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PRIVATE CAPITAL FLOWS TO BRAZIL IN THE 1990s

Capital controls and the liberalization of the capital account

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1. INTRODUCTION

A market economy is considered to be the unique model capable of leading to economic progress. At the same time, as to reinforce this concept, the so-called process of globalization arose. Globalization is the accelerated growth of economic activity beyond the domestic and foreign political frontiers. This process may be facilitated by the reduction of legal barriers to the movements of goods and services (trade) and also of capital (investments), as well as by technological progress, mainly in the transportation and communication sectors.

The current globalization trend started in the seventies. It was fomented not only by policies adopted in the U.S. and Europe, aiming to end a stagflation period, but also by the development and diffusion of a new technological pattern, as well as by a growing integration of the financial markets combined with a shift outwards in the growth strategy adopted by the developed countries.

The process of globalization has been strengthened after the collapse of the Bretton Woods system, between 1971 and 1973. It has also been urged on by the deregulation of the financial markets and the development of new information technologies.

"The world's financial markets are rapidly integrating into a single global marketplace, and developing countries, starting from different points and moving at various speeds, are being drawn into the process. If they have adequate institutions and sound policies, developing countries may proceed smoothly along the road to financial integration and gain the considerable benefits that integration can bring. Developing countries have little choice about whether to follow this path, because advances in communications and new developments in finance have made the course inevitable. They can, however, decide how they wish to travel, choosing policies that benefit the economy and avert potential shocks."

External capital flows play an important role in the economic and financial development of a nation. The amount of available resources in the lower-middle income countries is increased by the savings of the capital exporting countries. The process improves the international allocation of funds. It must also be noted that at least part of the dramatic increase of international capital flows was due to the financial deregulation process carried out by many governments during the last twenty years. On the other hand, the Mexican crisis in December 1994 and the Asian crisis in 1997, with widespread and still ongoing effects, showed us the potential destabilizing effects of these flows.

Excessive dependence on short-term international financial flows makes a country's economy extremely vulnerable. Moreover, if there are repeated current account deficits with no parallel investment in productive capacity, then it is difficult to repay that debt in the future.

The reliance on external resources limits the use of economic policy tools to either privatizing the assets, or keeping interest rates high in order to continue to attract foreign capital. According to many economists, the analysis of the external financing profile of Brazil shows a large participation of short term consumption-directed inflows. Besides, there is no industrial policy aimed at the increase of exports.

Whenever any crisis in the stock exchange markets erupts, due to speculative attacks, the governments of the affected countries (with attached-to-the-dollar currencies) have only a two-step measure to take. First, they sell a good deal of their foreign reserves in order to avoid currency devaluation. Second, they raise the domestic interest rates in order to avoid capital fights, but that provokes a decrease both in growth and employment levels.

Everyone, except for the big speculators, loses in such a situation. Although Brazil has been relying on the maintenance of a huge volume of foreign reserves, its external vulnerability is still very high, as that has been recently proved. There are growing deficits in the trade balance and in transactions with the rest of the world, as well as in the governments' accounts.

The worlds' scenario shows us that perhaps a world regulatory system should be created, in order to avoid future catastrophes.

According to Ries, until recently, capital controls were considered by many policymakers to be among the more arcane and technical instruments of economic policy. National governments frequently imposed controls in support of balance of payments and monetary policy objectives when international capital flows threatened to overwhelm domestic policy priorities. The appropriateness of their application in these conditions, or the extension of their use to other situations, was little discussed. In the last decade, however, the power of market-based economics has swept through formerly socialist and communist countries, leading to economic and political reform in many of these states. With these changes, debates over the use of capital controls have gained new prominence since capital controls have frequently been used to sequence and fine tune liberalization policies in the emerging market economies.

Capital controls, far from being an arcane tool for fine tuning economic policy and macroeconomic balance of payments management, are shown to be of central relevance in determining patterns of international ownership and the character of national private investment. They can also have a significant effect on patterns of population migration and the development of national comparative advantage. They affect industrial organization at the deepest levels and so should be of concern to corporate strategists, investment portfolio managers and equity traders and anyone concerned with such broad issues of public policy such as development and growth, education and infrastructure planning.

The main purpose of this paper is to focus on the main policies adopted by Brazil either to attract or to control those inflows during the nineties, and also to discuss the liberalization of the capital account.

2. THE REVIVAL OF PRIVATE CAPITAL FLOWS TO DEVELOPING COUNTRIES IN THE NINETIES

2.1 Introduction

According to Corbo and Hernández, the debt crisis of 1982 was precipitated by a sudden reduction in capital inflows at a time when highly indebted countries were facing a slowdown of the world economy, a large increase in international interest rates, and a sharp loss in terms of trade. Weak economic policies and institutions in many developing countries exacerbated the effects of these shocks. The cutoff of capital inflows forced a quick and steep increase in the size of the net external transfer – translating, in the short run, into sharply reduced domestic expenditures and imports and, in the longer run, into damage to investment rates and economic growth.

During the decade following the initial shock, most of the highly indebted countries set about adjusting their policies and institutions to the new situation of severely restricted external financing. The goal of the adjustment was to restore a sustainable balance of payments and at the same time laying firm foundations for growth. Some countries expected to return to international capital markets, but to rely this time less on debt and more on direct foreign investment and portfolio investment.

In Latin America, once the debt crisis of the eighties had been overcome, Argentina, Mexico, Chile, and only recently, Brazil managed to stabilize their economies with reasonable success, thus becoming attractive investment options for foreign capital.

Since the start of the 90s, the industrialized economies have registered growth rates lower than in previous years. Since investment opportunities have deteriorated in the OECD countries, investors began channeling their funds to other nations.

The growing integration of financial markets that resulted from liberalization, deregulation, and the facilities provided by technological progress, and, simultaneously, the creation of new financial instruments, made it possible to carry out parallel operations in different and geographically distant markets.

2.2 Types of capital inflows

For the first years after the debt crisis, most lending to these countries took the form of official loans from international financial institutions to support the policy and institutional reforms necessary to achieve these goals. Once countries began to make progress in their adjustment efforts, private capital inflows to them increased significantly – financed partly by the repatriation of the capital that fled these countries in the early 1980s. In fact, the capital account surplus for all developing countries increased from $48.7 billion in 1987, to $ 162.9 billion in 1993, before easing to $142.2 billion in 1994. The new inflows came from commercial bank lending, foreign direct investment, and portfolio capital (investment in stocks and bonds). Portfolio investment, which increased from $11.9 billion in 1987 to $58.9 billion in 1994, has been motivated by the potential for providing risk-sharing capital financing to expand the private sector. Host countries have encouraged foreign direct investment, with its promise of access to new technologies and markets, by dismantling restrictions and improving the macroeconomic environment by introducing market-oriented reforms. Other incentives to capital inflows have been the introduction of restrictive monetary policy in conjunction with some type of intervention in the exchange rate market.

Between 1970 and 1985, total flows increased at an annual average rate of 13.2%. Credit operations continued as the main mechanism of international capital transfers. However, at the same time, operations with securities and other private flows began to move upward at a rather rapid pace. In 1985, foreign direct investments were responsible for 15.9% of total flows.

Allocation of flows among the developing countries has not been uniform. Between 1990 and 1994, Asian economies received an average of 51.8% of the resources channeled to the developing economies, while Latin American countries received 38.7% (see table 1).

Up to 1990, the Latin American countries received higher amounts of foreign direct investment. During the following years, those countries started to receive a preponderant share of portfolio capital, while the Asian countries moved into first place in the ranking of countries targeted for foreign direct investment. This occurred because many Asian countries were more resistant to accepting highly volatile portfolio investments, besides having less developed capital markets.

2.3 Costs and benefits of capital inflows

According to Cardoso and Goldfajn, there is a consumption-smoothing advantage offered by capital inflows, that arises under two circumstances: in a context of cyclical fluctuations and in a context of growth where foreign savings are used to initiate growth. In the case of cyclical disturbances to the terms of trade, output, or foreign demand, optimal consumption will fluctuate less than disposable income if there is the possibility to borrow during periods of income shortfalls with subsequent repayment when income recovers. This positive welfare effect of capital flows extends to disturbances that are domestic.

Besides, capital inflows add to an economy's productive capacity and thus potentially increase welfare. Foreign investment may carry more than the traditional neoclassical benefits by adding to competition or improving technology. But because of existing distortions, these factors may also lower welfare.

Corbo and Hernández say that recipient countries are usually concerned about a large increase in capital inflows for several reasons. First, in countries that have recently reformed or are reforming their trade policies to increase their integration into the world economy, trade reform would bring an initial real depreciation accompanied thereafter by a fairly stable exchange rate adjusted for fundamentals. The real exchange rate appreciation that accompanies capital inflows would counter the real depreciation, delaying the supply response of export-oriented sectors and increasing the competition for the import-competing sectors. Thus, for countries that have initiated a trade reform, the real appreciation effect of the capital inflow could work at cross purposes with the liberalization of trade and could undermine the credibility of reform. A related consequence for countries with a more flexible exchange rate system could be excessive volatility in the nominal and real exchange rates, particularly in the case of hot money.

Second, in countries that are pursuing a stabilization program with a fixed or preannounced nominal exchange rate as an anchor for domestic prices, or where price stability is an objective, the authorities could be concerned about monetization effects. The expansion in high-powered money caused by large capital inflows will have a temporary inflationary effect through the increased price of non-tradable goods (assuming that the increase in the supply of money exceeds the increased demand arising from lower interest rates and accelerated economic activity).

Third, for countries with weak banks and poor supervision of the banking and financial system, the larger amount of funds to be intermediated may exacerbate the typical moral hazard problems associated with deposit insurance.

Fourth, if capital inflows are volatile or temporary, their reversibility can have adjustment costs that derive from resource reallocation, bankrupticies, hysteresis (meaning the asymmetrical problems resulting from the fact that it is easier to exit a business than to enter it), or other market imperfections. If the capital inflows are largely temporary, and if the authorities perceive that the private sector is making decisions based on the assumption that the flows are permanent, governments may try to avoid the adjustment process entirely, since it will have to be reversed later – an expensive process when irreversible costs are involved.

Fifth is the concern about maintaining a sustainable current account deficit (as a ratio of GDP) in the long run. Too sudden an increase in this deficit, particularly if it comes with a consumption boom, could raise the country's risk premium, restrict its future access to international capital markets, and entail important adjustment costs if the flow is reversed following negative political or economic developments at home or abroad.

There is also a political argument. Many governments are subject to strong political pressure from interest groups in the exporting and import-competing sectors to avoid or limit the real exchange rate appreciation associated with the capital inflows. In such cases, many governments will be forced to take actions to protect the real exchange rate.

Specially regarding portfolio investment (bonds and equity), the most outstanding feature is that, like hot money, it can be reversed in a very short time: foreign investors may suddenly decide to leave the country in which they are investing. The volatility that this risk of flow-reversal may cause in exchange rates, asset (stock) prices, or

interest rates can be very harmful. When capital inflows of this type have found their way into the banking system and have pushed up domestic expenditures and increased the current account deficit, their reversal can affect the domestic economy through a decrease in asset prices, a jump in interest rates, liquidity problems in the banking sector, or a devaluation of the currency. Furthermore, if the central bank does not react quickly enough and the stock of international reserves is low, the reversal may cause a balance of payments crisis.

Negative shocks – such as a crisis in another country, a drop in the price of the main exportable good, a rise in the price of the main importable good, a sharp increase in international interest rates, or a change in taxes affecting returns from the inflows – may induce foreign investors to take their money out of the country or to keep it there only if a higher return is provided. Either way, they will react by selling their domestic stock holdings and buying foreign currency with the proceeds. That will cause a fall in the general stock price index and, depending on the exchange rate system, either a loss of international reserves and an increase in domestic interest rates, or a depreciation of the nominal exchange rate, or both.

All these price movements can create considerable uncertainty, discouraging investment, whether foreign or domestic. At the same time, they can be very damaging for the economy as a whole if interest rates, asset prices, or exchange rates fluctuate too widely – because of bankrupticies and hysteresis effects when interest rates increase and, in the case of exporting and import-competing sectors, when the exchange rate appreciates.

Another important characteristic of portfolio investment, as opposed to other forms of capital flows such as bank loans, is its behavior during different phases of the macroeconomic cycle. In fact, it has been argued that bank borrowing reinforces the up- and downswings in economic activity that characterize the cycle. This is because banks are willing to lend more during upswings – the expansionsary and recovery phases of the cycle – than during recessionary downswings. Private portfolio investors, on the other hand, will refrain from selling every time stock prices are too low (or buying every time they are too high) because they do not want to realize capital losses.

