interestingly, this competition was sharpest and innovation keenest for internal, proprietary activities, such as arbitrage, and for the business of major financial institutions, which were not subject to many of the controls on products offered in Japan. Occasionally, though, competition could be injurious to the sound development of markets in new instruments, especially when it was concentrated on small groups of potential customers, as in the case of yen commercial paper.

Turning to the second factor, regulators recognized the need for financial systems and financial institutions to evolve. Within the constraints of their regulatory and legal system, they tried to be flexible in responding to innovation and worked hard to find ways to permit the offering of new products and services. Despite the obstacles, dollar money market funds, stock index futures, and yen commercial paper were introduced in Japan. If confirmation were needed, the substantial resources that banks, securities firms, and other financial institutions devoted to obtaining regulatory approvals for new products demonstrated that they believed that the process worked and that the potential profits from innovation made the investment in securing regulatory permission worthwhile.

In terms of the third factor, the regulatory agencies understood the products and services they were being asked to approve. Their staff was highly qualified and had command of the details of money market funds, stock index futures, and commercial paper, among many other products. They could suggest and knowledgeably discuss modifications or conditions that might facilitate progress, such as credit standards for issuers of yen commercial paper. They also generally understood the risks inherent in each innovation, although they tended to focus primarily on those to the financial system as a whole and those to the competitive balance between different types of financial institutions. Risks, in the sense of potential losses to individual institutions, and appropriate controls to manage these risks, were secondary considerations.

Finally, relationships between the regulatory agencies and private sector financial institutions, both domestic and foreign, were extensive and strong. There were frequent meetings and conversations, which provided for a good two-way flow of information.

In addition to these four factors, the stability of the economic, regulatory, legal, and tax environment in Japan helped innovation. Knowing well in advance approximately when the stock transaction tax would be reduced, when cash settlement would be permitted, and when new products such as the Nikkei and TOPIX futures contracts would be introduced, as well as their detailed characteristics, greatly reduced uncertainty and hence lowered the costs of innovation. A final element conducive to innovation was the strength of financial institutions, both Japanese and foreign. Large capital bases and experienced management permitted investment in developing and introducing new products and services, a commitment of resources that weaker institutions cannot and should not try to undertake.

Yet this is an incomplete picture. That each new instrument effectively had to be approved by the authorities stifled the development of new products and services. However regulators might subscribe to the need for innovation and however flexible they might be in adapting regulations to accommodate new products, they wanted to control the process. Each innovation was scrutinized in minute detail. The precise characteristics of each product, the ways it would be processed operationally, and the customers to whom it would be offered were thoroughly reviewed. Its

competitive impact on other types of financial institutions was carefully weighed. And this process of review and approval applied to all new products. To give an idea of the magnitude of work involved, a single firm might be, at any given time, in various stages of discussion with the authorities about half a dozen or so new products. The burden on financial institutions and regulatory agencies was staggering. Given the mass of information to be processed, it is a tribute to the quality and dedication of the regulatory staff that the system was not completely bogged down.

In one sense, this regulatory burden could be viewed as an added cost that would discourage innovation. Yet the issue is more fundamental. Such official guidance or management is antithetical to the nature of innovation. Innovation proceeds by financial institutions trying, in a competitive marketplace where they are free to fail as well as succeed, to meet their customers' needs. The result of government attempts to control that process was that innovation in Japan was discouraged, delayed, and channeled in different directions. In some cases, the introduction of innovative products was delayed, in others, it simply did not take place. In yet others, the products introduced did not match customer needs or were not priced to yield a profit. Looking just at the three cases we have discussed, dollar money market funds were approved in 1990, three years after the approval process was begun (and more than 15 years after this product first appeared in the United States; yen money market funds were still in the future). The Nickel 225 contract first traded on the Osaka Exchange in September, 1988, two years after SIMEX started trading that same contract (and almost seven years after stock index futures appeared in the United States and subsequently in England). Yen commercial paper was approved in November, 1987, two years after Japanese financial institutions were allowed to deal in (non-yen) commercial paper abroad, and it was subject to stringent controls that restricted its size, introduced pricing anomalies, and initially led to losses for dealers.

Moreover, it is questionable that in attempting to control or guide innovation the authorities actually attained their goals, such as promoting safety and stability in the financial system. Rigid controls on the products and services that licensed financial institutions, such as banks and securities firms, created incentives to offer innovative products through non-licensed (and less regulated) intermediaries. The pattern of introducing a new product or service gradually in what is almost a phased approach imposed constraints that, in some cases, distorted the market's development. The cycle of initially imposing tight controls (on settlement, on issuers, on minimum maturity, on minimum denomination, etc.) and then gradually easing them can be observed in stock index futures, yen commercial paper, Euro-yen bonds, yen certificates of deposit, yen money market certificates, and other cases. While it may have minimized initial disruptions, in some cases it distorted the market's development. Constraining access for issuers and investors, for example, may have prevented markets from achieving viable size or realistic pricing and denied financial institutions the returns needed to cover the costs of innovation, as notably in the case of yen commercial paper. This is the paradox of innovation in Japan: by

trying to guide the process in a direction that promoted safety and stability, the authorities may instead have channeled innovation in a way that hindered the achievement of those objectives.

Innovation in Eastern Europe

Rather than comparing the Japanese experience with that of Brazil or perhaps other Latin American countries, it may be interesting to comment briefly on comparisons between innovation in Japan and Eastern Europe. Financial institutions as we know them (banks, securities companies, and so forth), which are independent of the government and seek to meet the needs of their customers while making a profit, have existed in Eastern Europe for little more than five years. Experience in these institutions and in the regulatory agencies is thus, by definition, limited. Furthermore, the economies in which these institutions operate are themselves in transition, creating additional challenges and opportunities for the financial sector. Innovation in Hungary, Poland, and the Czech Republic is centered on relatively basic products and services and is proceeding rapidly, as institutions try to catch up with their western counterparts. For example, as credit analysis developed, banks introduced unsecured loan products, with the emphasis on cash flow rather than security, and developed new products and services to meet the specialized financial needs of entrepreneurs. Credit cards, ATM cards, cash management and funds transfer products are some other examples of innovative products in the region.

If we look at innovation in Eastern Europe in terms of the factors described at the beginning of this chapter, financial institutions are gradually becoming more customer oriented. Several years ago you were likely to hear branch managers complaining about a new phenomenon among customers: they negotiated and even rejected the rates at which banks offered to lend. Today, banks are more likely to be aggressively seeking to identify and meet customer needs. Managements more fully recognize the capabilities and limitations of their institutions. In some cases they learned from costly mistakes, such as entering new businesses (for example, retail banking) or embarking on ambitious systems upgrades and discovering that the resources required were far greater than originally thought. Financial institutions were generally willing to take risks, but it has taken time to develop the ability to identify, assess, and control risks. Heavy loan losses led to the establishment of central credit departments and to the creation of workout units. Funding and foreign exchange trading were shifted from branches, which had previously had autonomy in these areas, to the head office to provide comprehensive information on and control over the bank's exposure. Finally, a strong entrepreneurial element in many individuals helped to foster an institutional culture that encouraged risk taking, although there needs to be greater openness in dealing with problems or mistakes. Japan's experience suggests that as financial institutions gain more experience, particularly in understanding, assessing, and controlling risk, they will become more

successful in introducing the new products and services their customers want and at prices where they can make a profit.

In terms of the governmental and regulatory environment, competition is strong and growing. This is probably the single most important factor in the resurgence of innovation in Eastern Europe, compared with stagnation under the previous system. Competition is coming both from the entry of new players, such as foreign banks, and from the expansion of existing players into new areas. Banks that had focused mainly on corporate lending are moving into retail banking, trade financing, and foreign exchange trading. Banks that specialized in foreign trade or retail banking are expanding into corporate lending. Institutions that had a particular geographical or sectoral focus are broadening the scope of their activities.

The regulatory authorities generally recognize the need to allow financial institutions to respond to changes and opportunities in the markets in which they operate. They try to be flexible in allowing new products and services to be introduced, for example by modifying the restrictions on banks' equity holdings in nonfinancial companies, so that debt/equity swaps are a viable product for banks in restructuring companies. The problem is that there are not enough regulators, they are not well compensated, and they are relatively inexperienced. These three interlocking problems have made it difficult for the regulatory agencies to build an understanding of new products and services. In some cases, this had created a tendency to seek refuge in the familiar and hold fast to existing rules, which has not been conducive to good relations with the banking community. Japan's experience suggests that as regulatory agencies gain more experience and develop a cadre of skilled professionals, they will become better able to deal with new products and the issues and challenges that they raise, and to maintain a healthy dialogue with the financial community.

Conclusion

The similarities and differences in terms of the governmental and regulatory environment for innovation between Japan and Eastern Europe are reflected in the varying pace and direction of innovation in each region. We will conclude by discussing three aspects (two similarities and one striking difference) that illuminate the importance of some of the factors we have been examining. First, both Japan and Eastern Europe have an environment of keen competition between financial institutions, both domestic and foreign. In both regions, it is this competition that supplies much of the drive for innovation, as individual institutions strive to better meet customer needs, provide products to more customers, and provide products more efficiently.

Second, in contrast to the regulation of new products and services in Japan, with its detail-oriented approach which extends to specifying characteristics, operational procedures and target customers, regulation is at a more general level in Eastern

Europe. In some cases, regulation in Eastern Europe may have been overly relaxed. Licensing procedures may not have been thorough enough, and oversight of banks' activities may have been so general that some institutions were able to act irresponsibly or even illegally. These shortcomings had high costs for the financial system, including the damage to innovation. Yet, as we have seen, regulation at a highly detailed level also impedes innovation. It imposes costs that burden and hence discourage innovation. It can delay the introduction of new products; money market funds, stock index futures, and commercial paper were held up for years. It can impose constraints that limit revenues and hence profits, notably in the case of yen commercial paper. Without sufficient financial incentives, innovation may be slowed or halted. Moreover, the experience of both Japan and Eastern Europe shows that detailed regulation is not necessary to achieve fundamental regulatory goals, such as safety and soundness in financial markets. Indeed, it may be detrimental, distracting attention from more important issues. To the extent it prevents financial institutions from earning adequate returns on their investment in innovation, whether by imposing costs, creating delays, or setting constraints, overregulation may also impair the financial strength of banks.

Third, the two regions differ in the number, qualifications, training, experience, and compensation of the staffs of regulatory agencies. By building experienced staffs of a size commensurate with their responsibilities, instituting compensation systems that retain qualified staff, and investing in developing understanding of innovative products and their risks, Japan's regulatory agencies were able to become comfortable with innovation and deal with the issues it raises. It was this capacity that enabled them to take on and carry the enormous workload imposed by their detailed approach to regulation. Eastern Europe, in contrast, starting with relatively few, relatively underpaid, and relatively inexperienced regulatory staffs, is trying to build more experience and develop a cadre of skilled professionals that can better respond to the challenges of innovation and maintain a healthy dialogue with the financial community.

In sum, the experience of these two contrasting regions suggests that the vital elements in determining how conducive an environment is to innovation in the financial sector are competition, a flexible regulatory approach, thorough but not overly focused on details, and a strong, well-developed regulatory staff that has built an understanding of innovative products and strong relationships with financial institutions.

CHAPTER 8

Government Support and the Financing of Technology Development: Lessons for Developing and Developed Economies

by Bernel Stone

Technology is used here to mean knowledge. The concern is knowledge that pertains to the production of goods and services. *Technology development* means the improved use of know-how in the economic system. Thus, technology development involves know-how based innovation and/or the creation of *knowledge capital*, i.e., know-how that has the potential to increase economic welfare.

As defined, technology development embraces virtually all economic innovation (change) other than redistributive change and refinements in existing processes. This pertains to both advanced and less developed economies. It is the key to most productivity improvements and thus to most economic growth beyond growth in labor force utilization. While the term “technology” suggests to many the frontiers of scientific research, engineering methods, or other know-how-intensive practices such as medicine, the definition used here is intentionally much broader. Moreover, much of technology development, especially in less developed countries but also in the most advanced economies, involves better utilization of the existing knowledge base rather than generating new discoveries.

The central concern is the evaluation of generic policy approaches, with the focus being the impact of various incentives (and disincentives) on private sector actions that increase technology development. Several assumptions are implicit in the discussion developed here.

Economic-Legal-Social Infrastructure. Technology development, like all aspects of economic development, requires a basic functioning economy. In particular, significant technology development requires stable financial markets (including mechanisms for pricing and allocating risk) and a functioning legal-regulatory system (including the protection of property rights).

Technology Importance. Technology is very important for productivity growth and overall economic growth. The capacity to utilize technology well is the critical difference between the advanced economies and less developed countries.

Policy Significance. The supply of incentive resources is limited. Technology development resources are a scarce commodity. How scarce resources are used (or misused) can have a significant impact on both the quantity and quality of technology development.

While these assumptions seem self-evident, the last merits comment. The tendency is to focus on financing support rather than generally superior direct incentives (to be defined shortly). Typical financial support policies often require impossible knowledge and/or very difficult judgments by policymakers. Moreover, they often bypass or short-circuit normal competitive mechanisms and the allocative services of financial markets.

Conceptual Frameworks: Key Factors

Production Factors

Much of economic theory is concerned with capital intensity. Thus, the productive model is often simplified either to a two-factor framework in which *labor* and *capital* are the two generic factor inputs or to a three-factor framework in which *labor*, *land*, and *capital* are the generic inputs.

The concern here is the utilization of knowledge in the economic system. In effect we are concerned with *knowledge intensity* or *know-how intensity*. Thus, the economic model used is a three-factor structure advocated by Kenneth E. Boulding (1976): materials, energy and know-how.

What distinguishes the advanced economies from less developed countries is *know-how capacity*, that is, the capacity for incorporating know-how in the productive process. The advanced economies have an elaborate know-how infrastructure.

Exhibit 1 lists major categories of knowledge support. While much of it is the very visible public know-how structure (education, libraries, government research and development, patent system, etc.), there is a massive, extremely adaptive, private for-profit knowledge support structure. The business of many enterprises in the advanced economies is “know-how services.”

Technology Assimilation Stages

Most technology development fits a three-stage pattern of gestation, then rapid growth, and finally mature growth. Figure 1 depicts the typical technology displacement curve.

