INEFFECTIVE CONTROLS ON CAPITAL INFLOWS UNDER SOPHISTICATED FINANCIAL MARKETS: BRAZIL IN THE NINETIES

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Abstract:

We analyze the Brazilian experience in the 1990s to assess the effectiveness of controls on capital inflows in restricting financial inflows and changing their composition towards long term flows. Econometric exercises (VARs) showed that controls on capital inflows were effective in deterring financial inflows for only a brief period, from two to six months. The hypothesis to explain the ineffectiveness of the controls is that financial institutions performed several operations aimed at avoiding capital controls. To check this hypothesis, we conducted interviews with market players. We collected several examples of the financial strategies engineered to avoid the capital controls and invest in the Brazilian fixed income market. The main conclusion is that controls on capital inflows, while they may be desirable, are of very limited effectiveness under sophisticated financial markets.

Resumo:

Analisamos neste artigo a eficácia dos controles de entrada de capitais em restringir e selecionar os influxos financeiros. A partir de estimações de *VAR*s, concluímos que nos anos 1990 no Brasil os controles de entrada de capitais lograram deter os influxos de capital especulativo apenas por breves períodos, de dois a seis meses. Nossa hipótese é a de que as operações de elisão dos controles de capitais no período realizadas pelos agentes financeiros tornaram tais controles pouco eficientes. Exemplificamos diversas operações de elisão dos controles que teriam sido utilizadas na época e que teriam permitido aos investidores aplicar seu capital no Brasil passando ao largo das restrições impostas pelo governo. A principal conclusão é a de que embora controles de entrada de capitais possam ser desejáveis, eles têm eficácia muito pequena sob mercados financeiros sofisticados. Portanto, ao se conceber a política econômica, deve-se evitar gastar os recursos escassos da supervisão bancária para tentar implementar tais controles, e focar mais em melhorar a política econômica.

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1. INTRODUCTION

International economic literature has given substantial attention to the destabilizing effects of financial globalization, a process that became particularly strong since industrial countries liberalized their capital accounts in the 1970s and 1980s. Subsequently, in the 1990s, emerging markets (EMs) followed suit.

Among the diverse proposals for reforming the "international financial architecture" aimed at creating a more stable environment is taxation of international capital flows[3]. The idea, in fact, has been around since Keynes [1936] suggested that taxing financial transactions could strengthen the importance investors place on long-term fundamentals in pricing assets. Decades later, the idea gained popularity in the academic community through the Tobin Tax proposal (Tobin [1978]).

Much of the recent literature has defended imposing controls on capital inflow, as Chile did during the 1990s. The objective would be to minimize the impact on EMs of capital flows instability and to reduce these countries' vulnerability to financial crises[4]. The proposals defend, in general, what we could call *ex ante* capital controls, i.e., restrictions that are defined prior to funds entering the country, thereby respecting the contracts. This type of control differs from those the literature has called controls on capital outflows, which are generally imposed during a financial crisis, typically after, or *ex post*, the entry of capital, and can thus be viewed as breaching contracts with foreign investors who have then already invested resources in the country. *Ex ante* capital controls usually try to deter capital inflows, but could conceivably be also imposed to restrict capital outflows.

Here, we address the effects of *ex ante* capital controls. In contrast to *ex post* controls, *ex ante* controls should not jeopardize the emerging market country's reputation, since they are included in contracts with foreign investors prior to their investing. We will analyze the effectiveness of inflow controls to limit short-term capital and modify the composition of financial inflows.

Several authors have suggested controls on capital inflows as an economic policy measure for managing excessive capital inflows into EMs. In periods of greater liquidity and low international risk aversion, it is common for substantial financial flows to move into Latin America and Asia. The year 2004 was a classic example: "dollar weakness", or expectations of greater depreciation of the U.S. dollar due to forecasts that the U.S. current account deficit had to be reversed[5], together with low base interest rates in developed countries. Both factors led to substantial capital inflows into EMs. As a result, Colombia adopted capital inflow controls to avoid accelerated appreciation of its currency, and many countries, including Brazil, Russia, China, Japan, and other Asian countries, rapidly accumulated international reserves so as to manage the abundant inflow of foreign currency. In this context, discussion surrounding controls on capital inflow has gained considerable steam among economists.

The central goal of establishing capital controls is containing the inflow of short-term capital. Short-term capital flows are considered more volatile and fungible and thus more closely related to excessive exchange rate volatility and to sudden reversals of external financing which lead to harmful real results. Many articles actually argue

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[3] Rogoff [1999], Eichengreen[1999], Stiglitz[1999] and Fischer[2002] are excellent references on the diverse proposals for reforming the international financial system.

[4] See Stiglitz [1999], Ito and Portes [1998], Eichengreen [1999], and Fischer [2002].

[5] Obstfeld and Rogoff [2000], Obstfeld and Rogoff [2004], Roubini [2004], Blanchard and Giavazzi [2005] are good references for discussion of the expected weakening of the US Dollar as a result of the country's record current account deficits.

that portfolio investments tend to be less stable than, for example, direct investment, because financial assets can be sold more easily than real assets can be liquidated.[6] Moreover, today's international financial scenario includes Hedge Funds, many of which are seeking immediate gains. As of August, 2005, it was estimated that there was around US$ 1.5 trillion in the hands of these financial institutions.[7] This, together with more sophisticated information technology, has made capital flows extremely fungible. Capital controls would also avoid excessive exchange rate appreciation and allow the central bank to regain control of monetary policy.[8]

The economic literature is therefore brimming with debate about how to manage excessive capital inflow in an exceptionally volatile global financial environment. Volatile capital accounts and consequent volatile exchange rates (except in the case of fixed exchange rates) influence decisions on investing in physical capital, since investors face greater uncertainty and higher costs on currency hedge operations, thereby affecting potential GDP. In light of this, a few authors have suggested adopting capital inflow controls and/or accumulating international reserves as a way of handling heavy inflow of foreign currency and reducing the threat of sudden stops.

Forbes [2003a] concludes that liberalization of capital accounts around the world did in fact intensify global financial instability, but the correlation between capital controls and limiting vulnerability to confidence crises is not particularly close or direct, as many writers have argued. Forbes [2003b] also observes that the controls diminish microeconomic efficiency, for example by increasing the cost of capital of small and medium-sized companies, which have less access to financial markets. Large companies have access to the international financial market and to ways of circumventing restrictions on external financing, so that they are less impacted by capital controls.

Glick and Hutchison [2004] explore the effectiveness of controls in avoiding or delaying financial crises. Based on an analysis of panel data from 69 countries, they conclude that restricting capital did not bring the desired results. Eichengreen and Leblang [2002], analyzing a panel of 47 countries, examine whether capital controls were effective in reducing the impact of financial crises in the real economy. They conclude that the controls impaired economic growth in periods of stability, but that they eased the effect on the country's product once the crisis unfolded. However, these papers do not separate the effects of capital controls on inflows from those on outflows.

This article narrows the analysis of the effectiveness of capital controls. We explore whether controls on capital inflows are effective in limiting and selecting capital flows. Thus, we analyze whether this type of control effectively meets its primary objective. The issue concerns positive economics and not normative economics. Naturally, if we were to show that the controls are not effective—as we will indeed claim it has been the case in Brazil—whether the controls are desirable or not would become irrelevant for policy purposes.

