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AND ECONOMIC
DEVELOPMENT

A Reassessment of
Interest-Rate Policies
in Asia and Latin America

Ronald I. McKinnon

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Financial Liberalization and Economic Development

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Interest-Rate Policies
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International Center
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PREFACE

This essay, by Ronald I. McKinnon of Stanford University, is number six in the Center's series of Occasional Papers, which feature broad reflections by senior scholars and policymakers on major development issues and policy applications experiences.

This paper focuses on a subject of great significance to developing countries—the importance and role of financial liberalization in capital formation and in economic growth. It reviews the traditional arguments for liberalization and considers problems associated with it, especially when policymakers are trying to reduce inflation and establish a stable price regime. He emphasizes both the enduring importance of liberalization and of controlling inflation for economic growth, and then focuses on case histories in Chile and South Korea to analyze the problems of managing the transition and consider strategies to accomplish that purpose.

Professor McKinnon has made major contributions to understanding the importance of capital markets and of financial liberalization for growth in developing countries. Studies by him and by his colleague Edward Shaw provided early scholarly support for liberalization, and this essay thus stands for him as an important return visit to this important subject.

Nicolás Ardito-Barletta
General Director
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Panama City, Panama
September 1988

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RONALD I. MCKINNON

Financial Liberalization and Economic Development

A Reassessment of Interest-Rate Policies in Asia and Latin America*

I. INTRODUCTION

When governments tax and otherwise distort their domestic capital markets, the economy is said to be financially "repressed."¹ Usury restrictions on interest rates, heavy reserve requirements on bank deposits, and compulsory credit allocations interact with ongoing price inflation to reduce the attractiveness of holding claims on the domestic banking system. In such a repressed financial system, real deposit rates of interest on monetary assets are often negative, and are difficult to predict when inflation is high and unstable. Thus, the demand for money—broadly defined to include savings and term

* The first part of this paper adapts and extends McKinnon (1988).

deposits as well as checking accounts and currency—falls as a proportion of GNP.

But these monetary assets naturally dominate the financial portfolios of small savers in less developed countries. Thus, back in 1973, Edward Shaw and I hypothesized that repressing the monetary system fragments the domestic capital market with highly adverse consequences for the quality and quantity of real capital accumulation:

(1) The flow of loanable funds through the organized banking system is reduced, forcing potential investors to rely more on self-finance.

(2) Interest rates on the truncated flow of bank lending vary arbitrarily from one class of favored or disfavored borrower to another.

(3) The process of self-finance within enterprises and households is itself impaired. If the real yield on deposits—as well as coin and currency—is negative, firms cannot easily accumulate liquid assets in preparation for making discrete investments. Socially costly inflation hedges look more attractive as a means of internal finance.

(4) Significant financial deepening outside of the repressed banking system becomes impossible when firms are dangerously illiquid and/or inflation is high and unstable. Robust open markets in stocks and bonds, or intermediation by trust and insurance companies, require monetary stability.

Remedying financial repression is implicit in its definition. We suggested keeping positive and more uniformly high real rates of interest within comparable categories of bank deposits and loans by eliminating undue reserve requirements, interest ceilings, and mandated credit allocations on the one hand, while stabilizing the price level through appropriate macroeconomic measures on the other. Then, savers and investors would better “see” the true scarcity price of capital, and thus reduce the great dispersion in the profitability of investing in different sectors of the economy.

These strictures for liberalizing the financial system seem now like mere truisms to most economists—although not to politicians.

Today, both the World Bank and the International Monetary Fund (IMF) stress the importance of stabilizing the domestic price level and increasing the flow of generally available loanable funds at close to market-clearing interest rates. From the perspective of the 1980s, those countries with substantially positive real interest rates and high real financial growth—such as Japan, Taiwan, and Singapore (as shown in more detail below)—are regarded as leading success stories.

This current emphasis on the advantages of financial liberalization is quite remarkable. Well into the 1970s, many development economists had still favored the generation of “forced” saving through inflation—or through shifts in the internal distribution of income by such means as turning the internal terms of trade against agriculture in order to transfer an economic “surplus” to the industrial sector. Credit subsidies, at below market rates of interest, were once widely promoted as a means of stimulating socially desirable investments. Unless so manipulated or repressed, the financial sector was not then viewed as a leading force in the development process. Now, however, there is widespread agreement that flows of saving and investment should be voluntary, and significantly decentralized in an open capital market at close to “equilibrium” interest rates.

Nevertheless, all is not well in the liberal camp. The general case favoring financial liberalization has been called into question by a series of bank panics and collapses in the Southern Cone of Latin America (Díaz-Alejandro 1985). In the late 1970s and early 1980s, Argentina, Chile, and Uruguay all made serious efforts to end wild inflation while deregulating and privatizing their commercial banks. Interest rates on both bank deposits and loans were completely freed, with the latter often increasing to unexpectedly high levels in real terms. That these attempted financial liberalizations generally ended in failure—with an undue build up of foreign indebtedness and government reintervention to prop up failing domestic banks and industrial enterprises—is well documented in a series of revealing studies edited by Vittorio Corbo and Jaime de Melo (1985).

Without retreating to the older view which elevates repressive financial measures to being potentially desirable instruments of public policy, we now recognize that our knowledge of how best to achieve financial liberalization remains seriously incomplete. The *order* in which the monetary system is stabilized in comparison to the

pace of deregulation of banks and other financial institutions must be more carefully considered than had previously been thought.

In this paper, I begin by reviewing the evidence that financial liberalization and significantly positive real rates of interest are, on average, associated with higher economic growth in LDCs. Avoiding financial repression remains very important if the economy's scarce capital is to be allocated efficiently.

In immature bank-based capital markets, however, there are limits to which interest rates can be raised without incurring undue adverse risk selection among industrial and agricultural borrowers—and undue moral hazard in the banks themselves. And, without proper bank supervision, these limits could well be breached during some major attempt to disinflate—as we shall see.

But those countries that have succeeded in sustaining high real financial growth through high real interest rates, while limiting financial risk, have managed to keep their internal price levels quite stable. Thus in the second part of the paper, I deal with the difficult problem of disinflation; how to move from high and volatile inflation to price-level stability.

II. CROSS-COUNTRY COMPARISONS OF INTEREST RATES, PRICE INFLATION, AND REAL FINANCIAL GROWTH

What lessons have been learned about financial repression in steady states—say over a decade or more? Countries that have sustained higher real rates of interest have generally had robust real financial growth leading to higher real economic growth. Some data on private holdings of “broad” money throw light on these issues. Table 1 presents ratios of the broad money supply (M_2) to gross national product (GNP).² One noticeable characteristic is that even the slower-growing Asian countries (shown in the lower panel) tend to be more financially developed than typical Latin American countries (shown in the upper panel). However, both groups of slowly or erratically growing economies have fairly low ratios of M_2 to GNP, averaging about 0.22.

In contrast, Table 2 shows financial development in the really

rapid-growth economies—West Germany, Japan, South Korea, Taiwan, and Singapore. A high and rising M_2 /GNP ratio indicates a large real flow of loanable funds. Because capital markets in these economies were dominated by banks, ratios of M_2 to GNP encompass

Table 1 Bank Loanable Funds in Typical Semi-industrial LDCs
(ratio of M_2 to GNP)

| | 1960 | 1965 | 1970 | 1975 | 1980 | Mean 1960-80 |
|--|-------|-------|-------|-------|-------|-----------------|
| Argentina | 0.245 | 0.209 | 0.267 | 0.168 | 0.234 | 0.225 |
| Brazil | 0.148 | 0.156 | 0.205 | 0.164 | 0.175 | 0.170 |
| Chile | 0.123 | 0.130 | 0.183 | 0.099 | 0.208 | 0.149 |
| Colombia | 0.191 | 0.204 | 0.235 | — | 0.222 | 0.210 |
| Mean ratio of M_2 to GNP for four Latin American countries | | | | | | 0.184 |
| India | 0.283 | 0.262 | 0.264 | 0.295 | 0.382 | 0.297 |
| Philippines | 0.186 | 0.214 | 0.235 | 0.186 | 0.219 | 0.208 |
| Sri Lanka | 0.284 | 0.331 | 0.275 | 0.255 | 0.317 | 0.291 |
| Turkey | 0.202 | 0.223 | 0.237 | 0.222 | 0.136 | 0.204 |
| Mean ratio of M_2 to GNP for four Asian countries | | | | | | 0.247 |

Source: IMF, *International Financial Statistics* (various issues).

Table 2 Bank Loanable Funds in Rapidly Growing Economies
(ratio of M_2 to GNP)

| | 1955 | 1960 | 1965 | 1970 | 1975 | 1980 |
|----------------------|--------------------|--------------------|--------------------|-------|-------|-------|
| Germany ^a | 0.331 | 0.294 | 0.448 | 0.583 | 0.727 | 0.913 |
| Japan | 0.554 ^b | 0.737 ^b | 0.701 ^b | 0.863 | 1.026 | 1.390 |
| Korea | 0.069 | 0.114 | 0.102 | 0.325 | 0.323 | 0.337 |
| Taiwan | 0.115 | 0.166 | 0.331 | 0.462 | 0.588 | 0.750 |
| Singapore | — | — | 0.542 ^b | 0.701 | 0.668 | 0.826 |

^a As well as deposits and currency, the German series includes bank bonds sold directly to the public.

^b The bias is downward because deposit information on specialized credit institutions was not collected.

Source: IMF, *International Financial Statistics* (various issues).

Table 3 Selected Developing Countries Grouped According to Interest-rate Policies: Growth of Real Financial Assets and Real GDP, 1971-80
(compound growth rates, percent per annum)

| | <i>Financial assets^a</i> | <i>GDP</i> |
|--|-------------------------------------|------------|
| 1. Countries with positive real interest rates | | |
| Malaysia | 13.8 | 8.0 |
| Korea | 11.1 | 8.6 |
| Sri Lanka | 10.1 | 4.7 |
| Nepal | 9.6 | 2.0 |
| Singapore | 7.6 | 9.1 |
| Philippines | 5.6 | 6.2 |
| 2. Countries with moderately negative real interest rates | | |
| Pakistan ^b | 9.9 | 5.4 |
| Thailand | 8.5 | 6.9 |
| Morocco | 8.2 | 5.5 |
| Colombia | 5.5 | 5.8 |
| Greece | 5.4 | 4.7 |
| South Africa | 4.3 | 3.7 |
| Kenya | 3.6 | 5.7 |
| Burma | 3.5 | 4.3 |
| Portugal | 1.8 | 4.7 |
| Zambia | -1.1 | 0.8 |
| 3. Countries with severely negative real interest rates | | |
| Peru | 3.2 | 3.4 |
| Turkey | 2.2 | 5.1 |
| Jamaica | -1.9 | -0.7 |
| Zaire | -6.8 | 0.1 |
| Ghana | -7.6 | -0.1 |

^a Measured as the sum of monetary and quasi-monetary deposits with the banking sector, corrected for changes in the consumer price index.

^b The period covered is 1974-80.