2.4 Capital flows to Brazil in the 1990s

Capital flows resumed into the Brazilian economy in the early nineties. As many other developing countries, Brazil benefited from favorable external factors. The main determinant of foreign capital flows has been the huge interest rate differential between the domestic and the international markets. The liberalization of exchange flows and the renegotiations of the foreign debt allowed the Brazilian economy to be one of the main recipients of foreign capital flows. The success of the current stabilization plan – the Real Plan – has strengthened this trend. The idea is to maintain a large volume of reserves so that it works as a (short-term) insurance policy of the exchange rate, which anchors the (new) currency. Nevertheless, the large volume of capital flows has prompted the government to try to fine-tune its size and composition. The high interest rate differential, which is maintained to guarantee the domestic consistency of the stabilization plan until further fiscal reforms are enacted, has attracted massive flows of short-term speculative capital.

According to Cardoso and Goldfajn, after the oil shock of 1973, Brazil's reliance on commercial loans to finance both public investment and the more expensive oil led the country to the debt crisis of the early 1980s.

The 1980s was, thus, a decade of political negotiation with the foreign creditors in order to restore the country's credibility abroad. Domestically, a policy of strict control over the foreign reserves has been adopted, as well as a policy for exports increase.

Following a trend common to other emerging markets, private capital inflows to Brazil disappeared in the 1980s and increased dramatically after 1991. Positive balances were only achieved from 1992 onwards. By 1993, the fall of international interest rates had eased the external debt burden and led to an agreement with creditor banks that was concluded in April 1994 with an exchange of instruments that covered over $50 billion in debt stocks and arrears.

According to Mello, in the 1980s, one of the characteristics of these capital flows was that they consisted mostly of voluntary bank credits. Later, with the outbreak of the debt crisis, this type of financing was replaced by other

forms of capital inflow, particularly resources from multilateral organizations and government agencies. With the dawn of the 1990s, foreign resources inflows based on security issues came to account for a considerable share of outside capital and supplanted bank credits. Taken as a whole, the resources obtained through commercial papers, bonds, notes and securitization accounted for 80.6% of the financial loan volume entering the country between 1991 and the first half of 1996, while bank loans dropped to just 10.2% of total inflows in the same period.

Monthly private capital inflows averaging US$39 million between 1988 and 1991 increased 25 times and turned into an average monthly net flow of US$970 million between 1992 and 1995. Since 1992, net foreign capital flows to Brazil have been sufficient to finance small current account deficits while contributing to an increase in foreign reserves. During that period, the capital consisted primarily of short-term resources tied to portfolio investments and other short-term investments. In 1995, net capital flows amounted to more than US$29 billion, of which US$20 billion was short-run capital: US$2.3 billion was equity and special investment funds, and approximately US$18 billion consisted of short-run capital not classified under a specific category (Cardoso and Goldfajn, 1997).

In table 2, the composition of capital flows is shown. There is the declining share of medium- and long-term capital flows (lines d and e) and the growing importance of short-term capital (lines c and f) in total private capital flows. It is also shown that the share of net direct investment (including reinvested profits, lines a and b) in total private capital flows oscillated between 1991 and 1995. Net direct investment, as a share of private capital inflows, declined from 22% in 1992 to a negative 5% in 1993, increasing to 11% in 1994, and falling, again, to 9% in 1995.

Mello highlights the importance of foreign portfolio investments. According to him, these operations have registered strong net inflows since 1991 when they amounted to US$0.6 billion, climbing to US$7.3 billion in 1994, US$2.3 billion in 1995 and US$2.9 billion in the first half of 1996.

Still according to Mello, despite the fact that specific legislation on foreign investments in Brazilian security exchanges dates to Law # 1401, issued in March 1975, only with the advent of Resolution # 1289, on March 20, 1987, were the first incentives offered to foreign investors in the Brazilian stock market. The appendices to this document define the mechanisms that discipline the creation of foreign capital investment companies (Appendix I), investment funds (Appendix II), diversified stock portfolios (Appendix III), and stock and bond portfolios operated in the country by institutional investors (Appendix IV), and finally, investments through depositary receipts (Appendix V). These institutional alterations, together with the low prices of Brazilian stocks and the exogenous factors, generated a huge volume in foreign portfolio investments in Brazil in the 1990s. Such operations accounted for 85% of foreign financial investment inflows between 1991 and the first half of 1996.

At the end of 1994, Mexico's financial crisis led to an immediate cutback in capital flows to emerging markets. During the fourth quarter of 1994 and the first quarter of 1995, the net flow of capital to Brazil was insufficient to finance the current account deficit, and the central bank lost reserves of about US$9.8 billion. When the crisis erupted, the initial reaction of investors suggested that the Mexican financial crisis would compromise all emerging markets, as stock prices plunged, particularly in Argentina and Brazil; currencies weakened in developing countries from Thailand to Bulgaria, and foreign portfolio investment disappeared. The IMF joined the United States in a rescue operation to support Mexican reforms. This infusion of capital successfully insulated financial markets from the crisis and soon capital also returned to Brazil. At the end of 1995, net capital flows were close to US$30 billion and in 1996 net flows again exceeded US$29 billion. In 1996, a boom in mergers and acquisitions led to an increase in foreign direct investment, which amounted to US$8 billion while the sum of equity investment and short-term capital fell from US$20 billion to approximately US$17 billion.

The Balance of Payments in 1997 (see table 3) is characterized by the high absorption of long-term foreign capital, such as foreign direct investment, and also by a dramatic amortization of long- and short-term external liabilities. Oscillation in the level of foreign reserves was also observed starting in October 1997, when the crisis erupted in Southeast Asia. During the most critical period, October and November 1997, the Central Bank had to provide foreign currency not only for both the floating and the free exchange rate markets.

The net inflows of foreign capital amounted to US$26.1 billion (see table 4), less than those observed during 1996. It must be taken into account, however, that there was a 80% increase in the payments of external liabilities, as well as the reversal of the net inflows of short-term capital.

The net foreign direct investments, including reinvestments, have increased, compared to the latest years, reaching an amount of US$17.1 billion, equivalent to 51.1% of the current account deficit.

The inflows directly related to the privatization processes (US$5.2 billion – US$3.1 billion associated with the energy sector) represented less than one third of the total invested amount. This shows the autonomy of the absorption of long-term-risk capital, related to the privatization process.

The net portfolio investments amounted to US$5.3 billion by the end of the year, after having reached a peak of US$8.1 billion in September. This was due to the strong outflows that occurred during the fourth quarter of 1997, as an effect of the Asian crisis.

Portfolio investments include financial funding for the stock markets (under the regulation described in the Appendices I to V of the Resolution # 1289), and also for the fixed-yield funds: foreign capital, privatization funds, real estate investment funds and mutual investment funds in emerging companies.

The Depositary Receipts Program accounted for 80% of the net portfolio revenue, with an amount of US$4.3 billion during the year. The fixed-yield funds registered net inflows of US$1.7 billion until November 1997. The increase of the domestic interest rates turned them into an attractive investment option again, and an inflow of US$327 million was registered in December. The privatization funds attracted US$1.2 billion, whereas the outflows reached the amount of US$663 million during 1997.

3. CAPITAL CONTROLS

3.1 Reasons for using capital controls

According to Mathieson and Rojas-Suarez, there are basically four reasons for using capital controls:

- to help manage balance of payments crisis or unstable exchange rates generated by excessive volatile short-run capital flows;
- to ensure domestic savings are used to finance domestic investment and to limit foreign ownership of domestic factors of production;
- to maintain the authorities' ability to tax domestic financial activities, income and wealth;
- to prevent capital flows from disrupting stabilization and structural reform programs.

They are also used to control the form of capital inflows: to limit short-term inflows while attracting long-term flows, like in Chile. Imposing taxes on short-term financial transactions has often been used as a means of limiting short-term capital flows, which can lead to a sharp change in a country's foreign exchange reserves or contribute to excess exchange rates volatility. It has been argued that the authorities should limit speculative capital flows rather than alter financial and macroeconomic policies designed to achieve medium-term objectives.

Doubts about the sustainability of a country's policy stance can potentially lead investors to alter their holdings of domestic and external assets in order to protect the value of their portfolios. While capital controls could be used to prevent these adjustments from occurring, this may not address the main problem, which is the credibility of the authorities' policies.

A second reason for the use of capital controls is the need of developing countries both to ensure that scarce domestic savings are used to finance domestic investment rather than the acquisition of foreign assets and to limit foreign ownership of domestic factors of production. The uncertainties created by an unstable

macroeconomic and political environment in many developing countries can reduce the expected private returns of holding domestic financial instruments far below the social marginal product of additional capital. It has been argued that capital controls can be used to help retain domestic savings by reducing the return on foreign assets (e.g., through an interest equalization tax or by raising the implicit cost of moving funds abroad) and by limiting access to foreign assets.

Even if capital controls limit the acquisition of foreign assets, however, they still might do little to increase or sustain the availability of savings for domestic capital formation. If domestic financial instruments carry relatively uncertain and low real rates of return and residents cannot acquire foreign assets, they usually respond either by reducing their overall level of savings or by holding their savings in inflation hedges such as real estate or inventories.

Capital controls may also be used to establish limits on foreign ownership of domestic factors of production, industries, natural resources and real estate. On the other hand, they may also discourage foreign direct investment.

Another reason for using capital controls is the need to maintain the authorities' ability to tax financial activities, income and wealth. Stamp duties and taxes on securities transactions have often been important sources of government revenues in countries with large securities markets (like Switzerland, for instance), and income taxes on interest and dividend income are key components of most tax systems.

Since domestic residents have a natural incentive to shift some portion of their financial activities and portfolio holdings abroad to avoid these taxes, capital controls have been viewed as a means of either limiting holdings of foreign assets or to gaining information on the scale of residents' external asset holdings so that these holdings can be taxed.

Finally, it has been often recommended that a opening of the capital account should occur late in the sequencing of stabilization and structural reform programs in developing countries in order to avoid capital flows that would make reform unsustainable. The nature of such destabilizing capital flows would depend on both the credibility of the reform program and the extent of the differences in the speeds of adjustment in goods, factor and financial markets. For example, if a stabilization program lacks credibility, the liberalization of the capital account could lead to currency substitution and capital flight, which could trigger a balance of payments crisis, devaluation and also inflation. Conversely, if it is anticipated that the reform program will be sustained, then there could be a capital inflow (due to higher perceived return on domestic assets) that would lead to a real exchange rate appreciation that could offset the effects of the trade reform on domestic traded goods prices. Moreover, even if there was some uncertainty about the likely success of the reform program, capital inflow could occur if residents temporarily repatriate funds from abroad to take advantage of the high real interest rates.

Cardoso and Goldfajn state that the desire to counteract the pressures to exchange rate appreciation in the face of large capital inflows and to limit inflows that are likely to be reversed has led to central bank intervention. Policies to reduce the impact of capital inflows include direct intervention through controls and taxes and a restrictive monetary policy in the form of sterilization. Sterilization can create significant fiscal costs in financing high levels of reserve holdings depending on the scale of the operation and the size of the interest differential vis-à-vis external rates in reserve centers. The instability caused by heavy inflows and the costs of sterilization seems to give governments a reason to control capital flows.

Still according to Cardoso and Goldfajn, one of the most convincing arguments in favor of the use of capital controls was advanced by Dooley (1996). He argued that large private capital inflows to developing countries have reflected a chain of official guarantees consisting of a commitment to an open capital account, the adoption of a fixed exchange rate (or limited flexibility) and the guarantee that the authorities would help stabilize the domestic financial system during a crisis. The financial system guarantees include a lender of last resort provision, bank deposit insurance, and interventions in equity markets to limit price declines. Given the incentives created by these guarantees, the size of the capital inflow will be related to the country's perceived net worth (the value of its net international reserves, the credit lines it can obtain from private markets, and the resources that are likely to be available from international financial institutions). If the guarantees lead inflows to

a poorly supervised financial system, then poor quality investments may occur. The solution to this problem lies in breaking the chain of guarantees offered to international investors (this can also be viewed as a modern rationale for the use of capital controls). Dooley regards a threat to withdraw the guarantee of the bank deposits or the solvency of the banking system as not credible. This leaves either changing the exchange rate regime (which can be an alternative, depending on the country and on the time) or imposing capital controls as the only options, if countries do not want domestic interest rates to be determined by international markets.

Besides the arguments for the use of the capital controls, a strong tradition argues that government intervention does not accomplish its stated objectives. There is the question whether the costs include the possibility of retaliation by other countries, evasion, administrative costs, and the inability to quantify the needed tax on capital flows. There is also the risk that controls established to mitigate a temporary distortion may generate interests of their own and outlive their purpose.

3.2 Types of capital controls

Controls on capital flows may take on the form of restrictions on the assets transactions or restrictions on payments related to the acquisition of assets. Restrictions on assets transactions include direct capital controls, such as quantitative limits or prohibition of certain transactions by imposing minimum maturity limits. Price-based capital controls take the form of taxes or reserve requirements.