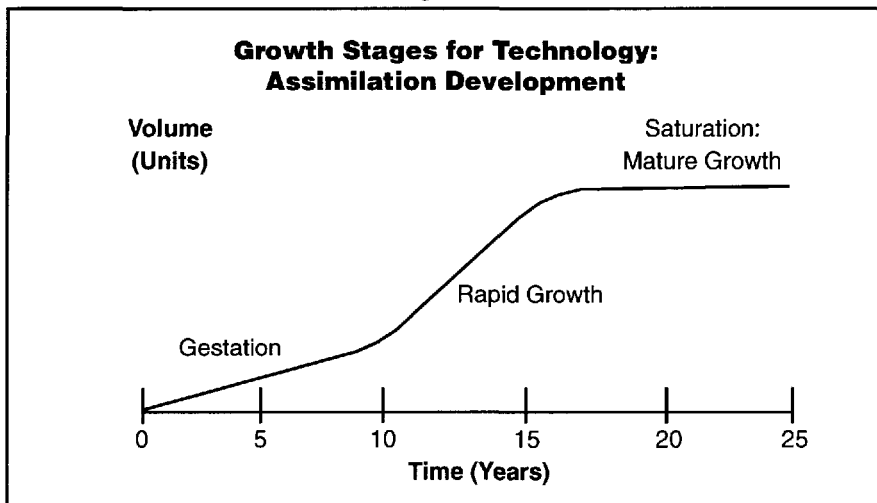
From the viewpoint of a developing economy, the most relevant stage is gestation. Infrastructure building (i.e., improving communication, transportation, education, medical, payment, and other support systems) impacts overall economic growth capabilities but especially improves the ability to move product-specific

Exhibit 1

Key Elements of Information Infrastructure

Educational systems
Electronic communications
Computers and computational services
Libraries
Databases
Newsletters, books
Trade associations
Access to worldwide information
(customized to be country useable)
Research infrastructure
Institutional memory
Human knowledge/Directories of experts

Figure 1



technologies through gestation into rapid growth. Efforts to develop particular products, including import substitution and export development, logically focus on gestation. They either try to accelerate gestation in time or quantity or else seek to remove success barriers.

Stone (1990) describes three gestation substages. Gestation substage one is product definition and early product development. Substage two involves product refinement, prototypes, and pilot tests. Substage three is characterized by growing market awareness, niche markets, and the creation of production-selling-support organizations.

It is common in forecasting and in formulating policy to focus on product definition and early development and to underestimate the time, cost, and difficulty associated with substages two and three.

Statement of Assumptions

Exhibit 2 summarizes the underlying assumptions. These concern economic complexity and the assumed goals of businesses (economic agents).

Rather than assuming the traditional economic goal of profit maximization with certainty, the assumed objective is the generally accepted goal of the financial model of the firm, namely maximizing the value of the owner's interest in the business. This goal has been restated as *maximizing the risk-adjusted return on invested capital*.¹ This framework makes risk a central concern of technology policy. *Risk* is adverse uncertainty about outcomes. *Relevant risk* is that adverse uncertainty that cannot be diversified away or insured against at low cost.

The assumption is that capital flows to the best risk-adjusted return. Whenever expected returns in a desired activity seems high, but capital is not being invested, this forces a reconsideration of risk and/or structural barriers to capital flow.

Exhibit 3 summarizes ways that policies impact businesses and ultimately risk-adjusted returns. Influencing prices, operating costs, capital costs, and taxes are self-evident incentives. These impacts all pertain to items in the accountant's income statement. They influence income (cash flow) to owners and thus income (cash flow) per dollar of investment and expected return.

Less obvious are policy impacts on risk and on non-economic barriers to technology change. These two impacts are discussed subsequently in the context of assessing the pros and cons of generic policy alternatives.

¹ For discussion of corporate objectives and their translation into maximizing risk-adjusted expected returns, as well as discussion of "relevant risk," see any of the standard corporate finance texts, e.g., Brealy, Myers, and Marcus (1995, especially chapters 1, 9 and 10) or Ross, Westerfield, and Jordan (1993, especially chapters 1, 10 and 11).

Exhibit 2

Economic Complexity

Economic systems are very complex

It is almost impossible to predict the consequences of economic policy; even direction of change may be hard to predict

Value Creation

Businesses maximize risk-adjusted return, not profit

Capital flows to the best risk-adjusted return unless obstructed by political or other non-economic barriers

Exhibit 3

Policy Impacts on Business

Price at which goods are sold

Cost of productive factors

Taxes (credits can be viewed as negative taxes)

Cost of alternative capital sources

Overall cost of capital

Risk

Non-economic barriers

Infrastructure

Desiderata

What are good and bad attributes of technology development policies? What criteria can be used to compare policy alternatives? The following sets forth some important considerations.

- *Required Knowledge Minimized.* Good policies require minimum knowledge by policymakers about the technology and its details. Likewise, policymakers

or government agents do not have to make decisions in advance of performance about which economic players participate, which are best, etc.

- *Universality.* All economic participants that meet qualifying criteria are eligible to participate in and benefit from the policy. There is no government selection of qualifying businesses or individuals except for broad groups. For example, all domestic companies or all small businesses (having less than 50 employees) are illustrative of broad qualifying conditions.
- *Minimum Competitive Market Distortion.* The policy should cause minimum distortion to competition and market allocation of resources other than the intended policy shifts.
- *Risk-Reward Allocation.* Efficiency should be rewarded and poor performance penalized. Neither governments nor policymakers are good at evaluating risk. With the exception of very major risks and some forms of legal and sovereign risk, governments have no competitive advantage in either directly bearing or allocating risks. Global financial markets are very good at pricing and allocating risk. Good development policies should make sure that risk is borne by the economic participants having both the knowledge and the ability to evaluate and manage it.
- *Simplicity.* Good policies should be simple in structure (understandability) and simple in administrative requirements. Administrative simplicity pertains to the required knowledge, administrative effort (cost), time delays, approvals (licenses, authorization), reporting, and audit-control (performance verification, fraud prevention, etc.).
- *Resource Leverage and Long-Run Budget Advantage.* Good development policies will provide high impact per dollar spent. The long-run benefit-to-cost ratio should be the most favorable among competing ways to achieve policy objectives.

Technology Policies

Policies have been grouped into six broad categories: (1) direct incentives: production subsidies; (2) direct incentives: operating cost subsidies; (3) direct incentives: credits; (4) direct incentives: profit subsidies; (5) financial subsidies and guarantees; and (6) direct government involvement.

Direct Incentives: Production Subsidies

Production subsidies are the most direct form of reward for phasing in and developing a new technology. A company is paid on the basis of its production in accord with an announced production subsidy policy. Production subsidies can take a number of forms. The subsidy could depend only on total production, on an increase relative to a base level, or on sales to target markets (such as export sales). There

Exhibit 4

Pros and Cons of Production Subsidies**Pros**

- Relatively easy to administer
- Focus on results
- Does not require “impossible to obtain” information
- Universality
- Does not distort competitive situation within supported sector
- Generally good way to shift costs for “intermediate goods”
- Generally least overall distortion

Cons

- May lead to overproduction if not phased out over time
- Quantity response (and therefore budget impact) uncertain
- Distorts competitive situation for competing products

may be group-economic criteria to qualify (e.g., domestic businesses, small businesses, etc.).

Profits are not required. Basing incentives on production rather than profits is generally an advantage in a start-up situation.

Direct Incentives: Operating Cost Subsidies and Operational Support

Operating cost subsidies are payments that reduce the cost of certain inputs, especially technology related inputs. One could subsidize the use of computers, data bases, certain forms of transportation; recycled materials, etc. By reducing effective cost, one accelerates use of desirable technology and accelerates its adoption. To the extent that fixed costs or other start-up costs are assimilation barriers, technology is accelerated. Moreover, with greater volume, real costs are also reduced and demand is further stimulated. Technology assimilation is thus accelerated, often with great leverage per dollar spent.

Direct Incentives: Activity Credits and Grants

Activity credits are payments for a particular desired activity such as research outlays, development expenditures, employment or additions to employment, education and training of employees, etc. *Research grants and education grants* are also a form of activity credit. The latter often go directly to an individual obtaining education rather than to a company. Like production and cost subsidies, activity credits have the merit of not requiring profits. While activity credits focus on particular

Exhibit 5

Pros and Cons of Operating Cost Subsidies

Pros

- Easy to administer
- Universality
- Selective distortion (i.e., can encourage desired activity over less desired)

Cons

- Use and therefore budget impact uncertain
- Danger of overuse
- Distorts competitive situation for non-subsidized inputs
- Involves policymakers in some economic decisions about preferred production technology or factors

Exhibit 6

**Pros and Cons of Direct Incentives
(Activity Credits and Grants)**

Type

Pros

Cons

Direct Credits:

Provide a subsidy to all firms that meet specified eligibility criteria involved in a specific activity (e.g., research credit, development credit, training credits)

- Relatively easy to administer
- Highly focused on desirable activity

- May not result in actual production or advance in technology
- No market test of quality
- Budget uncertainty

Direct Grants:

Research grants to firms, universities or research institutes. Educational grant to firms or individuals. Scholarships for higher education and/or foreign study.

- Focuses benefits on profitable activities
- Relatively easy to administer (fits within tax system)

- Requires firm to be earning profit
- Biased against start-up firms vis-à-vis established firms
- Budget uncertainty

Exhibit 7

Pros and Cons: Profit Subsidies

Type	Pros	Cons
Tax credits for all qualifying firms involved in a specific activity (e.g., investment tax credit, research tax credit)	<ul style="list-style-type: none"> • Focuses benefits on specific activities • Budget controllable • Most effective interventions for basic research and building a talent pool • Competitive in terms of proposal quality 	<ul style="list-style-type: none"> • Administratively costly • Benefit may be captured by established research groups • May be difficult to trace benefit to production • Some desirable activities may be excluded (time delay before supported) • May duplicate research already being done in developed countries

desired actions, they may entail more measurement problems and may be more administratively complex than production or cost subsidies.

Direct Incentives: Profit Subsidies

Profit subsidies are activities such as investment tax credits, research tax credits, or development tax credits that can be applied to reduce taxes. Profit subsidies are payments that are based on profits as a result of development production. In general, profit-based subsidies are less desirable because they require profitability, which usually occurs at the later stages in a new product. Hence they tend to favor existing firms that have other activities that are profitable rather than start-ups. In addition, there is danger of cross-subsidization for firms producing multiple products.

Direct Incentives: Synthesis

Direct incentives subsidize production, reduce costs, give credits for specific desired activities, or subsidize profits. Among the four types of direct incentives, pro-

duction subsidies are generally the easiest to implement with the fewest measurement problems.

Compared to financial credits and guarantees, all direct credits rate high on at least three of the desirable criteria. Required knowledge is much less than for financial subsidies. Universality arises from the structure of direct credits. All economic players are paid on the basis of the performance without preselection or exclusion. Because payments are based on performance, economic risk is borne primarily by the private sector rather than government.

While we have argued that incentive payments are generally the most desirable way to induce technology development, all incentive payment policies also have negative attributes. They may favor one activity over others that are unsubsidized or less subsidized. A closely related problem is that the presence of incentives in one activity can discourage the pursuit of alternatives, especially where there are complementary or substitute technologies. The incentive payment policy may preclude the best outcome because of the subsidy distortion.

Financial Subsidies and Guarantees

Financing assistance is often used as a vehicle to stimulate desirable economic activity. In the area of technology development, it copes with two barriers to success, namely high initial capital outlays and possibly limited capabilities for obtaining financing on the part of otherwise qualified participants.

Despite the seemingly desirable attributes of providing necessary financing, financial assistance is generally less effective than direct incentives. Financial guarantees generally mean undesirable risk shifting. Unless care is exercised in the design of the guarantee, most risk is transferred to the guarantor and thereby avoided by the parties that are best able to assess and bear it. Such risk shifting distorts incentives and economic behavior.

Interest rate subsidies reduce capital costs but they generally suffer from the disadvantage of requiring a decision about who is to receive the preferential loan. The problem of deciding who should qualify, especially in the early and middle gestation stage, is a difficult decision. Uncertainty about the form of technology and who are the best developers is extremely difficult at this stage. It is virtually impossible in any economy, developed or undeveloped, to have enough knowledge to know either the details of the technology or the best performers. In less developed economies, the capacity to assess and the problems associated with less transparent, less competitive financial markets exacerbate the generic limitations of direct financing assistance and guarantees.

Given limits on either subsidized financing or guarantees, the desirable attribute of universality is precluded, unless the subsidy is made widely available to broad classes of businesses. Since the amount of subsidized financing is limited, there is also the danger that financial institutions will capture much of the subsidy rather than having it stimulate technology development. When other economic

Exhibit 8

Financing Subsidies and Guarantees

Type	Pros	Cons
Loan Subsidies a) Government subsidized loans b) Subsidized loans via financial intermediaries	<ul style="list-style-type: none"> • Reduces cost of capital • May increase total supportable financing • May be targeted at specific activities or groups (e.g., smaller firms) 	<ul style="list-style-type: none"> • Government may not be capable of evaluating risk • Non-competitive • Subsidies often captured by financial markets • If subsidy is large, resources are allocated to capturing subsidy • Non-participating, qualified firm may view existence of subsidy as a barrier to entry
Loan Guarantees	Same	<ul style="list-style-type: none"> • Risk is transferred to government which does not have comparative advantage in monitoring or controlling risk • Guarantees hard to price • Requires selection-in-advance; violates universality
Equity Participation (Venture capital-type financing)	Same; properly structured, government can share in upside potential	<ul style="list-style-type: none"> • Very difficult to administer; government does not have correct incentives nor comparative advantage in evaluating, pricing, monitoring, etc. to assure maximum return
Other Forms of Risk Sharing	Same	Same

players capture the benefits, the effectiveness in inducing desired behavior is clearly questionable.

The problem with subsidized financing is not just reduced effectiveness but a high likelihood of being counterproductive. Such counterproductivity is illustrated in the case example of shale oil development.

All forms of financial assistance suffer from the problem of frequently being directed to the wrong economic assets. Moreover, most financial assistance programs are costly to administer. Even in highly developed countries, it is virtually impossible to tell either the best technology or the most able performers, especially in early and middle gestation. Distortions are especially great when repayment is contingent upon success.

Governments in general are not good at evaluating technology, choosing the best performers, monitoring progress, or pricing risk (uncertainty). It is very difficult for governments to create and enforce contracts in which they fully share in the upside potential. Government assumption of downside risk, either implicitly or explicitly, distorts economic incentives. The distortions to risk are a particularly severe problem of financing incentives. Therefore, in the gestation stage, especially during the early and middle periods, governments should minimize the use of financing assistance and use appropriately structured incentive payments whenever possible.

Direct Government Involvement

Most technology development is best stimulated via direct incentives. These are clearly preferred over financing incentives. Direct government involvement (such as those activities listed in Exhibit 9) should be limited to cases of severe market failure where direct incentive payments clearly will not work, as in the case of natural monopolies, projects whose scope is beyond the capacity of the private sector (such as fusion research and space development), or basic research.