Source: IMF (1983).

the main domestic flow of loanable funds in the system. By 1980 Japan, Taiwan, and Singapore had M_1 /GNP ratios of 0.75 or more. Only South Korea had a much lower ratio of M_1 to GNP (0.34), and had to make up for this shortage of domestic loanable funds by borrowing heavily abroad. The other countries shown in Table 2 are now net international creditors.

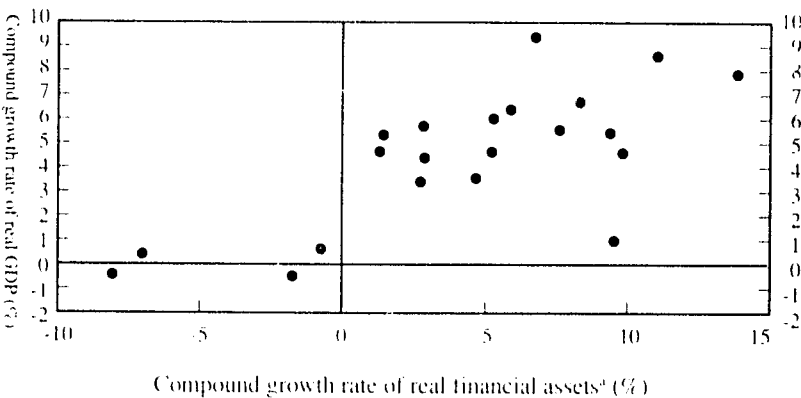
Although a higher rate of financial growth is positively correlated with successful real growth, Patrick's (1966) problem remains unre-

solved: what is the cause and what is the effect? Is finance a leading sector in economic development, or does it simply follow growth in real output which is generated elsewhere? Perhaps individuals whose incomes grow quickly want financial assets simply as a kind of consumer good (i.e., financial growth is an incidental outcome of the growth process). To disentangle these issues, Table 3 presents some data from a recent study on interest-rate policies in developing countries (IMF 1983). Pure data availability and membership of the IMF were the criteria on which countries were selected.

For any one country over time, the real interest rate can vary a great deal, even from positive to negative or vice versa. For the period from 1971 to 1980, the IMF calculated an average real interest rate for each country on a fairly common asset, usually a thirty-day deposit. Countries were then classified according to whether their average real interest rate was positive, mildly negative, or highly negative. Because most of these countries have fragmented interest-rate structures, a representative interest rate is not easy to select. Nevertheless, the IMF managed to devise the three-way classification shown in Table 3.

Using this same sample of countries from the IMF study, real financial growth (which is not the same as measured personal saving) is shown to be positively correlated with real GDP growth in Figure 1. The left-hand panel of Figure 2 shows that those countries that

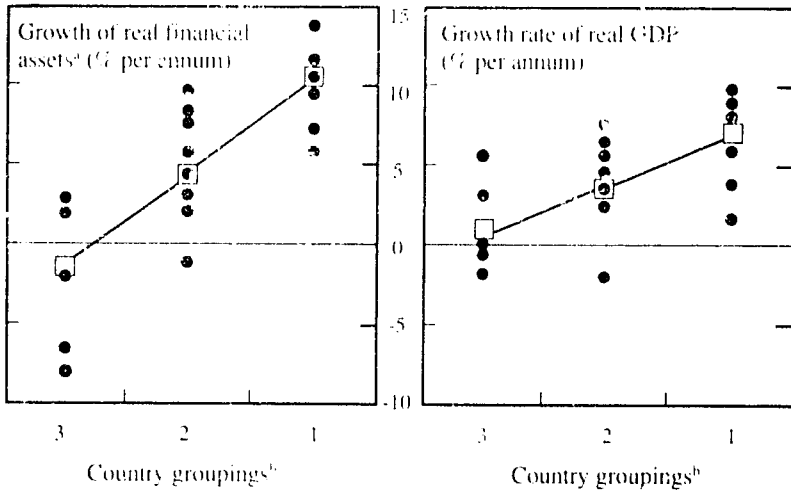
Figure 1 Selected Developing Countries: Growth of Real GDP and Real Financial Assets, 1971-80



^a As defined in Table 3

Source: IMF (1983).

Figure 2 Selected Developing Countries Grouped According to Interest-rate Policies: Growth of Real Financial Assets and Real GDP, 1971-80



* As defined in Table 3

^b See Table 3 for specifications of these groupings

Source: IMF (1983).

maintain positive real rates of interest have higher growth in real financial assets, as might be expected. Most importantly, the right-hand panel of Figure 2 shows a significant positive correlation between real rates of interest and real growth in GDP. A similar result was earlier obtained by Maxwell Fry (1978), who regressed real output growth on real interest rates using pooled cross-section and time-series data from a group of Asian LDCs.

With this kind of regression analysis, care must be taken in deciding which variables are exogenous and which endogenous. Positive correlations between growth in financial assets and growth in GDP do not show which way the causality operates. However, for the purposes of portfolio choice by individual investors, a case can be made for treating the real rate of interest as exogenous. Governments frequently intervene to set ceilings on nominal rates of interest on bank deposits, and at the same time they determine the aggregate rate of price inflation; the real rate of interest, therefore, is very much determined by public policy. Thus the presumption is that nonrepressive financial policies, resulting in significantly positive real rates of

interest, contribute to higher economic growth.

Any positive link between real rates of interest and personal saving, as measured in the GDP accounts, is much less apparent. The results of cross-country statistical studies linking inflation rates to aggregate saving have been quite ambiguous (Leff and Sato 1980). This ambiguity is puzzling: shouldn't saving be discouraged as inflation erodes the real values of financial assets?

In an inflationary economy, real rates of interest on financial assets are usually negative. Because of the inflation, however, the private sector is forced to abstain from current consumption. Individuals must keep adding to their nominal money balances in order to prevent their real balances from declining. But this inflation "tax" extracted by the government is classified in the GNP accounts as if it were private saving. However, real personal financial assets are not accumulating, and the flow of loanable funds to the private sector may be quite low—even though the flow of private "saving," as measured in the GNP accounts, might be quite high.

Typically, therefore, systematic relationships cannot be derived from cross-sectional data between the flow of personal saving and real rates of interest, or between personal saving and inflation. From cross-country comparisons of "long-run" experiences over a decade or more, however, the positive correlation between real interest rates and real growth seems unambiguous.

Apparently the quality, if not the quantity, of investment improves significantly when interest rates are positive and financial intermediation is robust.

Interest Rates and Rapid Economic Growth in Postwar Japan: A Revisionist View

Does the postwar Japanese experience support the case for financial liberalization and high interest rates? Starting with a very low per capita income after World War II, the Japanese economy grew very rapidly from the early 1950s to the early 1970s. Indeed, Japanese now rather nostalgically refer simply to their "era of rapid economic growth." Moreover, Table 2 shows robust Japanese real financial growth, with a rapidly increasing ratio of M_2 to GNP, during this period.

But, paradoxically, this era was and still is widely considered to be one of financial repression (using our more recent terminology). It was conventional wisdom that Japan was following a "low interest rate" policy in order to provide cheap bank credits, directed by government officials, to support officially sanctioned industrial investments. Interest ceilings in the form of standard loan and deposit

Table 4 Official Discount Rates, Deposit Rates, and Money Market Rate (Annual Average%)

| | 1953-57 | 1958-62 | 1963-67 | 1968-72 | 1973-77 | 1978-82 |
|---------------------------|---------|---------|---------|---------|---------|-------------------|
| Japan: | | | | | | |
| Discount rate | 6.9 | 7.1 | 5.9 | 5.4 | 7.1 | 5.6 |
| Call money rate | 8.7 | 9.6 | 7.4 | 7.0 | 8.6 | 7.1 |
| Deposit rate ^a | 5.1 | 5.3 | 5.0 | 5.0 | 6.0 | 5.2 |
| WPI rate of change | 1.1 | -1.0 | 1.4 | 1.3 | 11.4 | 5.1 |
| CPI rate of change | 3.1 | 3.6 | 5.6 | 5.9 | 13.1 | 4.6 |
| U.S.: | | | | | | |
| Discount rate | 2.4 | 3.1 | 4.2 | 5.2 | 6.5 | 11.0 |
| TB rate | 2.1 | 2.7 | 4.0 | 5.4 | 6.2 | 10.7 |
| Deposit rate ^b | 2.6 | 3.2 | 5.0 | 5.0 | 5.5 | 5.7 |
| WPI rate of change | 1.0 | 0.3 | 1.1 | 3.6 | 10.4 | 9.1 |
| CPI rate of change | 1.2 | 1.5 | 2.0 | 4.6 | 7.7 | 9.8 |
| U.K.: | | | | | | |
| Discount rate | 4.7 | 4.7 | 6.4 | 7.2 | 11.4 | 14.5 ^c |
| TB rate | 3.5 | 4.4 | 5.2 | 6.6 | 9.9 | 12.2 |
| Deposit rate ^d | 2.8 | 2.7 | 4.4 | 4.9 | 8.2 | 11.2 |
| WPI rate of change | 1.7 | 1.4 | 2.3 | 5.8 | 17.9 | 11.4 |
| CPI rate of change | 2.9 | 2.2 | 3.3 | 6.6 | 16.3 | 12.0 |
| Germany: | | | | | | |
| Discount rate | 3.8 | 3.4 | 3.6 | 4.7 | 4.6 | 5.8 |
| Call money rate | 3.7 | 4.0 | 3.8 | 5.3 | 6.3 | 7.7 |
| Deposit rate ^e | 3.5 | 2.9 | 3.1 | 5.4 | 6.0 | 6.8 |
| WPI rate of change | -0.5 | 0.5 | 0.9 | 2.6 | 6.2 | 5.4 |
| CPI rate of change | 0.9 | 2.0 | 2.7 | 3.5 | 5.7 | 5.8 |

^a The interest rate on six-month deposits.

^b The interest rate on time deposits less than U.S. \$100,000 (maximum). From 1953 to 1967, the maximum rate on deposits of more than one year.

^c 1978-80. The Bank of England stopped announcing the minimum lending rate, i.e., the discount rate.

^d The interest rate on deposits account repayable at seven days' notice (maximum).

^e The interest rate on three-month deposits (maximum).

Source: Horiuchi (1984).

Table 5 International Comparison of Prime Rate (Annual Average%)

| | Japan ^a | U.S. ^b | U.K. ^c | Germany ^d |
|---------|--------------------|-------------------|-------------------|----------------------|
| 1953-57 | 7.8(1.1) | 3.7(1.0) | 5.2(1.7) | 8.4(-0.5) |
| 1958-62 | 7.4(-1.0) | 4.5(0.3) | 5.2(1.4) | 7.9(0.5) |
| 1963-67 | 6.2(-1.4) | 5.2(1.1) | 6.9(2.3) | 8.1(0.9) |
| 1968-72 | 5.7(-1.3) | 6.7(3.6) | 7.7(5.8) | 9.5(2.6) |
| 1973-77 | 6.9(11.4) | 8.4(10.4) | 12.4(17.9) | 10.4(6.2) |
| 1978-82 | 6.0(5.1) | 15.2(9.1) | 14.6(11.4) | 11.3(5.4) |

Note: The parentheses presents rates of changes in the WPI.