In response to the mid-1990s capital outflows, Venezuela introduced comprehensive exchange controls to limit current and capital account transactions. Romania responded to its balance of payments crisis of early 1996 by effectively closing foreign exchange markets. South Africa postponed the elimination of remaining exchange controls on residents' capital outflows following a run on the rand in early 1996. In response to Mexico's peso crisis in late 1994, Brazil prohibited prepayment of foreign loans and relaxed certain capital inflow controls.

Experiences of direct controls by countries that experienced recent surges in capital inflows include, among others, Brazil's prohibition of some nonresident transactions (inflows to futures and options markets) in 1995, and Chile's one year minimum maintenance period for nonresident capital inflows. These countries also used price-based controls. For instance, Brazil raised the financial transaction tax to discourage inflows in the 1990s. Chile introduced a stamp duty in the mid-1990 and extended the base tax to all foreign loans.

Financial regulatory measures and prudential measures can also affect capital movements. China, India, Korea, and Thailand differentiate their reserve requirements between resident and nonresident deposits in a way that can influence capital movements in some cases. Prudential regulations applied for the purposes of controlling banks' open net foreign currency position may include a capital control element. Brazil, responding to capital outflows surges in 1995, raised banks' short position limit and lowered their long position limit.

Appleyard and Field comment on a major proposal that has attracted attention for some time is that of James Tobin (1978), who suggested imposing an international tax on all spot transactions involving the conversion of one currency into another in securities markets. Such a tax would presumably discourage speculation by making currency trading more expensive, thereby reducing the volume of destabilizing short-term capital flows. However, on one hand the tax has the potential advantages of reducing some of the marginally based speculative transactions or market "noise" and of fostering international cooperation on tax policy, on the other hand there are a number of problems with a transactions tax of this type.

There are four main problems with a Tobin tax that would inhibit its effectiveness. First, to limit the market distortions resulting from such a tax, the tax base would have to be as broad as possible and would have to exclude no category of market participants. However, the Tobin tax cannot distinguish between normal and institutional trading which ensures market liquidity and efficiency and destabilizing financial activity. Second, there is the question of what type of transaction to tax. If the tax is applied only to spot transactions, it can easily be avoided by going into the derivatives market. Taxing the initial contractional value of derivatives, however, would likely severely injure the derivatives market. Third, it can be argued that the tax should be applied only when markets are clearly in disequilibrium, but besides contradicting Tobin's idea of a one-tax system, it would be also very complex to administer. Finally, there is the question of the distribution of revenues, which is a

controversial political question within countries. Alternative models have been suggested by other economists, but there is still a lack of consensus among them, suggesting that such a measure is unlikely to be adopted in the near future.

They also point out that another approach to controlling capital flows involves adopting a system of dual exchange rates or multiple exchange rates. In this situation, a different exchange rate is employed depending on the nature of the foreign transaction. This way, a considerably higher price for short-term capital transaction would presumably discourage such transactions.

3.3 The effectiveness of capital controls

The ability of quantitative capital controls or a dual exchange rate system to insulate domestic financial conditions from those in international financial markets is naturally influenced by the expected gains from and costs associated with evading the controls. The incentives to evade capital controls will reflect not only nominal yield differentials (including expected exchange rate changes) but also differences in the availability of credit, the types of financial products and services that are provided, and the perceived stability and soundness of the financial institutions in domestic and offshore markets. In addition, the risks of expropriation and taxation of domestically held assets can also be important incentives to evade controls. The transaction, communication and other (including bribery) costs of evading the capital controls may be significantly lower for those individuals and institutions that regularly engage in (lower) international trade and financial transactions than for others. When such costs are significant, they make small scale illegal capital transfers unprofitable. The scale of disguised capital flows is also sensitive to the penalties applied for trying to evade the capital controls. The effectiveness of these penalties in inhibiting illegal capital transactions depends on the effort put on the enforcement of the capital controls and on the prosecution of those caught violating the controls. A large and technically sophisticated bureaucracy may be required to enforce a system of complex and comprehensive capital controls.

Cardoso and Goldfajn describe Chile as a generally cited example of the effective use of capital controls but, according to them, some economists find mixed results. There is (econometric) evidence (between 1987 and 1995) that capital controls were not evaded in Chile where substantial levels of tax revenue were levied on capital participants. As a matter of fact, the ability to collect tax revenue on capital flows increased over time as the Chilean authorities closed loopholes and the selective capital controls have discouraged significantly particular classes of short-term credits. The results show that the taxed short-term flows were smoothly substituted by other short-term flows without measurable changes in total short-term credits. The taxes were borne by participants who were unable to substitute flows. The authors also find that selective capital controls have failed to achieve other objectives of the Chilean monetary authorities, such as delaying real exchange rate appreciation or improving the mixture of foreign financing between long- and short-term credits.

Cardoso and Goldfajn also say that the conceptual evidence seems to be that capital controls can temporarily provide breathing room for dealing with balance of payments difficulties and help to reverse capital outflows if combined with policy tightening involving higher interest rates. Controls can also serve to discourage potentially destabilizing short-term capital flows and reduce a country’s vulnerability to shifts in market sentiment. But it seems ineffective in preventing sustained outflows of savings or avoiding a crisis induced by inconsistent macroeconomic policies. Thus, enforcing capital controls over extended periods can reveal itself as a hopeless task in a world of highly integrated international capital markets.

3.4 The costs of capital controls

Even if the effectiveness of capital controls erodes over time, they can still inhibit or heavily "tax" certain classes of external financial transactions, limit the access of some individuals or institutions to international financial markets, restrict the degree of competition in domestic financial markets and discourage the repatriation of flight capital. Capital controls can thereby create inefficiencies in the domestic financial system and inhibit risk diversification, which can in turn weaken the competitive position of domestic producers in international trade and increase the vulnerability of domestic spending and wealth to domestic financial shocks.

As new channels have developed for moving funds abroad, the costs of enforcing the capital controls, inspecting any suspected violations or punishing the violators, have risen.

Capital controls may also contribute to the adjustment costs of an economy if they create the illusion that the authorities can target nominal variables (such as the exchange rate) without addressing the fundamental causes of inflation and balance of payments problems. As the effectiveness of capital controls erodes, moreover, such inappropriate macroeconomic policies can be sustained only if capital controls are further tightened thereby increasing the distortions they can potentially create.

Capital controls also create an implicit market value for the licenses for approved but restricted capital account transactions. However, these licenses are seldom sold at public auctions but are usually allocated to individuals and institutions according to a set of rules administered by the capital controls bureaucracy. These arrangements, thus, often provide a strong incentive for individuals to attempt to capture the "rent" inherent in these licenses through bribery, corruption, and political influence. Although such "rent seeking" activities may be viewed as highly profitable from an individual’s perspective, they have been identified as an important source of economic inefficiency in many economies with extensive controls on external trade and financial transactions.

3.5 Constraints on the formulation of macroeconomic and structural policies

When the effectiveness of capital controls erodes, this may impose new constraints on the formulation of macroeconomic and structural policies. Even when external financial market conditions are unchanged, an increasing willingness and ability of domestic residents to evade capital controls implies that unstable domestic monetary and financial policies (which create a large differential between the expected real returns on domestic and external assets) typically lead to: increased capital flight, a growing "dollarization" of an economy, and thereby smaller real sizes of the domestic monetary system and the domestic tax base. As the real size of the domestic financial system declines, the revenues that the authorities can obtain from an inflation tax (at a given rate of inflation) will also be reduced.

The reduced effectiveness of capital controls can also affect fiscal policy by making it increasingly difficult for the authorities to tax financial incomes, transactions, and wealth. High taxes on financial incomes and wealth, for instance, can create a strong incentive for domestic residents to hold a significant proportion of their wealth as external assets which are often not subject to any or much lower taxation. As a result, new taxes and/or cuts in government spending will be needed as the effectiveness of capital controls erodes and leads to a decline of real tax revenues.

Even if the capital controls are not relaxed, there can be strong incentives for repatriation of external assets held by residents during the initial phase of stabilization and structural reform programs. In this case, even if the residents repatriate only a modest proportion of their external assets, there could be relatively large capital inflows that could produce an appreciation of the real exchange rate and potentially undermine trade reform.

There have been many analysis of how best to deal with these capital flows. Policy recommendations have generally focused on three alternatives: sterilization of capital inflows, tightening capital controls and implementing measures which allow the country to live with the capital inflow and limit the potentially adverse effects of any real exchange rate appreciation. Open market sales of government debt by the central bank or the issuance of new government debt by the fiscal authorities have been viewed as one means of offsetting the effects of any capital inflow on the domestic monetary base when the exchange rate is fixed or less than perfectly flexible. While such operations would increase the stock of government debt in private portfolios, they could do little to satisfy a generalized demand for increased holdings of a broad range of domestic assets at the initial configuration of yields on domestic securities (including equities and private debt instruments).

If these capital flows cannot be effectively sterilized, another policy alternative would be to tighten capital controls at the beginning of the stabilization and reform program. The effectiveness of tighter capital controls is likely to depend on whether the capital inflows are motivated primarily by short-run speculative considerations reflecting attempts to temporarily take advantage of high domestic real interest rates or represent a desire to repatriate a portion of the residents’ external assets over the medium term because of a credible reform program.

A tightening of capital controls could give the authorities some additional short-term control over capital inflows and thereby some influence on the real exchange rate. The effectiveness of such additional control, however, would be of uncertain duration. If residents are primarily motivated by medium-term considerations, historical experience suggests that they would eventually find channels for evading the new controls. Moreover, if the authorities' aim was to limit capital inflows over the entire period during which the structural reforms (especially trade reform) were being phased in, then capital controls might have to tighten repeatedly in order to maintain the same level of control, which could interfere with the financing of normal trade transactions and thereby undermine a trade reform just as seriously as a real exchange rate appreciation.

The potentially adverse effects of a severe tightening of capital controls raise the issues of what are the potential benefits of a more open capital account and whether there are fiscal, financial and structural policies that would allow a country to initially "live with" the capital inflows and limit the potentially adverse effects of any real exchange rate appreciation and eventually help achieve and sustain an open capital account.

3.6 Capital Controls in Brazil

The Brazilian Central Bank sets an adjustable band for the dollar value of the real and maintains a continuing crawling peg within it, while the National Monetary Council is responsible for formulating the overall foreign exchange policy. Regulations on capital outflows or inflows differ. Brazilian banks are allowed to sell foreign exchange to Brazilian investors in the Common Market of the South (Mercosur) countries but, outwards capital transfers, not included in public regulations, need prior authorization from the central bank.

Portfolio investment by foreign investors is restricted to two classes of fixed-income funds, and foreign investment in the Brazilian capital market may be made through one of the five alternatives established under National Monetary Council Resolution # 1289. Special regulations govern borrowing abroad. Payments for current invisibles not covered by current regulations require approval from the central bank's exchange department. Remittances abroad of income from foreign direct investment and remittances in respect of royalties and technical assistance require prior registration of the foreign capital concerned, including reinvestment, and the contracts for patents and trademarks with the department of foreign capital of the Central Bank.

Capital inflows in the form of financial loans require prior approval from the central bank. Proceeds from foreign borrowing are subject to a financial transaction tax with rates that range from 5% for loans with maturities under three years, to zero percent for loans with maturities over six years. Otherwise, inward transfers are unrestricted, although use of the proceeds for the acquisition of certain domestic assets are restricted. Remittances of interest on loans and credits and of related amortization payments are permitted freely in accordance with the terms stipulated in the respective contract and recorded in the certificate of registration. Purchasers of foreign exchange for some current invisibles are subject to the financial transaction tax of 25%.

In the 1980s, following the debt crisis, controls on capital outflows were the norm. With the capital surge of the early 1990s, controls on outflows were lifted and controls on inflows were increased before the Mexican financial crisis and then reduced after the crisis induced an increase in capital outflows.

Between 1990 and 1992 liberalization measures were taken, showing that Brazilian legislation had adapted to the new capital flows, such as institutional investment in bonds and equities, as well as domestic enterprises bond issues in the international markets.

Garcia and Barczinsky say that in 1992, the main changes in regulation were still aimed at further opening of the capital account. The additional income tax on profit and dividend remittance abroad was extinct. Foreign investors were allowed to invest in derivative markets. Firms were allowed to issue abroad securities convertible in stocks. The minimum length of stay of foreign capital invested through the privatization auctions was reduced from twelve to six years. Regarding reinvestments in Brazil, foreign investors were no longer required to wait for two years before being able to sell assets purchased through the privatization process.

In 1993, despite the implementation of several liberalizing measures on exchange markets, the government started a gradual process of diminishing the attractiveness to foreign capital inflows in order to prevent further

increases in domestic government debt. According to the Brazilian Central Bank's Annual Report (1994), " the impossibility of a more drastic reduction of the rate differential between domestic and foreign interests, which would naturally discourage the inflow of foreign financial savings, resulted in measures that made it possible to attenuate the monetary impact of the foreign sector, without interrupting the process of integration with international financial markets".