In situations where significant and expensive basic research is still required (i.e., where even the early gestation stage has not been reached), direct support may be pertinent. Such research should be public and done so that it strengthens the knowledge creation infrastructure conducted by universities, think tanks or government research institutes.

Case Example: *The U.S. Shale Oil Debacle*

As part of the efforts to develop alternatives to imported petroleum, the United States focused on “shale oil” as one of several synthetic fuels that could substitute for imported petroleum and increase energy independence. Shale oil was particularly attractive since there were large U.S. reserves, the basic technology was known and pilot projects had established at least two technically feasible methods to pro-

Exhibit 9**Direct Government Involvement
in Production**

Type	Pros	Cons
Development Projects	May be only way to rapidly proceed with basic research or high-risk projects.	Government may not have comparative advantage in selecting technology or managing its development. (Especially as technology moves out of gestation period).
Demonstration Projects	May be necessary while macro-infrastructure is being developed or when insurmountable non-economic barriers exist.	Other alternatives are more cost effective.
Government Companies	May allow control over strategic resources or critical activities. Logical alternative with natural monopoly or large high-risk project.	May create barrier to entry if not privatized or phased out. Non-competitive barrier.

duce shale oil. These production methods were mining and “cooking” to separate hydrocarbons from limestone, and “in-site processing” (streaming hydrocarbons from rock beneath the surface and simply pumping the separated hydrocarbons to the surface). There were two environmental issues. First, shale oil would require considerable water in an arid part of the U.S., and second, mining with surface processing would leave a high volume of residual rock tailings.

However, the central issue was economic. While some claimed to have the ability to produce shale oil at \$30 to \$35 per barrel, more realistic estimates (Stone, 1980) projected production costs of \$40 to \$45. At a time when OPEC prices were

\$35 per barrel and adverse scenarios were projecting \$40-plus and even \$50-plus per barrel, the economic case for shale oil and other synthetic fuels seemed great, especially given marginal costs for off-shore and arctic oil estimated at \$40-plus per barrel for discovery, development, and delivery to the U.S.

The problem was to move shale oil from gestation (known technology with a product having a clear need) to “rapid growth.” This required many large-scale production sites and an infrastructure to transport and refine so that shale oil would fit within the existing petroleum infrastructure. Shale oil was an interesting development situation for several reasons. As a substitute for an established product, shale oil was a relatively simple case of technology substitution. It required much less infrastructure creation than most new technology assimilation situations. Finally it was an example of efforts at “import substitution.”

The main uncertainties were prices and cost. What would the cost per barrel be? What would the world price and U.S. price of petroleum be?

The Carter administration perceived the problem to be capital. To accelerate development, the U.S. created a government funding agency, Syn Fuels Corp. It was charged with selecting shale oil producers and providing subsidized financing and/or financial guarantees for debt.

Several projects operated by major oil companies (or at least consortia containing major companies) were identified. However, the world price of oil fell. The logical economic decision of the participating companies was to fold and leave the government to cover the cost. As a result, the United States has no shale oil and no ongoing development structure.

Several observations are pertinent:

- *Knowledge.* By selecting and financing particular projects, Syn Fuels Corp. and/or other government agencies had to make decisions about the best technology, environmental issue resolution, and the most able, competent, committed providers. The competition was in obtaining government financial assistance and not in achieving economic efficiency.
- *Entry Barriers and Universality.* Not being selected precluded other companies from competing. Both research and unsubsidized entry were shut off.
- *Risk.* The government (Syn Fuels Corp.) bore risk (doing the technology development, poor performance, high production cost, and/or low selling price). The risk was asymmetric. If petroleum prices were high relative to production costs, the selected companies would make good returns and have a competitive advantage over non-selected companies in future growth. If price was adverse relative to cost, there was little down-side loss in quitting.

Given that the world price of petroleum and shale oil production costs were the main uncertainties, an alternative direct incentive policy would have been a subsidy per barrel, possibly a subsidy that declined over time. An example might have been a subsidy of \$20 per barrel in 1984 declining to zero in 2004.

Given a decision for a limited number of sites, competition could arise by having potential providers “bid” for their required subsidy, which could be site specific. Many providers could be selected. Payments would occur only for successful production. The providers win only by producing efficiently. They could raise their own financing given a subsidy commitment. They could manage price risk by forward contracting or other risk management techniques. The government, in a system of direct subsidies, does not have to make decisions about technology and can deal with environmental issues via restrictions. Risk is not shifted to the government.

Shale oil is a clear example where financing guarantees for a small number of pre-selected providers produced no technology development, shut off research, discouraged non-selected providers, and incurred considerable cost. With the benefit of hindsight, it is clear that production subsidies would have been a superior policy alternative.

Case Example: ***Agricultural Subsidies***

The support structure for agriculture is extensive, including government subsidized research and development, field support (e.g., U.S. Department of Agriculture field agent services), crop subsidies, crop insurance, and in some cases financial assistance. However, price subsidies are the primary policy.

The key point is that price subsidies stimulate production and stimulate the use of improved equipment, fertilizers, herbicides and pesticides, and other activities that pay by increasing output. Reward is proportional to efficiency. Risk is borne primarily by the producer or managed via hedging and/or insurance.

When more production was needed at the start of World War II, the response to the incentive provided by production subsidies and guarantees was dramatic. The ongoing U.S. problem in agriculture is a surplus of supported crops relative to demand.

The experience shows the danger of market distortion for supported versus unsupported activities and the need for time-phased incentives. Moreover, U.S. agriculture reflects the importance of infrastructure support (suppliers, markets, technical assistance, and especially know-how support). These will arise within the private sector when the basic industry is healthy.

Case Example: ***Electronic Payments and Non-Economic Barriers***

Efforts to use computer-communication technology to enhance the payment system of the United States provide a particularly interesting case example of the difficulty of technology development in an advanced economy that has important lessons for the less developed economies. This example is especially pertinent since an effi-

cient payments mechanism is a critical component of an efficient financial system and an efficient economy.

The Federal Reserve Act of 1913 created the Federal Reserve System of the United States in its current form. Creating an efficient payments mechanism was one of the three major responsibilities given to the Federal Reserve, the other two being to manage the money supply and to charter and supervise national banks.

The Federal Reserve plays a central role in the U.S. payment system. Rather than being just a regulator-supervisor, the Federal Reserve is a payment processing-clearing agent for banks and other depository institutions. It competes with private sector payment clearing-settlement services.²

The U.S. payment system is almost universally viewed as a model of efficiency. Despite a large number of depository institutions in the United States (more than 60,000) and despite a large geographical area, payments are settled quickly at low cost with great reliability. For instance, the Federal Reserve's cost for clearing a check deposited in an east coast bank and written on an account in a west coast bank is less than 5 cents. The settlement time, including physical delivery of the check to the drawee bank, is generally no more than one business day. The processing and settlement of checks in the United States is often cited as an amazing example of processing efficiency.

Electronic payment is a generic term for the use of computer-communication technology to make payments or to transfer funds. *Wire transfers*, real-time movement of funds between accounts in two different banks (depositing institutions), is a payment mechanism that is inherently electronic. However, the concern here is using electronic payments as a substitute for checks, payment drafts, credit drafts, and other paper payment instruments.³ This is a situation of *technology substitution* in which a paper payment instrument such as a check, with its physical handling and transportation requirements, is replaced by an electronic check image that is moved via communication lines. In effect, the electronic check substitute is replaced by a computer record containing the same information as the check.

Efforts to produce electronic alternatives to checks and to other paper payment instruments began in the 1960s. At that time, it was technically feasible to substitute electronic payment images for paper payment instruments, especially checks and payment drafts. Since paper payment instruments required physical handling, sorting, and delivery via a transportation system, electronic images sorted and stored in a computer and delivered via a communication network seemed like an obvious improvement—lower cost with much greater speed and reliability. Since the Federal Reserve had a set of forty-plus computer centers for processing checks that were linked by a private communications network (and since the Federal Reserve already

² See Federal Reserve Bank of Atlanta (1983) and Stone (1986b) for background on the United States payment system and the basics of electronic payment.

³ See Stone (1986a, 1986c, 1990) for more details on product enhancements and reliability improvements.

operated the technically more difficult wire transfer system with links to major banks), going from paper checks to electronic check images seemed technically easy and both socially and economically desirable.

Planning and system design began in the late 1960s. The Automated Clearing House (ACH) was organized and became operational in 1976 with the Federal Reserve as the primary operator. However, very little electronic payment volume took place in the 1970s. One issue was economic incentive. The Federal Reserve provided both check clearing and electronic payment processing to member banks as a nominally free service until 1981. Banks had no economic incentive to change. Their investment in check processing equipment and check-based services was a clear disincentive.

The 1980 Monetary Control Act mandated service pricing. To encourage electronic payments, the Federal Reserve subsidized ACH clearing services from 1981 to 1986 with a time decreasing subsidy. Moreover, depository institutions were required to accept electronic settlements such as payroll and Social Security. However, with very low volume and no significant price difference, there was still very little incentive for banks to actively market electronic payments as an alternative to checks. The U.S. check clearing system was very efficient and performed most payment functions well. Moreover, given high fixed costs for systems, software, and training and given geographic neutrality, most small banks saw electronic payments as a threat. They preferred the check-based system.

By the late 1980s, many efforts at accelerating the conversion from check payments to electronic check images (electronic payments) were undertaken. Most notably, many improvements in cost, reliability, and product features were added.

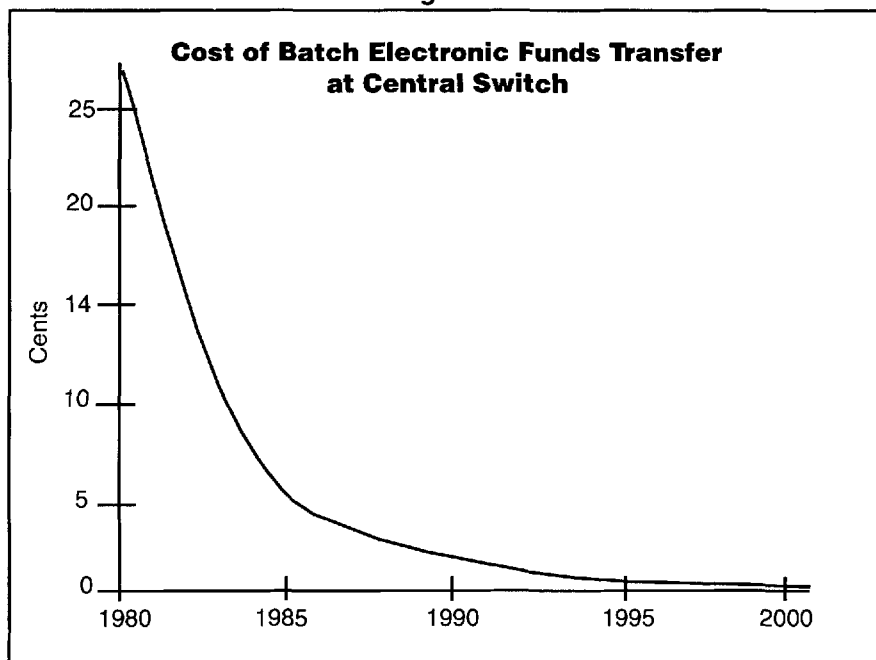
Figure 2 shows the dramatic price (cost) improvement as a function of time. The Federal Reserve developed software and a terminal system for small banks. Extensive education efforts took place. Much support infrastructure was added. Corporations, moreover, became serious about EDI (electronic data interchange) with electronic payment being part of financial EDI as detailed in Stone (1989).

Since 1990 electronic payments in the United States have experienced accelerating growth from favorable economics and infrastructure building. After twenty-plus years, the gestation stage is ending and rapid growth is beginning. If the generally accepted criterion of 10 percent market penetration is used to define the start of rapid growth, then 1998 to 2000 is the likely start of the hyper-exponential growth phase.

The U.S. experience with electronic displacement of check payments is important for the lessons that can be learned about the extreme difficulty of technology displacement under the best of conditions.

- *Forecast Difficulty.* Given the obvious economic system, and product merits, there were many overly optimistic forecasts of rapid displacement, including in-depth studies by the Federal Reserve. *It is easy to underestimate technical complexity and overestimate how fast new technology will be assimilated.*

Figure 2



- *Gestation Acceleration.* It is very difficult to accelerate the gestation process. The process of product development, refinement, and testing, and the creation of an infrastructure to produce, support, sell, and educate pertinent constituencies, are all very time-consuming and difficult to accelerate even in an advanced country. Even using the resources and power of the Federal Reserve did little to speed electronic payment technology.
- *Economic Incentives.* Having economic incentives is crucial. However, it is a necessary but not sufficient condition. Giving electronic payments away would have had little effect on accelerating displacement.
- *Risk.* Reliability (the absence of processing risks, both errors and failures) was crucial. The ACH was limited until this barrier was overcome in the mid-1980s.
- *Change Incentives and Disincentives.* Given an efficient check payment mechanism, there were no strong incentives to change in the absence of volume. Many parties with change retarding power (primarily small banks) had clear incentives to minimize change. For the most part, there were very few “first mover incentives.” Hence, change drivers with market and economic power (other than the Federal Reserve) were not present.
- *Education.* While the basic concept of an electronic check image is fairly easy to understand, there are many technical and system complexities. Creating the

operational knowledge and disseminating it was a multi-year (ten-plus) process. Likewise, product and benefit education for various market segments was slow.

- *Non-Economic Barriers.* Without detailed elaboration, many non-economic barriers slowed or blocked change, including: (1) the need for legislation (e.g., the 1980 Monetary Control Act) to force pricing and economic incentives; (2) payment system float; (3) corporate and bank processing systems; (4) the complex nature of the U.S. banking system, including several types of depository institutions (e.g., commercial banks, savings banks, credit unions), federally chartered and state-chartered institutions, within-state and other geographical restrictions, and a very large number of depository institutions; (5) conflicting system and data standards; (6) institutional-regulatory conflicts; (7) legal ambiguity with respect to payments; (8) risk responsibility for processing failures or other errors; and (9) product deficiencies or omissions (such as stop payment options).

Realism as to the difficulty of technology development is critical for good policy formation. The problems of advanced economies can provide important lessons for developing economies.

Conclusions

- Technology development is very difficult even for relatively simple, clearly attractive technologies in advanced economies. Technology assimilation is hard to forecast.
- Economic incentives are necessary but not sufficient. The more direct, simple, and universal the incentives, the better it is for success. Direct incentives are generally preferred to subsidized financing, although many situations involve combinations of direct and indirect government involvement. Government is often the crucial provider of necessary infrastructure.
- Risk is pervasive. The private sector and financial markets and intermediaries are generally better equipped than government to price and manage risk other than legal-regulatory risks.
- Non-economic barriers are crucial and often block or delay otherwise viable technologies.