In general, the literature addresses short-term capital controls without considering the capacity of international investors to avoid the restrictions imposed. The general rule has been to implicitly assume that *de jure* imposition of capital controls is the same as their *de facto* application. However, developed and sophisticated financial markets present diverse substitute assets that may be used to engineer financial transactions that avoid part or all of the costs incurred by the capital controls. Garcia and Barcinski [1998] and Garcia and Valpassos [2000] focus on this issue for Brazil.

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[6] See Dixit and Pyndick [1994], Frankel and Rose [1996], and Dornbusch [1998].

[7] Chan, Getmansky, Haas and Lo [2006].

[8] Cowan and De Gregorio [2005] say that the goals of Chilean capital controls were to "... stem net inflows, avoid a large appreciation and keep control of monetary policy."

They indicate the ineffectiveness of inflow controls in reducing the inflow of capital seeking the high returns of Brazilian public debt between 1994 and 1996. Papers addressing the case of Chile, such as those of Simone and Sorsa [1999], Edwards, Valdés and De Gregorio [2000] and Cowan and De Gregorio [2005], also stress that circumvention of capital controls may have limited its effectiveness in changing the composition of the financial inflows.

In this paper, we conduct econometric exercises—based on an analysis of impulse response functions inspired by the VAR analysis of Cardoso and Goldfajn [1997]—that show that the capital controls were only effective in restricting financial capital inflows in Brazil in the 1990s for two to six months. Our updated results corroborate those from previous papers.

The novelty of this paper is in the methodology aimed at explaining why capital controls lost *de facto* effectiveness. This paper's main contribution is its focus on the limiting effects that the avoidance of capital controls practiced by financial market players had on the effectiveness of controls on capital inflows. Based on interviews with financial market players active during the analyzed period, we exemplify methods (financial strategies) that could have been used to avoid capital control laws in Brazil during the 1990s.

The article is divided as follows: after this introduction, Section II presents a VAR analysis aimed at measuring the effectiveness of the capital controls in reducing short-term financial inflows; Section III reports cases of avoidance of capital restrictions that explain how capital controls were rendered almost ineffective; and Section IV contains the conclusion.

II - A VAR ANALYSIS OF THE EFFECTIVENESS OF INFLOW CONTROLS IN DETERRING CAPITAL INFLOWS

In this section we conduct an econometric analysis using a vector autoregression model to examine whether controls on capital inflows in Brazil have been effective in reducing the inflow of financial capital.

The methodology is based on the articles of Cardoso and Goldfajn [1997] and Edwards, Valdés and De Gregório [2000], which used the VAR model to analyze the effectiveness of capital controls in Brazil and in Chile, respectively.

Cardoso and Goldfajn [1997] examined the effect of controls on capital inflows in the period from 1983 to 1995, concluding that the impact of inflow controls on the total net inflow was temporary (around six months). They used VAR estimation, because they showed that the controls are endogenous to the dynamic of the capital inflows. Here, we apply a similar procedure to the period between 1995 and 2001, using, however, different capital inflow measures and other endogenous variables. We chose not to extend the sample beyond 2001 given there were very few changes to legislation on capital inflows between then and 2004, so there is little to be inferred from the period about the effect of controls on capital flows[9].

Edwards, Valdés and De Gregório [2000] estimated a VAR to analyze simultaneously the effectiveness of controls in containing capital inflows and in altering the term of foreign investments. They used as one of the endogenous variables a Power Index for monitoring the effect of control circumvention on the effectiveness of restrictions on short term capital. We did not build a similar index from Brazil because we felt that, with the available data, its accuracy and reliability would not be

[9] See the chart with the Capital Inflow Controls Index in Section IV.

sufficient.[10] Edwards, Valdés and De Gregório [2000] concluded that Chile's control on capital inflows did not effectively reduce the total capital inflow, but it did increase the percentage of long term flows. In other words, the controls were effective in reducing short term capital, but the total inflow remained stable as more long term capital entered the country. However, they argued that the result may be distorted by short term capital investments that were declared as long term. They could not guarantee that the control power index was able to isolate the effect of this type of avoidance.

In this section we estimate three VARs. They differ in the variable that measures capital inflows.

The capital inflow measure of the first VAR is the Brazilian Central Bank series on the inflow of portfolio investments in Brazil. The inflow measure of the second VAR is the contracted exchange rate inflows for financial transactions. The measure for the third is net investments through the Annex IV channel. The use of three different measures of capital inflows is aimed at providing robustness to our analysis. All of the VARs have the same endogenous variables: the deviation of the effective real exchange rate to its equilibrium level, the covered interest parity differential, the measure of capital inflows, and the logarithmic difference of the index of capital inflow controls. The exogenous variables varied in the VAR specifications. The number of lags for each VAR was chosen based on the Akaike and the Schwartz information criteria. In order to obtain the impulse response functions, we applied the Cholesky decomposition for identifying a VAR's structural form. It is essential to note that the results were robust with the several orderings of contemporaneous causality among the endogenous variables, so this possible criticism does not affect our results.

The main objective of the estimation of these VARs is to analyze the impulse response function of the capital flows to a change in capital inflow controls. The variation from the index of capital inflow restrictions was used as the measure of capital controls. It is important to clarify that the index's order of integration is equal to 1, so that we had to use the first difference to obtain a stationary series. From 1983 to 1995, the series was constructed, as we have already noted, on Cardoso and Goldfajn [1997], and updated for this article after 1995.The results were as follows.

The first VAR has the following endogenous variables:

- Logarithmic variation of the equilibrium real effective interest rate (LOG(REER_DESVIO2)), which was calculated as the logarithm of the ratio between the index value of the real effective exchange rate and a series trend extracted by applying the Hodrick-Prescott filter beginning January of 1995.

- Covered interest parity differential (CIPD) in continuous capitalization, or *LOG(1+CIPD)*, where *LOG* is the logarithm in the Neperian base.

- Logarithm of the portfolio investment inflows as a percentage of the GDP (LOG(IEC_CRED/PIB)), which is our capital flow measure in this first VAR.

- Finally, the logarithmic variation of the Index of Capital Inflow Controls (D(LOG(ICC)).

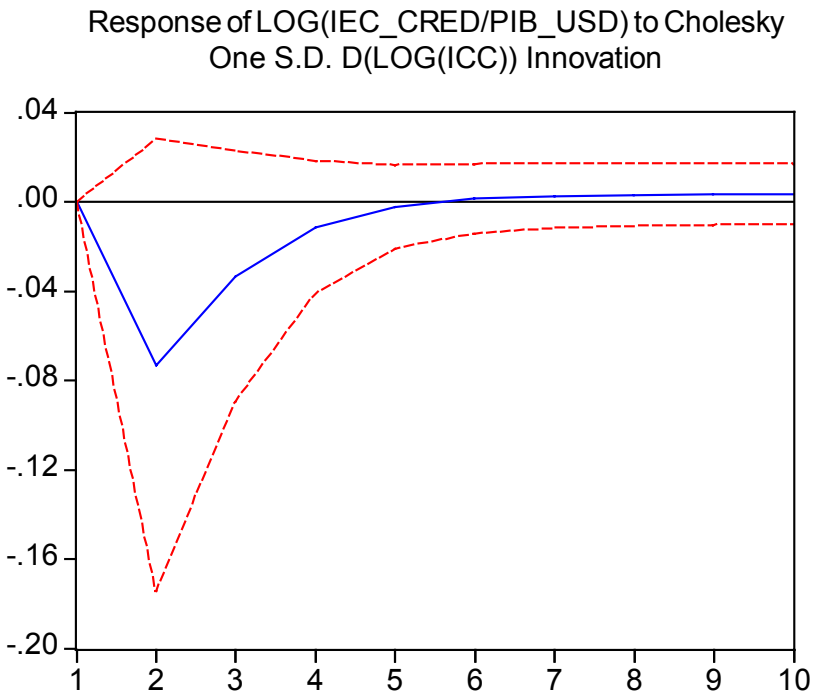
The exogenous variables used were the American one-year futures rates (LOG(1+US1Y)), which summarize the level of international liquidity; the variation of the Index of Capital Outflow Controls (D(LOG(ICC_S)), which was calculated as an

