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Ineffective Controls on Capital Inflows under Sophisticated Financial Markets
Brazil in the Nineties

Bernardo S. de M. Carvalho and Márcio G. P. Garcia

2.1 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.[1] 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 (Stiglitz 1999; Ito and Portes 1998; Eichengreen 1999; Fischer 2002). The proposals defend, in general, what we could call ex ante capital controls, that is, restrictions that are defined prior to funds entering the country, thereby respecting the contracts. This type of

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1. Rogoff (1999), Eichengreen (1999), Stiglitz (1999), and Fischer (2002) are excellent references on the diverse proposals for reforming the international financial system.

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 as 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 years from 2004 to 2006 were classic examples: "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,[2] together with low base interest rates in developed countries. Both factors led to substantial capital inflows into EMs. As a result, Colombia (2004), Argentina (2005), and Thailand (2006) adopted capital inflow controls to avoid accelerated appreciation of their currency,[3] 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 that lead to harmful real results. Many articles actually argue 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 (Dixit and Pyndick 1994; Frankel and Rose 1996; Dornbusch 1998). Moreover, today's international financial scenario includes hedge funds, many of which are seeking immediate gains. As of August 2005, it was estimated

2. Obstfeld and Rogoff (2000, 2004), Kim and Roubini (2004), Blanchard, Giavazzi, and Sa (2005) are good references for discussion of the expected weakening of the U.S. Dollar as a result of the country's record current account deficits.

3. Colombia, Argentina, and Thailand have imposed Chilean-style capital inflow control, which obliges investors bringing capital into the country to withhold 30 percent of the total amount for one year at the Central Bank, without remuneration. But Colombian authorities banned the measures just few months afterwards, alleging they were ineffective in containing the capital inflows.

that there was around US$ 1.5 trillion in the hands of these financial institutions (Chan et al. 2006). 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.[4]

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 as investors face greater uncertainty and higher costs on currency hedge operations, thereby affecting potential gross domestic product (GDP). In light of this, a few authors have suggested adopting capital inflow controls or accumulating international reserves as a way of handling heavy inflow of foreign currency and reducing the threat of sudden stops.

Forbes (2003) 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 (2004) 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 sixty-nine countries, they conclude that restricting capital did not bring the desired results. Eichengreen and Leblang (2003), analyzing a panel of forty-seven 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

4. Cowan and De Gregorio (2005, 1) say that the goals of Chilean capital controls were to "stem net inflows, avoid a large appreciation and keep control of monetary policy."

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 for 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. 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 Nadal-de-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 vector autoregression (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 2.2 briefly discusses capital control legislation, section 2.3 presents a VAR analysis aimed at measuring the effectiveness of the capital controls in reducing short-term financial inflows sections 2.4 and 2.5 reports cases of avoidance of capital restrictions that explain how capital controls were rendered almost ineffective, and section 2.6 contains the conclusion.

2.2 Capital Controls in Brazil

Brazil's exchange rate and capital controls legislation is highly complex and confusing, mixing normative rulings from the period of the Vargas administration in the 1930s with modern resolutions. Exchange rate regulation is still considered an impediment to capital flows due to its complex-

ity, and its reform is one of the most important issues for ensuring continued development of the Brazilian financial market.[5]

The following economic papers address Brazil's tangled exchange rate and foreign capital legislation: Franco (1990), Cardoso and Goldfajn (1997), Garcia and Barcinski (1998), Garcia and Valpassos (2000), Arida (2003), Franco and Pinho Neto (2004), and Goldfajn and Minella (2005). The annual bulletins of Brazil's Central Bank also address the issue, discussing exchange rate policy and summarizing the legal proceedings of the institution, the National Monetary Council (CMN), and the Ministry of Finance during the course of the year. In this section, we present an overview of this legislation to offer a context for discussing the effectiveness of controls on capital inflows.

The legal framework for exchange rate transactions and foreign capital establishes the following key points: foreign exchange must be converted into the national currency, the real (BRL), which is the only legal tender in the country; resources secured offshore or those addressed in Law 4131/62[6] must be brought back into the country; export revenues earned abroad must be brought back into the country (surrender requirements); and private exchange rate transactions are prohibited, meaning the Central Bank holds a monopoly on exchange rate transactions. In summary, the legal framework is aimed at keeping all possible foreign exchange in the country.

In March of 2005, the CMN simplified currency legislation in an effort to streamline and reduce the costs of capital flow with Brazil. It did not, however, change the legal framework or any laws, but rather published new CMN resolutions. These measures are part of a process of liberalization and correction of the asymmetries of legislation governing currency transactions with other countries, which the Central Bank undertook some years ago. Among the principal measures, we note merging of the free rate (MCTL) and floating rate (MCTF) exchange markets as Brazil still had a de jure (but not de facto) system with multiple exchange rates; authorization to make direct offshore remittances without use of the CC-5 accounts;[7] a longer period for bringing foreign currency revenues from exports back into the country; and authorization of foreign forward currency agreements (ACC) for exportation of services.

Much of prevailing exchange rate legislation was established over sixty

5. Reforms of exchange rate regulations are also needed to support the increased amount of international trade, but we will not touch on this important issue here.

6. Law 4131 of 1962 regulates foreign capital in the country.

7. CC-5 accounts were maintained by those not residing in Brazil and were created by the Central Bank's bulletin number 5 in 1969. These resources had free access to the MCTF to purchase foreign currency and send it offshore. It also authorized remittance from others through the account. CC-5 accounts were the main vehicle for both residents and nonresidents to access foreign markets.

years ago. Only exchange rate rules for foreign direct investments (FDIs) remained stable as Franco and Pinho Neto (2004) emphasize.