^a Discount rate of commercial bills eligible for rediscount by the Bank of Japan (more than ¥3 million).

^b The prime rate.

^c The interest rate on overdrafts for the prime corporations.

^d The maximum level of interest rate on overdrafts (until 1966). The interest rate on overdrafts of DM 1 million or less (from 1967).

Source: Bank of Japan, Statistics Department *Nihon keizai wo chūshin tosuru kokusai hinkaku tokei* (Japan and the world: a comparison by economic and financial statistics), various issues.

rates were observed by all significant banks—and open market sales of corporate bonds and other debt instruments were limited and monitored by government officials. In the documents of the Bank of Japan and the Ministry of Finance, numerous references to administrative guidance could be construed as allocating the flow of most bank loans to officially preferred uses.

However, in his paper “The ‘Low Interest Rate Policy’ and Economic Growth in Japan,” Akiyoshi Horiuchi (1984) provides a convincing alternative view that the Japanese financial system was not significantly repressed after all.¹ For the era of rapid economic growth, Horiuchi shows that officially controlled real interest rates in Japan were relatively high by international standards. Moreover he argues that variability in the free interbank call money rate, and in large compensating balances required of business borrowers, meant that the effective loan rates charged Japanese industry fairly accurately reflected the “true” scarcity price of capital in the economy.

Tables 4, 5, and 6 simply reproduce Horiuchi’s data comparing Japanese interest rates to those in the U.S., Britain, and Germany. One can easily see that nominal interest rates on both the deposit and loan sides were generally higher in Japan from the early 1950s through 1972. And remember that the yen/dollar exchange rate was fixed

Table 6 Interest Rates on Bank Loans in Japan (Annual Average %)

| | Loan Rates Covered by Formal Control: All Banks | Loan Rates Not Covered by Formal Control: All Banks | Rate of Change in WPI |
|---------|---|---|--------------------------|
| 1953-57 | 8.2 | 9.5 | 1.1 |
| 1958-62 | 7.6 | 8.9 | -1.0 |
| 1963-67 | 7.1 | 8.5 | 1.4 |
| 1968-72 | 6.9 | 8.2 | 1.3 |
| 1973-77 | 7.7 | 8.8 | 11.4 |
| 1978-81 | 6.0 | 7.9 | 6.1 |

Note: Ceilings have been imposed on interest rates of short-term (less than a year) bank loans by the Temporary Interest Rate Adjustment Law (1947). Within the legal ceilings, the short-term loan rates have been determined by a de facto cartel among the private banks. Though interest rates on other loans have been exempted from the control, they also have been determined by a type of cartel. The Japanese authorities can influence the decision making of these cartels.

Source: Horiuchi (1984).

almost to the very end of this period so that nominal interest rates could be directly compared.

But whether "real" interest rates were higher depends heavily on which index is used to measure Japanese price inflation, i.e., the opportunity cost of holding yen-denominated financial assets. If one uses the relatively rapidly increasing consumer price index (CPI) to deflate nominal interest rates, Table 4 shows that Japanese real interest rates were not so high and, on occasion, were even negative. However, if one uses the slowly growing wholesale price index (WPI) as the relevant deflator, Japanese real interest rates were relatively high: 4 or 5 percent on deposits and 6 or 7 percent on loans.

Elsewhere (McKinnon 1973, 96-97; McKinnon 1979, 234-36), I have argued that the WPI—which represents claims on a broad basket of (tradable) *goods*—is a better deflator than the CPI, which depends heavily on movements in the prices of domestically produced *services*, which cannot be held directly in asset portfolios. In inflationary circumstances, the relevant alternative to holding yen-denominated financial assets is a portfolio of tangible goods (not intangible services), or foreign exchange assets which are a claim on foreign goods.³ In Tables 5 and 6 Horiuchi recognizes this by using just the WPI to show that, in the 1950s and 1960s, real loan rates in Japan were higher than in the U.S. and U.K. and comparable to those prevailing in Germany—another high growth country.

Horiuchi goes on to show that the Japanese government was far less successful than is commonly believed in influencing the domestic flow of capital. The relatively small flow of government-directed cheap credit was largely allocated to "sunset" or declining industries. Internationally competitive firms had no trouble bidding for funds at close to the market rate of interest. In summary, the Japanese financial system was not significantly repressed in the era of rapid economic growth.

But neither did the Japanese authorities fully "liberalize" their banking system by removing ceilings on deposit rates of interest, or allowing the standard loan rate charged to nonbanks to be unrestricted, or allowing banks to borrow freely abroad. Nor did the central bank in any way abandon its close monitoring of what the commercial and savings banks were doing in terms of the safety of their asset portfolios. Indeed, because of fiscal surpluses and the absence of a significant market in government bonds, the Bank of Japan was deeply involved in discounting a fairly large proportion of the commercial banks' portfolio of private loans—the famous "overloan" situation—in order to secure sufficiently high growth in the monetary base. This greatly facilitated the central bank's monitoring of the quality and safety of loans to the private sector.

From the late 1970s to the present time, the Japanese have greatly liberalized what their commercial banks can do in both foreign and domestic financial markets. The overloan situation has virtually disappeared. But in assessing the quite different Latin American experiences below, what does the earlier Japanese experience suggest for the correct order of financial liberalization?

First, monetary stabilization with a fairly constant domestic price level was the principal mode by which high real interest rates and high real financial growth were secured. The Japanese government was not often put into a situation of having to permit (decide on) high nominal interest rates in order to offset high and variable domestic inflation.

Second, only after substantial financial deepening in the nonbank parts of the capital market—growth in primary securities trading and increased intermediation by finance and insurance companies, pension funds, and so on—did the authorities substantially loosen up (or begin thinking about loosening up) on what the commercial banks could do.

Third, the domestic banking system was never put in the situation of being the principal financial intermediary for significant amounts of net capital flows from abroad— with its attendant direct or indirect exchange risk. The limited foreign capital coming into Japan was in the form of direct investment— or, more commonly, took the form of company-to-company licensing agreements.

High Real Interest Rates in Taiwan

Through its price-level and interest-rate policies since 1960, Taiwan has promoted real financial growth more consistently than any other developing country.

Beginning a decade later than Japan, Taiwan established a monetary policy that succeeded in eliminating domestic sources of inflationary pressure. From 1963 to 1973, Taiwan's dollar exchange rate was fixed, with consumer price inflation averaging about 3.4 percent per year (Table 7), and the wholesale price index was virtually stable. Subsequently, episodes of major inflation in 1974 and again in 1980-81— with irregular inflation in between— were mainly due to unsettled conditions in the international economy, in part associated with the two oil shocks.

Then, from 1982 to 1987, the CPI remained unchanged, while the WPI actually fell about 10 percent as Taiwan's currency appreciated somewhat against the U.S. dollar.³ Hence, in the minds of Taiwanese savers, the threat of domestic inflation became negligible. Even though international inflation might hit the economy quite hard on occasion, as in 1974 and 1980-81, foreign exchange assets would not be much of a refuge in comparison to new Taiwan dollars.

To complement this remarkable control over the domestic price level, Taiwan has run with nominal interest rates which were and are high relative to Japan and other industrial countries. Table 7 shows that interest rates on a one-year savings deposit were kept at 9 and 10 percent in the 1960s when prices were stable, and then raised somewhat in the more inflationary 1970s, to be lowered again in the later 1980s when the domestic WPI began to fall. The incentives for Taiwanese savers to build up their clams on the domestic banking system were well maintained. Indeed, updating Table 2, in mid-1988 Taiwan's M_2 /GNP ratio now exceeds unity, and is five times that of

the "typical" Latin American country shown in Table 1. The flow of private loanable funds to support domestic, and now foreign, investment has become enormous.

To support these high yields to depositors, standard loan rates were also kept high—about two to three percentage points higher than the standard interest rate on a one-year savings deposit—and were anywhere between 10 and 14 percent per year in normal noninflationary times. Although some financial repression existed in the form of preferential interest rates for exporters (Table 7), these rates were generally kept positive and substantial in real terms; nor was this commitment to finance exporters sufficient to undermine the central bank's control over the monetary base—unlike the Korean experience to be discussed below.

In addition, a vigorous curb market remained an important marginal source of finance to those Taiwanese firms (or households) that might be arbitrarily rationed from bank credit. Competition among banks was limited if only because they were state-owned—in effect providing implicit deposit insurance. To further limit banks from

Table 7 Interest Rates and Inflation Rates, Taiwan, China, 1956-1984 (%)

| End of Year | At Banks | | Export Loan | "Curb Market" | Consumer Price Inflation |
|-------------|-----------------|----------------|-------------|----------------|--------------------------|
| | Savings Deposit | Unsecured Loan | | Unsecured Loan | |
| Average | | | | | |
| 1956-1962 | 17.0 | 20.9 | 11.2 | 41.1 | 8.4 |
| 1963-1973 | 10.1 | 14.1 | 7.7 | 25.4 | 3.4 |
| 1974 | 13.5 | 15.5 | 9.0 | 29.3 | 47.5 |
| 1975 | 12.0 | 14.0 | 7.0 | 26.4 | 5.2 |
| 1976 | 10.7 | 12.7 | 7.0 | 27.6 | 2.5 |
| 1977 | 9.5 | 11.5 | 6.5 | 25.6 | 7.0 |
| 1978 | 9.5 | 11.5 | 6.5 | 27.2 | 5.8 |
| 1979 | 12.5 | 15.2 | 10.5 | 30.1 | 9.8 |
| 1980 | 12.5 | 16.2 | 10.5 | 31.3 | 19.0 |
| 1981 | 13.0 | 15.2 | 11.0 | 30.1 | 16.3 |
| 1982 | 9.0 | 10.7 | 8.2 | 27.7 | 3.3 |
| 1983 | 8.5 | 10.2 | 8.0 | 26.8 | 1.8 |
| 1984 | 8.0 | 10.0 | 7.7 | 29.9 | 1.7 |

* One-year savings deposits.

Sources: Cheng (1987); The Central Bank of China (Taiwan, China), *Financial Statistics Monthly*, various issues; Council for Economic Planning and Development (Taiwan, China), *Taiwan Statistical Data Book, 1984*, June 1984.

undertaking unduly risky lending and vying for deposits, the government imposed standard—albeit high—ceilings on deposit and loan rates of interest. This created a large fringe of unsatisfied borrowers who could then bid for finance at interest rates of 25 percent or more (Table 7) in the curb market *without* impairing the safety of the monetary system.

But even in curb-market lending, the robustness of the monetary system remained important. The principal financial instrument, the promissory note from borrower to lender, was the postdated check. If the check on the state-owned bank bounced, the government could jail the borrower. In addition, the overall stability of the price level made such contractual arrangements more attractive to both borrowers and lenders at longer terms to maturity than in similar curb-market transactions in other developing countries.