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CHAPTER 9

Pension System Reform and the Evolution of Capital Markets: The Chilean Experience

by Augusto Iglesias

Reform of the Chilean pension system in 1980 entailed the establishment of a new regime—the AFP system—with defined contributions, individual capitalization of workers' contributions, private and competitive management, and state regulation and supervision. This new system came into operation in May 1981 and will eventually replace the old one.¹ The creation of the new pension system has given rise to a rapid, substantial accumulation of financial resources in both pension funds and life insurance companies.² In December 1994 the value of the pension funds was \$22.3 billion, and life insurance company investments totaled \$5.1 billion. Funds managed by both kinds of institutional investors represented 50 percent of 1994 GDP.

Some analysts have warned of the risks associated with such a rapid build-up of funds in countries with underdeveloped capital markets. They have pointed out that this is a weakness of pension system reforms that imply a total substitution of traditional regimes by a new capitalization system. Since, by many standards, Chile's capital market was not fully developed when the reforms went into effect, the Chilean case is a valuable experience that can serve as a guide for other countries considering pension reforms.

The aim of this chapter is to describe and discuss the impact of the development of pension funds and life insurance companies on Chile's capital markets. It first analyzes the relationship between reform of the pension system and changes in the institutional framework of the capital market that were brought about both by government decisions and by the spontaneous initiative of those involved in the investment process. Next, the effects of pension system reform on the volume of financial savings and the impact on the stock and fixed income market arising from the pension funds' demand for financial assets are described. The chapter then provides an analysis of the effect on financial sector intermediation by the creation

¹ Since January 1983, all dependent workers entering the workforce have had to join the new system.

² These companies cover the financial risks of disability and survivorship for people affiliated with the new system and offer life annuities to retirees.

of pension fund managers (AFP), both from the point of view of the pension funds' importance as sources of financing for the system, and from that of the possible competition between AFPs and financial institutions ("disintermediation").

Pension Reform and Capital Market Regulation

Experience in Chile shows that the replacement of the pay-as-you-go pension system with individual capitalization resulted in substantial changes in the institutional framework of the capital market. Although some of the changes in regulation took place before the new pension system began operations, most of them have occurred at the same time as the growth of the social security funds. Without any doubt, this process has had a positive influence on the development of the capital market and the economy as a whole.

The fact that the creation and growth of social security funds occurred at the same time as institutional advances in the capital market suggests that such advances are, at least in part, a direct result of pension system reform. Although it is possible to argue that some changes, such as the enactment of a new securities or corporation law, would have taken place with or without the creation of the new pension system, the timing of these reforms leads one to conclude that, at the very least, the accumulation of social security funds accelerated the reform process, since it created an urgent need to improve the rules and regulation of the capital market. In fact, as Valdés and Cifuentes (1990) have argued, since 1981 (when the AFPs commenced operations), an important change in emphasis has occurred in government policies regarding the capital market. Priority has been given to transparency in operations and solvency in institutions. Moreover, in many cases, such as the establishment of a risk-rating system for public offerings or the regulation of conflicts of interest, the main motivation for change came directly from the pension industry, resulting from its need to ensure the adequate development of the process for investing social security funds. All this indicates that capital market regulation was indeed affected by the creation of the new pension system.

The changes in capital market regulation were directed mainly towards preventing conflicts of interest; increasing the efficiency of the securities intermediation process; improving the transparency of stock market operations; facilitating and encouraging the development of new instruments and markets; and reinforcing and modernizing government supervision. With this purpose in mind, substantial reforms of stock market legislation were carried out in the early 1980s (1980-1982), when the Organic Law of the Superintendency of Securities and Insurance, the Law of the Stock Market, and the Law of Corporations were enacted. Since then, these codes have been modified many times and specific regulations have been incorporated which have substantially improved the functioning of the capital market.

As regards the pension system, regulations have had to combine different objectives. Regulations have addressed both the need to accommodate the pension funds' increasing demand for financial assets and the need to ensure transparency in the handling of these funds. At the start, to ensure that transactions were carried out under publicly recognized conditions and to reduce the level of risk to which the pension funds could be exposed, investments were restricted to fixed-income instruments, with predetermined maximum limits per instrument and per issuer. Also, the type of markets in which instruments could be traded was stipulated, and common procedures for valuation of investments were created. Rigorous supervision of the system was also put into place. Later, as pension fund management experience was gained and capital market regulation improved, the authorities made the regulations more flexible, broadening the possibilities for investment to avoid undue portfolio concentration in certain instruments and issuers. For example, investment in shares was authorized at the end of 1985. In 1994, the investment limit was raised for shares in companies with more concentrated ownership. At present, the authorities are also drafting legislation aimed at introducing new financial instruments, which may be acquired directly or indirectly by the pension funds. Real estate corporations, investment trusts and mortgage funds are thus being created.

This ongoing process of reform recorded in Chile is further evidence of the close relationship between the accumulation of social security funds and the institutional transformation of the capital market. It seems unlikely that all these changes would have occurred at the same very fast pace without the constant demands of AFPs and life insurance companies for better regulations.

Chile's experience also points to the importance of some degree of coordination between a country's pension system, capital market reform, and other economic changes, such as the privatization of public companies. For example, establishment of the risk-rating system and authorization for investing social security funds both took place in 1985, the same year that the "second wave" of privatization began in some state companies. This coordination aided the process and made it possible for pension funds to acquire large percentages of the privatized state companies.

This process of change in capital market regulation has benefited not only the pension funds but other sectors of the economy. As Valdés and Cifuentes (1990) point out, there are at least three types of externalities resulting from improved regulation of capital markets. The first is at the level of the financial industry. It is produced by the greater transparency and liquidity generated by the regulations established for pension fund operation and the increased competition in buying and selling securities fostered by the appearance of new institutional investors. The existence of economies of scale in the securities and financial markets permitted an increase in the volume of stock market transactions, greater specialization of functions, and a reduction in costs. Also, institutional advances made the stock market more attractive to people who considered it risky or not sufficiently transparent. A second externality benefits other productive sectors and stems from

improved training for financial system and stock market employees. The third type of externality is produced because the new regulations (or improvements to them), which were triggered by the reform of the pension system, may also be applied to other activities.

In the following pages, different examples of how these externalities have been present in Chile will be described.

Custody of Securities. Until 1994, the AFPs and insurance companies had most of their assets in custody in the Central Bank of Chile (by legal obligation) and a smaller proportion in their own offices. The daily buying and selling of securities carried out by these investors implied, therefore, the physical transfer of instruments to and from custody and the checking of their authenticity. This exposed them to the risks of document falsification and robbery, as well as increased administrative costs. To resolve this problem, pension funds, life insurance companies, and the stock exchanges, together with the banking sector, contributed to the creation of a centralized, electronic system of securities custody (*Depósito Centralizado de Valores*), which began operating in 1995.

Electronic Trading of Securities. Until 1987, the trading of fixed-income instruments and shares in the stock exchange was carried out by traditional “open outcry” systems. In that year, an electronic trading system was implemented at the Santiago Stock Exchange (an institution that has been in existence since 1893). Later, in 1990 a second Stock Exchange, which also used advanced trading systems, was created in Santiago. This technological advance and greater competition among brokers significantly improved the efficiency of the market, permitting the simultaneous interaction of a greater number of traders and providing on-line information concerning current deals. It also made it possible for pension funds and other institutional investors to trade financial instruments directly, instead of acting through orders to brokers authorized to operate in the stock markets.³ This allowed them to carry out transactions more quickly and with greater control.

The emergence of an electronic trading system would probably have occurred even without pension reform. However, there is no doubt that the large volume of operations with which they are involved, and their interest in increasing the efficiency of intermediation, was a decisive factor in accelerating this process and helped the decision to create the new Stock Exchange.

Professionalization in the Investment Decision-Making Process. The creation of pension funds substantially altered the profile of the investors operating in the capital market, by including professional decisionmakers who work with a longer time horizon than that of the traditional investor and with greater capacity to gather and analyze information. One of the most important effects on the capital market of the professionalization of decision-making is the improved allocation of available financial resources. Experience in Chile shows that this technification of the

³ What happened in practice was that brokers signed contracts with the pension funds, authorizing them to use their passwords to access the electronic exchanges.

investment process has extended to other institutional and noninstitutional investors, who have also benefited from the improved information and wider range of instruments produced by the operations of the AFPs and insurance companies.

It has also been argued that the professionalization of investment decisions has contributed to the stability of the capital market and, in particular, the stock market (Camus, 1994). This occurs because the decisions of institutional investors are based on changes in expectations regarding the development of the market, which are perceived to be permanent, or to opportunities occasioned by mispricing of certain instruments. This assists the market in moving from one point of equilibrium to another, with positive effects on efficiency. On the other side, in the face of short-term fluctuations in prices of financial assets that are not grounded on real changes in the position of the issuers, it is very probable that the reaction of AFPs and insurance companies will be more “rational” than that of other investors, whose vision may be short-term.

It is possible to argue that these beneficial effects could be counterbalanced, since variations in the portfolio structure of these investors could have a large impact on market prices. In addition, competition between the AFPs, together with the regulations requiring that they reach a minimum return relative to the market average (Article 37 D.L. 3500, 1980), produce a “herd effect.” In other words, managers follow each other in changing their portfolio structure (to avoid the risk of falling below the minimum return), and this increases the effect on the market of the buying and selling of instruments by the leading AFPs. Although there is no doubt that rough variations in the investment portfolio of these institutional agents can produce important effects on market prices, this does not mean that their participation will increase the volatility of the market because, as was already mentioned, they usually base their decisions on long-term factors, which are much more stable, and also because, once a decision to change the portfolio composition has been made, it takes them far longer than other investors to reach the desired investment structure, because of the size of their portfolios relative to market transactions.

There is some statistical evidence showing that the creation of institutional investors in Chile has been a positive factor in the stability of the market. For example, Camus (1994) points out that the participation of the institutional investors has reduced price volatility, compared to other large Latin American markets. The coefficient of volatility, measured by calculating the coefficient of variation in average monthly return for each country’s share indexes over a five year period, was 1.92 for Chile; 2.44 for Mexico; 3.25 for Argentina; 3.73 for Peru; and 4.46 for Brazil.

Risk-Rating Systems. In 1985, a risk-rating system came into operation in Chile for those instruments eligible for pension fund investment. The body responsible for the approval and final rating of securities is the Risk Rating Commission. Initially made up of state functionaries (the Superintendents of AFPs, Banks and Financial Institutions, and Securities and Insurance), the majority of its members now come

from the private sector. Decisions adopted by the Commission were first based on studies carried out by the pension fund managers themselves. Later, private risk-rating companies were created, and were contracted by the AFPs to carry out their risk studies. At present, all public offering instruments must, by law, be rated by at least two specialized entities. The Rating Commission makes its decisions on the basis of studies prepared by these private entities.

In this way, and as a result of the pension funds' need for information (risk rating is used to determine the specific limits for different instruments), a new risk-rating industry was developed in Chile, marking a very important milestone in the perfecting of the capital market. The information produced by the risk-rating companies is not only used to calculate limits for a few institutional investors, but is also made widely available to the stock market. As a result, investors now have a low-cost tool that enables them to make better investment decisions.

Reform and Expansion of the Capital Market

The aim of this section is to analyze the consequences of the reform of the pension system on the volume of financial savings channeled through the capital market (there is no attempt to study the impact of this reform on the total volume of savings within the economy).

The creation of the new AFP system resulted in a significant reduction in the income of the old social security institutions (*cajas*), since they no longer received the contributions of workers who transferred to the new system. This increased the existing deficit and the financial support required from the government. Part of this increased deficit was financed by issuing state securities which were placed in the capital market. The government also used other sources of financing, such as the sale of state assets and the reallocation of spending destined to other areas of the budget. Moreover, at the time of the reform, the government was running a budget surplus on its non-social security accounts as a result of cutbacks in spending during previous years.

For their part, the pension fund managers began to receive the flow of contributions from workers who changed to the new AFP system. Because of the characteristics of reform in Chile and the bad reputation of the old system, the number of workers who transferred to the new pension system was immense. After only eight months of operation, the number of people affiliated with the AFPs was 1.4 million, a figure equivalent to 63 percent of the workers who were registered in the old system's social security *cajas* at the end of 1980, and 39 percent of the total labor force.⁴

⁴ In 1982, the AFPs received \$421 million in net contributions from workers (net of fee payment to AFPs, payments in pensions and other deductions). Later, the flow of contributions diminished, reaching \$261 million in 1985, but since 1986 it has grown steadily, reaching \$1.2 billion in 1994.

Under the old system, workers' contributions were destined directly to payment of benefits. In contrast, the flow of contributions received by the AFPs is invested in different financial instruments through the capital market. In this way, the reform gave rise to a substantial increase in the financial savings channeled through this market, plus an increase in the supply of financial instruments, due to the issuing of state securities, which was necessary to cover part of the deficit caused by the reform.

The pension funds managed by the AFPs increased from \$272 million in 1981 to \$22.3 billion in 1994, equal to 41 percent of the GDP. The investments of the life insurance companies rose from \$303 million in 1982 to \$5.1 billion in 1994, equal to 9.4 percent of the GDP. Social security saving, measured as the flow of contributions plus interest⁵ and other increases, less the payment of fees to the AFPs and expenditure on pensions, represented between 11 and 18 percent of total saving between 1982 and 1994. In addition to the increase in financial savings channeled through the capital market, the AFPs' and life insurance companies' demand for financial assets has had other substantial effects on the capital market. These are expansions in the volume of transactions; reductions in trading costs; increases in the supply of long-term funds; creation of new financial instruments; reductions in the cost of funds for companies; and the development of new instruments for savings.

Size of the Market. As mentioned above, the AFPs and life insurance companies must invest the net contributions and premiums through the capital market. Because of the relative size of the funds managed by these institutions, this investment process has produced a sharp increase in the value of the transactions carried out in the market for both fixed-income instruments and stocks.

According to a report from the Santiago Stock Exchange, (Bolsa de Comercio de Santiago, 1995), the amount traded in fixed-income and financial intermediation instruments increased from \$2.4 billion in 1983 (9.9 percent of GDP) to \$854 billion in 1994 (157 percent of GDP). The value traded in shares rose from \$80 million (0.3 percent of GDP) to \$5.6 billion (10.4 percent of the GDP) in the same period. The number of trades in fixed-income and financial intermediation instruments rose from 52,234 in 1983 to 557,154 in 1994, while the number of trades in shares increased from 24,934 to 471,085 during the same period.