In 1931, Decree 20.451/31 conceded the monopoly of exchange rate transactions to the Banco do Brasil and established what was called the "centralization of foreign exchange transactions." Decree 25.258/33 consolidated the exchange rate policy and defined "illicit exchange rate transactions" as those conducted outside the official monopoly or subsequently by establishments the monopoly holder authorized for such. Today this holder is the Central Bank of Brazil. This Decree 25.258/33 is still in effect and stipulates that "understating the value of export cover or increasing prices of imported goods to obtain undue cover is punishable by law." Until today, this 1933 ruling requires exporters to convert their offshore revenues into domestic currency (surrender requirements) and penalizes overpricing of imports and underpricing of exports. The maximum term for bringing export revenues back to Brazil has changed numerous times. As noted in the preceding, in March of 2005 the term was extended to 210 days after shipping, as compared to the previous 180 days (Resolution 3266/05).

Rules for foreign capital in Brazil were consolidated under Law 4.131 of 1962, which remains in effect today. As Franco and Pinho Neto (2004) noted, "subsequent laws smoothed some of the more prominent edges of Law 4.131/62," but government authorities still have substantial discretionary power to impose or reverse restrictive measures for exchange rate flows.

In general, current legislation still clearly allows the CMN to set measures for controlling foreign capital flows. One example is the set of restrictive measures that may be enacted in the event of "urgent needs of foreign exchange," as defined in Article 28 of Law 4.131/62:[8] simple administrative

8. *Law 4.131/62 Art. 28*

"**Art. 28**—Any time there is extreme impurity in the balance of payments, or serious grounds for assessing there will be, the *National Monetary Council may impose restrictions, for a limited period of time, on the entry and exit of revenues in foreign currency,* and to this end, grant the Banco do Brasil a complete or partial monopoly on exchange rate transactions.

§ 1—In the case provided for in this article, *remittance of capital return are prohibited, and remittance of their profits limited to a maximum of 10% (ten percent) per year,* related to capital and reinvestments registered in the currency of the country of origin, in the terms set forth in Articles 3 and 4 of this Law.

§ 2—Revenues exceeding the percentage fixed by the National Monetary Council, as set forth in the preceding paragraph, must be listed with the Central Bank of Brazil, which, if the restriction provided for in this article is extended for over one fiscal year, may authorize the remittance, in the subsequent fiscal year, of the remaining amounts, if the profits made do not reach that limit.

§ 3—In the same cases of this article, the National Monetary Council may *limit remittance of funds for paying "royalties" and technical, administrative or similar support* up to the annual cumulative maximum of 5% (five percent) of the company's gross earnings.

§ 4—Also in the cases of this article, the National Monetary Council *is authorized to issue rulings limiting currency spending on "International Travel."*

§ 5—There are no restrictions, however, on remittances of interest of interest or amortization quotas contained in duly registered loan agreements."

decisions can establish controls on capital outflows and foreign exchange centralization. This attests to the uncertainties surrounding Brazil's legislation, signaled by Arida, Bacha, and Lara-Rezende (2005) as one of the major determinants of the country's very high sovereign risk.

Until the 1980s, exchange rate legislation focused primarily on foreign currency outflows in an environment of restricted capital account's transactions. It only authorized the sending of foreign capital whose ingress into the country was documented. The remittance of profits and dividends were taxed. With the 1980 debt crisis, international capital stopped flowing toward Latin America so that only the egress and not the ingress of foreign currency had to be contained.

Beginning in 1987, and especially after the 1994 institution of the Real Plan, the Brazilian government adopted a directive for liberalizing the current and capital accounts. In the early 1990s, inflows increased, and as the economy stabilized in the second half of the decade and Brazil returned to the foreign debt market, the pace of capital inflows accelerated considerably. Figure 2.1 demonstrates the evolution of the inflow of foreign portfolio investments.

Financial flows to Brazil gained momentum following renegotiation of the country's external debt in 1994, under the Brady Plan model applied in several Latin American countries, and with the success of the stabilization provided by the Real Plan.

The increase of capital inflows that began at the end of 1991 generated problems for managing the country's macro economy. Abundant inflows of foreign capital triggered appreciation and excessive exchange rate volatility or accumulation of international reserves and a consequent increase of the public debt due to sterilized intervention. Additionally, most of the capital that entered at that time was for short-term investments given the very high real interest rates prevailing in Brazil. This type of investment,

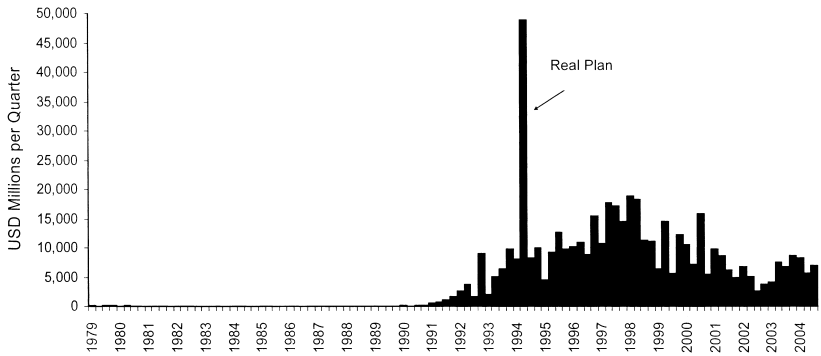

Fig. 2.1 Foreign portfolio capital inflows
Source: Banco Central do Brasil (all years).

termed "carry-trade," is usually reversed very quickly at the first sign of depreciation of the receiving country's currency. As such, it enhances the probability of a sudden stop and also sparks greater economic volatility.