In June 1993, the Central Bank expanded the minimum average term of financial loans from 30 to 36 months. Furthermore, for purposes of the fiscal benefits related to the income tax on remittances of interest and other charges, the periods of these operations were increased from 60 to 96 months. The Central Bank also tried to induce delays in the inflow of export revenues by increasing the period for exchange contracting from 45 to 180 days after the actual shipment. In the case of external credit (advances on exchange contracts – ACCs), the maximum period between the inflow of resources and the shipment of merchandise was decreased from 360 to 180 days. Regarding imports, it was also allowed to anticipate the exchange contracting in relation to the maturity of the liabilities abroad up to 180 days (it used to be 45 days), trying unsuccessfully to make importers pay the dues in advance.

Banking regulation was also changed to prevent dollar denominated liabilities and allow for large amounts of dollar denominated assets; the selling positions defined on the basis of each bank's worth (dollar liabilities) were reduced by 50%, while buying positions (dollar assets) were increased from US$ 2 to US$ 10 million (surplus to be deposited at the Central Bank).

Since 1987, portfolio investment has been fostered by the creation of specific channels that gave foreign investors exemption from domestic income tax on capital gains. The most widely used change to invest in Brazilian stock and derivative markets is the so-called Annex IV (Securities Portfolio Institutional Investors), created in May 1991.

Given the tax exemptions of the investments under Annex IV, financial engineering was widely used to move those funds to the high-interest-paying government debt. In August 1993, the National Monetary Council forbade funds channeled through Annexes I to IV to be invested in fixed yield funds, including exchange NTNs (National Treasury Notes - a dollar linked Treasury bond) and commodity investment funds (which actually worked as fixed-income-like funds). The alternative found by the market to circumvent the regulation and keep investing in fixed income was to invest in debentures. In November, the National Monetary Council closed that loophole by also forbidding investments in debentures. It also created a specific channel for fixed income investments, the Foreign Capital Fixed Yield Funds, which levied a 5% "entry" tax (tax on financial operations – IOF) on initial exchange rates transactions. Currency financial loans also started paying a 3 % initial tax.

By December of the same year, a new measure was enacted. It forbade a broader range of fixed-income-like securities, including investment strategies involving derivatives that lead to predetermined returns, for instance, box-strategy operations.

The evaluation then made by the Central Bank was that all these measures placed obstacles to the foreign capital inflows which aimed exclusively to seek the earnings provided by the high interest rate levels. At the same time, the structure that favored the inflow of resources to the stock market, was preserved.

In January 1994, a new restriction was enacted, now targeting one government security (NTN), which could be purchased by Annex IV funds under a broad interpretation of a decree that listed the NTNs as privatization currency. In March, the "entrance" tax levied on the Foreign Capital Fixed Yield Funds was extended to all portfolio investments, although the tax rate was initially set to zero percent for Annex IV funds. The mechanism of automatic prior authorization of foreign loans was suspended, and renewal or extension of previous loans were also subject to the minimum terms of 36 or 96 months, which prevailed for new loans.

Basically, on the one hand, up to the adoption of the Real Plan, in July 1994, some measures were taken towards both the liberalization and flexibilization of the exchange market. On the other hand, the movements of capital were restricted due to difficulties in conducting monetary policy.

The group of measures taken during the first semester of the implementation of the Real Plan aimed, on the one hand, to make a higher domestic interest rate viable. On the other hand, the goal was also the continuity of the process of liberalization of exchange market. The idea was to reduce the Central Bank's role in determining the exchange rates, in order to fit a flexible exchange rate regime with restricted monetary aggregate aims, such as the monetary basis.

On the eve of the Real stabilization plan, several further restricting measures were taken, such as: prohibition of transformation of advances on exchange contracts (ACC) into anticipated short-term export payment, when it resulted in the postponement of the regulatory period for the merchandise's shipment; increase of the minimum period of amortization of anticipated export payment operations registered at the Central Bank, from 360 to 720 days; a 90-day suspension of such operations; and a 90-day suspension of the foreign-loan taking by entities of the public sector.

With the Real Plan, the Central Bank let the exchange rate float. Given the prevailing conditions at that time, with emphasis on the very high interest rate, that attitude lead to the nominal (and also real) appreciation of the Real. Since capital inflows subsisted, the Central Bank tried new measures, like the increase in the banks' buying position in the free exchange rate market, from US$ 10 to US$ 50 million, before they had to deposit any surplus at the Central Bank.

In August 1994, a new round of measures towards the liberalization of the exchange outflows were undertaken, such as: the possibility of contracting exchange for future liquidation in financial operations – it was previously permitted only for commercial operations; dispensation from the import license for contracting import exchange operations, permission for anticipated liquidation of foreign liabilities related to financial loans and financing registered at the Central Bank up to 31st August 1994, no matter whether the resources had completed the minimum period of permanence in the country; and free negotiation among the parties of the percentage of the value of imports to be financed in operations with more than 360-day terms, thus permitting a larger volume of on sight payments that were previously limited to a maximum of 20%.

Attempting to stimulate the demand for foreign currency, the value of the transfers that the banks were permitted to carry out without the Central Bank authorization for purposes of investment abroad by private nonfinancial legal entities was raised from US$ 1 million to US$ 5 million. Legal entities were also allowed to purchase real estate abroad, something previously restricted to individuals.

In September 1994, investment funds abroad were allowed for Brazilian investors. Those funds had to carry at least 60% of (internationally issued) Brazilian government securities. Then, restrictive measures were taken due to the nominal appreciation of the exchange rate. The Central Bank intervened in the exchange rate markets in late September, ending the short period of free flotation of the exchange rate.

It culminated with the adoption, by late October 1994, of further restraints on capital inflows: a) reduction of the maximum period for the contracting of exchange prior to shipment and, consequently, of ACC operations, which dropped from 180 to 150 days in the case of exporters with a total value of contracted operations equal to or less than US$ 10 million during the last 12 months (small-scale exporters); for medium and large-scale exporters, the maximum period was reduced from 180 to 90 days; a maximum 30-day period was set for products considered essential to internal supply; b) the earmarking of exchange contracting operations to registration of exports, without permitting alteration of the merchandise to be exported. The purpose of this measure was to make it difficult to practice negotiation of export performance.

Several other restrictions were attempted to prevent the increase in the outstanding credit to Brazilian exports, a well-known channel to avoid capital controls on inflows, including a 15 % reserve requirement on ACCs to be deposited in the Central Bank. A 30% reserve requirement was imposed on contracts involving assumption of the importer's obligations. The idea was to discourage importers from resorting to this financing mechanism offered by banks through withdrawals against credit lines abroad. In November, the rate was increased to 60%.

In order to increase discouragement of capital inflows, the "entry" tax was raised in most portfolio investments and loans: a) from 3% to 7% for loans; b) from 5% to 9% for investments in Foreign Capital Fixed Yield Funds;

and c) from zero to 1% in the case of Annex IV investments. The minimum period for domestic loans under the Resolution # 63 (dollar liabilities) was raised from 90 to 540 days, and stricter requirements were set. Annex IV funds could no longer be invested in money market short-term funds (FAFs) or fixed-income privatization currencies. Pension funds were allowed to invest up to 10% of their reserves on investment funds abroad. Foreign capital privatization funds were forbidden from investing in domestic debt. A massive liberalization of exchange transactions was undertaken. But then, the December 1994 Mexican crisis took place.

In the beginning of 1995, due to the effects of that crisis, the Brazilian authorities tried to make the existing controls more flexible. Thus, some of the previous measures aimed at increasing the demand for foreign currency were undone. The 180-day term for the closing of exchange prior to shipment (ACC) was reestablished, while the reserve requirement was suspended.

The worsening of the trade balance and clumsy Central Bank intervention in the exchange markets in early March 1995 prompted a near exchange rate crisis. The exchange rate band was changed and a speculative attack took place. It required a sharp increase in domestic interest rates, along with several other measures that undid the previous restrictions, namely: a) the reduction of the "entry" tax rate from 7% to zero on foreign loans; from 9% to 5% on investments on Foreign Capital Fixed Yield Funds; and from 1% to zero on Annex IV investments; b) the reduction of the minimum average term from 36 to 24 months for new financial loans and from 36 to six months in the case of renewal or extension of previous loans; and c) the reduction of domestic relenting under Resolution # 63 minimum period from 540 to 90 days. The banks' buying position before they had to deposit any excess at the Central Bank was reduced from US$ 50 to US$ 5 million.

At the end of March 1995, the Brazilian currency had undergone a 5.2% nominal devaluation, and a new exchange band regime was implemented, with Central Bank interventions. This new regime aimed for a gradual devaluation of the Real against the Dollar, but without providing any signals to the market as to the speed or the intensity of those devaluation processes.

Later, with the reversal of the Mexican crisis and as markets became convinced that the exchange regime was credible, another surge of external capital inflows resumed by July 1995. Then, in August 1995, a new round of restrictions on capital inflows took place: a) foreign loans "entry" tax was raised from zero to 5%; Foreign Capital Fixed Yield Funds, from 5% to 7%; b) the adoption of a 7% tax (IOF) on short-term financial transactions between institutions in the country and abroad in the floating rate segment (which was being used to circumvent the restrictions); c) derivative markets in Brazil were forbidden to foreign investors. Moral suasion was also a widely used method by the Central Bank in order to control inflows.

In September 1995, the "entry" tax (IOF) on currency loans was changed to provide an incentive to longer-term loans. A decreasing scale of taxes was adopted, inversely related to the loan maturity: 5% (two years or less), 4% (three years), 2% (four years), 1% (five years), zero (six years or more).

In February 1996, another "package" of measures was enacted aimed at further restricting short-term capital inflows. For investments under Annex I to IV, it forbade investments on TODA, OFND and Siderbrás debentures (securities that provided fixed income results not previously excluded). The minimum average term for currency financial loans was put back to 36 months (new, renewals or extensions). The funds under Resolution # 63, while waiting to be lent in a domestic bank, could not be invested on NTN-D (exchange-rate-linked domestic debt). A 5% "entry" tax (IOF) was imposed on investments on Privatization Funds. Foreign investors (individuals or legal entities) were allowed to invest on real estate funds and emerging firms investment mutual funds, with a tax (10% or 5% for regularly registered funds) on all withdrawals for periods shorter than one year.

After that, there was a growing concern with the also growing current account deficit and our dependence on external financing, mainly on short-term capital inflows. The main concern was how to become more competitive, in order to increase exports and have self sustained growth with income distribution. Then, the turbulence in international financial markets in late October 1997, following the crisis in Asia, dramatically changed the environment and affected the Brazilian economy's performance. The sharp cutback in financial inflows from abroad and the outflow of large sums of capital drove down prices on the country's exchanges and

eroded its international reserves. In response to this emergency situation, the Government doubled real interest rates (to an annual rate of 35%) and launched a drastic fiscal austerity plan designed to cut the public sector's deficit by US$ 18 billion (2.3 % of GDP). These measures were an attempt to maintain price stability and, particularly, the continuity of exchange rate policy based on a monthly devaluation of approximately 0.6%. The crisis was overcome but the concern about the country's external vulnerability and the danger of the contagion effects of any crisis remained.

In March 1998, some measures were taken to restrict and also select short-term capital flows. After the huge increase of domestic interest rates, aiming to attract foreign capital, there has been a flood of short-term, speculative capital through the commercial banks. Theoretically, the purpose was to invest in agriculture (Resolution # 63, known in Brazil as "63 caipira"). The money was applied on public bonds with exchange restatement. This way, it was protected against any eventual currency devaluation, and also benefitted from the high domestic interest rates. Besides, the resources were not necessarily directed to the agricultural sectors.

In the already mentioned IMF Working paper, written by Cardoso and Goldfajn, a vector autoregression with monthly capital flows, controls, and interest differentials (from 1986 to 1995) is estimated. An index of capital controls is constructed, in order to empirically test the determinants of capital flows, their composition, and whether the controls have been effective. The paper explicitly takes into account the reverse causality from capital flows to controls through the government reaction function. It concludes that Brazil's capital controls are endogenous and have responded to capital flows. That means the government sets capital controls taking into account capital flows. Also, they have a temporary effect on capital flows with the peak at six months after implementation. They have been temporarily effective in altering the level and composition of capital flows and have been responsible for up to a 30% of the forecasted variance of capital flows, but have had no sustained long-run effects.

3.7 The Chilean Experience

After an earlier experience with rapid liberalization and a banking crisis, Chile followed a gradualist approach to reforms. During the period covering 1985-89, the reforms focused on the completion of the restructuring of the banking system, the establishment of indirect methods of monetary control, trade reform, increased scope of transactions by banks, establishment of the autonomy of the Central Bank of Chile, and the selective liberalization of direct and portfolio capital inflows. Later phases of reforms emphasized the development of financial markets, the adoption of more flexible interest rate and exchange rate policies, and a selective relaxation of controls on capital inflows and outflows, accompanied by the introduction of controls on certain capital inflows mainly in 1991 and 1995.