[10] The index is formed by attributing rates of 0 to 1 for each new restrictive measure. When the restriction was applied, the measure received a rating of 1. With the passing of time, if the restriction was circumvented, the rating moved closer to 0, where the measure was assessed as having lost all effectiveness. Establishing a similar index for Brazil was a complex task, because it involved a large number of exchange rate of measures and because the Brazilian financial market was more developed than the Chilean.

exogenous variable because we considered that economic policy had lifted outflow controls independent of capital flows; and lastly, some circumstantial dummies from the period of the Brazilian currency crisis. Dummies for other periods of financial crisis were not significant, since the effects were probably captured by the endogenous variables, especially the real exchange rate and the covered interest parity differential. The exception was the wave of speculation in 1998, when there was a large inflow of capital even with the higher sovereign risk, followed by a mass exodus after depreciation, for which a binary dummy variable was applied.

Chart 7 shows the impulse response function of the portfolio investment inflows to new restrictions on capital inflows. We see that a new control measure on capital inflows initially reduces the portfolio investment inflows and peaks in the second month. However, its effectiveness diminishes rapidly, and up to around six months following its implementation, the effect on capital flows disappears. Therefore, the exercise indicates that controls on capital inflows in Brazil are temporarily effective, lasting around two to six months. This period would be the time required for the market to discover investment alternatives for circumventing the restriction.[11]

CHART 7



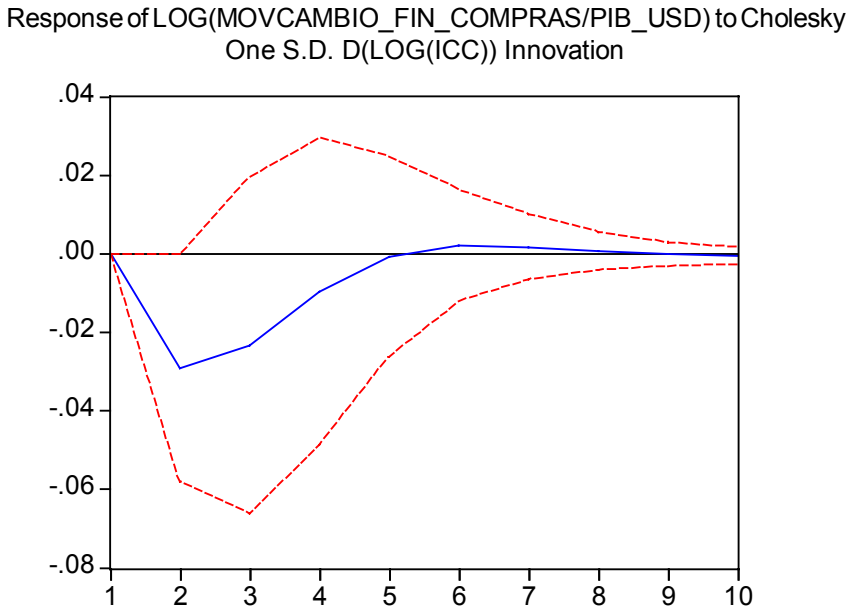
The second VAR has the same endogenous variables as the first with the exception of the capital inflow measure, which becomes the contracted exchange rate inflows for financial transactions as a percentage of the GDP (LOG(MOV_CAMBIO_FIN_COMPRA/PIB)). These are data from the Brazilian Central Bank that report the currency flows from all financial investments except for those going through the CC-5 account, that is to say, they do not include exchange rate

[11] The confidence intervals of the impulse response functions in our exercise are wide and limit the potential of our results. A similar problem occurred with the VARs of Goldfajn and Cardoso [1997] and Edwards, Valdés and De Gregório [2000]. For future research, refining of the ICC may imply narrower confidence intervals.

flows from abroad and the CC-5 accounts. This series included all flows from portfolio capital, direct investments and foreign loans. Since the capital controls exempted direct investment flows, we used this data as an exogenous variable. The other exogenous variables are the same as those in the first VAR.

Chart 8 shows the impulse response function of the contracted exchange rate inflows for financial transactions to the new restrictions on capital inflows. Again, the exercise indicates that the effectiveness of inflow controls was temporary and lasted for around two to six months.

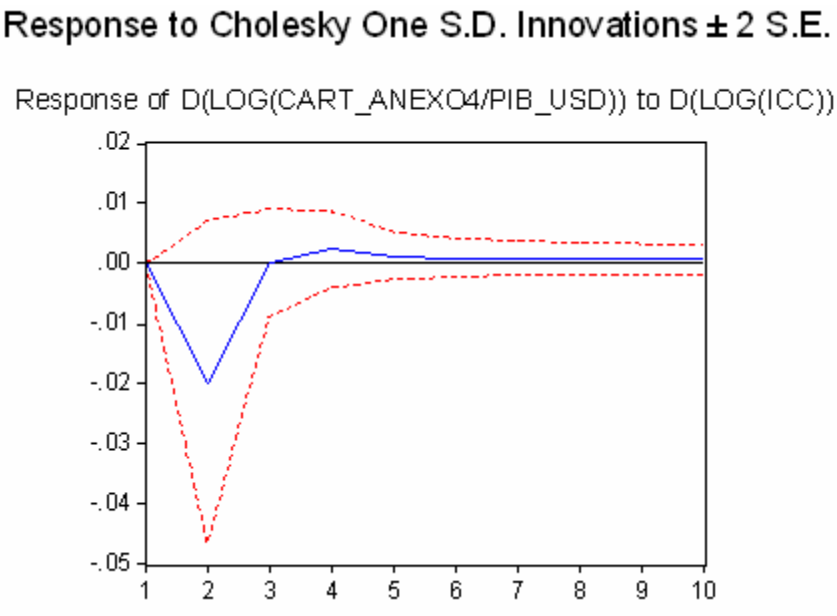
CHART 8



The third VAR uses net investments through Annex IV as the capital flow measure. No series for capital inflows through this channel are available, but only data on the total portfolio value under Annex IV in the country. Therefore, in this VAR we used a logarithmic difference of the Annex IV portfolio as the measure of net capital inflow. As in our other estimations, we considered capital flows as a percentage of the GDP (D(LOG(CART_ANEXO4/PIB)). The other endogenous variables were the same as those of the previous estimations. As an exogenous variable, we used only one dummy for the Brazilian currency crisis, because the other variables we adopted were not statistically significant in this exercise.