In fact, the 1990s oscillated between periods of excessive inflow, such as between 1992 and 1995 and then between 1996 and the middle of 1997, and periods of shortage of foreign capital in times of international crises (crisis in Mexico that hit Brazil in 1995, Asian crisis in 1997, and crises in Russia and Brazil in 1998 and 1999, respectively). In periods of excessive inflows, controls were placed on capital inflows in an effort to limit short-term capital and alleviate the effects of too much foreign currency, causing appreciation or, to prevent it, forcing fiscally expensive sterilized interventions. In periods of shortage, controls were lifted in an attempt to attract capital to finance the Brazilian balance of payments as current account deficit grew from 3 percent of GDP in 1995 to 5 percent in 1999. Capital controls were, then, endogenous to external financing conditions and to monetary policy, as shown by Cardoso and Goldfajn (1997).

In 1987, incentives for foreign portfolio investments in the country were provided by the Central Bank of Brazil's Resolution 1289, which exempts foreign investors from income tax on capital gains in Brazil. The Resolution's Annex IV was the preferred channel by investors to make tax exempt investments in Brazil. However, in August 1993, to contain excess inflows of short-term capital aimed at profiting from the very high interest rates prevailing in Brazil, the CMN prohibited using the Annex IV mechanism to invest in government bonds. The purpose was actually to prohibit fixed income investing in general, authorizing only investing in the capital market. But numerous loopholes in the legislation opened the door for fixed income investments through this mechanism, as the following section shows. Fixed income investments then officially had to enter the country via specific funds that were subject to a tax on financial transactions (IOF) tax of 5 percent to 9 percent.[9] This was one of the main measures for controlling capital inflows in the 1990s, but the market managed to bypass it in numerous ways and reap gains from the high short-term interest rates without paying the IOF.

In 1999, Resolution 1289 was revoked by Resolution 2689, and the IOF

9. In November of 1993, the Foreign Capital Fixed Income Fund was established, charging a 5 percent IOF tax (IOF stands for Tax on Financial Transactions, which is a tax that can be easily and quickly imposed or changed by the Ministry of Finance, not having to wait to the following fiscal year to take effort). In October 1994, the IOF was raised to 9 percent. In March of 1995, due to the "Tequila Effect" (Mexican Crisis), the IOF was lowered to 5 percent, and then raised again in August of that year to 7 percent. In April of 1997, it was lowered from 7 percent to 2 percent, and in March of 1999 to 0.5 percent. In August of 1999 this IOF was eliminated, but the capital from the investment write-off had to be invested on the BOVESPA for at least one day or be held without remuneration for fifteen days. For investments of less than ninety days, a 5 percent IOF tax is levied even today (May 2006).

tax was removed for fixed income investments.[10] Currently, most capital flows are registered in the Central Bank's electronic registration system (RDE),[11] including most of those governed by Resolution 2689. The process allows for closer monitoring and greater transparency of financial flows. Only very short term (less than ninety days) fixed income investments are charged the 5 percent IOF tax. There are also rules in Annex V of Resolution 2689 for Depositary Receipts (DR), when shares of Brazilian companies are issued abroad with counterpart shares in Brazil. This movement is not registered in the RDE. Finally, until March of 2005, the account for nonresidents (CC-5) was still in place. It was not declared on the RDE and served as a vehicle for foreign capital to enter the country.

Controls on capital inflows, rather, ex ante controls on capital inflows, in the 1990s focused largely on limiting short-term inflows, restricting fixed income investments and short-term loans. Export revenues were also strictly regulated. As we have seen, since 1933 exporters have been subject to surrender requirements within a specified period, 360 days as of March 2007. Forward foreign currency agreements (ACC), a mechanism to provide credit for exports, are also restricted even today to a maximum 360 days prior to shipping.

Based on the methodology of Cardoso and Goldfajn (1997), we updated the indexes of controls on capital inflows and outflows through 2004. The original article had constructed the indexes through 1996, and we updated them. The methodology is simple: add +1 to the base index if the control restricts the analyzed type of flow (inflow or outflow) and –1 if it liberalizes it. The methodology applies to the indexes of the controls on both capital inflows and capital outflows.[12]

Figure 2.3 clearly shows that since the early 1990s a trend toward liberalizing outflows has prevailed, yet figure 2.2 shows that only beginning in 1997 was there an unequivocal trend toward liberalizing capital inflows. This is because between 1997 and 1999 there were several crises: in Asia, in Russia, and a currency crisis in Brazil. During those periods, because capital was fleeing the country, there was no need for adopting controls that restricted capital inflows. In 1999, Brazil floated its currency and defined a clear directive for liberalizing the capital account in order to reap the benefits of external savings. One example was in August of 1999, when the IOF

10. Traders in Brazil still refer to the investment mechanism of the prevailing Resolution 2689 as "Annex IV."

11. The RDE is divided into IED, ROF, and Portfolio registration. RDE-IED: foreign director investment; RDE-ROF: financial transaction registration (financing and importation, commercial leasing, rental and freight, services and technology, currency loans, advance payment of exports, and asset investments), RDE-Portfolio: portfolio investing.

12. However simple, this methodology has the drawback of considering that all measures had similar effects on capital flows, which is clearly a problem. Nevertheless, we believe that the indexes rightly capture the major trends.