Only in the early 1980s did the development of more conventional money-market instruments—such as commercial bills, bankers' acceptances, or negotiable certificates of deposit—become significant. In order to bid for funds in competition with these money-market instruments with variable interest rates, the commercial banks were progressively decontrolled and decentralized (Kohsaka 1987). In the longer term, financing by insurance and trust companies and new stock issues rose to more than marginal importance. Thus, after almost two decades of remarkable financial deepening with price-level stability, only now is Taiwan finally loosening up its tight controls on what its banks can do.

To secure the correct "order" of financial liberalization, how best might the Taiwanese financial system mature further? Further deregulation of the commercial banks is not only welcome but virtually unavoidable, although their risk-taking activities should remain limited in order to preserve the safety of the monetary system. However, the relative importance of the commercial banks, or other institutions with publicly insured deposits, should diminish. New higher yield and uninsured money-market instruments in the "organized" capital market should gradually replace the curb market on the one hand (if tax laws are properly enforced) and the use of fixed-rate demand and savings deposits on the other. Longer term bonds and mortgages should become more commonplace—along with new equity issues for riskier activities—if the government maintains a stable price level into the indefinite future.

Premature Financial Decontrol in Chile

Although measured and carefully delimited financial liberalizations have worked well in the cases of Japan and Taiwan, more sweeping attempts at financial decontrol have sometimes come to grief, as in Turkey, Sri Lanka, and the Southern Cone of Latin America. It is worthwhile tracing out one such experience.

In the late 1970s, all three countries in the Southern Cone—Argentina, Chile, and Uruguay—had substantially deregulated their banking systems *before* bringing inflation under control and achieving significant financial deepening. Indeed, all three countries suffered from substantial macroeconomic instability at the time that interest ceilings on bank deposits and loans were removed—and banks were allowed to compete freely in the capital market.

Only Chile, however, had sufficient fiscal control to make price stabilization and financial liberalization a fully credible objective of public policy. Thus the Chilean experience from 1976 to 1982 with bank supervision is a somewhat cleaner example of how uncontrolled interest rates might work when inflation is still very high and difficult to predict.

Price inflation started off at over 170 percent per year in 1976, before falling to less than 10 percent in 1981 and then rising again. Table 8 summarizes some extensive Chilean financial data provided by Rolf Luders (1985) on the extraordinary pattern of deposit and loan rates—both nominal and real—after most commercial banks had been returned to the private sector by 1976 and official interest ceilings had been removed. Two characteristics stand out.

The first is the very high real interest rate, calculated *ex post* on the basis of experienced inflation rather than on *ex ante* expectations of it. For example, in 1978 the “real” lending rate on peso loans was 42.2 percent on an annualized basis—although lending was typically much less than a year in duration. The net annualized spread between peso deposits and loans was about 10.7 percentage points, after taking out the effects of reserve requirements. To achieve these real yields, the nominal peso loan rate was 85.3 percent, less than a third of what it had been in the more inflationary year of 1976.

The second striking characteristic of Table 8 is the large spread between the apparent interest costs of borrowing in pesos compared with borrowing from domestic banks in dollars, which, after the deregulations of the mid-1970s, accounted for almost half of total

Table 8 Chile: Interest Rates on 30-Day Bank Deposits and Loans (% per annum)

| | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 | 1982 |
|---|-------|-------|------|------|------|------|------|
| Peso Deposits: | | | | | | | |
| Nominal | 197.9 | 93.7 | 62.8 | 45.1 | 37.4 | 40.8 | 47.8 |
| Real ¹ | 8.6 | 18.5 | 24.9 | 4.4 | 4.8 | 28.6 | 22.4 |
| Peso Loans: | | | | | | | |
| Nominal | 350.7 | 156.4 | 85.3 | 62.0 | 47.0 | 51.9 | 63.1 |
| Real ¹ | 64.3 | 56.8 | 42.2 | 16.6 | 11.9 | 38.7 | 35.1 |
| Gross Spread | 57.2 | 33.7 | 14.5 | 12.1 | 7.1 | 12.3 | 10.7 |
| Net Spread ⁶ | 8.1 | 17.4 | 10.7 | 7.4 | 5.2 | 6.3 | 9.5 |
| Interest Differential:⁴ | | | | | | | |
| Peso/Dollar deposits | 2.9 | 7.8 | 0.0 | 8.7 | 14.0 | 19.5 | -1.2 |
| Peso/Dollar loans | 48.9 | 36.4 | 8.6 | 14.1 | 17.1 | 24.3 | 5.6 |
| Dollar Deposits: | | | | | | | |
| Nominal | 8.9 | 8.9 | 11.1 | 13.5 | 15.1 | 17.8 | 14.6 |
| Real ⁵ | -18.1 | 7.9 | 4.6 | -5.8 | 12.3 | 7.6 | 40.0 |
| Dollar Loans: | | | | | | | |
| Nominal | 13.9 | 13.9 | 16.1 | 20.7 | 19.9 | 22.2 | 18.3 |
| Real ⁵ | -14.3 | 12.9 | 9.3 | 0.1 | -8.6 | 11.6 | 44.5 |
| Change in | | | | | | | |
| Consumer Prices | 174.3 | 63.5 | 30.3 | 38.9 | 31.2 | 9.5 | 20.7 |

¹ All real peso interest rates are calculated monthly, based on monthly changes in the Chilean Consumer Price Index in Pesos, before being annualized.

² Nominal dollar deposit rates are costs of borrowing abroad: LIBOR plus average spread charged to Chilean Commercial Banks.

³ Nominal dollar loan rates are interest charged domestic customers by Chilean Banks.

⁴ To calculate interest differential, nominal interest rates in dollars are first adjusted upwards by the (experienced) rate of exchange devaluation.

⁵ The "real" interest rate in dollars is:

$$\frac{(1 + \text{nominal rate})(1 + \text{devaluation rate})}{1 + \text{peso inflation rate}} - 1$$

⁶ Net spread after effects of compulsory non-interest-bearing reserve requirements against peso deposits are taken out.

Source: Luders (1985). Taken from *Sintesis Monetaria y Financiera*, Banco Central de Chile.

bank loans (Luders 1985). Adjusted downward for the experienced rate of peso devaluation, this spread was as high as 48.9 percentage points in 1976 and then fell to a still high 8.6 percentage points in 1980 before increasing to 24.3 percentage points in 1981. It then fell sharply with the "surprise" devaluations of 1982. Indeed, often the "real" cost (adjusted for the domestic rate of price inflation less the rate of exchange devaluation) of borrowing in dollars was negative—

even though real borrowing costs in pesos remained very high.

At the time, virtually everyone thought this difference was due to imperfections in financial arbitrage because of the remaining restrictions on foreign capital inflows. Indeed, this belief prompted the authorities to loosen capital restrictions even further in 1980—thus worsening the overborrowing syndrome. Corbo (1985) analyzes the unsustainable real appreciation of the Chilean peso, associated with the buildup of external debt in 1977-81, which led to a sharp decline in the profitability of the tradable goods sector.

Sadder but wiser, we now understand that these incredibly high interest rates on peso loans in large part represented the breakdown of proper financial supervision over the Chilean banking system. Neither officials in the commercial banks themselves, nor government regulatory authorities, adequately monitored the creditworthiness of a broad spectrum of industrial and agricultural borrowers:

The internal source of difficulty in Chile was a proliferation of bad loans within the banking system. The rolling over of these loans, capitalizing interest along the way, created what I call a "false" demand for credit, which, when added to the demand that would normally be viable, allowed real interest rates to reach unprecedented (and, to many, incredible) levels. (Harberger 1985, 237)

This form of Ponzi game, however, had a peculiarly international flavor in which Chilean financial intermediaries—not only banks—incurred exchange risk as they extended bad loans. James Tybout (1985) and others have shown that the large economic groups, "Grupos," used their control over domestic banks together with their overseas contracts to get dollar credits at relatively low interest rates to relend at the extremely high interest rates denominated in pesos to borrowers of dubious creditworthiness.

Because banks were officially restricted from directly assuming foreign exchange exposure, they simply made dollar loans to the Grupos' industrial companies, which then did most of the ongoing lending in pesos. Thus, by assuming the foreign exchange risk themselves, these Grupos continued to show increases in their nonoperating earnings in 1980 and 1981, well after their operating earnings had soured because of the exchange overvaluation and continued high interest rates. Some were recording unrealized capital gains, from some very precious assets, as earnings on their books.

Of course, many Chilean firms need not have known at the time that they were engaged in a Ponzi game. Many probably suffered

from excessive optimism regarding future asset values and rates of return—hopes that were ultimately dashed by the real exchange rate overvaluation and downturn in the international economy in 1981-82 that led to massive losses by firms across the export and import-competing sectors. The resulting series of defaults on outstanding bank credits—including those to the large Grupos—forced bankruptcy on virtually all of Chile's financial intermediaries.

In 1982-83, the Chilean banks were all renationalized in order to protect the positions of domestic depositors and foreign creditors—even though the government had not previously committed itself to deposit insurance. In a similar set of bankruptcies in Argentina, official deposit insurance had been more explicit. Nevertheless, the upshot in the two countries was the same. The special position of the banks—as custodians of the nation's money supply—effectively meant that the depositors and the banks could behave *ex ante* as if their deposits would be insured in the event some major financial breakdown occurred.

Price-Level Stabilization

What are the lessons to be learned from the rather cautious approach to bank regulation in Japan and Taiwan in comparison to the Southern Cone experiences with complete decontrol?

Obviously, sustained stability in the domestic price level is a necessary condition for achieving high real financial growth without undue risk of some major financial panic and collapse. When general macroeconomic and price-level instability is pronounced, the use of extremely high nominal rates of interest to offset anticipated inflation, and balance the supply and demand for loanable funds in the capital market, becomes very risky—although perhaps necessary.

III. THE TRANSITION FROM HIGH INFLATION TO A STABLE PRICE LEVEL

Designing a successful macroeconomic stabilization, where the economy moves from very high to low price inflation, is itself a major problem. From the starting point of a (typical) inflationary and

partially indexed less developed economy with uncontrolled government deficits, suppose that a major fiscal reform suddenly makes full monetary (price-level) stabilization feasible. Government expenditures, including credit subsidies financed by the central bank, are reduced and/or traditional tax revenues are increased. The otherwise quite different experiences of Chile and Korea with inflation and disinflation in the late 1970s and early 1980s are useful benchmarks. Both achieved sufficient internal fiscal control to eliminate the need for the inflation tax as a means of public finance. Thus both could embark on credible programs for stabilizing their domestic price levels as a precondition for full-scale economic liberalization.

Even as improved fiscal policy permits growth in domestic central bank credit to be reduced in the transition from very high to low inflation, there remain difficult problems of how to manipulate previously indexed wages, the exchange rate, and interest rates. As the economy evolves toward price-level stability, the government must consistently manage these key *nominal* prices in order to prevent serious *real* price misalignments. What are the basic issues?

- To secure control over the real exchange rate, should access to foreign capital be limited?
- In order to disinflate, can "orthodox" tight money based on high real interest rates be effective?
- Should monetary policy rely on fixing the nominal exchange rate and international commodity arbitrage to stabilize domestic prices?
- Is traditional backward looking indexing of wages or exchange rates consistent with price level stabilization in the future?