Once again, the impulse response function of the capital flow measure to a new capital inflow control measure (Chart 10) indicated that restrictions on financial inflows were effective only temporarily. In the case of flows through Annex IV, the effect of the controls appears to be even more transitory, lasting only two to three months. Strikingly, most avoidance cases, as we saw in the previous section, continued using the Annex IV channel to invest so as to guarantee tax benefits.

CHART 10



Therefore, the VAR exercises indicate that the controls on capital inflows were effective in reducing financial capital inflows only for short periods of time (two to six months). The probable cause of the limited duration of the restrictions' impact is avoidance of capital controls by the market, which continues to invest in the country without incurring in the capital controls' costs by renaming the type of investment made, or by conducting financial engineering operations.

In the next section, we document and analyze cases of avoidance of controls on capital inflows in Brazil. Outflow controls have also been frequently avoided since the 1980s through parallel (black) exchange rate markets, but our analysis focus only on the effectiveness of controls on capital inflows.

The key point is that measures for controlling capital inflows are at best temporarily effective in containing and selecting capital inflows, since financial agents have been able to dodge them in many different ways. The lesson to be learned is that in open and developed capital markets, controls on capital inflows will probably be ineffective, because the market has many alternative assets and transactions that can capture the desired return. In the following section, we discuss cases of circumvention, and show a quantitative proof that this circumvention was at work. We do this by documenting the characteristic migration of capital inflows among Annex IV items to avoid restrictions imposed on fixed income investments and the minimum terms for offshore funding.

III - CASES OF CIRCUMVENTION OF CAPITAL INFLOW CONTROLS IN BRAZIL

Exchange rate and capital control legislation in Brazil has a tradition of being highly complex and intricate. However, the Brazilian financial market is also quite sophisticated, particularly in derivatives trading.[12] The Futures and Commodities Exchange (BM&F) of São Paulo, for example, is one of the world's largest and most active derivatives exchange, comparable to the Chicago Mercantile Exchange.

[12] Years of crowding out and hyperinflation created both a hypertrophy of expertise in fixed income and derivatives trading and a hypotrophy of credit granted by financial intermediaries.

Furthermore, there are extensive derivatives trading abroad with underlying Brazilian instruments. One example is New York trading of Brazilian Real/U.S. Dollar NDFs (Non-Deliverable Forwards). Derivatives allow traders to replicate financial strategies originally conceived with the underlying financial assets without the need to trade the underlying assets. For example, a box is a financial strategy involving only options that perfectly replicates a bond. The existence of derivatives makes the task of imposing capital controls much more burdensome. Since there was a well-established market for Brazilian financial instruments, including derivatives, there was, *ipso facto*, a variety of alternative instruments that made it possible to circumvent most capital controls.

Between 1993 and 1999, when investors were prohibited from investing in domestic Brazilian bonds through Annex IV of Resolution 1289 and charged a 5% to 9% IOF, there were many cases where this tax was avoided. The market found a range of methods for investing in fixed income and enjoying the tax benefits of Annex IV, at very low cost. Even today, foreign investors have ways of avoiding the tax on fixed income returns, which is higher than the tax on returns in the equity market.[13]

In this section, we report numerous cases of capital controls avoidance in Brazil between 1993 and 2000, illustrating how difficult *de facto* application of capital controls actually is. We show that *de jure* imposition of restrictions in this period did not effectively contain capital inflows seeking short term, tax exempt return on fixed income, nor was it effective in extending the term of foreign investments on fixed income.

Garber [1998] addressed the issue of how offshore derivatives trading may be used to bypass domestic controls. Garcia and Barcinski [1998] and Garcia and Valpassos [2000] analyzed how avoidance of capital controls impacted their effectiveness in restricting and selecting financial flows, and they reported a few of the methods used to circumvent controls in Brazil. Simone and Sorsa [1999] concluded that the capital controls in Chile in the 1990s were only temporarily effective in restricting short term capital due to capital control circumvention. Edwards, Valdés and De Gregório [2000] concluded that Chile's capital controls effectively changed the composition of capital inflows, increasing the inflows of long term capital, but they cast doubt on the reliability of this result, which could have been distorted given that short term flows could have been labeled as long term capital flows, that is to say, effectively bypassing the country's capital controls. Forbes [2003b] noted that small and medium-sized companies in Chile were more burdened by the higher cost of capital than were large ones, because the latter had access to financial transactions on the international market that would enable them to avoid Chilean capital controls.

In this article we take a more in-depth look at capital controls avoidance practices in Brazil based on field study involving members of the financial market, who offered extensive help in collecting information about what agents did in Brazil to avoid controls on capital inflows between 1993 and 2000.

The large majority of transactions reported was legal, and merely took advantage of loopholes in the intricate exchange rate legislation. They included renaming as long term flows that were ultimately directed at short term interest rate investments. However, they were officially accounted on the balance of payments as flows destined for other purposes. For example, many flows were identified as "privatization money," which in theory would go to finance privatization programs; short term capital was disguised as foreign direct investments, which were not taxed; resources were declared

[13] Foreign investors do not necessarily reside outside Brazil. Brazilian financial institutions generally have offices abroad designed to obtain tax benefits given to foreign capital, and also to shield against border risk, or restrictions of capital outflows.

as equity investments when in fact they were used to obtain fixed income return, etc. Below we will provide further details of these forms of circumvention.

The central idea is that financial agents were able to use a variety of means to bypass capital controls. The major restriction was prohibition of fixed income investments through Annex IV of Resolution 1289, which carried tax exemption rights, as we reported in the previous section. There were also numerous restrictions for minimum terms for amortizing overseas loans.

Prohibition of fixed income investments through Annex IV is the equivalent of charging an inflow tax τ that imposes a cost equal to the loss of tax benefits of investing in fixed income by other means. During the period, agents could invest in fixed income in Brazil through mutual funds specifically established for such, which were subject to an IOF tax of 5% to 9%. Hence, the official τ was the IOF.

However, the *de facto* cost for the short term investor was the cost of circumventing the control, or τ^*, which was certainly less than he or she would lose by not investing in fixed income through Annex IV. It follows that the actual cost incurred by the investor due to the capital control is: $\tau^* = min \{\tau$, cost of circumventing inflow control$\}$.

Let us examine a few of the circumvention methods reported[14].

1) <u>Disguising short term investments as long term, equity or trade finance</u>

<u>CASE 1</u>: *Disguise short term capital as Foreign Direct Investment*

Foreign direct investment is considered to be the best form of capital flow to the receiving country, because it is closely associated with investing in fixed capital and the transfer of technology, and consequently with expansion of the potential GDP. It is also thought to be the least fungible, since compared to portfolio investments; it is less reversible and has a longer investment horizon. Many articles do argue that portfolio investments tend to be less stable than direct investments, because portfolio investments can be reversed more easily than real assets can be liquidated (Dixit and Pyndick [1994], Frankel and Rose [1996], Dornbusch [1998]). Thus, direct investments would be less linked to capital flight. For these reasons, capital flow regulation commonly handles direct investments differently than portfolio investments.