Recovery of the banking system following the earlier banking crisis, and the reversal of the earlier trade protectionist policies, were given priority in 1985-87. As a result of the banking crisis and the external shocks, interest rate liberalization had been reversed. Following the completion of the banking system restructuring, the central bank eliminated the practice of announcing indicative interest rates in 1987 and influenced the level of domestic interest rates mainly through open-market operations in its indexed instruments (PRCBs). Capital market activity which had been moderate, was promoted gradually: pension funds were allowed to invest part of their assets in selected domestic stocks beginning in 1985. In 1989, the law established the legal autonomy of the central bank.

Chile's liberalization of external transactions focused initially on trade liberalization, providing more liberal access to foreign exchange for current international transactions, exchange rate adjustment, and exchange market development. In 1985, previous tariff increases were rolled back in two steps and concurrently, the exchange rate was lowered to offset the impact of the lower tariffs and to bring the exchange rate to a more realistic level. Limitations were eased on payments and transfers for current international transactions, and new instruments were introduced in the foreign exchange market.

Capital account measures were selective and focused initially on liberalizing capital inflows. In 1985, amendments to Chapter XIX of the foreign exchange regulations permitted foreign direct investment inflows through debt/equity swaps (the main legal framework for foreign investment in Chile was the Decree-law # 600,

or Foreign Investment Statute, of 1974 as amended several times, and the Compendium of Foreign Exchange Regulations of the Central Bank of Chile, in particular Chapters XII, XIV, XVIII, XIX, XXVI, and XXVIII). However, capital from these investments could not be repatriated for ten years and profits for four years. Such swaps operations were further promoted in 1987, with the authorization of External Investment Funds. Under the new mechanism, small external investors were able to participate in debt equity conversions without having to go through the case-by-case conditions normally applied to such operations.

Also under an amendment to Chapter XVIII of the foreign exchange regulations, nonresidents were permitted to purchase selected debt instruments. However, the source of foreign exchange and the conversions had to take place outside the official foreign exchange market. Allowable transactions were broadened in 1986, and in 1987, when nonresidents were permitted to invest in publicly offered instruments with the repatriation of the original capital after five years and no limit on profit remittances; and in 1989, the Additional Tax on the repatriation of profits by foreign investors under the Income Tax Law was reduced from 40% to 35%.

The capital account of the balance of payments showed a marked strengthening and recorded a surplus in 1989 reflecting much stronger foreign direct investment inflows (see table 5). In 1989, monetary policy was tightened to offset accelerating inflation, and portfolio capital inflows increased substantially reflecting the large interest differentials. In this context, the authorities abandoned their previous policy of seeking a real depreciation of the exchange rate, and widened the band for the fluctuations in the exchange rate. Under the crawling exchange rate parity, the peso was devalued daily on the basis of the difference between domestic inflation in the previous month and expected external inflation.

Beginning in 1990, the authorities emphasized the development of domestic financial markets and instruments. Several measures were implemented to broaden and enhance the efficiency and competitiveness of the stock exchange and local security markets. Trading in future contracts was introduced in 1990; pension funds could invest more of their assets in equities; and electronic screen-based trading and settlement systems began functioning in 1993. The following year the stock market introduced trading in options, and during 1995-96, the investment activities of pension funds in the local securities markets were further liberalized. Concurrently, the money and foreign exchange markets were developed. The central bank enhanced its capacity to conduct monetary operations by widening the range of instruments and maturities used in open market operations. Under new foreign exchange regulations, the whole foreign exchange market became an informal legal market in which the exchange rate was freely determined.

In response to the large capital inflows recorded in 1990, the authorities began to liberalize capital outflows. In 1991, residents were allowed for the first time to use foreign exchange obtained in the unofficial market to invest abroad and the period of investment after which capital could be repatriated by nonresidents was shortened to three years. In 1992, the pension funds were granted limited freedom to invest overseas and remittances of profits and capital earned on foreign investments were allowed in advance of pre-existing schedules under certain conditions. Foreign inflows were also liberalized by allowing the issue of American Depository Receipts (ADRs) and in 1991 the arrangements for trading shares sold through ADRs were expanded and taxes on dividends were reduced. At the same time, new restrictions were introduced on certain capital flows. In 1991, the central bank introduced a 20% reserve requirement on new foreign borrowing except for trade credits with the objective of limiting short-term capital inflows. Subsequently, the reserve requirement was extended to most outstanding foreign borrowing and to foreign currency deposits and increased to 30%. The stamp duties imposed on domestic loans were also extended to foreign loans.

Net capital inflows declined briefly in 1991 as interest rates were reduced but recovered sharply in 1992. In response to continuing large capital inflows and upward pressure on the exchange rate, the reference rate of the peso was revalued, and modified from a peg to the U.S. dollar to a peg to a basket of currencies, and the fluctuation band for the exchange rate around the central rate of crawl was widened from +/- 5% to +/- 10%. Inflation was constrained through continued fiscal consolidation appreciation in the real exchange rate and sterilized foreign exchange intervention (see table 5). Sterilization policies were used throughout the entire period but more heavily during 1990-92. The main instrument was the use of open market operations using central bank paper (one-year promissory notes). Longer-term promissory notes (four and six years) were used in

1992. Also in 1992 the central bank raised the real annual interest rate posted by the central bank on the auction of its 90-day indexed promissory notes, and in 1993 a more active use of repurchase agreements was introduced.

During the period from 1993-96, the pace of capital account liberalization accelerated with a greater emphasis on capital outflows. Certain restrictions on capital inflows were also intensified. In 1993, the minimum period that capital had to remain in the country was reduced from three to one year and the time limit for remittances of profits was eliminated. In 1994, foreign portfolio investment outflows were encouraged by allowing life insurance companies, pension funds, banks and mutual funds to invest larger percentages of their portfolios abroad through the official market, allowing domestic banks to invest in financial institutions abroad and granting individuals access to the formal exchange market for a limited set of capital transactions. Regulations on the surrender and repatriation of foreign exchange earnings were relaxed and authorized exchange houses were also permitted to conduct forward and swap operations in the official exchange market.

Capital outflows were liberalized further in 1995-96 by broadening the allowable assets and reducing the limits on foreign investments. Portfolio investment inflows were also encouraged by reducing the minimum size of ADRs issues, lowering the rating requirement for corporations issuing bonds on the international market, and modifying the 30% reserve requirement on foreign borrowings. At the same time, due to circumvention of the existing restrictions, the authorities intensified restrictions on certain other inflows. In 1994, reserve requirements on foreign borrowing were required to be held solely in U.S. dollars, and in 1995, the ceiling on credit in Chilean pesos backed by deposits in U.S. dollars was reduced to avoid a circumvention of the reserve requirement on foreign borrowing. The reserve requirement on foreign liabilities was extended to secondary market transactions in ADRs, and to all investment inflows that did not constitute an increase in the capital stock of the bank.

Chile’s overall capital account strengthened and there were much larger gross capital movements (see table 5). Direct investments abroad increased to US$1.1 billion in 1996, while foreign direct investment inflows increased to US$4.1 billion. The net capital account strengthened to US$6.3 billion (9% of GDP) in 1996. The current account balance fluctuated and showed some tendency to widen on average. The authorities repaid foreign debt, reducing the surplus in the overall balance of payments. The authorities continued to adapt the exchange rate arrangement, by revising the weights of the currency basket and widening the exchange rate band. The real exchange rate continued to appreciate and the inflation performance continued to improve.

Chile’s capital account liberalization appears to follow a distinct sequencing, with an initial focus on the completion of the restructuring of the banking system, trade reform, liberalization of the exchange system and selective liberalization of capital inflows. Subsequently, the emphasis shifted to developing domestic money, bond and equity markets. The capital account liberalization was also combined with the evolution of macroeconomic policies and instruments: instruments for indirect monetary control were strengthened, the exchange rate arrangement was modified to allow for greater flexibility of the rate within a crawling band exchange arrangement. Capital outflows were liberalized in response to a strengthening of the balance of payments. At the same time, Chile liberalized longer-term capital outflows and inflows and it introduced selective controls on capital inflows. However, such controls were circumvented and had to be progressively broadened.

4. CAPITAL ACCOUNT LIBERALIZATION

4.1 Introduction

Shortly before the end of World War II, policymakers from 44 countries met at Bretton Woods, New Hampshire, to discuss an institutional framework for the reconstruction of the world economy. Their goals included the establishment of a new, cooperative international monetary order. The key elements of this order were contained in the Articles of Agreement of the International Monetary Fund, which was established soon after the war ended to oversee the new international monetary system. This document includes provisions according to which member countries may exercise controls "as are necessary to regulate international capital movements"(Article VI, Section 3) and the IMF "may request a member to exercise" such controls (Article VI, Section 1).

At the time, the IMF's founders gave priority to liberalizing trade and removing foreign exchange restrictions on current account flows rather than to liberalizing capital movements, since capital movements played a less prominent role in the world economy at that time than they do today.

At the time of the Bretton Woods conference, it was widely believed that capital controls could preserve the independence of domestic policies, and, in fact, were necessary for this purpose.

To ensure exchange rate stability in the postwar global economy, the Bretton Woods participants established what was known as the par value regime – a system of fixed exchange rates that could be adjusted after consultation with the IMF. In the early 1970s, however, the par value system was abandoned. It had proved to be incompatible with national economic objectives and with increasing capital mobility. The scale of capital flows and their importance for the word economy had grown considerably; this growth was due to numerous factors but owed much to the opening of trade and current accounts during the 1950s and the 1960s. The growing interdependence of the world economy over the past few decades has been a key product of the more open trade relationships fostered by the Bretton Woods regime, which, in turn, helped bring about larger and closer financial and credit links between countries.

An essential legacy (and challenge) of the Bretton Woods order, therefore, has been the expansion of international capital flows and the greater integration of financial markets, particularly those in advanced countries. Another characteristic of the post-Bretton Woods order is that an important proportion of expanding capital flows has been private, rather than official, with commercial bank lending, securities trading, and direct investment flows accounting for a large share of the growth.

Over the latest years, many of the IMF's members have relaxed capital controls in the context of a general liberalization and deregulation of domestic financial markets. These developments have sparked debate on the appropriate sequencing of liberalization in two domains: the balance of payments, where the issue is whether the current or the capital account should be liberalized first; and the financial sector, where the issue is whether or not domestic financial liberalization should precede the opening of the capital account.

At the time of Bretton Woods, and for a quarter of a century thereafter, it was generally accepted that governments and their policies were predominant forces in the economy. Governments were expected to take responsibility for basic economic objectives and economic performance. However, the views held today as to the economic role of government and the limits of economic policy have completely changed. First, the consensus is that the role of the government is to allow and support, not to restrain or compete with, private initiative. Government's responsibilities involve maintaining a stable macroeconomic framework, supporting the economic infrastructure and developing an institutional infrastructure. Second, the consensus that has developed regarding the limits of macroeconomic policy is based on both conceptual analysis and empirical evidence. On the conceptual front, economic policy is viewed essentially as an instrument for providing a relatively stable framework in which market forces can operate. On the empirical front, most countries – advanced, developing, and transition alike – have moved in the direction of using economic policy as a means for encouraging market forces, rather than as an instrument for molding and competing with them.

4.2 Capital account convertibility

Although capital account convertibility is likely to be sustainable only if supported by appropriate macroeconomic, financial and structural policies, the potential benefits of an open account, as well as the costs of maintaining capital controls, will influence whether countries will respond to the growing ineffectiveness of capital controls by moving toward more restrictive controls or more open capital accounts.

There are several efficiency and welfare gains associated with the removal of capital controls. First, freedom of capital flows allows the international economy to attain the efficiency gains created by specialization in the production of financial services. Just as with trade in goods, countries will find it more efficient to import rather then produce some financial services.

Second, capital account convertibility can also promote dynamic efficiency in the financial sector. Increased competition from abroad will force domestic producers to become more efficient and can stimulate innovation and productivity improvement.

Removing capital controls can also improve the global intermediation of resources from savers to investors if international financial markets appropriately price the risks and returns inherent in financial claims. Under such conditions, global savings can be allocated to the most productive investments. In addition, enterprises will be able to more easily diversify their activities abroad and to adopt new technologies and managerial techniques, especially those involving the use of new financial products to manage risks and finance investments.

In addition, capital account convertibility allows residents to hold an internationally diversified portfolio of assets, which reduces the vulnerability of their income streams and wealth to domestic financial and real shocks.

A further benefit associated with the removal of capital controls is that it may facilitate access to international financial markets and reduce borrowing costs. For a lender to extend credit over the medium term, the expected yield on the loan must reflect the likelihood of any potential default on or disruption of debt-service payments. Thus, if it is anticipated that in a crisis a country might tighten controls or impose limits on debt service payments during the period of the loan, then lenders may either abstain from lending or incorporate a risk premium into their lending rate.