To analyze these fundamental problems of how to keep exchange rates, interest rates, and wages "correctly" aligned during disinflation, I shall use a historical case-study approach. The failed Chilean stabilization attempt from 1978 to 1982 is treated first. Then some key differences with the more successful, but less demanding, Korean stabilization of 1979 to 1983 are pointed out.

Economic Repression and Liberalization in Chile: A Brief Review

By the end of 1973, virtually every measure showed that the Chilean economy had become massively repressed. In foreign trade, extremely high tariffs on the order of 100 percent (Table 9) significantly understated the actual degree of protection. Exchange controls, quotas, and outright prohibitions proliferated over the whole range of both imports and exports.

Table 10 shows the basic macroeconomic and financial statistics for the Chilean economy from 1970 to 1982. Reaching almost 25 percent of GNP in 1973, the government budget deficit was out of control and had become fully monetized. But this understated the extent to which the central bank—either directly or indirectly—was forced to provide subsidized credit lines to a wide variety of enterprises and government agencies throughout the country.

Table 9 Profile of the Chilean Tariff Reform

| | | Average nominal tariff rate (percentages) | Maximum nominal tariff rate (percentages) ¹ |
|------|-----------------|---|--|
| 1973 | July-December | 94 | 500+ |
| 1974 | January-June | 80 | 160 |
| | July-December | 67 | 140 |
| 1975 | January-June | 52 | 120 |
| | July-December | 44 | 90 |
| 1976 | January-June | 38 | 70 |
| | July-December | 33 | 60 |
| 1977 | January-June | 24 | 50 |
| | July-December | 18 | 35 |
| 1978 | January-June | 15 | 20 |
| | July-December | 12 | 15 |
| 1979 | June 30 onwards | 10 ² | 10 |
| 1980 | | 10 | 10 |
| 1981 | | 10 | 10 |
| 1982 | | 10 | 10 |

¹ With a few exceptions for some (but not all) automotive vehicles. Small cars may be imported at the standard tariff rates.

² Of the 4,301 commodities or tariff lines that are classified for customs purposes, only 12 are exempt from any duties.

Source: Central Bank of Chile.

Table 10 Chile: Macroeconomic Overview, 1970-82

| | 1970 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 | 1982 |
|--|-------|---------|-------|-------|-------|-------|--------|--------|--------|--------|--------|
| Production | | | | | | | | | | | |
| (1) GDP (% real change) | 2.1 | -8.6 | -1.0 | 12.9 | 3.8 | 9.9 | 8.2 | 8.3 | 7.5 | 5.3 | -14.5 |
| (2) Unemployment Rate (%) | 8.7 | 4.8 | 9.2 | 13.5 | 18.9 | 14.2 | 14.2 | 13.8 | 11.8 | 10.9 | 20.4 |
| (3) Gross Domestic Investment Rate (% GDP) | 16.7 | 7.9 | 21.2 | 13.1 | 12.8 | 14.4 | 17.3 | 17.8 | 21.0 | 30.7 | 9.9 |
| (4) Gross National Savings Rate (% GDP) | 15.1 | 5.3 | 20.7 | 7.9 | 14.5 | 10.8 | 12.6 | 12.5 | 13.9 | 6.6 | 0.04 |
| Balance of Payments | | | | | | | | | | | |
| (5) Exports (FOB MMUS\$) | 1,112 | 1,509 | 2,151 | 1,590 | 2,116 | 2,185 | 2,400 | 3,835 | 4,705 | 3,836 | 3,706 |
| (6) Imports (FOB MMUS\$) | 956 | 1,288 | 1,794 | 1,520 | 1,473 | 2,151 | 2,886 | 4,190 | 5,469 | 6,513 | 3,643 |
| (7) Current Account Balance (MMUS\$) | 81 | -294 | -211 | -491 | 148 | -551 | -1,088 | -1,189 | -1,971 | 4,733 | -2,304 |
| (8) Changes in Reserves (Balances in Millions of US\$) | 114 | -21 | -55 | -344 | 414 | 113 | 712 | 1,047 | 1,244 | 70 | -1,165 |
| (9) Total Foreign Debt (Millions of US\$) | 3,123 | 4,048 | 4,774 | 4,854 | 4,720 | 5,201 | 6,664 | 8,484 | 11,084 | 15,542 | 17,153 |
| Fiscal | | | | | | | | | | | |
| (10) Public Sector Expenditures (% GDP) | 40.6 | n.a. | 39.7 | 39.5 | 37.0 | 34.7 | 34.2 | 32.4 | 30.3 | 35.6 | 43.3 |
| (11) Fiscal Deficit (% GDP) | 2.7 | 24.7 | 10.5 | 2.6 | 2.3 | 1.8 | 0.8 | -1.7 | -3.1 | -1.6 | 2.4 |
| (12) Total Change in Monetary Base (% GDP) | 2.9 | 22.2 | 7.5 | 7.2 | 8.0 | 5.3 | 3.3 | 2.5 | 2.3 | 0.0 | -0.02 |
| Money & Prices | | | | | | | | | | | |
| (13) M2 GDP (%) | 11.0 | 22.3 | 11.1 | 11.2 | 11.7 | 13.0 | 16.0 | 17.4 | 19.3 | 23.4 | 24.7 |
| (14) Annual Real Lending Interest Rates (%) ² | -11.0 | -76.1 | -36.9 | 16.0 | 64.3 | 56.8 | 42.2 | 16.6 | 11.9 | 38.7 | 35.1 |
| (15) Annual Change in CPI (%) | 34.9 | 508.1 | 375.9 | 340.7 | 174.3 | 63.5 | 30.3 | 38.9 | 31.2 | 9.5 | 20.7 |
| (16) Annual Change in WPI (%) | 33.7 | 1,147.1 | 570.7 | 410.9 | 151.5 | 65.0 | 38.9 | 58.3 | 28.2 | -3.9 | 39.6 |
| (17) Real Wage Rate ³ Index (1970=100) | 100.0 | 60.8 | 60.2 | 63.9 | 82.9 | 86.2 | 85.9 | 87.2 | 96.5 | 110.6 | 107.1 |
| (18) Real Exchange Rate ⁴ Index (1975=100) | 102.6 | 99.5 | 88.9 | 100.0 | 86.6 | 83.6 | 91.0 | 79.9 | 69.4 | 69.7 | 87.9 |
| (19) Terms of Trade ⁴ Index (1960=100) | 145.0 | 148 | 137 | 86 | 87 | 79 | 78 | 110 | 100 | 76 | 62 |

¹ In 1970 and 1973, import values are expressed US\$ millions of dollars.

² Nominal (30-89 days) per cent loan rates, deflated by official CPI.

³ Dollars/Pesos

⁴ Export prices/Import prices

Source: Luders (1985), *World Bank Report* (1984), *Economic and Social Indicators*, and *Monthly Bulletin*, Banco Central de Chile, various issues.

Chile had a long history of using the central bank, and a large state-owned commercial bank (The Bank of Chile), to provide credit subsidies for "development" purposes to enterprises throughout the country. But under Salvador Allende's Socialist government from 1970-73, worker collectives seized operating control over most industrial enterprises and some large farms. Because wages rose sharply relative to the (nominally frozen) output prices, these enterprises began to run with large negative cash flows—which were then covered by new and extended credit lines from the banking system.

The result was massive inflation in the mid-1970s, partially repressed in 1973 by price controls but subsequently becoming open inflation with their removal. Because of the inflation, interest rate restrictions, and heavy reserve requirements (more than 80 percent) on deposit collecting banks, the financial system operated with negative real rates of interest from 1973 into 1975. The domestic flow of loanable funds in any open, organized capital market was virtually nonexistent. In view of this economic chaos, as well as for political reasons, foreign capital (other than short-term trade credit) was completely unavailable to the Chilean economy.

In 1974, however, there began a remarkable series of liberalizing reforms and moves toward monetary and fiscal stabilization—the results of which are immediately evident upon glancing at Tables 9 and 10. Government expenditures were cut, income taxes were rationalized, and commodity taxes were consolidated through the imposition of a uniform 20 percent value added tax. By 1978, the fiscal deficit was negligible—and surpluses developed in the next three years.

Equally important, the government undertook additional draconian measures to liberalize the domestic financial system. It phased out automatic official credit lines to prop up failing industrial and agricultural enterprises. Reserve requirements on deposit taking banks were greatly reduced, and by 1976 formal interest ceilings on deposits and loans were eliminated. Commercial banks, the principal financial intermediaries, were sold back to the private sector—thus creating a vigorous competitive market for deposits and loans. Interest rates rose sharply from negative to very high positive levels, and thus encouraged high real financial growth (Table 10).

With the benefit of hindsight, however, we now know that interest rates became unduly high in real terms (Table 8). This created

severe adverse risk selection among nonbank borrowers and substantial moral hazard among the banks themselves—as discussed above (page 25). This failure to exercise proper supervisory control over the banking system was not, at the time, recognized as such but became an important contributing factor to the ultimate breakdown of Chile's otherwise well-designed program of economic liberalization—as we shall see.

Reforms were equally remarkable in the foreign trade sector. Nontariff barriers had been pretty well eliminated by 1977; Table 9 shows how tariffs averaging over 90 percent in 1973 were scaled down to a flat 10 percent across all imported commodities by mid 1979—a reform which lasted through 1982.

Given the severe distortions that had developed in the Chilean economy by 1973, these new policies for freeing international trade and eliminating domestic financial repression seemed to be remarkably well ordered in a “textbook” sense. They were widely applauded by almost all economists who were then firsthand observers. Thus the numerous banking failures and severe downturn of the economy from late 1981 to 1984, leaving the economy with a huge debt overhang relative to the size of its shrunken GNP, are distressing not only to Chileans but to economists.

Granted, much of Chile's economic decline was due to adverse world economic conditions in the early 1980s: the unexpected deterioration in the terms of trade of nonoil primary products, the sharp increase in international real interest rates, and the unexpected appreciation of the dollar which further contributed to the real cost of servicing Chile's external debt.

Nevertheless, a careful assessment of the monetary stabilization program, where price inflation was successfully reduced from several hundred percent per year in the mid-1970s to almost zero by late 1981, is in order. Did the authorities make any substantial technical errors in the administration of their foreign exchange and domestic financial policies? With the benefit of hindsight, what should they have done differently to support their general goal of liberalization?

Vittorio Corbo has developed the now generally accepted view of where Chilean financial policy went astray (Corbo 1985, 1986). In order to curb domestic price inflation, beginning in early 1978 the rate of depreciation in the nominal exchange rate was deliberately reduced below the differential between inflation in Chilean prices and that

prevailing in the international economy. The apparent real interest costs of foreign borrowing in dollars fell below those prevailing in domestic financial markets in pesos. The resulting huge inflow of foreign capital forced an undue appreciation in the real exchange rate. This caused a profit squeeze in Chilean industry and agriculture and defaults on domestic bank loans. The subsequent banking collapses in 1982-83 were worsened by previous regulatory lapses which had permitted the commercial banks to accumulate too many bad loans.