Experience in Chile also shows that the positive impact of AFP and life insurance company investments on the capital market, together with the favorable evolution of the economy and the expansion of national income, have stimulated an increase in the number of investors participating in the market. For example, the number of shareholders in corporations which put up their securities for public offering rose from 435,389 in 1985 to 570,984 in 1994, and the number of participants in (open) mutual funds rose from 56,181 in December 1991 to 158,594

⁵ A conservative interest rate of 5 percent has been considered. Gains or losses of capital due to variations in the prices of the instruments on the market have not been taken into account.

in October 1995. The number of issuers and the amount of financial liabilities have also grown significantly. In 1985 the number of issuers of fixed-income instruments was 40, whereas in 1994 it was 96. The corporations listed on the stock exchange rose from 215 to 281 during the same period. The stock of financial liabilities rose from 55 percent of GDP in 1981 to 206 percent in 1994.

Reduction of Trading Costs. The greater volume of trading carried out through the stock exchange and the increased competition implied by the creation of the Electronic Stock Exchange of Chile in 1990 has stimulated a reduction in the commissions charged for trading on the stock exchanges. As a consequence, the costs of new investment and portfolio restructuring have also gone down, encouraging saving through the stock exchanges. According to a report from the Santiago Stock Exchange, commissions charged on the trading of shares and fixed-income instruments fell from 0.5 and 0.015 percent in 1985 to 0.12 and 0.0 percent in 1994, respectively, while the commission at present for financial intermediation instruments is zero. (There is a fee charged by the broker).

Supply of Long-Term Funds. Unlike other institutional investors, such as (open) mutual funds or banks, the AFPs and insurance companies manage financial resources that can be invested long term. This is because the contributions paid in by workers to the AFPs cannot be withdrawn from the individual accounts until the requirements are met for receiving an old-age, disability or survivorship pension (workers can take their funds to a different manager at any moment; AFPs do therefore require liquidity in their investments). During the period 1981-1995, the managers received vast resources in workers' contributions and have had to pay out only a small number of pensions. Given the newness of the system, it is projected that this situation of surplus will continue for many more years, until the system is in long-term equilibrium (around the year 2030), when a much larger number of workers will begin to withdraw their accumulated funds to finance their pensions.

The life-insurance companies which offer annuities to workers retiring under the AFP system also have stronger incentives to invest part of their assets in long-term instruments, because Chilean law allows those companies which present a better match between the terms of their assets and liabilities to use a higher interest rate to calculate the reserves which they must hold in order to back the commitments undertaken with the pensioners (decreasing, in this way, their capital requirements).

For this reason, the establishment of the new pension system created an important potential supply of long-term funds, which radically changed the funding opportunities for companies. The evolution of the market for bonds (long-term securities issued by companies) and mortgage-backed certificates clearly shows the positive effect of the reform on the availability of long-term finance. The balance of bonds issued increased from \$366 million (1.5 percent of GDP) in 1984 to \$2.5 billion in 1994 (4.5 percent of GDP), while annual placements rose from \$51 million (0.2 percent of GDP) to \$440 million (0.8 percent of GDP) during the same period. The total stock of mortgage-backed certificates rose from \$1.2 billion in 1981 to \$5.3 billion in 1994. In December 1994 the investment of pension funds in bonds and

mortgage-backed certificates was \$1.4 billion and \$3.0 billion respectively, which represented 6.3 and 13.7 percent of the total stock of these instruments in existence at that date.

Creation of New Financial Instruments. The significant increase in pension funds and insurance company investments and the expansion in the demand for financial assets has forced authorities to study and apply measures to increase the supply of financial instruments in order to avoid excessive concentration of social security resources in certain securities or issuers. With this in mind, investment limits for social security funds have gradually been made more flexible and the availability of existing instruments in which these funds may be invested has been increased. Again, an outstanding example of the measures adopted is the establishment of the risk-rating system. Once the relevant legal modifications were made (especially with regard to the maximum concentration permitted in the ownership of companies available for pension funds investment), this system allowed far more companies to issue public offering instruments (both shares and bonds) and offer them to the pension funds. Another example is the 1990 authorization to invest pension funds abroad, which became effective in 1993 once the necessary regulations were completed.

The need to increase the pool of investments has led authorities to encourage the creation of new financial instruments. Thus, real estate companies were established in 1989, and investment trusts (close-end funds) were created in 1991 (Law 18.815, 1991). The investment trusts were set up to steer part of the pension funds indirectly to the purchase of shares in companies whose securities are not traded on the stock exchanges and therefore represent a higher level of risk: "company development investment trusts"; investment in real estate, "real estate investment trusts"; and others kind of financial instruments, "general investment trusts". Also, another financial instrument (*mutuo*), similar to the mortgage-backed certificate, was created. The *mutuo* represents a contract between its holder and the mortgagor, in which there is no intermediate institution, such as the financial institution in the case of mortgage-backed certificates, to back the fulfillment of the obligations assumed by the mortgagor. The conditions for the issue of these instruments (amount, term and rates) are more flexible, and they are therefore less liquid than mortgage-backed certificates, which are issued in series of similar characteristics.

The capital market reform of 1994 incorporated modifications to Decree-Law 3.500 which regulates the AFPs, and authorized pension funds and life insurance companies to carry out operations to cover the financial risk which might affect their investments. At the same time, authorization was also given for the indirect acquisition of securitized credits through investment trusts. However, risk-hedging instruments, which are widely used and traded on the international market, are still incipient on the Chilean stock exchanges, while the securitization of credits has not yet taken place. In both cases, it is hoped that demand from the pension funds and life insurance companies will stimulate the development of the market.

Reduction in the Cost of Funds for Companies. Medium-sized and large companies now have access to direct financing from the pension funds through the issue of bonds and public offering of shares. As has already been mentioned, in December 1994 the funds held 6.3 percent of their portfolio in bonds and 33.0 percent in shares for a total of 39.3 percent invested in company securities. This total percentage has risen sharply since 1985, when it amounted to only 1.1 percent. Before the reform the main sources of financing for companies were bank credit, retained earnings and capital contributions by controlling shareholders.

It is impossible to determine the exact impact of the reform on the cost of funds for companies because other changes which took place in the Chilean economy have affected interest rate and price to earnings ratios.⁶ However, it can be argued that in some degree the expansion of financial savings resulting from the reform, and the increased competition in the supply of financing for medium-sized and large companies implied by the creation of the AFPs, has contributed to a reduction in the interest rates. Paul (1994) estimated that, at the end of 1994, prime companies were obtaining financing at 40 basis points over the risk-free rate. In a similar way, the incorporation of pension funds into the stock market as of the end of 1985 has been one of the most important factors in reducing the rate of return demanded by the market for investment in this type of instrument (the price-earnings ratio rose from 4.2 in December, 1987 to 21.5 in December, 1994).

Development of New Instruments for Saving. Contributors to the AFP system can make tax-exempt voluntary contributions to their individual capitalization account in order to increase their pension benefits or bring forward their retirement date. Moreover, since 1988, workers have also been able to open a voluntary savings account in the AFPs, either directly or through automatic deduction from wages by the employer. These accounts are independent of their pension account, and the funds deposited in them are freely available. Up to four withdrawals may be made each year, without prior notice. Contributors may request account balance information at any time, as well as information on deposits, withdrawals and yield, without having to go to an AFP branch office.

The most important advantage of the voluntary savings account is its low costs (the AFPs may charge commission for managing the voluntary savings accounts, but none has done so), and the fact that there is no lower limit for saving, which is particularly important for lower-income workers. In December 1994, the total balance in voluntary savings accounts was \$340 million, a figure equivalent to 1.5 percent of total pension funds and 0.6 percent of GDP. It is very probable that a

⁶ National savings rose from 8.2 percent of GDP in 1981 to 25.4 percent in 1994; the level of country risk has dropped, due to the sustained improvement in the economic indicators. This has produced an increase in the level of external saving, both in the form of direct investments and credit. The foreign investment trusts created in 1987 placed financial resources in fixed-income instruments and company shares. In 1992, various large Chilean companies began to trade their shares in the international markets, through ADR issues.

proportion of the savings placed in these accounts represents additional net savings and is not a substitute for other kinds of saving, since for one segment of workers (those with low incomes), this account is the only instrument which allows them to save at low cost and in small quantities.

Reform and Financial Disintermediation

The purpose of this section is to analyze the effect of pension reform on bank intermediation. To do this, the impact of the accumulation of pension funds on the banking system's ability to raise funds and allocate credits is compared with the hypothetical situation which might have occurred without the reform. It is also necessary to consider the effect which the AFPs have had on the business carried out by certain bank subsidiaries.

Effect of the Reform on Bank Funding

The creation of the AFP system resulted in an increase in the financial savings channeled through the capital market. One of the sectors which gained the most from this increase is the banking system, since the pension funds have invested a significant proportion of their portfolio in time deposits and mortgage-backed certificates issued by commercial banks. During the first years after the reform of the pension funds, their portfolio was concentrated in fixed-income securities, both because of the legal stipulations then in force for pension fund investment and because of the scarce supply of other financial instruments which fulfilled minimum conditions of security and liquidity. Thus, at the end of 1981, 71 percent of the pension funds were invested in securities issued by the financial system (62 percent in time-deposits and 9 percent in mortgage-backed certificates), and 28 percent in securities issued by the government (1 percent in Treasury bonds and 27 percent in Central Bank notes). Until 1985, the volume of funds invested in these three issuers did not change greatly and, at the end of that year, the joint investment in state and financial system securities amounted to 99 percent of total pension fund investments. However, government debt became more important, concentrating 43 percent of the pension funds (Treasury, 22 percent and Central Bank, 21 percent), compared with the financial system's 56 percent (time-deposits, 21 percent and mortgage-backed certificates, 35 percent). Despite the reduction in the relative importance of the financial sector in the funds' portfolio, total investment increased in absolute terms, due to the significant growth in pension funds, which rose from \$197 million in 1981 to \$1.6 billion in 1985. However, beginning in 1986, the volume and percentage of the pension funds placed in fixed-income instruments and shares issued by private companies increased sharply. In December of that year, 5 percent of the funds were invested in this type of instrument, while at the end of 1994 the figure was 39 percent (33 percent in shares and 6 percent in bonds).

Between 1986 and 1994, as the importance of company bond and stocks in the portfolio of pension funds increased, the percentage of funds invested in securities issued by the financial system decreased significantly. By December 1994, it had fallen to 20 percent (6 percent in time deposits and 14 percent in mortgage-backed certificates). However, investment in absolute terms rose from \$1.6 billion in 1985 to \$4.5 billion in 1994.

Investment of pension funds in time deposits and mortgage-backed certificates, which in 1981 represented 3 percent and 2 percent respectively of the total amount issued in these instruments, by 1988 had risen to 24 and 53 percent, respectively. From 1989 onwards a reduction occurred in the importance of the funds in the time deposits market, and at the end of 1994 the percentage fell to 12 percent. By contrast, the market share of pension funds in mortgage-backed certificates continued to rise, reaching 57 percent in 1994 (with a peak in 1992 of 61 percent). These resources would not have been available for the financial system, at least in the amounts indicated, if it had not been for the reform of the pension system. So, pension funds became one of the main sources of financing for the banking system.⁷

It can thus be concluded, then, that the creation of AFPs has not resulted in competition for the banks as regards to funding, with the only exception of the voluntary savings account which has some operational advantages and, at least until 1993, some tax advantages, compared with other forms of saving offered by banks, such as time deposits or mutual funds. However, in practice, the voluntary savings account has not been a real source of competition for the financial system, mainly because it is an investment alternative open only to individuals. Companies and institutional investors, which are responsible for the major part of financial saving carried out in Chile, do not have access to these accounts. Moreover, the creation of the voluntary savings account has probably produced an expansion in savings. In addition, the actual balances in voluntary savings accounts are insignificant compared to the pension funds and to the deposits and bonds issued by the financial system. As was mentioned earlier, at the end of 1994 the amount in these accounts totaled \$340 million, equivalent to 1.5 percent of the pension funds and only 2.7 percent of the current value of time deposits and bonds issued by the banking system.

⁷ It may be argued that, without the reform, the financial situation of the social security *cajas* would have been stronger and, therefore the state's commitment to the system would have been less, increasing the availability of funds for the government, some of which could have been placed in the financial system. It is true that the government's liquidity position would have been more favorable without the reform, at least in the early transition years, but it seems likely that a very small proportion of that greater availability of funds would have been channeled into the financial system. Other alternative uses would have attracted the most significant part of those extra funds, such as pension readjustments, other public sector operating expenses, or debt repayments to the Central Bank.

Effect of the Reform on the Allocation of Bank Credit

The pension funds and life insurance companies invest in bonds and shares issued by companies and fixed-income securities of the Central Bank of Chile and the Treasury. Although these investments represent a potential source of competition for the placement of resources carried out by banks in these sectors, the degree of competition depends on the regulations applied both to the AFPs and the banks.⁸ Experience in Chile suggests that the creation of the AFPs has, to a certain extent, implied that financing through the issuance of bonds and shares has become a substitute for bank credit. Although it is not possible to gauge the magnitude of this substitution, there are indications that it has not been very great.

As far as capital is concerned, there is no competition, because banks are not authorized to offer this type of financing. With regards to company debt, a high degree of substitution does not appear to exist due to the characteristics of each type of financing. Credit offered by the banking system is fundamentally short term, while the financing offered to companies by the AFPs is long term. It may even be argued that the substitution effect was offset by the complementarity between banking credit and AFP financing. In fact, the greater availability of long-term financial resources via bonds and shares, which was a consequence of pension reform, allowed companies to enter this market and invest in a way that would have otherwise been impossible, because of the match between project cash flow and payments of contractual debts and the restrictions in the debt-to-capital ratio which companies were allowed to reach. This greater volume of investment and activity has probably had a positive effect on the demand for short-term credits from the financial system (working capital, for example), a market in which the pension funds have not participated.⁹

From a different perspective, it should be noticed that only one group of companies has had real access to pension fund financing. For small companies, and many medium-sized ones, the issuing of bonds and shares is not justified because of the costs involved (among others, the risk-rating which is required of public offering instruments; the preparation of the issue prospectus; the regular publication of information; and the dissemination of information and explanations of the use to which the funds will be put). Although the creation of "company development investment trusts" has opened a potential source of indirect investment in companies of smaller size for the pension funds, the investment trusts have so far bought shares in companies with an average net worth of \$11 million (medium-sized companies by Chilean standards), and the pension funds have set aside only a low percentage of their portfolio to invest in these trusts.

⁸ In Chile, banks have not been allowed to form AFP subsidiaries.

⁹ Short-term pension fund investments have largely been in the form of bank deposits and Central Bank instruments.