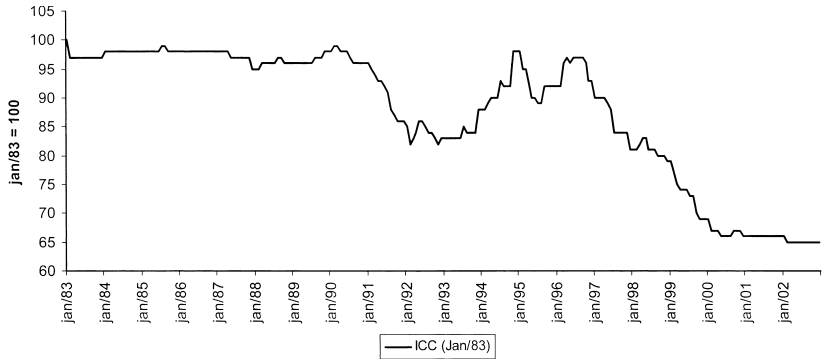

Fig. 2.2 Capital inflows controls index (Jan. 1983 = 100)

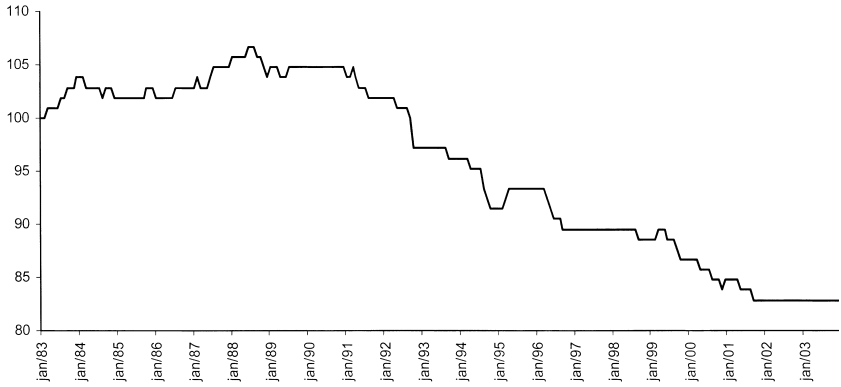

Fig. 2.3 Capital outflows controls index (Jan. 1983 = 100)

tax was lifted for fixed income foreign investments of over ninety days that were previously under Annex IV.

In the next section, we provide econometric evidence of the very limited effectiveness of the controls on capital inflows imposed by Brazilian authorities in the 1990s.

2.3 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 Gregorio (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.[13]

Edwards, Valdés, and De Gregorio (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 sufficient.[14] Edwards, Valdés, and De Gregorio (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. Figures 2.4 and 2.5 show the different series we used on a monthly basis and accumulated in twelve months. 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

13. See figure 2.2 and 2.3 with the capital inflow controls index in section 2.2.

14. 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.

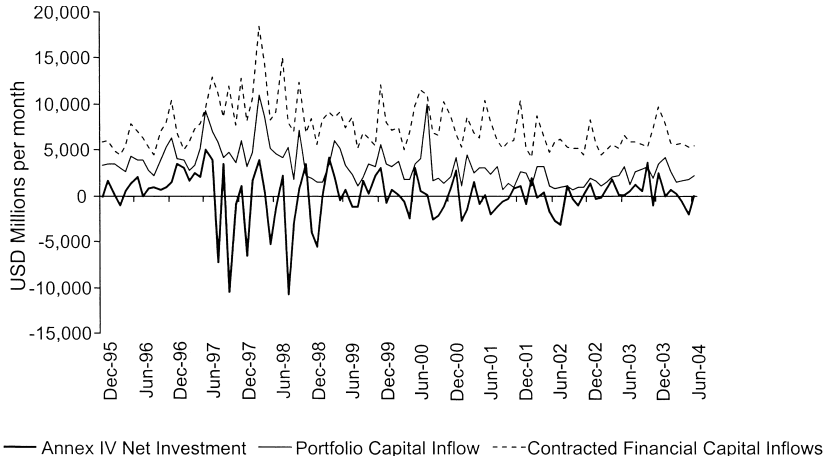

Fig. 2.4 Financial capital flows measures
Source: Banco Central do Brasil (all years) and Securities and Exchange Commission (CVM).

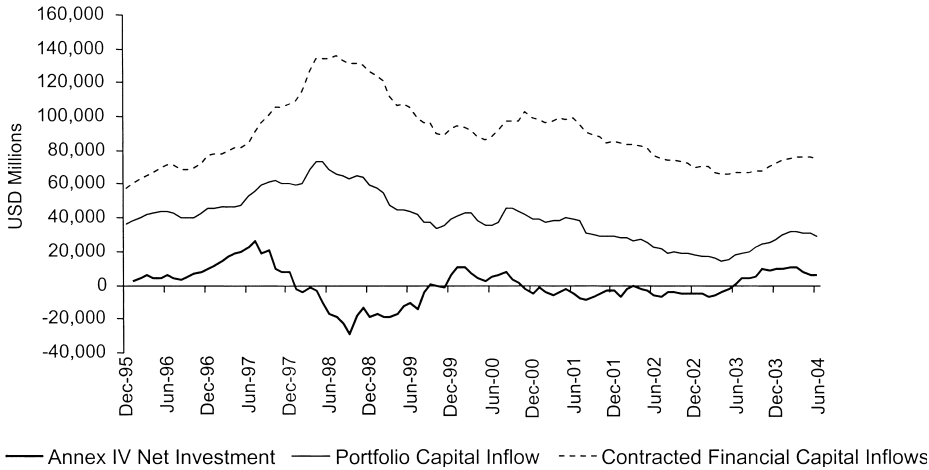

Fig. 2.5 Financial capital flows measures, accumulated in twelve months
Source: Banco Central do Brasil (all years) and Securities and Exchange Commission (CVM).