Notwithstanding, in an environment of capital controls, when in general the flow of direct investments wanes, market agents tend to take advantage of this loophole in exchange rate legislation to disguise their short term investments or loans as direct investments, thus bypassing the restrictions imposed. In Chile during 1996 through 1998, for example, what the Central Bank designated "Potentially Speculative Direct Investment" was also subject to *encaje*, that is to say, to Chile's prevailing capital controls. This was because between 1991 and 1996, when Chile required non-remunerated deposits of 10% to 30% for one year for short term investments and foreign loans, many agents were found to circumvent the restriction by (inappropriately) identifying their flows as direct investments.

In Brazil, we reviewed a transaction, likely to be used even today, designed to disguise short term capital as direct investment. The transaction has a simple structure.

At that time, investing in fixed income through Annex IV was restricted, but the channel was open for equity investments, and there were tax benefits for direct

[14] The methods of bypassing capital controls were collected by the authors during interviews with Brazilian financial market players. The authors do not have information on who conducted them, or even if they actually took place.

investments. Financial intermediaries could use the transaction to take advantage of these two loopholes.

The financial intermediary would create a public corporation (S.A.) and list its shares on the São Paulo Stock Exchange (BOVESPA). The company was strictly a legal entity and had no physical activity. Since the financial intermediary held all the company's shares, it could manipulate their price by arranging purchase and sell transactions with low liquidity. The price was completely artificial. The financial intermediary, having capital outside the country, would invest in the company as a foreign investor and declare this flow as direct investment. It acquired over 50% of the shares and subsequently conducted intercompany loans, considered foreign direct investments. This money, then, since the company only existed on paper, would be invested in fixed income. Returns would go to the company and be sent abroad as profit or dividends. Thus, Annex IV restrictions did not apply, even though the objective was short term returns from the high interest rates of the day.

The cost of establishing this investment in short term fixed income as a direct investment was quite low. Given the scale of capital invested, the cost of opening an S.A. corporation and listing its shares on the exchange was negligible. The agent's cost to come into the country, the aforementioned τ^*, was fixed and much lower than the official tax.[15]. The financial intermediary's only expenses were for opening the corporation at the beginning of the operation. Subsequent investments had no inflow costs, meaning τ^* was equal to zero. The outflow costs were determined by legislation governing profit and dividend taxing of foreign companies, which have been much more advantageous for investors than taxing of portfolio investment gains. In fact, profit from foreign capital previously invested and declared in Brazil is exempt from taxes.

CASE 2: *Labeling fixed income investments as equity investments*

As noted above, the control on Annex IV capital inflows applied to fixed income investments. However, equity investments were not restricted, because growth of the stock market was believed to lead to greater investment capacity for the companies and contributes to the economy's expansion. Obviously, the market then sought to use the stock market to gain the coveted returns from the high Brazilian interest rates.

This Case 2 and the following Case 3 refer to avoidance of capital controls through the stock market. Case 2 involves a transaction that also takes advantage of the structure of the S.A. corporation created in Case 1.

To bypass restrictions on fixed income investments via the securities market, the financial intermediary in Case 1 could use the corporation already created. The financial intermediary would then invest in the shares of that corporation. The means used would be the Annex IV channel for investments in the BOVESPA, which were permitted at that time and still today provide tax benefits for fixed income investments. Thus, the financial intermediary invested his off-shore capital like a foreign investor in the BOVESPA by purchasing shares of the company he had opened. The amount paid for the shares was invested in fixed income and the returns remitted abroad as dividends or capital gains. Note that the financial intermediary could also manipulate the company's

[15] The cost of opening a joint-stock (S.A.) company and listing its shares on the exchange, without considering programs for attracting investors (contracting banks to manage the I.P.O., press, advertising, etc.), in 2005, is between US$20,000 and US$100,000. If the financial intermediary used this avoidance strategy to invest US$ 10 million in fixed income, it would already have saved, in the period when the IOF tax applied, at least US$ 500,000 in IOF (5%) expenses. The volume invested through this avoidance strategy can be much greater than US$ 10 million, so that τ^* could become negligible.

share prices, since it owned a 100% stake. Therefore, the investor declared equity investments while capturing the returns of fixed income.

Again the actual cost of the capital inflow in this case, the τ^*, was only the cost of opening the S.A. corporation and listing its shares on the exchange. The cost was low compared to the financial volume invested, and it was also diluted as the investor invested, free of taxes, for several years. We can thus consider that τ^* was fixed and much lower than the official τ.

The descriptions of Case 1 and Case 2 depict two similar methods of avoiding the restriction on gains from the short term interest rate in Brazil between 1993 and 2000. The person interviewed did not, however, wish to go into great detail, but rather offered a general overview. For the third form of circumvention, which we will elaborate below, we were able to gather more details. It also involves disguising fixed income investment flows as equity investments in order to take advantage of the tax exemption provided for in Annex IV.

CASE 3: *ACC and Trading Companies*

To control excessive capital inflows into Brazil, especially between 1993 and 1996, many restrictions on raising external resources were imposed. The prohibition of foreign investments in fixed income under Annex IV, for example, made it more difficult to raise funds, since loaning resources at fixed interest rates, the investor had to pay the IOF tax, because the Annex IV channel was prohibited. Moreover, minimum terms were required for beginning loan amortization, meaning there were restrictions on short term loans. For example, in January 1993, a minimum period of 96 months was established for beginning amortization for principal and interest payments to be exempted from taxes.

At the same time, the use of Foreign Forward Currency Agreements (ACC) for exports allowed for financing of less than 360 days. The exporter could close an ACC up to one year before shipping merchandise. Theoretically, the ACC was exclusively for financing exports, and financing by this means required a physical outflow of exports associated with the contract to demonstrate that the loan had in fact been used to finance foreign trade. The market soon saw in this legislation a way to get short term loans, which additionally carried tax benefits.

The interest rate for ACC funds was normally less than the CDI, the short-term-benchmark interest rate in Brazil. This occurred because loans were less heavily taxed and because foreign investors seeking high return in Brazil offered capital at interest rates below the country's base rate due to restrictions on other investment means. Furthermore, financing foreign trade generally carries relatively low risk, since most loans are released only after the export contract has been signed, and the exports serve as collateral.

Therefore, ACCs constituted a means of getting short term loans with tax benefits and interest rates below the CDI. This was another opportunity that the Brazilian financial market players eagerly grabbed. The restriction a financial investor had to circumvent to raise funds via ACCs was demonstrating that the financing was associated with merchandise exports. An agent had a one-year period after signing an ACC to ship the financed export product.

The financial investor of course was not planning to use the resources to finance exports, so he had no product to ship. Exporters conducting foreign trade without ACCs, who did not use export financing, began selling their ACC rights to foreign

investors. An ACC would then be signed to finance a specific export, but the capital would actually go to a financial investor who had purchased the exporter's right.

In this way, investors made short term investments at rates below the CDI using the ACCs, and were able to provide export documentation. Some exporters would pass this credit on to investors. In fact, until 2000 there was an underground market for export credits, that is to say, a parallel market developed for trading export documentation. An investor could simply make a loan to himself (disguised as an ACC, a loan to a Brazilian exporter) and buy this export documentation on the aforementioned market. A few banks even established trading companies, which specialized in financing foreign trade, to be able to better undertake this capital control avoidance strategy. These trading companies would contract ACC loans, then legalize the loan on the parallel market for trading ACC documentation. Since the financing cost was less than the CDI, a bank could close an ACC to finance its margin deposit on the BM&F (interest rate derivatives) or the overnight market, and capture good returns with these standard operations. However, the money that theoretically was destined for financing foreign trade was actually invested in short term fixed income investments. This is an important example of how difficult it is to apply, *de facto*, capital controls.