However, what the Chilean financial authorities should have done with respect to foreign-exchange and interest-rate policies in the late 1970s remains to be spelled out. Let us review their policy options.

The Monetary Stabilization Problem of February 1978

What was the economic dilemma facing the Chilean authorities at the beginning of 1978, prior to their fateful adoption of an "active" (my terminology, McKinnon 1981) downward crawl for the exchange rate?

While the government had virtually eliminated any need for the inflation tax as a means of public finance, in 1977 the rate of price inflation was still over 60 percent. Although it was substantially less than in 1975 and 1976, the authorities rightly thought this inflationary momentum to be unwarranted.

Prior to February 1978, the exchange rate had been "passively" (but only partially) adjusted to compensate for internal price inflation and to roughly balance international payments—with significant restrictions on inflows and outflows of private capital. Even so, a very sharp real appreciation of the currency took place from 1975 to 1977 (see Table 11). This increase in the real value of the peso was probably important in reducing price inflation from more than 300 percent in 1975 to less than 70 percent in 1977.

True, the peso was greatly undervalued in 1975 because capital flight forced a rapid depreciation of the currency. Yet, if the same *ad hoc* exchange rate adjustments had continued after 1977, the real value of the peso could well have continued to increase. Few people now realize that the exchange-rate policy the Chilean authorities were following prior to February 1978 was not sustainable indefinitely.

Table 11 Chile: Measures of International Competitiveness (1979 II = 1.0)

| | PM/PS (1) | PX/PS (2) | PI/PS (3) | PI/W (4) | PX/PM (5) | Nominal Exchange Rate* (6) |
|------|--------------|--------------|--------------|-------------|--------------|----------------------------------|
| 1975 | | | | | | |
| I | 1.640 | 1.663 | 1.652 | 2.168 | 1.014 | 2.57 |
| II | 1.664 | 1.689 | 1.677 | 2.463 | 1.015 | 4.36 |
| III | 1.703 | 1.707 | 1.705 | 2.205 | 1.002 | 6.03 |
| IV | 1.752 | 1.777 | 1.765 | 2.208 | 1.014 | 7.80 |
| 1976 | | | | | | |
| I | 1.732 | 1.774 | 1.753 | 2.218 | 1.024 | 10.48 |
| II | 1.529 | 1.522 | 1.526 | 1.923 | 0.995 | 12.43 |
| III | 1.340 | 1.370 | 1.355 | 1.628 | 1.022 | 13.91 |
| IV | 1.184 | 1.277 | 1.230 | 1.427 | 1.079 | 16.55 |
| 1977 | | | | | | |
| I | 1.096 | 1.151 | 1.123 | 1.251 | 1.050 | 18.43 |
| II | 0.904 | 0.990 | 0.946 | 1.117 | 1.095 | 19.44 |
| III | 0.910 | 0.940 | 0.925 | 1.059 | 1.033 | 22.26 |
| IV | 0.954 | 0.968 | 0.961 | 1.171 | 1.015 | 25.99 |
| 1978 | | | | | | |
| I | 1.016 | 0.967 | 0.992 | 1.106 | 0.952 | 29.11 |
| II | 1.016 | 0.907 | 0.966 | 1.078 | 0.893 | 31.25 |
| III | 0.999 | 0.875 | 0.935 | 1.047 | 0.876 | 32.69 |
| IV | 0.999 | 0.897 | 0.947 | 1.065 | 0.898 | 33.58 |
| 1979 | | | | | | |
| I | 0.987 | 0.924 | 0.955 | 1.003 | 0.936 | 34.72 |
| II | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 36.26 |
| III | 1.082 | 1.185 | 1.132 | 1.051 | 1.095 | 39.00 |
| IV | 0.984 | 1.103 | 1.042 | 1.032 | 1.121 | 39.00 |
| 1980 | | | | | | |
| I | 0.939 | 1.118 | 1.025 | 0.920 | 1.191 | 39.00 |
| II | 0.925 | 1.092 | 1.004 | 0.864 | 1.178 | 39.00 |
| III | 0.917 | 1.017 | 0.966 | 0.832 | 1.109 | 39.00 |
| IV | 0.874 | 0.916 | 0.895 | 0.736 | 1.048 | 39.00 |
| 1981 | | | | | | |
| I | 0.846 | 0.843 | 0.845 | 0.687 | 0.998 | 39.00 |
| II | 0.786 | 0.775 | 0.780 | 0.631 | 0.986 | 39.00 |
| III | 0.744 | 0.709 | 0.726 | 0.579 | 0.953 | 39.00 |
| IV | 0.723 | 0.681 | 0.702 | 0.569 | 0.942 | 39.00 |
| 1982 | | | | | | |
| I | 0.696 | 0.606 | 0.649 | 0.532 | 0.871 | 39.00 |
| II | 0.713 | 0.611 | 0.660 | 0.549 | 0.857 | 40.34 |
| III | 0.937 | 0.837 | 0.886 | 0.755 | 0.893 | 50.01 |
| IV | 1.366 | 0.893 | 1.104 | 0.963 | 0.754 | 69.28 |

* The nominal exchange rate is the number of units of domestic currency required to purchase one U.S. dollar.

PS Price index for nontradables obtained from the Cortazar Marshall CPI based on the equation estimated in Corbo (1982a)

PM Import price index in pesos, obtained as a Divisia index of the exchange-rate-adjusted industrial components of the wholesale price index for Argentina, Brazil, Japan, Germany, and the United States, using the structure of imports from each of those countries as a weighting base. The index is also adjusted for average customs duties

PX Export price index in pesos, measured as a Divisia index of major Chilean exports excluding copper.

W Nominal manufacturing wage rate.

PI Geometric average of PX and PM with weights of 0.50 for each.

Source: Corbo (1985, 895).

What was needed was a “forward-looking” monetary policy that would stabilize the domestic price level and price expectations, while at the same time prevent further appreciation in the real exchange rate. At the beginning of 1978, *some* substantial change in monetary and exchange rate policies was warranted to break the economy’s inflationary momentum. The highly desirable fiscal reforms by themselves were not sufficient to establish monetary control.

The Domestic Monetarist Solution

One school of thought—actively advocated in Chile in 1977-78—was the standard Friedman-Meltzer approach of “domestic monetarism.” To secure control over the domestic monetary base, get rid of capital account restrictions and float the exchange rate. Then target some domestic monetary aggregate such as M_1 or M_2 to grow at a smooth rate consistent with future price-level stability and/or some deliberate pace of disinflation. A credible announcement effect would then directly reduce private inflationary expectations.

In my view, this strategy could well have proved more devastating to the Chilean economy than what actually happened. Because of the fast pace of financial transformation (the demand for real cash balances was rapidly increasing as inflation diminished), the authorities could not accurately estimate what the “correct” rate of growth in domestic nominal M_1 and M_2 should be. (And Table 10 shows that the ratio of M_2 to GNP was indeed unstable.) This unpredictable growth in monetary aggregates is characteristic of any economy that is moving from a state of repression to a more liberalized financial system. Suppose the government directly tightened control over the monetary base and successfully reduced inflationary expectations. With an open capital account in the balance of payments, a massive shift in international portfolio preferences in favor of the Chilean peso would have occurred anyway—perhaps even earlier. The problem of excessive capital inflows would still remain.

Because asset markets adjust much faster than goods markets, in 1978 a floating Chilean peso would have appreciated sharply—even in nominal terms. Although price inflation might then have fallen more rapidly in 1978 (despite the presence of backward-looking wage indexing), the gross overvaluation of the peso would have occurred

much sooner and crushed the profitability of the Chilean export and import-competing sectors even before the tariff reductions were completed in mid-1979.

In summary, adopting a floating exchange rate in the 1970s would not have solved the fundamental problem of avoiding excessive capital inflows and real currency appreciation in the course of moving the increasingly open Chilean economy from very high inflation to a stable price level. Even the much milder U.S. price disinflation of 1980-82 led to a sharp appreciation of the floating dollar along with a depression in American tradable goods industries.

The Exchange Rate as the Forward Signal

In February 1978, a successful monetary stabilization clearly required an unambiguous signal — around which private expectations could easily coalesce — that price inflation would be reduced to the international level in the near future. Quite plausibly, the authorities decided to use the dollar exchange rate as the intermediate target for Chilean monetary policy — both as a signal for what they intended the rate of disinflation to be, and partly as a forcing variable through international commodity arbitrage for achieving it.

The sweeping trade liberalization gave the authorities confidence (false, as it turned out) that domestic price inflation would quickly converge to the international level if the exchange rate was fixed. Because fiscal policy was such that the central bank could subordinate monetary policy to achieve any reasonable target for the nominal exchange rate, such a policy was credible and seemed potentially effective in stabilizing the price level.

This was the rationale for announcing and widely publicizing an active forward downward crawl or “tablita” for adjusting the exchange rate on a daily or weekly basis by very small amounts. The numbers going into the preannounced tablita were inevitably somewhat arbitrary: 24 percent depreciation in 1978 and 14 percent in 1979 after which the nominal exchange rate would be fixed indefinitely. The announcement effect was designed to allow private contracts denominated in pesos to anticipate the cessation of inflation.

Table 11 shows these decelerating movements in the nominal exchange rate converging in mid-1979 to a fixed exchange rate,

which was sustained through June 1982. This tablita system broke down with the exchange devaluations of 1982 in the midst of general economic decline.

The Indexing Problem

This movement to an active downward crawl—or “forward” stabilization—in the nominal exchange rate by the Chilean government was not itself a policy mistake as is often suggested. Rather the absence of suitably supportive capital-market and labor-market policies—as well as external stress—eventually caused the stabilization policy to fail.

Consider the labor market first. Corbo correctly emphasizes the inconsistency between the forward-looking indexing of the nominal exchange rate, and the backward-looking indexing of money wages which is often found in high-inflation economies. Chilean wages were linked to the *past* rate of inflation, which was very high relative to that anticipated in the future. Thus, as international competition from newly liberalized foreign trade and the ever-slower downward crawl in the nominal exchange rate slowed price inflation in the tradables industries, growth in money wages continued at a much faster pace. Indeed, from early 1978 to early 1982, Corbo's data in Table 11 show that the ratio of tradables prices to wages fell more than 50 percent.

In retrospect, it seems as if money wages in February 1978 should have been put on the same forward-looking tablita as the exchange rate. Similarly, all other prices which were indexed to ongoing inflation, such as charges for the use of public utilities, should have been put on the same tablita.

Putting wages on the same forward-looking indexing procedure need not have eliminated the overvaluation problem entirely. Although wages would be fixed in terms of the prices of tradable goods, the price of nontradables could continue to edge upwards. However, because wages are quite dominant in determining the cost of nontradable services, the sharp fall from 1978 to 1981 shown in column (3) of Table 11 would not have occurred.

Nevertheless, if the economy tended to absorb large amounts of foreign financial capital when the exchange rate was pegged by the

tablita, the domestic money supply would expand unduly and this inflationary pressure would affect the prices of nontradables more than tradables. In the presence of massive capital inflows, even "correct" wage indexation would not fully resolve the problem of avoiding exchange overvaluation.