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 presented in section 2.3 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 differences to obtain a stationary series. In figure 2.6, we present the capital inflow controls variation 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_DESV102)), 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)).

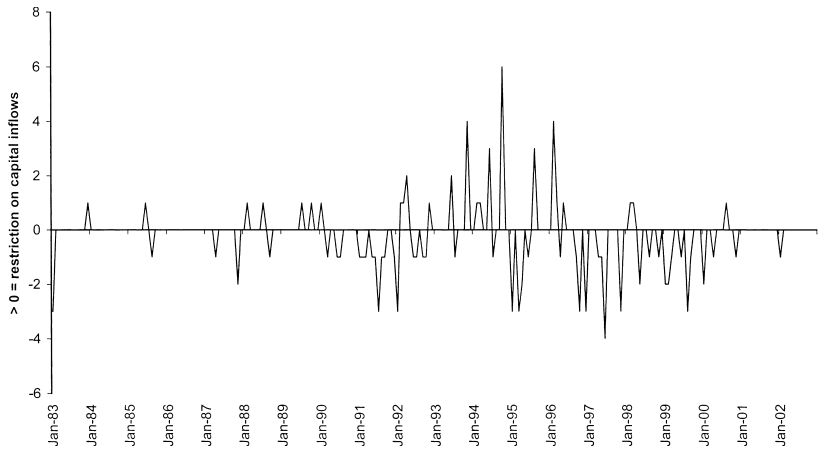

Fig. 2.6 Restrictions on capital inflows (first difference of capital inflows controls index)

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 exogenous variable because we considered that economic policy had lifted outflow controls independent of capital flows, as indicated by the downward trend of the ICC-O in figure 2.3 of section 2.2; and, last, some circumstantial dummies from the period of the Brazilian currency crisis. Dummies for other periods of financial crisis were not significant as the effects were probably captured by the endogenous variables, especially the real exchange rate and the CIPD. 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.

Table 2.1 summarizes the output of the first VAR estimation, and figure 2.7 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.[15]

Figure 2.8 shows the impulse response function of the capital inflow controls to an increase in capital inflows: we see that control tends to be tightened when capital inflows increase, which is consistent with the findings on endogeneity of controls indicated by Cardoso and Goldfajn (1997).

Table 2.2 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 flows from abroad and the CC-5 accounts. This series included all flows from protective capital, direct investments, and foreign loans. Because the capital controls exempted direct investment flows, we used these data as an exogenous variable. The other exogenous variables are the same as those in the first VAR.

Figure 2.9 shows the impulse response function of the contracted exchange rate inflows for financial transactions to the new restrictions on

15. 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 Cardoso and Goldfajn (1997) and Edwards, Valdés, and De Gregorio (2000). For future research, refining the capital controls index (CCI) may imply narrower confidence intervals.

Table 2.1 **VAR 01—Portfolio investment capital flows (vector autoregression estimates)**

	LOG(REER_DESVIO2)	LOG(1+CIPD)	LOG(IEC_CRED/PIB_USD)	D(LOG(CC))
LOG(REER_DESVIO2(–1))	0.848994	–0.063483	–0.065995	–0.04362
	–0.06995	–0.02975	–0.81052	–0.02845
	[12.1367]	[–2.13415]	[–0.08142]	[–1.53336]
LOG(1+CIPD(–1))	0.002434	0.993933	–0.057779	0.148311
	–0.15516	–0.06598	–1.7978	–0.0631
	[0.01569]	[15.0641]	[–0.03214]	[2.35048]
LOG(IEC_CRED(–1)/PIB_USD(–1))	–0.029375	–0.010079	0.465205	0.004209
	–0.00986	–0.00419	–0.11421	–0.00401
	[–2.98003]	[–2.40444]	[4.07310]	[1.04999]
D(LOG(ICC(–1)))	–0.055859	–0.235101	–5.725003	–0.001572
	–0.33932	–0.14429	–3.93165	–0.00401
	[–0.16462]	[–1.62932]	[–1.45613]	[–0.01739]
C	0.22708	–0.025619	–0.424531	–0.007136
	–0.07133	–0.03033	–0.82644	–0.02901
	[0.31836]	[–0.84466]	[–0.51368]	[–0.24601]
LOG(1+US1Y)	–2.027193	–0.088474	–19.21475	0.07025
	–1.25812	–0.535	–14.5774	–0.51163
	[–1.61129]	[–0.16537]	[–1.31812]	[0.13731]
D(LOG(ICC_S(–1)))	–1.346541	–0.294861	14.681138	–0.356286
	–0.89256	–0.37955	–10.3418	–0.36297
	[–1.50863]	[–0.77687]	[1.41961]	[–0.98158]
DUM98_06	–0.022205	–0.007393	–0.183745	0.000461
	–0.03602	–0.01532	–0.41732	–0.01465
	[–0.61651]	[–0.48273]	[–0.44030]	[0.03146]
DUM98_09	–0.017627	0.014355	–1.193587	–0.00198
	–0.03742	–0.01591	–0.43353	–0.01522
	[–0.47110]	[0.90224]	[–2.75317]	[–0.13015]

(cotinued)

Table 2.1 (continued)