Evidence from Chile would therefore indicate that for small companies, and many medium-sized ones, there has been no competition between the banking system and the pension funds in the allocation of financial resources. This competition has existed only for certain medium-sized companies and larger companies. However, the supply of long-term funds in the pension funds has also benefited the banking system because of the effects on the activity levels of companies and their consequent demand for short-term loans.

Final Remarks

When pension system reform took place in Chile, authorities had already carried out substantial modifications to the regulation of the capital market, especially with respect to liberalizing interest rates and transferring ownership of banks to the private sector. However, the stock market was yet underdeveloped and regulations affecting it were deficient in terms of the transparency of operations and the solvency of the participating institutions. This was not an obstacle to carrying through of reform and the creation of the new system of AFPs, although the authorities had to act with prudence to safeguard the security of the pension funds and accommodate their growth with the development of the capital market. In the early years, this meant limiting investment possibilities for pension funds to instruments with the lowest risk and highest liquidity, such as securities issued by the state and the banking system.

The rapid accumulation of pension funds and the increased demand for financial assets necessitated the adoption of measures to increase investment opportunities available to these institutional investors. With this purpose in mind, the authorities acted in two directions. First, they made investment regulations more flexible and authorized the acquisition of instruments already existing in the market. Second, they improved the regulation and supervision of the capital market, with the aim of increasing the transparency of operations. These changes were made gradually, as greater experience was gained in managing the pension funds and as the stock market developed.

A continuous process of regulatory reform to the capital market has been evident since the time the pension system was reformed. In fact this process would have been very difficult without the particular dynamics imposed by the existence of the pension funds, and the will and determination demonstrated by the authorities to perfect the operation of the capital market. All in all, after almost 15 years of operation of the new pension system, the Chilean capital market is now more highly developed. The volume of operations has risen sharply. Regulations have been improved. There are greater opportunities for those supplying and demanding funds, and more investors and issuers of instruments are participating in the market.

The banking system has benefited most from the creation of the AFP system. The investment of a significant proportion of the pension funds in time deposits and

mortgage-backed certificates has allowed them to count on a new, important source of financing. Although the acquisition of company bonds and shares by the AFPs has implied a certain degree of competition against the allocation of credit by the banking system, available evidence suggests that this has not been very great because many small and medium-sized companies cannot obtain financing from the pension funds. Also, the degree of substitution between bank lending and that offered to larger companies by pension funds seems low, since the former is fundamentally short-term, while the latter is long-term. Bank subsidiaries dedicated to stockbroking, intermediation and financial consultancy have expanded their business with the increase in the value of trading on the stock market, which has been encouraged by the creation of the AFP system.

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SECTION FOUR

Policy Recommendations for Latin America and the Caribbean

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Policy Recommendations for Latin America and the Caribbean

The final section of this book consists of a single chapter, “Financial Intermediation and Policy-Based Lending: Policy Recommendations for Latin America and the Caribbean,” prepared by Antonio Vives and Kim B. Staking of the Infrastructure and Financial Markets Division of the Inter-American Development Bank. Chapter 10 attempts to apply the lessons of policy-based finance as practiced in East Asia to the economies of Latin America and the Caribbean as these continue to undertake reform programs based on a market orientation. Many of the lessons of the East Asian experience are indeed shown to be universal and can be incorporated into the reform programs already underway. Messrs. Vives and Staking begin with a review of the necessary and sufficient conditions for government intervention in financial markets. Nevertheless, they caution that any such interventions must be undertaken with extreme care, with an emphasis on allowing markets to work while providing, as a first priority, the needed legal and regulatory environments.

The minimum conditions for a successful application of policy-based lending are divided into two categories, those that impact the overall economic environment and those related to policy design. Conditions regarding the economic environment include macroeconomic stability; the existence of an open economy; competitiveness in markets for goods and services; the development of a repayment culture; satisfactory legislative and regulatory environments; a functioning judicial system capable of protecting property and individual rights; appropriate financial market oversight; and a basis of functioning financial markets. Program design must be consistent with other government policies; use a market-like source of funds; be targeted to market imperfections; select profitable projects (i.e., those with an ability to repay) that have a positive development impact; retain a multisectoral focus; be professionally managed; be independent from political influence; and be of a temporary nature with a limited size. These ideals will be difficult to incorporate, but the absence of any single factor will limit the effectiveness of any and all government interventions.

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CHAPTER 10

Financial Intermediation and Policy-Based Lending: Policy Recommendations for Latin America and the Caribbean

by Antonio Vives and Kim B. Staking

This chapter discusses the conditions under which policy-based lending may further economic development within a Latin American and Caribbean context, given the current state of financial markets in most countries of the region. The discussion is intended as a conclusion to the articles presented at the “Conference on Policy-Based Finance and Alternatives for Financial Market Development,” many of which are included in this book. It nevertheless reflects more the opinion of its authors than a consensus. The conference itself did not attempt to reach such a consensus and at its conclusion many of the participants continued to maintain divergent positions with regards to several of the key issues. To some degree, this chapter is an attempt at a compromise; a position that does not recommend a formal adoption of policy-based finance as it exists in East Asia, but rather proposes the incorporation of the universal lessons from the East Asian experience into the more market-based reforms currently underway in Latin America and the Caribbean. While the discussion in most of this book is centered on credit programs, the conclusions are equally valid for other varieties of government interventions in financial markets.

Why Is Policy-Based Lending an Issue?

Many students of development, particularly economists, conclude that any intervention by government in the allocation of financial resources, whether in the form of loans, guarantees or interest rate subsidies (via policy-based lending or more strictly, directed credit programs) will result in a reduction of overall economic welfare. The commonly accepted view, since the time of McKinnon (1973), is that credit decisions are best left to properly functioning markets. Markets are presumed to provide the incentives necessary to encourage individual investors and financial intermediaries to process all available information (which is generally assumed to

be freely available) and make the appropriate allocation and pricing decision based purely on the market's subjective distribution of the risk-return tradeoff associated with myriad investment opportunities. At the limit, all aspects of economic well-being, including tradeoffs between the purely rational financial goals and the need to protect societal well-being, can be subsumed into the pricing decision.

Notwithstanding this consensus, empirical evidence indicates that financial markets, especially those of developing countries, do not always conform to this ideal. There is evidence of both market failure and government failure which prevent markets from operating properly. Information is not widely available and available information cannot be processed without the expenditure of significant resources. Barriers to the development and operation of financial markets include legal and judicial environments that do not always provide adequate protection of property values, a concentration of economic power, and incomplete regulatory environments, all of which increase risk and financial costs. In addition, markets do not consider nonfinancial goals or social costs. When one adds the role of significant positive externalities that arise from the existence of properly functioning financial markets, some, albeit limited, role for the government can easily be justified. The question before us then, is how such interventions can best be structured.

The success, controversial as it may be, of policy-based lending in some countries of East Asia, and the recognition of their potential effectiveness by some economists (Stiglitz, 1993; Calomiris and Himmelberg, 1993) have prompted a re-examination of the role of government intervention in the development community. Several East Asian governments have actively pursued interventionist policies that have been credited with the creation of a strong industrial and commercial sector (World Bank, 1993). Detailed discussions of the experiences of Japan and Korea with policy-based finance are included in this book. Nevertheless, it is clear that the credit policies of the governments were only part of a financial environment that allowed for and supported economic growth. Thus, the lessons of East Asia for Latin America and the Caribbean are multiple. These lessons must include the importance of macroeconomic stability, the need for consistency among government policies, the role of market-like structures in achieving quasi-market outcomes, the need for independence and professionalism in government credit agencies, and the vital necessity of creating a credit culture including an emphasis on independent project appraisal, monitoring, and collection as part of any government intervention.

The relatively mild interventions in East Asian credit markets, when compared with the massive and unsuccessful interventions in Latin America and the Caribbean point towards limited, carefully targeted interventions. The East Asian success stories provide ample evidence of the validity of these underlying lessons. Moreover, the contrast with the Latin American and Caribbean experience highlights the fact that financial markets are imperfect, but that while some kind of government intervention *may* result in an improved allocation of scarce resources, this does not necessarily imply that such an intervention *will* result in a positive reallocation.

It must also be recognized that the more successful interventions have not been without cost. As pointed out by several authors (Cho, Santomero, and Vittas in this volume, and World Bank, 1993), the relative success in many of the East Asian economies was achieved at the expense of slower development of more complete financial markets. Severe financial repression has left the financial systems, especially in Korea but to a lesser extent in Japan, in a relative state of underdevelopment, both with respect to the rest of the developed world and the needs of their own economies. It is not yet possible to judge whether the benefits justify the costs. Would Japan have achieved its current development if it had resorted to market measures in credit allocation and promoted the market development of financial institutions? Without the financial repression associated with policy-based finance, would Korea today be facing the severe problems associated with economic concentration and an underdeveloped financial system? We do not have conclusive answers to these questions, but hope that a discussion of the issues will aid the countries of Latin America and the Caribbean in their development efforts.

All interventions by governments in economic activity are associated with a set of costs and benefits; their relative size will always be a matter of discussion. Some costs and some benefits are impossible to measure, both *ex ante* and *ex post*, and even when they can be measured, there will not be consensus regarding the proper comparison methodology. Politicians will tend to have a very short-term view, and in general, may conclude that the benefits (normally achieved over the short run) outweigh the costs (normally felt over the long run). In their implicit cost-benefit analysis, they effectively use a high discount rate. Theoretical economists, on the other hand, may underestimate the presence of market imperfections, externalities and information asymmetries and tend towards a lower discount rate. The former will tend to overemphasize the fact that whatever benefits are achieved in the short run may have a multiplier effect on economic development that will, in turn, allow for a better absorption of the costs over the long run, while the latter may not provide adequate consideration for any potential multiplier. This may particularly be the case for economists who are accustomed to the developed, information rich, and well-functioning financial markets of the United States or Western Europe.

Given that it is almost impossible to measure and compare all costs and benefits of policy-based lending, the effectiveness of these interventions will always be an issue and the conclusion reached by a given proponent or detractor will always be influenced by the assumptions made, the eloquence in expounding the issues, the issues selected and ignored, and the conditions under which the program is expected to work or did work, among others. *The effectiveness and desirability of policy-based lending will remain a controversial subject.*

Is There a Role for Government Intervention in the Allocation of Credit?

This book has outlined the experiences of Japan and Korea with policy-based finance, along with the history of other countries in using financial programs to support specific sectors (housing, agriculture, technology development, student loans, small and medium enterprises in the United States; and enterprise development, agriculture and regional development in Europe). Given the evidence presented here, it is reasonable to conclude that, under certain conditions and at some point in the development history of a country, policy-based lending or other forms of intervention in the allocation of credit will have a role to play in bringing credit to segments of economic activity which are desirable from an economic and social point of view, but that the market cannot or will not supply. It is unlikely that governments will stop intervening altogether in financial markets (Corrigan, 1996). Efforts must, therefore, be aimed at limiting these interventions to where they have the greatest positive impact and structuring the programs so that distortions and misallocation of resources can be minimized.

Economists often claim that markets are the most efficient tools for the allocation of credit. To understand this claim, we must understand what is meant by market efficiency. Efficiency is a relative concept and will depend on the criteria used to define it. Markets seek to allocate resources that comply with a very strict efficiency criteria, which is the *maximization of financial returns for a given level of risk*¹ based on available information. Furthermore, each agent in the market will make the allocation decision based on the marginal impact of the investment on the investor's own position or portfolio. An investment whose financial return depends solely on the exploitation of a tax loophole may be quite attractive for those able to capture it, even if it does not produce any goods that society needs. Such an investment will probably find financing in the market (subject to the perception of the risk in the elimination of the loophole). Conversely, there are many investments that provide large societal benefits which private markets are unlikely to provide, if these benefits cannot be captured by a specific investor. Investments such as lending facilities for microenterprises or poor farmers have the potential to create employment, reduce poverty, slow urban migration, possibly even reduce crime, and eventually lead to a larger tax base and greater tax revenues. Who benefits from the reduction of social unrest? The benefits do not flow only to those who supply the capital, at least not in the proportion of their contribution, and will therefore not enter into the market calculation. However, such investments, when all costs and benefits are properly accounted for, might not only be economically or socially profitable, but may even prove to be financially profitable for the government through the increase in tax revenues and reduction of other social expenditures. There is a clear potential for externalities that justify some kind of governmental intervention.

¹ Or alternatively, the minimization of risk for a given level of return.

From the point of view of society as whole, which is the viewpoint governments should take, the financial profitability criterion used by the markets may not be sufficient when there are other economic and social returns and risks that also have to be incorporated in the evaluation of the efficiency of the allocation. These include achieving greater fairness in income distribution, creating level playing fields when there is an unequal distribution of economic resources, assuring the elimination of discriminatory policies (or ameliorating the impact of past discrimination or other injustices), and creating opportunities for specific marginalized sectors of the economy where private perceptions of the risk/return tradeoff are not sufficient to induce investment. The externality may justify the intervention, but the intervention must also be efficient from a societal perspective in achieving the stated goal at the lowest possible cost (including the impact of risk). The question that needs to be asked is whether direct interventions in financial and credit markets, taking account of the resulting distortions in these markets, is the most effective way for governments to address these underlying issues. Too often, financial market interventions are viewed as an easy way to address the needs of a “political constituency” without an adequate analysis or understanding of side effects. Likewise, when designing policies to address these social issues, policymakers must decide whether market incentives can be used to address the issues on a cost effective basis.

There is ample evidence of imperfections in financial markets, especially when compared with the traditional neoclassic model of pure competition. Financial economists have made great strides in explaining the existence and structure of different kinds of financial intermediaries and the instruments issued by these firms. The analyses of Stiglitz and Weiss (1981), Santomero (1989) and Diamond (1984) clearly document that market imperfections created by the existence of information asymmetries are real and can result in market failure. It is equally clear that many of the problems in financial markets in developing countries are due to government failure, where actions (or often the lack of action) on the part of the government prevent markets from working. How are we able to tell which interventions will have an overall positive impact, that is, where total economic and social benefits outweigh the total social and economic costs?

Unfortunately, no one has been able to provide clear answers regarding when a government should intervene, or equally important, how the intervention should take place when justified. Stiglitz, in analyzing the “East Asian Miracle,” indicates that there is no simple formula that can be applied; instead he concentrates on the ingredients. “Because these ingredients are interactive, and because they were introduced in conjunction with other policies, the government’s approach has to be evaluated as a package. Indeed, East Asia’s success was based on a number of factors, particularly the high savings rate interacting with high levels of human capital accumulation, in a stable, market-oriented environment” (Stiglitz, 1996, page 151). When one compares the East Asian experiences with those of Latin America and the Caribbean, it is more difficult to uncover a similar pattern of actions

or “combination of ingredients” that justify the intervention that took place. One can only conclude that while some forms of interventions may be warranted, the conditions under which they can be successfully applied are likely to be quite restricted and must be carefully analyzed and justified on a case by case basis. The following sections provide the basis for such analysis.