This means of avoidance only decreased with the liberalization of fixed income investments and of the loan terms for foreign borrowing. Still today, though, financial market players consider ACCs a way to negotiate better interest rates, since the cost is less than the economy's base interest rate. Therefore, there are clear indications that this avoidance strategy would be widely adopted if new restrictions on short term capital were imposed, such as applying an IOF tax on investments provided for in Resolution 2689. Since Brazilian exports increased remarkably in the last years, this would pose an even larger hurdle to the effectiveness of capital controls nowadays.

The capital inflow cost, the τ^*, was the amount required to build a financial and legal structure for implementing this method of avoidance. The cost is minimal for a large, functioning bank, which additionally was compensated by using funds borrowed at less than CDI rates and invested on the overnight market. Thus, depending on the financial volume, τ^* could be negative.

2) Using sophisticated financial engineering (derivatives) to avoid controls

CASE 4: *Development of the international derivatives market: avoiding convertibility risks.*

An increasingly common method used by international financial markets to avoid imperfect capital mobility in emerging countries (capital controls, risk of additional controls, and convertibility risks) involves foreign derivatives over-the-counter operations, most notably in New York. Foreign investors trade local assets, but without exposing themselves to the risks and costs of actually moving resources into the country.

A classic example is the trading of Real against the U.S. Dollar futures in New York, the currency Non-Deliverable Forwards (NDF). By trading this asset in New York rather than on the BM&F in São Paulo, the foreign investor avoided all capital controls and convertibility risks.

Garber [1998] analyzes the development of the international derivatives market and its impacts on capital flows and reports diverse ways that financial intermediaries circumvented regulations on credit risk using derivatives overseas. He also points out the possible role of these off-shore operations in avoiding capital controls.

In recent years, the international derivatives market has substantially developed. One of the main engines of this transnational market is capital controls and currency convertibility risk in emerging market countries. They offer assets with greater volatility, which therefore have greater potential return, but the associated border risks hamper investing in the countries. Since the market wants to trade with them, it has developed international markets designed to avoid restrictions on capital mobility. The idea is to break down the risks involved, so that one can pick and choose which risks one wants, with the corresponding returns

CASE 5: *Investing through Box operations: Strategies with options for earning fixed income returns*

Initially, the Annex IV restriction only applied to fixed income investments. Other types of investments, such as in securities and derivatives, could still use this channel. The market was able to use these types of investments to profit from Brazil's short term interest rates. Cases 2 and 3 were methods of circumventing the control via the stock market. Another commonly used method was to use the derivatives market adopting options strategies that guaranteed fixed return, as we are about to see.

An operation was conducted that was known as a Box, consisting of four options, two calls and two puts, with the price on the established strike date fixed. By a non arbitrage argument, it is shown that Box return must be equal to the benchmark interest rate, in Brazil's case, the CDI.[16] A Box is, therefore, a financial strategy involving options that is akin to a loan.

Since derivatives investments were not restricted, the market began conducting Box operations on the BM&F and the BOVESPA to capture the return of Brazil's high base interest rates. This lasted until the Central Bank detected this market movement and subjected Box operations to the same regulations that applied to fixed income investments.

The Box strategy actually went further than avoiding foreign capital controls: it also aimed at saving on taxes levied on domestic fixed income investments. Instead of using traditional means, like investing in government bonds, many agents began conducting Box operations on the BM&F and BOVESPA to earn fixed returns and bypass Brazil's internal revenue service's (Secretaria da Receita Federal) regulations. This form of tax avoidance ended when the Brazilian IRS (SRF) detected the loophole in the legislation and imposed the IOF tax on Box transactions as well. However, many agents were still able to disguise their Box operations.

The cost of avoiding capital controls using the Box strategy, the τ^*, is only the cost of conducting the option transactions on an exchange. The operation itself has no more cost than traditional fixed income investments, because the difference between earnings from the buying and selling of the puts and calls is the amount invested. The cost difference may be only the brokerage fee charged by the financial agents, which is minimal in light of the volume invested. We can consider, then, that τ^* in this case is equal to zero. Therefore, this legislation loophole rendered the capital control completely ineffective.

CASE 6: *Increased Eurobond Issues with embedded options for bypassing the minimum loan term.*

[16] CDI (Interbank Certificate of Deposit) is the base overnight interest rate for transactions between financial institutions.

In August of 1995, the government set a 5% IOF tax on foreign loans in order to avoid excessive capital inflows. In September of the same year, the government changed the legislation in an effort to encourage long term loans, establishing a sliding IOF according to the loan term. For up to two years, the tax was 5%; up to three years, 4%; four years, 2%; five years, 1%; and six years or more, 0%.

The market soon perceived in this legislation a chance for circumventing the restriction: it began raising resources through issues of long term bonds (over six years), but with embedded put option clauses. This meant the foreign creditor could shorten the loan term by exercising the option. In practice, therefore, the loan was short term.

The government then began to levy a retroactive IOF if the option was exercised, and the borrower had to reverse the capital brought into the country within six years. Those interviewed in our field research stated that it was still advantageous to issue a six-year bond with a put option exercisable within one year, even with the retroactive IOF, because this did not eliminate the transaction's gains.

This case illustrates the difficulty of implementing, in practice, controls on capital inflows. It is an example of a contract subject to capital control taxes that encourages the short term investor to disguise his investments as long term while planning to recover the investment before it matures.

Since the intent of capital controls was to deter excess volatility of capital flows, the renaming of actual short term flows as long term would seriously jeopardize it. After all, if the status quo that prevailed when the investment was first made continued to hold, the short term capital would, *ex post*, became a long term investment. This appears to have been the case of Chile (Edwards, Valdés and De Gregorio [2000]). However, if conditions changed, and the carry-trade strategy no longer seemed to be a good deal, funds would be sent back home. The IOF tax would not be sufficient to keep the funds in the country if devaluation or default became very likely. For example, a 5% IOF tax would be sufficient to counterbalance a devaluation of only 10% within a year with a 50% probability. After the Asian crisis, the odds for devaluation were certainly much higher than those, which explained why it was worth to issue a six-year bond and exercise the option, paying the IOF tax retroactively, if the scenario changed. Carvalho [2005] develops a dynamic model that shows that the tax rates necessary to deter capital outflows if a confidence or currency crisis became likely would be too high to be implemented.

II.2 - CONCLUSION OF CASES OF CAPITAL CONTROLS CIRCUMVENTION

In this section, we have presented diverse strategies for circumventing controls on capital inflows in Brazil in the 1990s. Most strategies were designed to avoid the IOF tax on fixed income investments that was imposed with the prohibition of investments in government bonds using the Annex IV channel, although we also reviewed cases with strategies for bypassing the IOF on foreign exchange transactions and the minimum terms for foreign loans.

Controls on capital inflows in Brazil varied based on two factors: the amount of capital inflows and the means the market found to bypass restrictions.

The first point was addressed by Goldfajn and Cardoso [1997], who pointed out the endogeneity of capital controls in Brazil. In periods of heavy capital inflows, restrictions were placed on the capital inflows; and in periods of scarce foreign financing, the controls were lifted so as to attract foreign capital.