	LOG(REER_DESVIO2)	LOG(1+CIPD)	LOG(IEC_CRED/PIB_USD)	D(LOG(CC))
DUM98_10	–0.072689	–0.031912	0.784007	–0.00372
	–0.04323	–0.01838	–0.50086	–0.01758
	[–1.68154]	[–1.73603]	[1.56532]	[–0.21161]
DUM98_11	–0.33384	–0.007341	–1.097422	–0.015072
	–0.03745	–0.01593	–0.43398	–0.01523
	[–0.89131]	[–0.46092]	[–2.52874]	[–0.98951]
DUM98_12	–0.058555	–0.016687	–0.69168	0.001728
	–0.03929	–0.01671	–0.45521	–0.01598
	[–1.49044]	[–0.99883]	[–1.51949]	[0.10816]
DUM99_01	0.141244	0.010355	–0.428468	–0.021543
	–0.03941	–0.01676	–0.45668	–0.01603
	[3.58358]	[0.61781]	[–0.93822]	[–1.34407]
R^2	0.863004	0.866213	0.404071	0.161514
Adj. R^2	0.834661	0.838533	0.280775	–0.011966
Sum sq. resids	0.06632	0.011993	8.903604	0.010968
SE equation	0.033815	0.014379	0.391804	0.013751
F-statistic	30.44762	31.29377	3.277248	0.931025
Log-likelihood	146.9012	207.6138	–27.03869	210.7849
AIC	–3.771866	–5.482079	1.12785	–5.571405
SC	–3.357572	–5.067785	1.542144	–5.157111
Mean dependent	–0.00975	0.068627	–2.797709	–0.004711
SD dependent	0.083161	0.035785	0.461994	0.01367
Determinant Residual Covariance		2.68E-12		
Log-likelihood (df adjusted)		542.9422		
AIC		–13.82936		
SC		–12.17218		

Notes: Sample period (adjusted): 1995:03 to 2001:01. No. of observations = 71, after adjusting endpoints. Standard errors are in parentheses and *t*-statistics are in brackets. SE = standard error. SD = standard deviation. AIC = Akaike Information Criteria. SC = Schwarz Criteria.

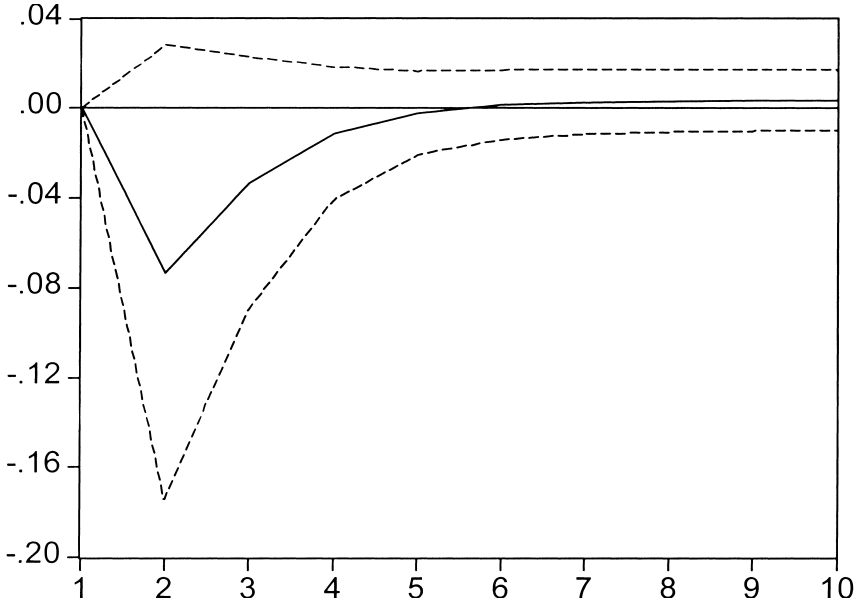

Fig. 2.7 Response of LOG(IEC–CRED/PIB_USD) to Cholesky, one S.D. D(LOG(ICC)) innovation

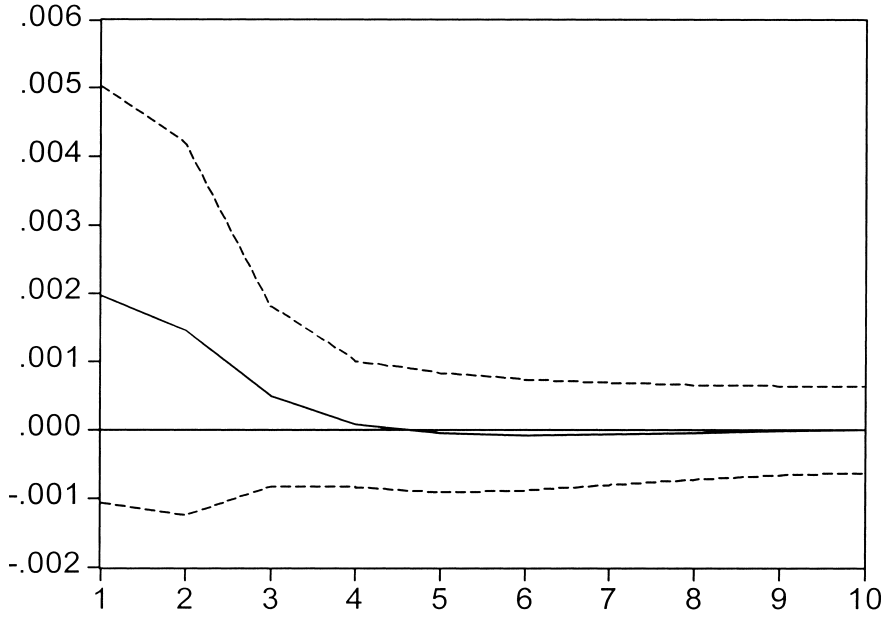

Fig. 2.8 Response of D(LOG(ICC)) to Cholesky, one S.D. LOG(IEC_CRED/ PIB_USD) innovation