Necessary and Sufficient Conditions for Government Intervention in Credit Markets

A necessary condition for government intervention in markets is evidence of market failure or the existence of significant externalities. However, the justification of such intervention requires as an additional sufficient condition that it is effective in overcoming the market failure and/or offsets for the externality. Such necessary and sufficient conditions can also be applied to policy-based finance or other government intervention in credit or financial markets. While not intended to be an exhaustive list, the three justifications discussed below are among the most important.

Necessary Conditions

- *Information Asymmetries.* The classic discussion of the failure of financial markets concerns information asymmetries between borrowers and lenders. The argument is generally made that information is very expensive to obtain (but once obtained by one lender, the information can be freely observed by others) and that it is hard for lenders to justify the investment in information gathering and monitoring. Information asymmetries often lead to significant adverse selection and moral hazard problems. There is also evidence that the inability of financial intermediaries to properly measure and segment risks (whether due to a lack of information or the inability to use information) results in the collapse of markets.
- *Externalities (Public Goods, Social Benefits).* The claim is often made that financing specific activities will have positive spillover effects on the rest of the economy. Claims for externalities are most often used to justify intervention in science and technology, agricultural finance or support for microenterprises, but are also used to justify pilot programs in a number of sectors.
- *The General Failure of Credit and Other Financial Markets in Emerging Markets.* A common criticism of the financial markets and institutions in Latin America and the Caribbean is that they fail to provide complete services or services to specific sectors. This includes the lack of longer term markets, insufficient risk mitigation instruments or diversification opportunities, the lack of competition among providers of financial services (and resulting high prices), and especially the limited availability of credit services to small and medium-sized enterprises or to the rural sector. In some instances, the government

intervenes when the scope of a project is considered too large for the local financial sector to finance.

It is easy for governments to perceive the existence of some form of market failure, to claim that resources are not allocated properly, and find some areas where intervention may be justified. As is generally the case with necessary conditions, it is far harder to find a justification for effective government intervention. For government to effectively provide these services when the private sector is unwilling or unable to do so, it must be able to demonstrate that it can correct for the market failure or externality or that it has the ability to resolve the information problem more effectively than the private sector. Thus when addressing the perceived market failures, governments must be able to defend sufficient conditions similar to those that follow.

Sufficient Conditions

- *Resolve Information Asymmetries.* If there are information asymmetries, the government must show that it has better access to information (or is able to better use existing information).
- *Correct for Externalities.* If there are externalities, the government must be able to measure them and justify that the proposed program corrects the market's allocation in ways that take the externalities into account.
- *Overcome Market Failure.* If private markets are unwilling to lend to a specific sector, the government must show that its programs are designed to correct the underlying cause of the problem and not just the symptoms of market failure.

In our examination of the sufficient conditions for government intervention in the allocation of credit, there are two aspects that must be kept in mind. First, if there is a market failure, it is not enough that there is a willingness on the part of the government to lend to the sector in question. The government must also be able to demonstrate that it is better able to select risks, monitor the resulting credits and recover higher amounts than would be possible for the private sector. Second, it is important that market failure be distinguished from government failure. If the private sector is unwilling to lend to a specific sector because of legal constraints or regulatory restrictions, because the judicial system is unwilling or unable to enforce contracts, or because the government has a history of intervention in a sector (e.g., forced refinancing or credit forgiveness) to the point that the private sector is unable to compete, the government's role should more appropriately be concentrated on the elimination of such restrictions.

It should be noted that government policy may also be aimed at supporting greater social equity. There are continual tradeoffs in economics between equity and efficiency. Many of the credit programs that are directed at smaller borrowers or the rural sector have social equity as an underlying motive. In such cases, when

government makes a conscious decision to support a particular sector, care must be taken to ensure that subsidies are carefully targeted. Too often, funds are unintentionally diverted to groups that may share similar characteristics with the targeted group, but are not the group in need of assistance.² As noted by Bernel Stone in his chapter, direct subsidies are almost always preferable to interest rate subsidies as they can be more directly targeted to the specific need. Moreover, even the structure of a direct subsidy program (e.g., production-based vs. income-based) can make a large difference in the incentive compatibility of the program, thereby impacting its effectiveness.

Advisability of Policy-Based Finance in Latin America and the Caribbean

In order to provide recommendations regarding the advisability of policy-based lending in Latin America and the Caribbean, the applicability of the above noted necessary and sufficient conditions must be first assessed. One of the first tasks will be the design and implementation of programs to remove all feasible obstacles. While it is clear that imperfections will still exist, care must be taken to ensure that the degree of market imperfection is not increased by the intervention or that one imperfection merely replaces another. The degree and extent of any intervention must be determined by the degree and extent of the market imperfection. As Calomiris and Himmelberg (1993) aptly point out, “The fact that one can imagine justifications for government credit policies to support industries does not mean that such policies are a good idea. It is not clear that the assumptions necessary for justifying government involvement are met.” Before embarking on a policy-based lending program to reach some given target, the above-mentioned criteria should be carefully examined as to their applicability in the specific case. Often, private financial markets and/or market incentives can and should be used in reaching a cost effective solution.

Some of the conditions for the successful application of policy-based lending, especially those learned from the (relatively successful) experiences of East Asia, have been ably detailed by Dimitri Vittas in chapter four. Nevertheless, analyzing the experience of other countries, particularly the failures observed in Latin America, detailed in chapter three by Armando Montenegro, we can present a more complete set of conditions. We propose grouping them into two categories: eight

² Credit programs with highly subsidized interest rates are often directed at smaller firms. Nevertheless, because of the fixed costs associated with obtaining the subsidy (getting information about the program, navigating the bureaucratic maze, etc.), these programs often result in a concentration of credits with the largest eligible firms. They may also attract camouflaging where “non-eligible” firms try to portray themselves as “eligible” in order to gain access to the subsidy.

conditions with respect to the *economic environment* (largely exogenous to the programs) and eight conditions governing *program design* (endogenous to the programs).

Economic Environment

The *eight conditions* briefly described below are basic for the functioning of all credit markets, but acquire more relevance in the case of policy-based lending or other interventions in financial markets, with their potential for distortions in the allocation of credit.

- ***Macroeconomic Stability.*** As the experience of many Latin American and Caribbean countries in the 1980s attests, credit can still be granted under conditions of instability. Nevertheless, it is clear that such credit is extremely hard to control and the transaction costs involved make such programs prohibitively expensive. Policy-based lending under inflationary conditions is indeed conducive to misallocation of resources.
- ***Open Economy.*** One of the best ways to ensure the effectiveness of any type of credit program, market-based or policy-based, is to promote an open economy, subject to international competition. Under such conditions, the production of goods and services will tend toward efficiency, increasing the likelihood of success of any credit program. Furthermore, open financial markets will encourage the flow of capital into the country and contribute to the financing needs of local industry, helping to overcome any deficiencies in local savings and lessen the impact of the duration mismatch between assets and liabilities of the financial system. The openness of the economies of Japan and Korea was instrumental to the success of policy-based lending programs in these countries.
- ***Industry Competitiveness.*** In market-based credit systems, intermediary institutions allocate credit only to firms and industries that are considered viable and competitive, at least over the term of the credit. It is equally important that the industries or activities selected by the government be solvent and competitive in their own right, either before or especially after the allocation of credit. Otherwise, sooner or later, repayment problems will arise. The selection of competitive firms and industries was one of the key features of the programs of Korea and Japan. These programs used export competitiveness as a signal; international competition provided the necessary performance incentives. If the firms receiving credit are internally oriented, the markets in which they operate must provide similar signals. Otherwise, the allocation will result in a crowding-out of other competitive industries. Those managing the credit programs must keep in mind the justification for government involvement in credit allocation. There must be a significant externality, some clear market failure or an identifiable information asymmetry that can be corrected by government involvement. The fact that a firm cannot get credit is

Exhibit 1

Minimum Conditions for Successful Application of Policy-Based Finance

Economic Environment

- Macroeconomic Stability
- Open Economy
- Industry Competitiveness
- Repayment Culture
- Satisfactory Legislative and Regulatory Frameworks
- Functioning Judicial System
- Appropriate Supervisory Oversight
- Functioning Private Financial Markets

Program Design

- Policy Consistency
- Market-Like Source of Funds
- Small, Targeted to Imperfections
- Select Only Profitable Projects with Positive Development Impact
- Multisectoral — Problem Oriented, Not Sector Specific
- Professional Management
- Political Independence
- Temporary Nature, Limited Size

not a justification for government involvement. The firm may not be creditworthy.

- *Repayment Culture.* Sadly, in many countries of Latin America and the Caribbean, there still exists the notion that credit allocated from fiscal resources or through a public financial intermediary constitutes a reward for the activities being carried out. This perception often exists within the credit granting agency as well as among the borrowing population. The provision of credit resources is considered to be a subsidy (or at times, a grant) and timely repayment is not perceived to be a requirement of the loan. It is no wonder that the market is unwilling to finance these kinds of activities in the face of such experience. A culture of repayment within the lending institution is a necessary condition for these programs to be successful. Each credit must be carefully analyzed with regards to its repayment potential. Appropriate guarantees or collateral must be required. Credit should not be extended nor renewed when there is a history of non-payment. Following extension, the credits must be carefully monitored and any deterioration of credit quality noted. Timely repayment must be demanded (with full recourse to the legal collection process when payment is not made). The professional staff of the lending institutions must have the appropriate incentives to assure compliance with credit standards. In this regard, governmental programs must be indistinguishable from market-based credit.

This is one of the strong features of the programs in East Asia that distinguishes them from efforts in Latin America and the Caribbean.³

- *Satisfactory Legislative and Regulatory Frameworks.* Laws and regulations must be comprehensive, consistent, comprehensible and fair. Of particular importance in financial and credit markets are the ability to enter into voluntary contracts; a delineation of the powers of and limitations on financial institutions; a clear definition of rights and responsibilities associated with a variety of financial instruments (particularly non-traditional instruments); the ability to perfect collateral and enforce claims (including ease of access to collateral); and the rights of the government to intervene in the affairs of a financial institution and/or to limit or circumscribe the use of specific instruments or transactions.
- *Properly Functioning Judicial Systems.* To operate efficiently, financial markets require effective and efficient judicial systems that will consistently enforce contractual obligations. Property and individual rights must be effectively enforced. Not even the government should be willing to grant credit if it cannot assure repayment or repossess collateral. In the case of policy-based or other directed credit programs, with the potential for collusion between lender and borrower or other forms of corruption, the effectiveness of the legal system is even more important.
- *Appropriate Supervisory Oversight.* The existence of information asymmetries often implies that financial markets require some kind of official oversight. This can range from very formal supervision, as in the case of commercial banks or insurers, to less formal oversight (including information disclosure requirements and oversight of self-regulatory organizations) as in the case of markets for traded securities. It is critical that the staff of the supervisory organizations be respected professionals who are adequately trained and compensated. Supervisory organizations also need the powers to enforce regulations and to intervene and close unsafe or imprudently managed institutions.
- *Properly Functioning Financial Markets.* Policy-based lending cannot be used as a substitute for imperfect financial markets. The fact that financial intermediation is deficient, either because of a lack of credit resources or institutional weaknesses, does not by itself constitute an excuse for the government to intervene by providing, allocating and pricing credit. If market mechanisms cannot operate, government efforts should be directed at improving those mechanisms, not at stifling their development by intervening in the credit

³ It should be noted that problems in the repayment culture exist for the private sector as well in much of Latin America and the Caribbean. Legal systems do not function as well as one would want, especially with regards to the perfection of collateral and the execution thereof. This situation is one of the major barriers for the provision of credit to many sectors of the economy (especially smaller firms and agricultural credit) whether by the private or the public sector. Government resources should be dedicated to the resolution of these problems prior to promoting public involvement in extending credit.

markets. If the basic conditions do not exist, governments must work simultaneously in the development of market-based financial systems. It is also critical to note that the interventions in East Asia generally resulted in a mild degree of financial repression—interest rate subsidies were generally small. This differs greatly from the severe degree of financial repression observed in the countries of Latin America and the Caribbean.⁴

Program Design

Even if all of the above conditions are present in a given country, they do not ensure the success of a policy-based lending program. There is a need for effective program design, as the potential for abuse and the introduction of distortions is enormous. For all practical purposes, policy-based lending programs must seek to imitate the conditions under which a well functioning market-based financial system operates. The *eight conditions* below attempt to summarize the requirements of an effective program.

- *Policy Consistency.* Policy-based lending cannot function in isolation from other government policies. These must be consistent in such a way that they complement and support each other. For instance, policy-based lending must operate within an industrial policy that does not protect certain industries, is reasonably free of price controls, has positive real interest rates, and has an exchange rate policy that neither hinders industrial competitiveness nor artificially protects it. The cases of Korea and Japan amply demonstrate the wisdom of policy coordination and consistency.
- *Source of Funds with Minimal Fiscal Impact.* The source of resources utilized in policy-based lending should be transparent. If fiscal resources are involved in providing a subsidy, they should be clearly identified in the fiscal budget and limited to these amounts. If deposits are gathered, these deposits must be repaid from the program. Resources should not arise from the inflation inducing money creation by the central bank. The institution of extra reserve requirements on

⁴ The last few years have witnessed significant attempts at reform of the financial sector in most countries of Latin America and the Caribbean (Inter-American Development Bank, 1996). Even though much progress has been achieved in the areas of liberalization of interest rates, strengthening of bank supervision, improving information disclosure requirements, and limiting of the role of the state in direct financial intermediation, much remains to be done. It is particularly important to implement internationally accepted accounting and auditing standards and corresponding information dissemination, establish regulations on self-dealing, provide oversight of financial conglomerates, and develop capital markets and hedging instruments. In their chapters in this volume, Santomero and Corrigan present an extensive discussion of the requirements of properly functioning financial markets. The Inter-American Development Bank has been very active in promoting financial sector development throughout the region. Since 1990, investment sector and financial sector loans, multisectoral credit facilities containing financial sector conditionality, and related technical assistance programs have been instituted in virtually all borrowing member countries.

the banking system to fund these loans should also be avoided. The creation of unfunded deficits can be very destabilizing to the economy as a whole. Rather than solving the financing problem for a relatively small industrial, commercial or agricultural sector, such interventions tend to create long-term problems for the entire economy via increased inflation and interest rates. The ideal sources of funds are those coming from borrowings, be it external from multilateral institutions or commercial sources, or internal through financial intermediation. This was one of the major differences between Korea and Japan; in Korea, a sizable portion of the resources came from the Central Bank, contributing to macroeconomic instability, while in Japan, most of the resources came from postal savings, without introducing additional macroeconomic distortions.⁵

- *Small, Targeted to Imperfections.* Policy-based lending should be in response to a market problem and as such should be targeted to overcoming that problem (or provide temporary relief while the problem is being resolved). The intervention can neither be generic nor widespread, as the distortion in resource allocation would only be compounded. If the problem is one of term (local markets only generating short-term resources), the government contribution might be limited to extending the term, possibly by obtaining longer-term international funds. If the problem is one of access to credit, as is the case of smaller enterprises, government intervention in the credit markets should generally be limited to mitigating the perceived riskiness of smaller enterprises through the absorption of some of the costs associated with processing smaller loans (usually limited to the first loan), providing technical assistance to financial intermediaries willing to work with smaller borrowers, or providing training and technical assistance to the smaller firms themselves.
- *Profitable Projects with Developmental Impact.* Investments funded by government programs should be able to pass profitability, solvency and liquidity criteria imposed by the market on other comparable investments that are not experiencing the problems that the government program addresses. Investments should not be made in firms that need subsidies or protection to be profitable, but in firms that are viable and can contribute to the country's development in ways that would not be realized without government intervention.