In order to obtain the benefits of a more open capital account, however, a country must be able to sustain whatever degree of capital account convertibility it establishes. This raises two policy-related issues. One is what difficulties are likely to be encountered either when capital controls are initially relaxed or subsequently removed. The other is what policies can be used to facilitate the transition to an open capital account and to sustain capital account convertibility.

Countries have followed quite divergent strategies when attempting to establish capital account convertibility. While some countries, such as Argentina and Uruguay in the 1970s, removed most of their capital controls in a short period, most countries have followed a more gradual approach of first relaxing constraints on trade-related capital flows, then restrictions on longer-term foreign direct and portfolio investment flows and finally on short-term financial flows. But, anyway, capital account liberalization has only been undertaken as one element in broader stabilization and structural reform programs. Moreover, the credibility and consistency of other economic policies played a key role in determining the sustainability of an open capital account.

4.3 Brief discussion on the liberalization of capital account

According to Manuel Guitián , there is a consensus that, other things being equal, capital account openness is preferable to capital controls. This discussion is often accompanied by others on the preconditions that an economy should satisfy before considering external financial liberalization. These conditions include, besides a stock of foreign reserves, the establishment of macroeconomic stability at a realistic rate of exchange. Another important element of the setting is a sustainable fiscal position. Besides, it is desirable to also have a liberal domestic financial system and one already endowed with a sound safety net to withstand foreign competition. But waiting for these conditions to materialize before proceeding to liberalize capital movements may prove the best recipe for permanent capital controls. Just as plausible is the opposite argument, that the capital account should be opened with no prior conditions. It can be argued that an open capital account will constrain domestic policies to the extent necessary to bring balance and stability to the economy. With this reasoning, a stable macroeconomy, rather than being a precondition for liberalization of capital transactions, can also be seen as a result of capital account convertibility. Similar arguments can be made with regard to the exchange rate – open capital flows will bring about a realistic exchange rate rather than require it *ex-ante*; and the same reasoning applies to the need of domestic financial liberalization, which can also be seen as an outcome, rather than a prerequisite for, external financial opening. Of course, this is not an ideal world, thus, capital account liberalization should be undertaken in less than optimal domestic economic conditions, but not under circumstances so far away from optimality that the credibility of the decision to open the economy to international financial transactions is so impaired that it cannot be sustained.

Still according to Guitián, the sequence of the balance of payments opening is another often raised pragmatic question. Many economists favor opening the current account before the capital account for several reasons, in particular, the different speeds of adjustment in the market for goods and services and in that of capital; the former is perceived as slower and, therefore, in need of lead time in its opening to the external environment. But, it seems there is no *a priori* reason why the two accounts could not be opened up simultaneously, if only because the very presence of capital controls can be an obstacle to current account liberalization. Although there is no categorical answer to the issue of sequencing, it is plausible to argue for simultaneous rather than sequencial liberalization, if accompanied by credible, sound domestic economic policies in a stable external environment.

John Williamson says that the literature identifies four dangers of liberalizing the capital account before other parts of the economy have been liberalized.

The first danger is that liberalizing capital inflows before trade has been liberalized will cause capital to flow into the wrong, i.e., import-substituting, industries. A second danger is that the liberalization of capital inflows before the domestic financial system has been liberalized will lead to an inefficient allocation of investment.

A third danger is that liberalization of capital inflows before the establishment of fiscal discipline will serve only to provide temporary financing for budget deficits that are ultimately unsustainable, and whose correction will be more costly and painful, the longer it is delayed. Borrowing simply serves to magnify the size of the future crisis.

The fourth danger is that capital inflows will serve to appreciate the real value of the currency and thus end the export-led growth that provides the only viable way for countries to develop. Wihlborg and Willett state that large net capital inflows could cause substantial appreciation of the real exchange rate, either directly, under flexible exchange rates, or by inducing monetary expansion and inflation under a pegged exchange rate. Such real appreciations could in turn substantially reduce prospects for export expansion. The classical example cited is Chile. More recently, Mexico is also frequently cited. This danger is caused by market myopia, rather than by government-imposed distortions and may remain a problem even after a economy has been thoroughly liberalized.

The failure of the liberalization programs implemented in the Southern Cone in the late 1970s demonstrated that these dangers are far from hypothetical. Indeed, it was that failure that motivated the development of the analysis. The high cost of New Zealand’s liberalization program, which again started with a liberalization of the capital account, has provided a subsequent confirmation of the analysis.

Regarding capital outflows, the main reason that countries seek to control them is to avoid a loss of savings that could be invested in the domestic economy. John Williamson argues that no one can seriously maintain that capital controls will not leak, but it is not true that they are thereby bound to be totally ineffective. He also agrees that at times the relaxation of capital outflow controls has had the paradoxical effect of stimulating a net capital inflow. The reason is that the elimination of outflow controls assures investors that it will not be difficult to get their money out again should they so wish, and in that way reduces the option value of holding funds outside the country. But things do not work that way if there is a large volume of funds wanting to escape from the country, as Chile found out to its regret in 1982.

He also enumerates a series of factors that are potentially relevant in deciding whether to liberalize capital outflows:

- there is a danger that capital flows will be cyclically destabilizing (in the sense that a negative shock to the current account will provoke capital outflows) until a country has credibly established the permanence of its policy regime. Once that is accomplished, it will be able to use an increase in interest rates to attract capital inflows and thus mitigate the shock;

- small countries in particular can gain important benefits from portfolio diversification by two-way capital flows. But that becomes feasible only when foreign investors are not deterred by political risks that apply differentially to them;

- high capital mobility requires either a floating exchange rate or severe constraints (at the least) on monetary policy. It would be unwise, according to the author, for most of the countries to float freely and thus lose the ability to ensure an exchange rate sufficiently competitive to secure export-led growth. The countries need to keep monetary policy as a usable tool for demand management at least until fiscal policy is in a position to take up the strain;

- holding foreign assets is a way to evade taxation, at least until tax administration is strong and the country has established a network of tax treaties with the main potential haven countries. Both things take time;

- countries with large stocks of foreign assets have a strong reason to liberalize capital outflows in order to privatize the foreign investment decision;

- an open capital account exposes the financial sector to the disciplines of foreign competition. However, the domestic financial system needs to be strong enough to compete, not loaded down with nonperforming assets from dinosaur state enterprises as it is in Eastern Europe, before the disciplines of foreign competition can be expected to enhance performance rather than precipitate financial collapse.

In the IMF Paper "Sequencing Capital Account Liberalization – Lessons from the Experiences in Chile, Indonesia, Korea, and Thailand", the four country's experiences are reviewed and the authors make some conclusions on the approach to and the consequences of the capital account liberalization, for managing such reforms.

In Chile and Korea financial sector reforms tended to precede capital account liberalization, while in Indonesia, capital account liberalization helped to promote restructuring, and to improve the competitiveness of the domestic financial system. The currency crisis in Thailand illustrates the risks when the approach to liberalization does not cover all the necessary concurrent reforms. In that case, the strengthening of financial institutions and the development of indirect monetary instruments lagged the liberalization of the capital account.

The approach to the liberalization of capital inflows and outflows varied depending on the particular priorities adopted by the country. In the case of Korea, management of the current account balance of payments appeared initially to be the overriding consideration, and Korea sought to manage current account surpluses and deficits through regulatory and other changes which influenced capital inflows and outflows. Thailand actively promoted capital inflows while limiting outflows, with the objective of supplementing domestic savings and promoting investment and quick economic growth. Indonesia maintained a relatively liberal regime for capital outflows and gradually liberalized inflows with the aim of attracting foreign capital to assist the restructuring of its economy. Chile also liberalized capital inflows as part of its program of economic restructuring, and liberalized outflows in response to balance of payments considerations.

Again, according to Guitián, a related issue to the sequence of liberalization is that of its speed, on which arguments can be grouped as favoring either a gradual or a rapid approach. Gradual opening softens the inroads of external competition and provides leeway for domestic preparation to confront that competition. On the other hand, there is no guarantee that the time will be used to prepare for external competition as opposed to continuing to exploit the opportunities of a closed or partially closed economy. If gradual opening encourages delays in adjustment, its costs will not fall below those from a rapid liberalization and it will not benefit from the latter's advantages. These advantages are the transparent signals that rapid opening of the economy conveys to economic agents and the consequent total absence of leeway for delays in behavioral adjustments to external competition.

According to Johnston, Darbar and Echeverria, the pace of reforms varied. Chile and Korea followed a gradual approach to reforms. By contrast, Indonesia liberalized capital outflows early in the reform process; the liberalization of capital inflows occurred much later and more gradually. Thailand opened its economy to capital inflows, especially portfolio investment inflows, much more rapidly than the other countries surveyed, but liberalized capital outflows only gradually.

Mathieson and Rojas point out that the speed with which a country can move to full capital account convertibility appears to depend on both how far it has proceeded in implementing the policies that are preconditions for such convertibility and its willingness to take further policy measures that credibly establish that it will carry through with the implementation of the remaining policy steps. Moreover, historical experience suggests that the consistency of macroeconomic, financial and exchange rate policies is more important for sustaining an open capital account than is the sequencing of the removal of capital controls.

Back to Guitián's point of view, he states that it is generally agreed that efficiency criteria argue for completely free exchange systems, with appropriate safeguards. But there are also pragmatic considerations for the establishment of full currency convertibility. These considerations include the desirability of strengthening the role of market forces as opposed to administrative controls; the need to encourage international resource flows; and the need to supplement domestic financial market liberalization and deregulation.

Christine Ries points out that another persuasive argument employed by Guitián for the removal of restrictions on capital flows is related to the underlying health of the domestic economy. Capital controls are imposed in order to insulate the domestic economy from external economic shocks or in order to preserve domestic economic distortions, including *"prevailing sources of imbalance and inappropriate policies."* Capital controls mask the effects of these distortions and can actually cause the distortions to become institutionalized. The distortions prevail, often with widespread, negative, and unintended effect.

Still according to Christine Ries, one implication of Guitián's argument is that public policy analysis in this arena should be shifted from a preoccupation with the effects of exchange rate changes on the balance of trade to focus on the effects of capital flows on domestic investment growth and performance. This approach would also argue for attention to policies that promote flexibility and responsiveness rather than those that reward inflexibility.

She concludes by saying that economic logic advocates the dismantling of capital controls; developments in the world economy make them undesirable and ineffective; and a strong case can be made in support of rapid and decisive liberalization of capital transactions. All these considerations point strongly to a code of conduct that eschews resort to capital controls as an acceptable course of action for economic policy.

Wihlborg and Deszeri describe wide-spread agreement that both developing and industrialized countries should support full capital mobility, though limits to convertibility and sequencing may still depend on some preconditions in the economy for effective implementation. They suggest that the limits to full liberalization may come from either market failures or policy limitations or both. They also argue that some criteria for liberalization, such as sufficient revitalization of privatized industries, may delay capital account liberalization for an excessive and perhaps indefinite period. Finally, in recognizing the financial underpinnings for capital flows, they suggest that analysis that fails to account for investors expectations and risk will lead to biased and erroneous prescriptions.

On the other hand, Richard Sweeney points out that one of the other roles of the financial system is to provide information for a broad range of business and investment decisions. This role is sufficiently important to push sequencing argument strongly in favor of early liberalization for capital transactions.

By pricing financial securities, the capital markets perform many functions in the economy. One of the most important is to provide information about the size and costs of various risks. When functioning capital markets are fully open, managers and investors can use the information contained in the patterns of security prices to assess the risks inherent in particular assets. Without this information, each assessment and each decision conceivably requires very extensive data collection, analysis and calculation. Since these calculations are not actually made, the quality of the resulting decisions is very poor.

When, however, local and national economies are fully integrated into the global economy, capital markets are free to assess information and the security price is fair, the information assessment burden is manageable.

Sweeney also considers the importance of government credibility in this process. He shows that lack of credibility undermines the entire pricing process and significantly reduces the value to be gained by more immediate liberalization. He demonstrates that credibility is damaged when controls are retained for domestic investors even though investment transactions for foreigners are freed.

5. CONCLUSIONS

The resumption of capital flows to Brazil in the early nineties can be explained, to a great extent, by the huge differential between domestic and international interest rates. This differential, which is maintained to guarantee the domestic consistency of the stabilization plan until further fiscal reforms are enacted, has attracted massive flows of short-term speculative capital.

The foreign capital flows prompted, among other consequences, a major accumulation of foreign reserves. Because of the sterilization undertaken, those inflows have also provoked an increase in the domestic debt and in the quasi-fiscal deficit.

Garcia and Barcinsky state that the capital flows to Brazil are, at the same time, a blessing and a curse. They are a blessing because without them the Real Plan would not have persisted so far, since they allow the Government to maintain an exchange rate anchor for the long term. They are a curse because structural reforms are usually postponed, until a crisis erupts.

As shown during the Mexican crisis, the Southeast Asian crisis and the current turmoil, investors (both foreign and national) may change their minds extremely fast as to the likelihood of success of the stabilization policy, once the structural reforms are not undertaken.