Table 2.2 **VAR 02—Contracted inflow of foreign exchange (vector autoregression estimates)**

	LOG(REER_DESVIO2)	LOG(1+CIPD)	LOG(MOVCAMBIO_FIN_COMPRAS/PIB_USD)	D(LOG(CC))
LOG(REER_DESVIO2(–1))	1.596	0.2162	–1.297422	–0.100528
	–0.12063	–0.05501	–0.46469	–0.06268
	[13.2301]	[3.93000]	[–2.79201]	[–1.60372]
LOG(REER_DESVIO2(–2))	–0.76867	–0.268611	0.956407	0.0504
	–0.12135	–0.05534	–0.46743	–0.06305
	[–6.33453]	[–4.85404]	[2.04608]	[0.79931]
LOG(1+CIPD(–1))	–1.056099	0.679976	1.186595	0.169177
	–0.31673	–0.14444	–1.22005	–0.16458
	[–3.33442]	[4.70776]	[0.97258]	[1.02794]
LOG(1+CIPD(–2))	0.97209	0.198835	–0.827889	0.068802
	–0.36258	–0.16535	–1.3967	–0.18841
	[2.68102]	[1.20252]	[–0.59275]	[0.36518]
LOG(MOVCAMBIO_FIN_COMPRAS(–1)/PIB_USD(–1))	0.018765	0.002513	1.003293	0.00675
	–0.02638	–0.01203	–0.10163	–0.01371
	[0.71122]	[0.20883]	[9.87167]	[0.49163]
LOG(MOVCAMBIO_FIN_COMPRAS(–2)/PIB_USD(–2))	–0.035169	–0.009047	–0.359534	0.003547
	–0.02523	–0.01151	–0.09718	–0.01311
	[–1.39402]	[–0.78636]	[–3.69954]	[0.27054]
D(LOG(ICC(–1)))	0.059725	–0.1086	–2.215967	–0.070253
	–0.28181	–0.12851	–1.08555	–0.14643
	[0.21193]	[–0.84505]	[–2.04133]	[–0.47976]
D(LOG(ICC(–2)))	0.008505	0.124223	0.495162	–0.096286
	–0.27883	–0.12716	–1.07409	–0.14489
	[0.03050]	[0.97693]	[0.46101]	[–0.66456]
C	0.014042	–0.025425	0.111609	–0.045985
	–0.07082	–0.03229	–0.27279	–0.0368
	[0.19829]	[–0.78729]	[0.40914]	[–1.24965]
LOG(1+US1Y)	–0.868745	0.149802	–7.091789	0.770644
	–1.38204	–0.63025	–5.32373	–0.71814
	[–0.62860]	[0.23768]	[–1.33211]	[1.07311]
LOG(FDI/PIB_USD)	0.000618	–0.00281	0.12433	–0.001046
	–0.00637	–0.00291	–0.02456	–0.00331
	[0.09698]	[–0.96666]	[5.06297]	[–0.31565]

D(LOG(ICC_S))	–1.630759	–0.129044	3.996622	–0.129792
	–0.76518	–0.34894	–2.94752	–0.3976
	[–2.13122]	[–0.36981]	[1.35593]	[–0.32644]
DUM98_06	–0.006115	0.000449	–0.248249	–0.002908
	–0.0287	–0.01309	–0.11056	–0.01491
	[–0.21305]	[0.03433]	[–2.24530]	[–0.19501]
DUM98_09	–0.010423	0.021473	–0.164069	0.000891
	–0.03136	–0.0143	–0.12078	–0.01629
	[–0.33243]	[1.50171]	[–1.35836]	[0.05468]
DUM98_10	0.002162	–0.006708	–0.28825	0.003468
	–0.03334	–0.01521	–0.12844	–0.01733
	[0.06485]	[–0.44114]	[–2.24427]	[0.20015]
DUM98_11	–0.053352	–0.011768	–0.125101	–0.008403
	–0.02978	–1.3E-02	–0.11471	–0.01547
	[–1.79157]	[–0.86656]	[–1.09057]	[–0.54303]
DUM98_12	–0.021103	–0.000484	–0.114811	0.003305
	–0.03068	–0.01399	–0.11818	–0.01594
	[–0.68787]	[–0.03461]	[–0.97153]	[0.20729]
DUM99_01	0.172991	0.023576	–0.032087	–0.020606
	–0.02993	–0.01365	–0.1153	–0.01555
	[5.77975]	[1.72729]	[–0.27831]	[–1.32504]
R^2	0.925925	0.917272	0.927996	0.227275
Adj. R^2	0.901708	0.890226	0.904456	–0.025346
Sum sq. resids	0.035599	0.007403	0.52824	0.009612
SE equation	0.026165	0.011932	0.100789	0.013596
F-statistic	38.23482	33.91548	39.42249	0.899667
Log-likelihood	166.1117	221.0752	71.70878	211.9372
AIC	–4.231763	–5.802149	–1.534537	–5.541062
SC	–3.653578	–5.223964	–0.956352	–4.962878
Mean dependent	–0.010592	0.068454	–2.025573	–0.004352
SD dependent	0.083457	0.036013	0.326072	0.013427
Determinant Residual Covariance		1.09E-13		
Log-likelihood (df adjusted)		647.389		
AIC		–16.43969		
SC		–14.12695		

Notes: Sample period (adjusted): 1995:04 to 2001:01. No. of observations = 70, after adjusting endpoints. Standard errors are in parentheses and *t*-statistics are in brackets. SE = standard errors. SD = standard deviation. AIC = Akaike Information Criteria. SC = Schwarz Criteria.