In summary, it is now commonly accepted that better synchronization of those indexation procedures under government control in February 1978 would surely have prevented much of the gross overvaluation of the peso that we later observed. But why use the downward crawling tablita rather than moving directly to a fixed exchange rate?

In the extreme case where the government controlled all nominal prices in the economy, inflation could be halted immediately by decree. The authorities could simply promulgate a fixed exchange rate—as well as fix all other nominal prices under their control. No forward-looking tablita would be necessary other than the announcement that the nominal exchange rate would remain fixed indefinitely. In effect, the tablita could be completely truncated with no continued inflationary momentum in domestic prices.⁷

In the newly liberalized Chilean economy of early 1978, however, the move to free trade was designed to restructure relative prices. Thus a general freeze of nominal prices of all goods and services would have been out of keeping with the very nature of the reforms—unlike wages, which were being controlled by the government anyway. Without such a general freeze, therefore, one could expect some price inflation to continue even if wages were put on the same tablita as the exchange rate.

In general, the greater the forward contracting in pesos in private transactions, the stronger the case for stretching out the tablita for some months. Assuming the Chilean government was unwilling to undertake a general price freeze, the active forward crawl toward a fixed exchange rate within two years does not seem wrong—even with the benefit of hindsight—provided that other controlled prices in the economy were also on the same tablita.

Scaling Down Nominal Interest Rates in Line with the Tablita

In February 1978, should more comprehensive financial measures in the capital markets have been taken to assist with the macroeconomic

stabilization of the Chilean price level? Except to advocate more stringent (unspecified) controls on foreign capital inflows, authors writing on the experiences of the Southern Cone do not seem to have fully come to grips with this financial issue.

Clearly, everyone now agrees that money wages—along with other significant prices which the government controlled—should have been put on the same forward-looking tablita as the exchange rate. But does it then make sense to leave extremely high nominal interest rates—over 80 percent in 1978—on peso loans in place when the government is planning such a fast convergence to price stability? Politically, Chilean workers would be less likely to accept a scaling down of their nominal claims when nominal interest rates remained so high. Perhaps a standard nominal interest rate on peso loans, whose term structure was indexed to the tablita, should have been promulgated at the same time that the new exchange rate policy was announced in February 1978. The authorities could aim to keep the standard loan rate between 8 and 12 percent in real terms, with real deposit rates 2 to 3 percentage points below this level. Real interest rates in Chile would then have been more in line with the successful Taiwanese experience discussed above.

With the benefit of hindsight, we are beginning to understand that full liberalization of the banks during a high and variable inflation is *not* warranted. Unduly high real interest rates will likely prevail in such circumstances, leading to adverse risk selection—both in the quality of the nonbank borrowers who come forward and in the banks' own behavior.⁶ These problems with prudential control over bank loan portfolios become magnified in stressful periods when the central bank is trying—one way or another—to impose "tight" money in order to disinflate successfully.

The Korean Experience: 1979-83

Are there precedents of other governments scaling down domestic nominal interest rates in the course of a major disinflation? The Korean government's successful price-level stabilization of 1979 to 1983 provides one such example. The relevant interest-rate data are provided in Table 12.⁷

Although much less than Chile, Korea suffered from inflation

averaging over 20 percent during 1979-81. In real terms, its standard nominal loan rate of 20 percent (made somewhat greater by the use of compensating won balances) was slightly negative.

Then, with a big fiscal improvement and monetary stringency, Korea's internal inflation rate was driven down to about 7 percent in 1982 and only 3 percent in 1983. The Korean authorities anticipated declining inflation by quickly reducing the standard loan rate in stages to 10 percent by mid-1982. Nevertheless, the loan rate became positive in real terms-- see the far right-hand column of Table 12. Over the same interval, the standard short-term interest rate on won deposits was reduced from 14.4 to 6.0 percent.

It should also be noted that the Bank of Korea did not attempt to use its exchange rate as the forcing variable for domestic price-level stabilization--unlike Chile. Indeed, Table 13 shows that, from 1980 to 1983, the won depreciated a bit faster than the reduction in the domestic inflation rate.

In part because the Korean foreign trade sector was not as fully liberalized as the Chilean, the Korean government did not believe that international commodity arbitrage could be used to stabilize the domestic price level. Instead, the nominal exchange rate was managed by an informal downward crawl to adjust passively to declining domestic inflation. Thus, as price-level stability was secured, the syndrome of exchange overvaluation was avoided.

This scaling down of domestic interest rates as inflation slowed, while maintaining the rate of downward crawl in the won against the dollar to reflect the inflation differential between Korea and the United States, prevented undue incentives to move foreign capital into the Korean economy. Even so, the Korean government maintained substantial controls on the capital account to prevent a further untoward buildup of international indebtedness during the liberalization process.

A Rationale for Interest-Rate Management

In the course of a major disinflation, why should interest rates on bank assets and liabilities be reduced by deliberate public policy? Shouldn't nominal interest rates be bid down by the market, be allowed to fall naturally, as inflation recedes?

Table 12 Korea: Nominal and Real Interest Rates

| | GNP deflator (rate of change) | Curb market rate ^a | | Yields on corporate bonds | | Yields on government bonds | | Bank lending rate ^b | |
|--------------|----------------------------------|----------------------------------|-------------------|------------------------------|------|-------------------------------|------|-----------------------------------|------|
| | | Nominal | Real ^c | Nominal | Real | Nominal | Real | Nominal | Real |
| 1979 | | | | | | | | | |
| 1/4 | 20.1 | 44.0 | 23.9 | 26.4 | 8.9 | 23.4 | 3.3 | 19.1 | -1.1 |
| 2/4 | 20.3 | 42.1 | 21.8 | 26.8 | 6.5 | 24.2 | 3.9 | 19.0 | -1.3 |
| 3/4 | 21.4 | 40.7 | 10.3 | 26.9 | 5.5 | 25.5 | 4.1 | 19.0 | -3.6 |
| 4/4 | 22.6 | 41.7 | 20.1 | 27.1 | 4.5 | 27.5 | 4.9 | 19.0 | -3.6 |
| Year Average | 21.2 | 42.4 | 21.2 | 26.7 | 5.5 | 25.2 | 4.0 | 19.0 | -2.2 |
| 1980 | | | | | | | | | |
| 1/4 | 25.5 | 50.8 | 25.3 | 30.5 | 5.0 | 30.3 | 4.8 | 24.3 | -1.2 |
| 2/4 | 27.8 | 48.8 | 21.0 | 31.9 | 4.1 | 30.6 | 2.8 | 24.7 | -3.1 |
| 3/4 | 23.7 | 42.5 | 18.8 | 29.7 | 6.0 | 27.9 | 4.2 | 23.7 | — |
| 4/4 | 25.9 | 37.7 | 11.8 | 28.1 | 2.2 | 26.2 | 0.3 | 20.8 | -5.1 |
| Year Average | 25.6 | 45.0 | 19.4 | 30.1 | 4.5 | 28.8 | 3.2 | 23.4 | -2.2 |
| 1981 | | | | | | | | | |
| 1/4 | 21.7 | 36.6 | 14.9 | — | 7.2 | 24.8 | 3.1 | 26.0 | -1.7 |
| 2/4 | 17.0 | 35.2 | 18.2 | — | 5.8 | 22.2 | 5.2 | 20.0 | 3.0 |
| 3/4 | 17.1 | 33.8 | 16.7 | — | 5.8 | 21.8 | 5.7 | 20.0 | 2.9 |
| 4/4 | 10.5 | 35.4 | 24.9 | 9 | 16.5 | 25.5 | 15.0 | 19.0 | 8.5 |
| Year Average | 15.9 | 35.3 | 19.4 | — | 8.3 | 23.6 | 7.7 | 19.8 | 3.9 |
| 82 | | | | | | | | | |
| 1/4 | 13.2 | 32.6 | 18.6 | 21.7 | 8.5 | 20.5 | 7.3 | 16.1 | 2.9 |
| 2/4 | 7.6 | 33.1 | 25.5 | 17.3 | 9.7 | 17.1 | 9.5 | 13.9 | 6.3 |
| 3/4 | 6.6 | 27.5 | 20.9 | 14.3 | 7.5 | 15.0 | 8.4 | 10.0 | 3.4 |
| 4/4 | 3.7 | 29.0 | 25.3 | 15.7 | 12.0 | 16.7 | 13.0 | 10.0 | 6.3 |
| Year Average | 7.1 | 30.6 | 23.5 | 17.3 | 10.2 | 17.3 | 10.2 | 12.5 | 5.4 |
| 1983 | | | | | | | | | |
| 1/4 | 4.8 | 24.1 | 19.3 | 14.9 | 10.4 | 14.4 | 9.6 | 10.0 | 5.2 |
| 2/4 | 2.2 | 27.5 | 25.3 | 14.0 | 11.8 | 13.5 | 11.3 | 10.0 | 7.8 |
| 3/4 | 2.2 | 26.8 | 24.6 | 14.0 | 11.8 | 13.4 | 11.2 | 10.0 | 7.8 |
| 4/4 | 2.9 | 24.7 | 21.8 | 14.2 | 11.2 | 13.8 | 10.9 | 10.0 | 7.1 |
| Year Average | 3.0 | 25.8 | 22.8 | 14.2 | 11.2 | 13.8 | 10.8 | 10.0 | 7.0 |
| 1984 | | | | | | | | | |
| 1/4 | 1.2 | 24.1 | 22.9 | 14.0 | 12.8 | 13.4 | 12.2 | 10.4 | 9.2 |
| 2/4 | 2.6 | 25.7 | 24.1 | 13.3 | 10.7 | 13.6 | 11.0 | 10.5 | 7.9 |
| 3/4 | 6.0 | 23.5 | 17.5 | 14.4 | 8.4 | 14.7 | 8.7 | 10.5 | 4.5 |
| 4/4 | 5.1 | 25.4 | 20.3 | 14.9 | 9.8 | 15.2 | 10.1 | 11.1 | 6.0 |
| Year Average | 3.9 | 24.7 | 20.7 | 14.2 | 10.2 | 14.2 | 10.2 | 10.6 | 6.6 |

Bank of Korea survey data

^a Interest rate on bank loans up to one year^b Real interest rate = Nominal interest rate - the rate of change of GNP deflatorSource: Yoon Je-yho, "Status of Financial Liberalization," (Unpublished) World Bank, December 1985. Taken from Bank of Korea and *Economic Statistics Yearbook*.

First, the question of correct macroeconomic signaling. If any individual sees very high nominal interest rates above recorded inflation, he could interpret this as a signal that most other people in the economy expected inflation to continue and the stabilization program to fail—even though the high nominal rates could be explained *ex post* on other grounds. Indeed, if enough firms borrow heavily at very high nominal rates of interest, it becomes more

probable that the government will keep the inflation rate high in the future in order to bail them out. This reinforces private fears that inflation will not wind down.