Joseph Stiglitz, vice-president of the World Bank pointed out recently that the careless and hurried liberalization of the capital accounts and balances of payments, are to blame for the exchange and financial collapse in Asia. Still, according to him, the lack of information is often a symptom, rather than a cause for any crisis. The liberalization of capital flows may be very profitable for the financial system, but not for the countries' economies. If the private sector of a country is highly indebted in the short run, the government will be forced to increase its reserves. The loan will probably cost more than the remuneration the government is going to obtain in the foreign markets (in U.S. T-bonds, for instance).

In the World Bank's paper "Financial Vulnerability, Spillover Effects, and Contagion: Lessons from the Asian Crises for Latin America", the authors, Perry and Lederman, say they believe "the root cause of the 'symptoms' of (financial) vulnerability was a perverse incentive structure, arising from moral hazards in domestic finance, lack of transparency in corporate governance and financial transactions, lax prudential regulation and supervision, and rigid exchange-rate regimes". According to them, this incentive structure does not always lead to excessive risk-taking by the private sector, but it did, during a time of rising international capital flows in the context of ill-sequenced financial and capital account liberalization. The ill-sequenced liberalization of the capital account magnified the effects of the perverse incentive structure.

Among the major factors that contributed to the financial emergency and vulnerability of the Asian economies, they mention a traditional external sector vulnerability. That means real exchange-rate appreciations, accompanied by slowdowns in export revenues, and high or widening current account deficits. Besides, there was a need to roll-over a large stock of short-term debt (high relative to reserves), which combined with the current account deficits, contributed to those economies' high gross borrowing requirements, thus making them highly susceptible to reversals in capital flows. In addition, the slowdown in the rate of growth of export revenues signaled that this external vulnerability would tend to increase in the near future.

These characteristics can be observed in most Latin American economies and, more specifically, in Brazil.

In several Asian countries, capital account liberalization took the form of easing restrictions on external borrowing by domestic banks and/ or corporations, while at the same time restricting foreign entry and ownership (FDI) in the domestic banking sector.

Comparing capital controls prevailing in Asia and Latin America prior to the crisis of 1997, reveals that while some Latin American countries (like Brazil, Chile and Colombia) discouraged short-term capital inflows, some Asian countries, especially Indonesia, Malaysia, Thailand, and Korea, discouraged FDI and long-term borrowing. This particular sequencing of financial and capital account liberalization adopted in these Asian countries, seems to be a good recipe for problems, especially in the presence of moral hazard and weak prudential regulation and supervision.

After an earlier experience with rapid liberalization and a banking crisis, Chile followed a gradualist approach to reforms.

The objective of the capital account policy has been to complement fiscal, monetary, exchange, and foreign reserves policies. The idea was to avoid an "excessive" inflow of foreign capitals, which could possibly destabilize both domestic and external equilibria.

The inflows were allowed in a gradual and selective way, so that short-term capitals would be avoided. The aim was to permit a change in the economy's relative prices, so that the different sectors would be able to adjust less traumatically over time.

This policy allowed the domestic interest rates to be lower than those adopted by other emerging countries, which have opened their capital accounts more rapidly.

According to Zahler, what really matters, for a country to be considered integrated to the world economy, is quantity, quality, cost, and steadiness over time of the effectively available capital inflows. All these elements are associated with the trust all the rest of the world has in that particular economy.

According to Johnston, Darbar and Echeverria, what is generally important for managing the volume (and type) of capital flows is the overall incentive structure that can give rise to such flows. It will be induced by the regulatory regime for capital movements, the stage of development and the soundness of the financial systems, and by the configuration of the interest rates and the exchange rates.

They point out that countries should adopt a coordinated and comprehensive approach to reforms, and capital account liberalization is part of it.

As any emerging market, a country which depends on external savings to supply its investment needs, is very likely to import a huge volatility, according to the changes in the global liquidity. This leads inevitably to cyclical market crisis. Besides, short-term debts in foreign currency, which are initially cheap, tend to become part of the mechanism that accelerates the collapse of the system.

According to Jeffrey Sachs, the emerging countries should not close their economies to foreign trade or financial markets but financial liberalization should be better directed and also submitted to some sort of control.

Even the IMF, after the Hong Kong Declaration, is reviewing its position towards liberalization, though it is still for it. Several risk-minimizing measures are to be undertaken, such as increasing banking supervision and surveillance over short-term capital flows, requiring more transparency regarding economic data from the governments and also introducing a fiscal conduct code among the member countries. It is also emphasized that liberalization has to be done in an orderly manner.

The finance ministers from the Group of Seven (G-7) have recently issued a report to their heads of state outlining ways to mitigate future global financial crisis. *"The process of globalization and recent events in Asia have revealed a number of weaknesses and vulnerabilities in national and international financial systems, as well as in the borrowing and lending practices of banks and investors"*, the ministers said in a statement titled "Strengthening the Architecture of the Global Financial System". The statement also said that reforms could not eliminate financial failures, but needed to mitigate risks which might threaten the whole financial system. It outlined possible action in the following areas:

- helping countries prepare for global capital flows;
- strengthening national financial systems and corporate governance;
- ensuring that the private sector takes responsibility for its lending decisions;
- enhancing further the role of the international financial institutions and cooperation among them.

Franco points out the prospects for capital account liberalization in Brazil rely, to a great extent, on the country's stabilization process. Given the country's current economic condition, the issue of further deregulating the capital account is rather debatable. In order to stress his point of view, he mentions Argentina's and Peru's experiences, as well as the longevity of the capital account restrictions in Europe.

Brazil has adopted a more gradual approach towards capital account liberalization. Nevertheless, it is even though criticized for having opened its economy too far. Ricupero says Brazil should have done the same as China. China didn't completely liberalize its financial system, and thus it hasn't been affected by the Asian crisis.

However, according to João Paulo dos Reis Velloso, the process of globalization is "a fact of life". Countries must, thus, adapt to this current global trend. Since emerging economies are more susceptible to volatility in capital flows, they must be more attentive to them. Besides, in a globalized world, no crisis is going to be restricted to the primarily affected countries. The contagion effects are able to reach even the industrialized countries. Therefore, surveillance and risk management measures (mainly concerning volatile short-term capital flows) have to be globally undertaken.

Finally, as IMF's Executive Director, Mr. J. (Onno) de Beaufort Wijnholds, pointed out, during a recent IMF Economic Forum, " a number of things seem to be essential (to liberalization). First of all, you have to have a certain degree of political stability. Also, sound macroeconomic policies and the domestic financial system has to be reasonably sound, too. There must be adequate supervision in place. Liberalization will have to be tailored to specific countries. There is no one-size-fit-all type of approach. Finally, sequencing is important. (...) As Michael Mussa said, capital account liberalization is a difficult thing. It is like fire. You do not want to play around with it. You want to heat your house, but be careful that you do not burn yourself."

6. TABLES

6.1 Table 1: Capital flows to developing countries (1)

(US$ billion)

Itemization	Annual Average 1977-82	1983-89	1990	1991	1992	1993	1994
Developing countries							
Total net inflows	30.5	8.8	39.8	92.9	111.6	154.7	125.2
Direct foreign investments	11.2	13.3	19.5	28.8	38.0	52.8	56.3
Portfolio investments	-10.5	6.5	6.2	22.5	39.1	88.3	61.7
Others	29.8	-11.0	14.2	41.7	34.5	13.6	7.2
Asia (2)							
Total net inflows	15.8	16.7	25.6	50.7	39.2	72.0	73.4
Direct foreign investments	2.7	5.2	9.8	14.9	19.9	35.6	36.9
Portfolio investments	0.6	1.4	-0.4	3.1	7.4	23.9	28.1
Others	12.5	10.1	16.2	32.7	11.9	12.5	8.4

Latin America (3)							
Total net inflows	26.3	-16.6	17.9	28.6	52.6	62.3	38.6
Direct foreign investments	5.3	4.4	6.8	11.2	12.9	13.8	14.8
Portfolio investments	1.6	-1.2	5.6	16.7	27.3	53.8	29.4
Others	19.4	-19.8	5.5	0.7	12.4	-5.3	-5.6
Other developing countries							
Total net inflows	-11.6	8.7	-3.7	13.7	19.9	20.3	13.2
Direct foreign investments	3.2	3.7	2.9	2.7	5.3	3.3	4.6
Portfolio investments	-12.7	6.3	1.0	2.7	4.4	10.6	4.2
Others	-2.1	-1.3	-7.6	8.3	10.2	6.4	4.4

Source: International Monetary Fund, International Capital Markets Developments, Prospects and Policy Issues, Aug. 95.

(1) Flows exclude exceptional financing.
(2) Capital exporting countries, such as Kuwait and Saudi Arabia, are not included.
(3) Acoording to the IMF's classification, it corresponds to the Western Hemisphere.

6.2 Table 2: Composition of capital flows to Brazil

Period	**1991**	**1992**	**1993**	**1994**	**1995**
(a) Net direct investment	-408	1,268	-481	852	2,376
(b) Reinvested profits	365	175	100	83	200
(c) Equity securities and other funds	578	1,704	6,651	7,280	2,294
(d) Debt securities and loans	2,368	5,761	5,866	3,713	9,113
(e) International organizations, and government agencies	-4,131	-3,425	-2,909	-1,908	-2,227
(f) Short-term capital and others	-2,901	1,033	-1,623	-2,504	17,554
(g) = (a)+(b)+(c)+(d)+(e)+(f) Financial account in the IFS	-4,129	6,516	7,604	7,965	29,310
(h) Arrears, other short-term liabilities and exceptional financing	-19	18,755	2,511	6,329	510
(i)=(g)+(h)=Capital account in Boletim do Banco Central	4,148	25,271	10,115	14,294	29,820

Source: Central Bank of Brazil, Boletim do Banco Central, International Financial Statistics, International Monetary fund and Fund staff calculations.