⁵ Internal resources must also be used with care to ensure that the allocation is based on market principles. In Japan, there are a number of restriction on the deposit taking activities of commercial banks that have provided the postal savings system with some unfair competitive advantages. In turn, postal savings, along with government pension funds, have provided government bureaucracies with a large source of funds, the Fiscal Investment and Loan Program, which has been used as a "second budget" (equal to 50 percent of the official budget but managed by the Trust Fund Bureau without parliamentary oversight). As the government of Japan is embarking on a major financial system restructuring, the size and existence of this fund is a cause for concern. As well as concerns regarding the impact on the competitiveness of the banking system, there is evidence that some of the funds raised through the postal savings system and public pension funds have been onlent to projects that are unable to repay the loans. (See discussion in the *Wall Street Journal*, March 5, 1997; and the *Washington Post*, March 10, 1997).

- *Multisectoral, Problem Oriented, Not Sector Specific.* In order to maintain competitiveness within the economy and encourage investment in those sectors that have the greatest comparative advantage, it is often preferable to maintain a multisectoral orientation. Governments have seldom proved to be more successful than private markets in identifying industries or firms that will expand, and are often tempted to support noncompetitive industries for political rather than economic reasons. In Latin America and the Caribbean, some of the more successful efforts to support the development of financial markets have incorporated the private sector in credit analysis, risk taking, monitoring and collection. Multisectoral credit facilities sponsored by the Inter-American Development Bank and other development institutions provide long-term financing to the private sector (addressing one of the perceived market failures) by utilizing the domestic financial system. Funds are made available, at market rates, to a group of eligible financial institutions (selected based on financial strength and the ability to evaluate and monitor longer-term investments). These local intermediaries, in turn, provide long-term financing to private sector firms, again at market rates. The private financial institutions bear the full credit risk; only the funding risk is eliminated.
- *Independent and Professional Management of the Program.* Most of the problems experienced in the directed credit programs of Latin America and the Caribbean can be traced more to program management than to problems related to the goals of the program. Many of these programs have been managed within a setting that considered that public funds, granted in the form of credit, are at best to be repaid if everything goes much better than expected. The accountability of managers has been almost non-existent. For a program to be successful it must be managed as a private endeavor. The importance of monitoring and collection cannot be underestimated. This was clearly the case in both Korea, where the country as a whole was, to a certain extent, managed as if it were a corporation, with thorough *ex ante* evaluation and *ex post* supervision of every investment. In the case of Japan, the Japan Development Bank, from its earliest history, was clearly managed by independent professionals.
- *Political Independence.* Related to the previous two conditions is the *sine qua non* of political independence. Policy-based lending must be devoid of political influence and lending institutions must be operated according to commercial criteria. The potential for political interference in this type of program is large, be it through the potential for corruption or vote seeking behavior associated with selective regional development or job creation programs. Where political gains are to be achieved, they must be the result and not the purpose of the programs. Independence is clearly one of the reasons for the success of the programs of Japan and Korea, while the lack of independence can be linked to the failure of many programs in Latin America and the Caribbean.
- *Temporary Nature and Limited Size of Support Programs.* Since directed credit programs are targeted at specific market failures, information asymmetries or

externalities, they should be complemented by measures to address the underlying problems. The larger the program, the more distortions it introduces in the allocation of resources and the more chances there are of stifling the development of market-based alternatives. The magnitude of the program should be relatively small, compared with the overall credit in the economy. The program should preferably be of a specified duration with a planned termination when the underlying causes are removed.

Although these restrictions do not call for an absolute exclusion of public involvement in credit allocation, they do strongly suggest that it will not be easy to develop successful programs where there is a direct role for the government (or a government owned intermediary) in the allocation of credit. Within the political and social environment of Latin America and the Caribbean, the application of the preceding criteria will no doubt require the allocation of the resources using, as much as possible, the existing channels of the private financial system. The role of the state should ideally be limited to setting policies, ensuring proper oversight of financial markets, monitoring and enforcing policies, and building the legal and regulatory infrastructure needed for the private financial markets to operate.

While longer-term markets are developing and gaining access to international markets, there may be a temporary role for the government in intermediating longer-term funds to solvent, well managed financial intermediaries. In these second tier lending programs, the private financial intermediaries should be responsible for the individual lending decisions and the monitoring of the investments and receive the reward and/or suffer the consequences resulting from their actions. Resources should be allocated at market rates, in order to avoid channeling subsidies to the owners of financial intermediaries. Central banks should have no role in credit programs and public development banks should operate under strictly commercial criteria; never in the guise of first tier, direct lending institutions. Under no circumstances should policy-based lending or other directed credit programs be used to substitute for, or to crowd-out, the private financial system.

Costs Associated with Policy-Based Lending

Needless to say, it would be difficult to apply all of the conditions presented above. Some imperfections will exist in any system where a government agency is asked to determine credit policy via administrative allocation. Their incentive structure does not allow for efficiency for a large-scale program. Significant costs will therefore be associated with the implementation of directed credit programs. Moreover, the potential for misallocation of resources is very large. While these costs seem to have been limited in the case of Japan, a preliminary evaluation of the Korean experience indicates that the costs of intervention were potentially high. A complete evaluation will likewise need to take into account the social costs associated with a

directed credit program (Calomiris and Himmelberg, 1993). As one attempts to measure the cost, it must be emphasized that the conditions described above, and the lessons learned from the East Asian experience, are specifically designed to help policymakers avoid or minimize those costs. The value of the lessons lies in how they can be applied to credit programs in other developing countries. Just as the value and appropriate design of a government supported credit program must take into account the specific characteristics of the targeted sector (and indeed, of the country in question), the costs will depend on the structure of existing financial markets.

The potential costs associated with the application of policy-based finance can be divided into three general classifications. First, there is the direct cost of the government intervention, including the extent to which it may result in a sub-optimal allocation of scarce economic resources or distortions in related financial markets. Second, there is the risk that the programs will not be properly implemented, that lessons, such as those that can be gleaned from the East Asian experience, will not be fully incorporated into the program. Third, there are the indirect costs associated with the underdevelopment of financial markets resulting from an overdependence on government sponsored financing programs. Unfortunately, many of the costs are difficult to measure prior to establishing the financial market intervention. Many of these indirect costs are ignored in the analysis or are considered to be “risks” that will be avoided through proper management of the program. Nevertheless, appropriate probabilities are not applied to the risks nor are funds made available to create the structures needed to control for these risks. When the risks become a reality, the *ex post* costs will be borne by the economy, but these potential costs are not properly accounted against the claimed *ex ante* benefits in determining whether or not a program should be implemented.

- *Direct Costs of Government Intervention in Financial Markets.* There are three types of direct costs associated with government intervention in financial markets. The first, the cost borne by the economy as a whole, is the sum of the costs associated with the management of the program (in excess of what would be charged by private markets), the funds needed to pay either direct or interest rate subsidies, and the losses generated by the program (whether in an implicit budgetary allocation or in the unexpected costs that arise once the program is in effect). A second set of costs are those related to the misallocation of funds within the economy. This includes the use of resources by firms that are not competitive and might otherwise exit the market and the corresponding lack of funds for firms that would be able to add to the wealth of a nation, but that are for some reason not targeted by the government. A final set of costs are those associated with rent seeking. These costs, along with the related potential for corruption associated with government sponsored credit allocation programs, are greatest when the potential subsidy is high. Such a use of non-productive resources represents a dead weight loss to the economy.

- *Costs of Improperly Implemented Interventions in Financial Markets.* The hidden costs that are associated with improperly implemented government directed credit allocation programs are possibly the most insidious. These include the potential impact on macroeconomic instability discussed earlier and the costs associated with poor management. Thus, the risks associated with inconsistent or inflexible policies must be taken into account along with the lack of professional management or independence from political influence, the inability to create a credit culture, the temptation to support non-competitive industries or to use the program to keep the economy closed, the use of improper funding sources, and the lack of attention to the underlying problems (macroeconomic instability, poorly functioning legal system, undercapitalized financial institutions, inadequate disclosure requirements or accounting standards) while efforts are concentrated on resolving the symptoms (high interest rates and lack of access to financing by some segments of the economy). A country with a history of professionalism and independence within the government agency responsible for the intervention is thus more likely to be able to successfully implement a program than is a country where the civil service is underpaid or one that has a history of political intervention or corruption.
- *Indirect Costs Resulting from the Underdevelopment of Financial Markets.* Of particular importance when looking at the cost of direct government involvement in the allocation of credit is the impact of financial repression on the development of financial markets. While repression was generally more limited in the East Asian experience than in Latin America and the Caribbean, both have resulted in underdeveloped financial markets. As pointed out by Allen and Santomero in their chapters, the financial systems of Latin America and the Caribbean will have to move beyond their dependence on government for the allocation of investment funds if they are to meet the needs of the real sector.

The long-term cost associated with government interventions in credit allocation on the development of financial markets is hard to measure on an *ex ante* basis. Some needed markets will just not develop. Private financial markets are unlikely to target rural markets or build the systems needed to lend to small and medium-sized enterprises if they are faced with competition from massive government programs. It is especially hard to compete with a lender that does not place a heavy emphasis on credit quality or collections. Likewise, if governments dominate the provision of longer-term credits to industry or to major exporters, the private sector may not have the incentive to develop the technologies needed to capture funds, to diversify and/or hedge risk, or to analyze and monitor complex projects. Moreover, such systems are more likely to remain dominated by banks or bank-like intermediaries and not develop traded markets, institutional investors, venture capital specialists, and the other types of institutions and instruments needed in a modern economy. No single model will be appropriate for all countries at all times, but a failure to allow markets to develop through the use of structures that are

incentive incompatible *vis-à-vis* private markets will only slow the process of development.

Concluding Remarks

Given the history of Latin America and the Caribbean with respect to credit allocation schemes, it is not clear that the development of a policy-based finance program along the lines implemented in East Asia would prove successful. Given the economic milieu in which Latin America and the Caribbean is operating today, the efforts of the governments should be concentrated on ensuring the proper functioning of private financial markets. Efforts should first be concentrated on maintaining macroeconomic stability, ensuring the existence and functioning of appropriate legal and regulatory environments, and maintaining adequate supervision and information disclosure requirements.

Although the development of markets and institutions is a priority, the lessons from East Asia are still important. It is unlikely that the countries of the region will abandon interventions in financial and credit markets targeted at specific sectors. This being the case, the correct application of the lessons of East Asia to government programs of credit allocation can help ensure that the needs of the targeted sector are better met and that the cost of the intervention will be minimized.

These lessons are straightforward. A proper underlying economic environment is essential; this is where government policymakers can have the greatest impact. Governments must strive to maintain macroeconomic stability, keep their economies open and maintain a competitive structure for their industries, develop a political environment conducive to a repayment culture for all government supported credit programs, establish and maintain a judicial system that provides effective and efficient protection of both individuals and property rights, and ensure a regulatory environment that allows for the functioning of safe and sound private financial markets.

Once this background is in place, lending programs can be designed to ameliorate specific market failures by *attacking the problems and not the symptoms*. Such programs should be limited to those where the government has a comparative advantage or access to better information, or where there is a clear externality associated with the government's support for a specific sector. When the lack of credit in a specific sector is due to government failure rather than market failure, the underlying problem should be addressed. The programs developed should have policies consistent with the overall economic strategy of the government and be funded by a market-like source of funds (ideally, one that has to be repaid out of funds generated by the program plus any explicit budgetary allocations). The programs should be targeted to specific, identifiable imperfections (with concurrent efforts to eliminate them), and thus should be limited in size and duration. To the greatest extent possible, they should be oriented to specific problems and limited to

those projects that clearly have a positive development impact. Professional management and independence from political influence are essential.

The reader will likely conclude that all, or even most, of those conditions cannot be met in any of the countries of Latin America and the Caribbean. As at the beginning of this chapter we criticized the position of theoretical economists for concluding that only the market is able to properly allocate credit on the basis of their unrealistic assumptions, we can also be the object of criticism for proposing excessively narrow conditions for the application of policy-based lending. It is likely that not all of the sixteen conditions will be met in all government interventions in financial markets, but the success of such interventions, in both macroeconomic and microeconomic terms, will be a function of how closely these conditions are met. Moreover, the conditions do point out the general direction that policymakers should follow in the creation and implementation of policy-based lending or other interventions in financial markets. The further a specific intervention diverges from meeting the standards set forth in this chapter, the less likely it is to be successful, and the more likely it is to greatly exceed the projected cost. Thus, the lessons from East Asia will be of particular value to policymakers as they undertake to correct for market failure while simultaneously working to develop more complete financial markets.

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Financial Market Development

Policy-based finance refers to the active involvement of government policymakers in the allocation of credit, widely used in East Asia as a tool for supporting exporters and other sectors of the economy considered key to economic development. It stands in contrast to the development of markets and establishment of limitations on the role of government in financial markets. To understand the applicability of the East Asian experience to other emerging markets, a conference on "Policy-Based Finance and Alternatives for Financial Market Development" was held in Rio de Janeiro, Brazil in early 1996. The Inter-American Development Bank, the Japan Development Bank and the Banco Nacional de Desenvolvimento Econômico e Social, the national development bank of Brazil, sponsored the conference.

Policy-Based Finance and Market Alternatives contains a selection of the major presentations from this conference. It explores the generally successful East Asian experiences with policy-based finance and contrasts these with the less successful, directed credit programs undertaken by Latin American and Caribbean governments in their attempts to support specific sectors of their respective economies. The volume extracts the universal lessons that are applicable to emerging markets and applies them to the market approach under way in most of the countries of Latin America and the Caribbean.

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