The second point was addressed in Garcia and Barcinski [1998] and in Garcia and Valpassos [2000], who pointed out the consecutive changes in legislation aimed at closing the loopholes the market found for circumventing restrictions. In fact, analyzing the composition of the total portfolio of Annex IV investments, one readily perceives the game of "cat and mouse" underway between the Central Bank / CMN and the financial market.

Between January 1993 and August 1993, the "Others" accounted for around 15% to 25% of total investment. This item contained investments in government bonds that were destined for fixed income gains. Investments in government bonds directed toward privatization were discriminated in the item "Privatization Funds." The other portfolio components were investments in securities, derivatives and debentures. Since 2000 and the publication of Resolution 2689, the fixed income investments item has been distinguished from the "Others" item.

With the August 1993 prohibition of Annex IV fixed income investments, the 25% of "Others" in the portfolio has fallen to approximately just 1%, since investments in government bonds with this objective could no longer be declared under Annex IV. The investments then had to be made via special fixed income funds for foreign capital, which incurred an IOF tax of 5% to 9%.

However, in the month following this prohibition, September of 1993, the percentage of debenture investments jumped from 4% to 19%, reaching 34% in November, indicating the market had begun circumventing by investing in debentures that earned fixed income, such as those of the Siderbrás Company. At the end of November of 1993, the government placed a restriction on some debenture investments, but only in February of 1996 prohibited investing in those of Siderbrás.

After debenture investments were restricted in November of 1993, the market began bypassing the IOF tax on fixed income investments using the loophole for using privatization funds and the derivatives market (using Box operations, as explained above). The percentage of privatization funds rose in September of 2003 and peaked at almost 10% of the Annex IV portfolio in June of 1994. The government then prohibited NTN investments as privatization resources, precluding fixed income gains through this loophole. The percentages for derivatives were only made available beginning in March of 1994, and we are unable to trace the development of these flows.

Finally, only equity investing was left unrestricted, and the other items were subject to diverse rules before permitted to invest through Annex IV. The market then began to use circumvention strategies involving the stock market, as seen in Cases 2 and 3 in the previous section. Another method that has been adopted since August of 1993 was disguising short term capital as direct investments, as described in Case 1. These two methods for circumventing the controls were not prohibited by any legal measure. Strategies such as the one in Case 2 may still be used by financial institutions seeking to avoid the income tax on fixed income gains, which is higher than that on capital market gains, or to invest in fixed income for less than 90 days without paying the 5% IOF tax.

The market, then, appears to always find a means of circumventing restrictions placed on foreign capital, rendering capital controls ineffective in the medium term. However, the price to be paid in terms of how the market is viewed when controls are imposed could endure for some time. Some argue that *ex ante* controls on capital inflows do not compromise the country's reputation and are prudent measures for avoiding destabilization caused by excessive capital inflows. However, to quote one of the financial market agents that we interviewed in our field research: "An ex-alcoholic can't touch a bottle of whiskey." Also, the operations of controls on capital inflows are not very well understood, and may create misunderstandings harmful to the country's

reputation. For example, in the aftermath of the Mexican 1994 crisis, Brazil reduced the IOF on capital inflows. The (albeit temporary) reduction of a tax should be considered a liberalization; however, it was taken by two highly trained scholars as just the opposite.[17]

As expressed in Forbes [2003a], economic literature has still not been able to prove conclusively that imposing controls on capital inflows effectively reduces the vulnerability of the countries that employ them. Quoting Forbes [2003a]: "...although capital account liberalization may increase country vulnerability to crises in some cases, the relationship between capital controls and financial crises is not so straightforward." However, the literature extensively defends increased liberalization of the capital account: financing via foreign savings allows for more investment, increased potential GDP, and intertemporal consumption smoothing.

Our main conclusion is that although from a welfare point of view *ex ante* capital controls may be desirable in certain cases, their implementation when sophisticated financial markets are present is very difficult. This ineffectiveness comes from three facts:

1) developed financial markets are very good in performing arbitrage;
2) capital is fungible;
3) usually, a country wants to control only a few forms of capital inflows (e.g., short-term portfolio investments) while providing total freedom to other forms (e.g., long term fixed investment).

With these three characteristics financial markets can lower the cost of effectively investing in the country, as we have documented for Brazil.[18]

[17] "Capital flows to developing countries fell by one-fifth from 1993 to 1994, with the February rise in U.S. interest rates often viewed as the turning point. At the same time, while some countries stayed the course to liberalization, others which had earlier liberalized (for example, Venezuela, **Brazil**, Ecuador, and Nigeria) resorted to re-imposing capital controls or to tightening existing regulations and delaying announced liberalization plans." Drazen and Bartolini [1997]

[18] One market player remarked that things may have changed somewhat in regards to the ability of the financial market to avoid controls. This would be because current legislation carries penal liabilities to the partners of institutions that are found guilty of breaching the legislation. Therefore, financial market players may have become more risk averse in devising financial engineering strategies to avoid capital controls, but that remains to be seen.

IV - CONCLUSION

We have analyzed the effectiveness of controls on capital inflows in restricting and selecting financial inflows. We saw that in Brazil in the 1990s, controls on capital inflows only effectively limited financial inflows for short periods: two to six months. The hypothesis we submitted was that operations aimed at avoiding capital controls during this period rendered ineffective the measures and restrictions. We gave numerous examples of the operations that were reportedly used in this period, and that allowed external investors to invest in Brazil while bypassing government restrictions.

The ability to circumvent controls on capital inflows implies that the cost of short term capital inflows is not necessarily the official tax rate imposed by the capital controls, but rather the lesser of the two between the official tax rate and the cost of avoiding the controls. We reported numerous cases in Brazil during the 1990s that showed that the cost of circumventing capital controls in that period was less than that of complying with regulation. As such, the effectiveness of measures restricting capital inflows was very limited. We conducted an analysis using impulse response functions to measure the effectiveness of inflow controls in restricting financial inflows in Brazil in the 1990s, and we found that the measures were able to reduce capital inflows for up to six months. Financial inflows through the Annex IV channel – which were often seen as the short term villains at the time – were even less affected, and reversed the impact of the restriction in only two to three months.

The impact of capital controls avoidance on their effectiveness has not yet been thoroughly addressed in economic literature. It is common to assume that implementation of the controls is a given, and to disregard the effect of circumvention. However, the imposition of capital controls will be influenced by the following factors: the development of the domestic financial market and alternatives in overseas derivatives markets (which enlarge avoidance alternatives); the ability of authorities to monitor inflows; the penalties for avoidance; and, the most difficult to prevent, regulation loopholes.

In summary, the effectiveness of controls on capital inflows will depend on the market's ability to circumvent restrictions and the government's ability to establish a covered interest parity differential that will balance capital flows. As long as the country's risk-adjusted earnings are attractive for the carry-trade strategy, controls on capital inflows will be at best only temporarily effective in a developed, sophisticated financial market. And policy-makers should take this restriction into account when designing economic policies. Capital controls may very well be desirable, a topic we do not discuss here. But if they are ineffective, there is no point in spending the scarce resources of bank supervision trying to implement them. Instead, improving economic policy should be the main focus.