6.3 Table 3: Balance of Payments 1996-97

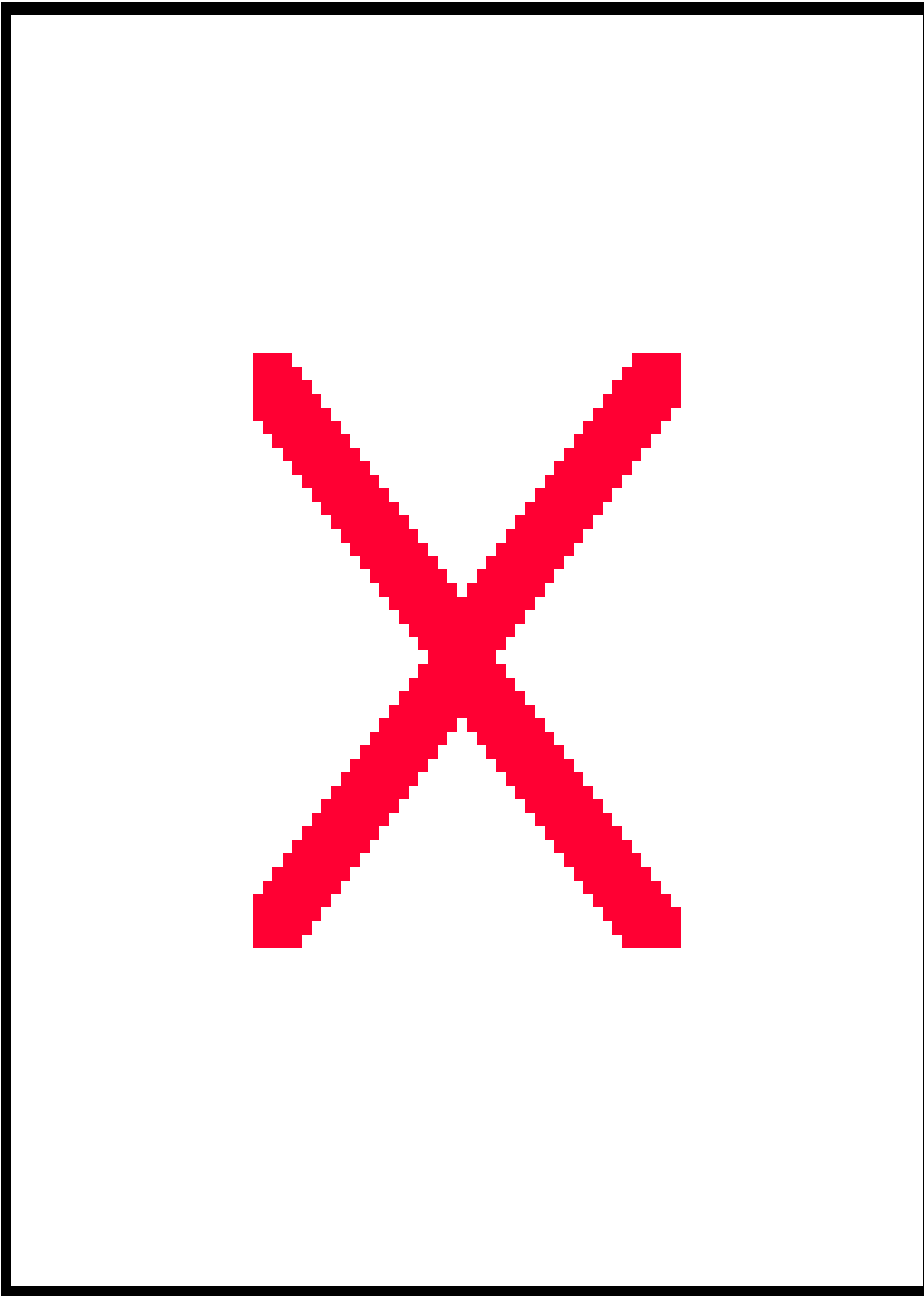
Itemization		1996			1997	
(US$ million)	1st sem.	2nd sem.	Total	1st sem.	2nd sem.	Total
Trade Balance (FOB)	-326	-5,228	-5,554	-3,752	-4,620	-8,372
Exports	22,903	24,844	47,747	24,786	28,200	52,986
Imports	23,229	30,072	53,301	28,538	32,820	61,358
Services (net)	-8,792	-11,691	-20,483	-12,264	-15,024	-27,288
Interests	-4,514	-4,658	-9,173	-4,505	-5,884	-10,390
Other services (1)	-4,277	-7,033	-11,310	-7,759	-9,140	-16,899
Unilateral transferences	1,596	1,304	2,900	1,164	1,052	2,216
CURRENT TRANSACTIONS	-7,522	-15,615	-23,137	-14,852	-18,592	-33,445
CAPITAL	17,167	17,096	33,263	14,926	11,161	26,087
Investments (net) (2)	8,704	7,367	16,071	12,904	7,911	20,815
Financing	1,782	2,525	4,307	6,002	12,407	18,409
Foreign	1,841	2,677	4,518	6,109	14,136	20,245
Domestic	-58	-152	-211	-107	-1,729	-1,836
Amortizations	-6,955	-7,464	-14,419	-11,410	-17,305	-28,714
Payed (3)	-6,955	-7,464	-14,419	-8,717	-17,305	-26,021
Refinanced	0	0	0	-2,693	0	-2,693
Loans (medium- and long-term)	10,348	12,493	22,841	11,753	17,117	28,870
Banks	640	174	814	600	1,834	2,434
New inflows	391	174	565	600	1,834	2,434
Refinancing	249	0	249	0	0	0
Others (4)	9,707	12,319	22,027	11,153	15,283	26,436
Short-term capital	3,380	2,373	5,752	-5,093	-12,423	-17,516
Other capital	-92	-198	-290	770	3,454	4,224
ERRORS AND OMISSIONS	-1,059	-1,050	-2,109	-2,138	1,650	-488
SURPLUS (+) OR DEFICIT (-)	8,587	430	9,017	-2,064	-5,781	-7,845
FINANCING	-8,587	-430	-9,017	2,064	5,781	7,845
Reserve assets (- = increase)	-8,225	-441	-8,666	2,147	5,760	7,907
Liabilities-FMI	-36	-36	-72	-23	-11	-34
Short-term liabilities	-326	46	-280	-60	32	-28
Arrears	-286	0	-286	0	0	0
Others	-40	46	6	-60	32	-28
Source: Boletim do Banco Central, Annual Report 1997.						
(1) Includes reinvested profits.						
(2) Includes reinvestments.						
(3) Includes US$1,439.5 million, as return over Brazilian investments, during the first trimester of 1996.						
liquidation of MYDFAS, converted to NTN by the Banco do Brasil.						
(4) Includes bonus, commercial paper, fixed/floating-rate notes, securitization and intercompany loans.						
Includes US$2,244 million as debt exchange (bonus), in 1997.						

6.4 Table 4: Capital flows to Brazil 1996-97

Itemization	1996			1997		
(US$ million)	**Inflow**	**Outflow**	**Balance**	**Inflow**	**Outflow**	**Balance**

TOTAL	71,869	37,605	34,263	113,334	87,246	26,087
Investments	37,776	22,236	15,540	58,953	38,289	20,664
Domestic	1,733	1,677	56	807	2,377	-1,569
Foreign	36,043	20,559	15,484	58,145	35,912	22,233
Portfolio	26,078	20,038	6,040	39,552	34,252	5,300
Direct	9,965	520	9,445	18,594	1,660	16,933
Privatization	2,645	0	2,645	5,249	0	5,249
Others	7,320	520	6,799	13,345	1,660	11,685
Reinvestments	531	0	531	151	0	151
Loans and financing (medium and long-term) (1)	27,809	15,080	12,729	50,006	31,441	18,565
Domestic	450	661	-211	891	2,727	-1,836
Foreign	27,359	14,419	12,940	49,115	28,714	20,400
International organizations	2,875	1,708	1,167	3,150	1,520	1,630
Government agencies	394	2,491	-2,096	1,260	1,814	-555
Credits from suppliers and buyers	1,248	2,324	-1,076	15,835	3,128	12,707
Banks	814	3,640	-2,826	2,434	2,569	-135
Bonus	1,263	571	691	4,995	10,317	-5,321
Notes	17,242	2,491	14,750	15,591	6,622	8,969
Commercial papers	653	323	329	315	570	-255
Others	2,870	870	2,000	5,534	2,174	3,361
Short-term capital flows (net)	5,752	0	5,752	0	17,516	-17,516
Other capital (net)	0	290	-290	4,224	0	4,224
Source: Boletim do Banco Central, Annual Report 1997.						
(1) Includes refinancing.						

6.5 Table 5: Chile: selected macroeconomic, financial sector, and balance of payments indicators



7. APPENDIX

The failure of capital account liberalization in the Southern Cone

In the early and mid 1970s, Argentina, Chile and Uruguay undertook stabilization and structural reform programs which removed several restrictions on activities in its domestic financial and commodities markets as well as on current and capital account transactions. However, there were important differences between the pace and sequencing of the various reforms in the three countries. Argentina and Uruguay removed most of their capital controls in the early stages of their reforms. In contrast, while Chile undertook the most extensive trade liberalization process, it eliminated controls on international capital movements much more gradually. Nonetheless, all three countries moved quickly to liberalize domestic financial markets, with the interest rate ceiling being removed by 1974 in Uruguay and by 1976 in Chile and Argentina.

The extent of the fiscal reforms undertaken in the three countries also differed significantly. Chile relied primarily on reducing expenditures and eventually generated an overall fiscal surplus during the period 1979-81. During the same period, Uruguay also attained a balanced fiscal budget. In contrast, although Argentina reduced the size of its fiscal deficit as a proportion of the GDP, the deficit amounted to almost 8% of GDP throughout the period 1976-80.

Throughout most of the reform period, all three countries experienced ex-post real interest rates that were considerably higher then those prevailing abroad (even after adjustment for the rate of depreciation of the exchange rate) and sharp real exchange rate appreciations.

The sharpest real exchange rate appreciation occurred in the period after 1978 following a fundamental change in exchange rate arrangements. From the beginning of the reforms until February 1978 in Chile and until December 1978 in Argentina and Uruguay, large initial exchange rate depreciations were followed by a "passive" crawling peg exchange rate arrangement, in which the exchange rate was adjusted to reflect differentials between domestic and external rates of inflation. During that period, the fiscal reforms, which facilitated reductions in the rates of monetary expansion, led to lower inflation in the three countries. Nonetheless, by late 1977, inflation remained high at about 50% in Chile and Uruguay and over 200% in Argentina. At that time, the three countries started to publish schedules ("tablitas") of future exchange rates, that implied daily rates of depreciation for their exchange rates, below the existing difference between domestic and foreign rates of inflation. Those "tablitas" were viewed as a mechanism for conveying the government’s commitment to reduce inflation and thereby influencing expectations about inflation.

However, as the rate of depreciation of the exchange rate declined with the implementation of the "tablitas", the spread between domestic interest rates (adjusted for the pre-announced rate of depreciation of the exchange rate) and external interest rates widened, which provided domestic residents with an incentive to borrow external funds to finance domestic expenditures. In all three countries, the resulting inflows of foreign capital were accompanied by relatively slow declines in inflation and real exchange rate appreciations. Indeed, by the end of 1980, the real exchange rates in Argentina, Chile and Uruguay had appreciated 74%, 37% and 67%, respectively, relative to their values at the beginning of their "tablita" periods. The real exchange rates appreciation led to a growing deterioration in the trade balances, which generated expectations that the pre-announced exchange rate regime would not be sustainable. These developments eventually undermined the credibility of the reform programs, which was reflected in capital flight, the abandonment of the "tablitas" by Argentina in early 1981, by Chile in June 1982 and by Uruguay in November 1982, and a series of financial crisis in the early 1980s.

These experiences raised the question of why the capital account liberalization ultimately proved unsustainable. Most analysis have attributed the difficulties to inconsistencies between the "tablitas" and other macroeconomic, income and financial policies. In Argentina, for instance, little progress was made in reducing the fiscal deficit. Since the financing of that deficit was a fundamental source of inflationary pressure, the resulting real exchange rate appreciation created an unsustainable current account position. Although Chile ran a government budget surplus during its "tablita" period, the problems created for its current account position by the real exchange rate appreciation were exacerbated by a system of backward indexation of wages, which adjusted wages to reflect past rather than current rates of inflation. With a declining rate of inflation, albeit a slow pace, the backward indexation of wages raised real wages. High real wages, the real exchange rate appreciation, and the persistence of high real interest rates contributed to the deterioration of the Chilean current account position and reduced output. In Uruguay, the sharp real exchange rate appreciation was financed to an important degree by increased issuance of foreign debt. As the inconsistencies between the macroeconomic policies became more apparent, capital flight, a balance of payment crisis, and the abandonment of the stabilization plan followed.

8. BIBLIOGRAPHY

APPLEYARD, D. R. and FIELD Jr., A. J. – International Economics, Irwin McGraw-Hill, 1998.

BOLETIM DO BANCO CENTRAL, Annual Report 1997.

CARDOSO, E. and GOLDFAJN, I. – Capital Flows to Brazil: The Endogeneity of Capital Controls – IMF Working Paper WP/97/115, September 1997.

CORBO, V. and HERNÁNDEZ, L. – Macroeconomic Adjustment to Capital Inflows: Lessons from Recent Latin American and East Asian Experience – The World Bank Research Observer, vol. 11, no. 1 (February 1996), pp. 61-85.

FOLHA DE S.PAULO (Brazilian newspaper) – several articles

FRANCO, G. H. B. – O regime cambial e a conta capital : notas sobre o caso brasileiro – Departamento de Economia PUC-RJ, fevereiro de 1992 (versão preliminar).

GARCIA, M. G. P. and BARCINSKY, A.- Capital flows to Brazil in the nineties: Macroeconomic aspects and the effectiveness of capital controls – summarized version for ANPEC from the Text for Discussion # 357 of the Department of Economics of PUC-RIO, December 1996.

GUITIÁN, M. – The Challenge of Managing Global Capital Flows, in Finance & Development, International Monetary Fund, June 1998.

IMF Economic Forum – Capital Account Liberalization: what is the best stance?, October 2, 1998, IMF, Washington, D.C. (at the internet).

JOHNSTON, R. B., DARBAR, S. M. and ECHEVERRIA, C. – Sequencing Capital Account Liberalization: Lessons from the Experiences in Chile, Indonesia, Korea, and Thailand – IMF Working Paper WP/97/157, November 1997

MATHIESON, D. J. and ROJAS-SUAREZ, L. – Liberalization of the Capital Account: Experiences and Issues – IMF Working Paper WP/92/46, June 1992.

MELLO, L. C. B. – Foreign capital flows and their impact on the Brazilian economy, Boletim do Banco Central do Brasil, May 1997.

PERRY, G. E. and LEDERMAN, D. - Financial Vulnerability, Spillover Effects, and Contagion: Lessons from the Asian Crises for Latin America, World Bank Latin American and Caribbean Studies (Viewpoints), Washington, D.C., 1998.

RIES, C. P. and SWEENEY, R. J. – Capital Controls in Emerging Economies, WestviewPress, 1997

THE WORLD BANK – Brazil, From Stability to Growth through Public Employment Reform – Report # 16793-BR, February 1998.

THE WORLD BANK – Private Capital Flows to Developing Countries, a road to financial integration, 1997.

UNITED NATIONS, ECLAC – Preliminary Overview of the Economy of Latin America and the Caribbean, 1997.

VEJA Magazine – "Não há via alternativa", interview with former Minister João Paulo dos Reis Velloso, May 13th, 1998, pages 11-15.

ZAHLER, R. – El Banco Central y la política macroeconómica de Chile en los años noventa, in Revista de la CEPAL, # 64, April 1998, pages 47-72.

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