Second, when inflationary expectations are still high and uncertain, the problem of adverse risk selection at the microeconomic level in the Stiglitz-Weiss sense is particularly acute (Stiglitz and Weiss 1981). In contracting at any nominal interest rate substantially above

Table 13 Korea: Exchange Rates and International Competitiveness, 1978-85 (Indices 1980 = 100)

| Year and Quarter | | U.S. Dollar per Won | Effective Exchange Rates | |
|------------------|-----|------------------------|--------------------------|-------------------|
| | | | Nominal | Real ¹ |
| 1978 | IV | 125.1 | 117.7 | 94.8 |
| 1979: | I | 125.1 | 120.2 | 99.6 |
| | II | 125.1 | 123.8 | 107.1 |
| | III | 125.1 | 123.4 | 107.2 |
| | IV | 125.1 | 127.5 | 112.2 |
| 1980: | I | 106.2 | 110.4 | 103.7 |
| | II | 102.0 | 102.8 | 100.6 |
| | III | 98.8 | 97.1 | 98.1 |
| | IV | 93.1 | 90.6 | 96.5 |
| 1981: | I | 93.1 | 88.3 | 96.0 |
| | II | 90.8 | 90.0 | 100.1 |
| | III | 89.0 | 92.2 | 105.8 |
| | IV | 88.3 | 89.9 | 102.3 |
| 1982: | I | 85.3 | 89.2 | 102.0 |
| | II | 83.2 | 88.9 | 101.9 |
| | III | 81.7 | 89.9 | 103.1 |
| | IV | 81.4 | 89.8 | 102.5 |
| 1983: | I | 80.4 | 85.5 | 99.4 |
| | II | 78.7 | 84.3 | 97.2 |
| | III | 77.2 | 83.8 | 96.1 |
| | IV | 76.2 | 81.9 | 93.6 |
| 1984: | I | 76.2 | 81.5 | 93.2 |
| | II | 75.9 | 81.3 | 92.5 |
| | III | 74.8 | 82.7 | 94.0 |
| | IV | 73.9 | 82.7 | 93.4 |
| 1985: | I | 72.2 | 83.2 | 94.2 |

¹ An increase indicates appreciation.

² Trade-weighted.

³ Adjusted by relative movements in consumer prices.

Source: Bijm Aghevli and Jorge Marquez-Ruarte, "A Case of Successful Adjustment: Korea's Experience During 1980-84," IMF Occasional Paper 39, August 1985. Korean Authorities and Fund Staff estimates.

the "normal" 10 to 20 percent range approximating average real rates of return, the borrower must bet on what the future inflation rate will be—and also determine the riskiness of his own project. He will then accept a riskier project in the hopes of a favorable high yield in case inflation doesn't bail him out and he has to default anyway.

But the Stiglitz-Weiss model has a natural check on adverse risk selection. The financial institution will charge a less-than-market clearing rate of interest and simply ration observationally equivalent borrowers. Or, if more information becomes available, risk-averse lenders will gravitate towards those borrowers who appear to be safer with more collateral or equity participation.

However, this natural tendency towards prudence among non-bank lenders may be seriously undermined in the case of banks, custodians of the money supply, who receive (*de facto*) deposit insurance from the government. This insurance leads to serious problems of moral hazard where, unless closely supervised, private banks may well undertake very risky and seemingly high yield lending on the presumption that adverse outcomes leading to major losses will have to be covered by the monetary authority—while net profits from favorable outcomes will still accrue to the owners (bank shareholders). Insured financial intermediaries will exhibit more risky behavior than the uninsured. In this case, mass insolvencies in the Chilean banking system in 1982-83 led to a renationalization of the banks in order to protect domestic depositors as well as foreign creditors.

Even in the highly developed capital market of the United States, federal deposit insurance is creating severe problems for bank supervisors in curbing undue risk taking by commercial banks as well as savings and loan institutions (see Kane 1985). In a developing country without an equities market or well-developed accounting standards, and where private (but insured) banks are the principal lenders, the probability of a capital-market equilibrium with very high "real" (but phony) interest rates and undue adverse risk selection is much greater (Cho 1986).

Although government supervisory control over private banks can prevent undue risk taking at falsely high real rates of interest, this supervision does not guarantee that the government itself won't exert pressure to make bad loans! The price-level stabilization of 1980-84 was very successful, but the Korean government's pressure on the

banks in the 1970s was less benign. Because of its determination to support the development of domestic heavy industry and Korean contractors undertaking major construction projects in the Middle East and elsewhere, the Korean government coerced the banks into making risky long-term loans—many of which are now nonperforming. In the 1980s, the Bank of Korea still provides subsidized credit lines (official discounting at below-market interest rates) to various commercial banks in order that they themselves can avoid bankruptcy by keeping these old 1970s loans on their books. As of 1988, this bad-loan syndrome continued to hinder the full liberalization of the Korean financial system despite the successful monetary stabilization.

Implementing Tight Money in the Transition from High to Low Inflation

In retrospect, it seems clear that Chile should have tightened up more in the domestic flow of bank credit (inclusive of that financed by foreign borrowing) while changing to forward-looking wage indexing—and relied less on the exchange rate as a lever for securing the price level. Because of acute potential problems with adverse risk selection, orthodox tight money relying on very high nominal (and real) interest rates could not work.

The Koreans implicitly recognized this in bringing about their successful price-level stabilization. Nominal interest rates were scaled down consistent with keeping real rates positive—albeit below market-clearing levels. Although the Bank of Korea also reduced reserve requirements as fiscal policy improved, central bank credit was rationed to the commercial banks—and foreign capital inflows were limited—in order to secure the desired deflation without significant exchange-rate overvaluation. (Growth in money wages was also scaled down by the Korean government.)

That is, tight money was imposed while real rates of interest were kept positive and fairly constant by decree.⁷ This meant that, in order to disinflate, the Korean banking system as a whole rationed credit to the private sector. However, because the Korean government's fiscal deficits were simultaneously reduced (as was also the case in Chile), the real flow of loanable funds to the private sector actually increased,

thus relieving the supply constraint on domestic output. No net credit squeeze on the private sector was necessary once the Korean government, and its various special agencies, stopped directing the flow of bank credit to itself.

Given the equally good and perhaps even more favorable fiscal conditions existing in Chile, it seems—with the benefit of hindsight, of course—that in February 1978 the Chileans should have followed an internal interest rate, wage rate, and bank credit policy more like Korea's of 1981-83. Then some of the burden of bringing about disinflation could have been taken off nominal exchange-rate policy, and controls on capital inflows during the price-level stabilization would have prevented such severe overvaluation of Chile's real exchange rate.

A Concluding Note

Despite the difficulties enumerated above, the potential gains from successfully stabilizing the domestic price level while retaining competitiveness in foreign trade are enormous.

Korea's GNP growth and financial development since the successful 1981-84 stabilization have been truly remarkable. The rapid deepening of financial flows within the Korean economy has made possible large net repayments of foreign debt through trade surpluses. Not only have bank deposits continued to increase sharply relative to GNP, but there has been a considerable lengthening of the term structure of corporate finance. Substantial new issues of corporate bonds have been floated domestically—an indication of financial maturity that occurs only if people believe that the domestic price level will remain fairly stable into the indefinite future.

The Chilean financial collapse of 1982-83, and the orgy of Chile's foreign borrowing in the preceding three years, caused a sharp downturn in real output and left the economy with a huge external debt, which will be difficult to service in the years to come. Nevertheless, the liberalization process was only interrupted—albeit severely. Instead of reverting to protectionism, Chile retained its open stance in both foreign and domestic trade. With the subsequent devaluation of its currency made necessary by the cumulative overvaluation prior to the crash, exports are now growing rapidly, and

growth in GNP has recovered. The modest ongoing inflation, in part a consequence of the devaluation, still inhibits the lengthening of the term structure of internal finance, as in Korea; but bank deposits as a share of GNP are again increasing, while the government continues to sort out the bad load portfolios of most of the major banks. Chile's economic position as of 1988 seems to be at least as good, or better, than that of all the other major Latin American countries, none of which has succeeded in implementing such thoroughgoing trade, fiscal, and financial reforms.

Finance and trade liberalization, with borrowing and lending at substantial real rates of interest made possible by a stable price level, is not easy and is full of potential pitfalls. Nevertheless, it remains the only game in town as far as successful economic development is concerned. That, of course, was the main message of my 1973 book, *Money and Capital in Economic Development*. It is perhaps a sign of advancing age, however, that I am now more inclined to emphasize the pitfalls.

Notes

1. Terminology introduced by Edward Shaw (1973) and McKinnon (1973). Further discussion of optimal financial management in a repressed economy is found in McKinnon and Mathieson (1981). A more general review of the literature on financial repression and liberalization can be found in Fry (1982) and most completely in Fry (1988).
2. These ratios are taken from IMF *International Financial Statistics* (various issues). The IMF defines M_1 as money (line 34) plus quasi-money (line 35) plus deposits outside commercial banks (line 45). M_2 is a stock tabulated as of 30 June for each calendar year, whereas GNP is the flow of output for that year.
3. From the well-known Scandinavian model of inflation, we can expect the CPI to increase rapidly when productivity growth is high in tradables industries but the cost of nontradable services increases—as was true in Japan. But then I claim that the CPI becomes an invalid deflator for calculating real interest rates.
4. For the more recent data, see the Central Bank of China, *Financial Statistics* (compiled in accordance with the IFS format), May 1988.
5. Are there other circumstances where a government could impose a fixed nominal exchange rate directly without fear of real overvaluation? Consider the last stages of extreme hyperinflation—such as that which occurred in Germany from 1921 to 1923. When the price level is increasing rapidly and erratically on a daily basis, hour-by-hour or even minute-by-minute exchange rate quotations are the most efficient source of information telling people how fast inflation is actually proceeding. Everyone then keys on (indexes to) the exchange rate in determining domestic prices and wages. Significant backward-looking indexing tends to disappear and virtually all forward contracting uses foreign exchange as the numeraire (see Doribusch 1985).
Consequently, a dramatic stabilization of the exchange rate will immediately stabilize domestic prices and wages—even if they are not directly controlled by the government. One must be cautious, however; a dramatic act such as the introduction of a new currency along with a new fiscal policy might be necessary to convince people that the exchange rate is likely to remain stable.
6. This adverse risk selection among nonbank borrowers and moral hazard for the (insured) banks themselves when the macroeconomy is unstable is analyzed in McKinnon (1989b, forthcoming).
7. In the Stiglitz-Weiss (1981) article dealing with adverse risk selection, the lending “bank” was (implicitly) assumed to be risk neutral. However, one can show that when (1) there is deposit insurance, and (2) macroeconomic instability causes positive covariance in default probabilities among nonbank borrowers, the bank itself becomes a risk taker. Moral hazard exists that induces the bank to make unsafe loans at interest rates which are “too high.” See Ronald McKinnon (1989, forthcoming).
8. Most students of economic development no longer have to be persuaded of the importance of keeping positive real rates of interest at substantial levels in order to avoid the syndrome of “financial repression” (McKinnon 1973; Shaw 1973). More recently, there has been substantial empirical work showing that LDCs that maintain higher real interest rates, and high real financial growth, tend to be more successful (IMF 1983; Fry 1978).

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