V - REFERENCES

Arida, P. [2003] – "Aspectos Macroeconômicos da Conversibilidade: o Caso Brasileiro", IEPE Casa das Garças, www.casadasgarcas.com .

Arida, P., Bacha, E. and Resende, A. [2005] – "Credit, Interest, and Jurisdictional Uncertainty: Conjectures on the Case of Brasil", in F. Giavazzi, I. Goldfajn, and S. Herrera, eds., *Inflation Targeting, Debt, and the Brazilian Experience, 1999 to 2003*, The MIT Press.

Baldini Júnior, R. [2001] – "Controles de Capital no Chile", *Nota Técnica do Banco Central do Brasil.*

Bevilaqua, A. , Garcia, M. , de Paula, A. [2001] – "Efeitos da Consolidação do Mercosul nos Mecanismos de Captação de Poupança Externa", in Bauman, R. (Org.). *Mecosul: avanços e desafios da integração. Brasília*, DF, 2001, p. 439-478.

Banco Central do Brasil [1997 a 2004] – *Relatóriso do Banco Central do Brasil*

Cardoso, E., Goldfajn , I. [1997] – "Capital Flows to Brazil: The Endogeneity of Capital Controls", IMF Working Paper # 97/115, September.

Carvalho, Bernardo S. de M. [2005] - "A eficácia dos controles de entrada de capitais no Brasil", Master Thesis PUC-Rio.

Chan, N., Getmansky, M., Haas, S. and Lo, A. [2006] – "Systemic Risk and Hedge Funds", Paper presented at Financial Markets Conference 2006, Federal Reserve Bank of Atlanta , May.

Cordella, T. [1998] - "Can Short-Term Capital Controls Promote Capital Inflows?", IMF Working Paper WP/98/131, October.

Cowan, K, De Gregorio, J. [2005] – "International Borrowing, Capital Controls and the Exchange Rate Lessons from Chile", NBER, WP # 11382, May.

Dixit, A. , Pindyck,R. [1994] – *Investment Under Uncertainty, Princeton University Press.*

Dooley, M. [1995] – "A Survey of Academic Literature on Controls over International Capital Transactions", NBER, WP # 5352.

Dornbusch, R. [1998] – "Capital Controls: An Idea Whose Time is Past", in *Should the IMF Pursue Capital Account Convertibility?, Essays in International Finance No. 207, Princeton University.*

Duffie, D., Singleton, K. [2003] – *Credit Risk: Pricing, Measurement and Management*, *Princeton University Press.*

Drazen, A., Bartolini, L. [1997] – "When Liberal Policies Reflect External Shocks, What Do We Learn?", *Journal of International Economics*, Vol. 42, nº 3-4, May.

Edwards, S. [1999] – "How Effective are Capital Controls?", NBER WP #7413.

Edwards,S. , Valdés, R. e De Gregorio, J. [2000] – "Controls on Capital Inflows: Do They Work?" , NBER, WP #7645.

Eichengreen, B. , Tobin, J. , Wyplosz, C. [1995] – "Two Cases for Sand in the Wheels of International Finance", *The Economic Journal, 105 (January),* 162-172.

Eichengreen, B. [1999] – "Toward a New International Financial Architecture: A Practical Post-Asia Agenda", *Institute for International Economics.*

Eichengreen, B., Leblang, D. [2002] – "Capital Account Liberalization and Growth: Was Mr. Mahathir Right?", NBER Working Paper # 9427.

Fischer, S. [2002] – "Financial Crises and Reform of the International Financial System", NBER, WP # 9297.

Forbes, K. [2003a] – "One Cost of the Chilean Capital Controls: Increased Financial Constraints for Smaller Trade Firms", NBER WP # 9777.

Forbes, K. [2003b] – "Capital Controls: Mud in the Wheels of Market Discipline",

paper presented at a conference, http://web.mit.edu/kjforbes/www.
Franco, G. [2000] – "The Real Plan and the Exchange Rate", *Essays in International Finance, No. 217, Princeton University.*
Franco, G. , Pinho Neto, D. [2004] – "A desregulação da conta de capitais: limitações macroeconômicas e regulatórias", PUC-Rio, WP #479.
Frankel, J. , Rose, A. [1996] – "Currency Crashes in Emerging Markets: An Empirical Treatment", *Journal of International Economics, November 1996,* 351-366.
Garber, P. [1998] – "Derivatives in International Capital Flow", NBER Working Paper # 6623.
Garcia, M. , Barcinski, A. [1998] – "Capital Flows to Brazil in the Nineties: Macroeconomic Aspects and the Effectiveness of Capital Controls", *The Quaterly Review of Economics and Finance, Vol.38, No.3, Fall 1998, 319-357.*
Garcia, M. , Valpassos, M. [2000] – "Capital Flows, Capital Controls and Currency Crisis: The Case of Brazil in the Nineties", in Larraín, F. (Editor), *Capital Flows, Capital Controls and Currency Crises. Latin America in the 1990's, University of Michigan.*
Garcia, M. e Olivares, G. [2001] – "O Prêmio de Risco da Taxa de Câmbio no Brasil durante o Plano Real", *Revista Brasileira de Economia,* January.
Garcia, M. and Didier, T. [2003], "Very High Interest Rates and the Cousin Risks: Brazil During the Real Plan" in José González e Anne O. Krueger, eds., *Macroeconomic Reforms: The Second Generation*, The University of Chicago Press
Glick, R. and Hutchinson, M. [2004] – "Capital Controls and Exchange Rate Instability in Developing Economies", *Journal of International Money and Finance.*
Goldfajn, I. e Minella [2005] – "Capital flows and controls in Brazil: what have we learned?", NBER WP #11640.
Ito, T. , Portes, R. [1998] – "Dealing with Asian Financial Crises", *European Economic Perspectives, CERP.*
Keynes, J. M. [1936] – "*The General Theory of Employment, Interest and Money*".
Obstfeld, M. [1994] – "The Logic of Currency Crises", NBER WP # 4640.
Nadal-de-Simone, F. e Sorsa, P. [1999] – "A Review of Capital Account Restrictions in Chile in the 1990's" IMF Working Paper # WP/99/52.
Neely, C. [1999] – "An Introduction to Capital Controls", *Review – Federal Reserve Bank of St. Louis", November/December 1999.*
Rajan, R. [2005] – "Has Financial Development Made the World Riskier?", NBER WP #11728.
Reinhart, C. , Todd Smith, R. [2001] – "Temporary Controls on Capital Inflows", NBER WP #8422.
Reinhart, C., Edison, H. [1999] – "Stopping Hot Money" , *NBER Conference*.
Rogoff, K. [1999] – "International Institutions for Reducing Global Financial Instability", *Journal of Economic Perspectives – Vol. 13, No. 4, Fall 1999,* 21-42.
Stiglitz, J. [1999] – "Bleak Growth Prospects for the Developing World", *International Herald Tribune, April 10-11, p.6.*
Tobin, J. 1978 - *"*A Proposal for International Monetary Reform*", Eastern Economic Journal, Vol. 4 (July-October), pp. 15359.*
Valdes-Prieto,S. e Soto, M. [2000] - "Selective Capital Controls: Theory and Evidence" em Larraín, F. (Editor), *Capital Flows, Capital Controls and Currency Crises. Latin America in the 1990's, University of Michigan.*