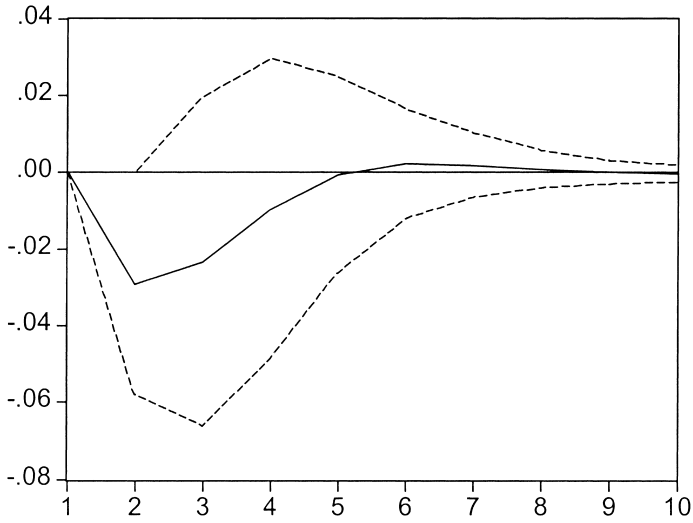

Fig. 2.9 Response of LOG(MOVCAMBIO_FIN_COMPRAS/PIB_USD) to Cholesky, one S.D. D(LOG(ICC)) innovation

capital inflows. Again, the exercise indicates that the effectiveness of inflow controls was temporary and lasted for around two to six months. Figure 2.10 shows the impulse response function of the capital inflow controls to an increase in capital inflows and it is also consistent with the findings on endogeneity of controls indicated by Cardoso and Goldfajn (1997). The third VAR will make even clearer the positive correlation between inflows and inflow controls.

Table 2.3 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 (figure 2.11) 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

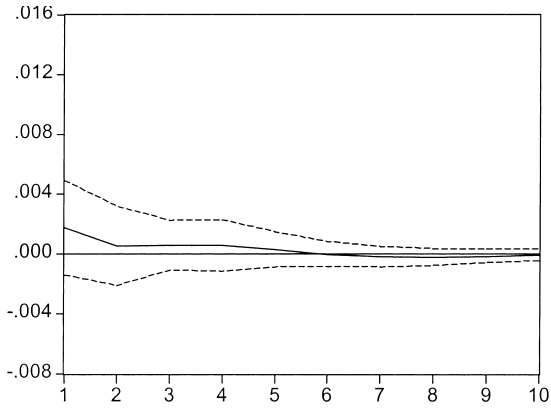

Fig.2.10 Response to Cholesky one S.D. innovations ± 2 S.E., response of D(LOG(ICC)) to LOG(MOVCAMBIO_FIN_COMPRAS/PIB_USD)

channel to invest so as to guarantee tax benefits. The impulse response function of figure 2.12 shows the authorities' reaction to the increase in Annex IV inflows. Greater capital inflows using this means led to tighter restrictions on capital inflows. This result shows the endogeneity of capital controls to capital inflows, consistent with the findings of Goldfajn and Cardoso (1997).

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 focuses 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 as financial agents have been able to dodge them in many different ways. The lesson to be learned is that in open and sophisticated 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

Table 2.3 **VAR 03—Capital flows through Annex IV Channel (vector autoregression estimates)**

	LOG(REER_DESVIO2)	LOG(1+CIPD)	D(LOG(CART_ANEXO4/PIB_USD))	D(LOG(CC))
LOG(REER_DESVIO2(–1))	0.899085	–0.030183	0.423416	–0.040701
	–0.06799	–0.02438	–0.2035	–0.02269
	[13.2230]	[–1.23805]	[2.08071]	[–1.79397]
LOG(1+CIPD(–1))	–0.021034	0.987582	0.064443	0.139635
	–0.15871	–0.05691	–0.47501	–0.05296
	[–0.13252]	[17.3541]	[0.13567]	[2.63670]
D(LOG(CART_ANEXO4(–1)/PIB_USD(–1)))	–0.101546	–0.046076	–0.024486	0.027486
	–0.04225	–0.01515	–0.12646	–0.0141
	[–2.40343]	[–3.04149]	[–0.19364]	[1.94971]
D(LOG(ICC(–1)))	1.79E-05	–0.250229	–1.604453	0.00612
	–0.36086	–0.12939	–1.08001	–0.12041
	[5.0E-05]	[–1.93392]	[–1.48559]	[0.05083]
C	–0.004639	–0.001172	–0.003257	–0.013619
	–0.01232	–0.00442	–0.03686	–0.00411
DUM_BRASIL	0.036762	–0.001772	0.028608	–0.009482
	–0.01481	–0.00531	–0.04434	–0.00494
R^2	0.796892	0.858981	0.153832	0.163088
Adj. R^2	0.781269	0.848133	0.088742	0.09871
F-statistic	51.00551	79.1861	2.363378	2.53329
Determinant Residual Covariance		3.29E-13		
Log-likelihood (df adjusted)		617.3627		
AIC		–16.71444		
SC		–15.94959		

Notes: Sample period (adjusted): 1995:03 to 2001:01. No. of observations = 71, after adjusting endpoints. Standard errors are in parentheses and *t*-statistics are in brackets. AIC = Akaike Information Criteria. SC = Schwarz Criteria.

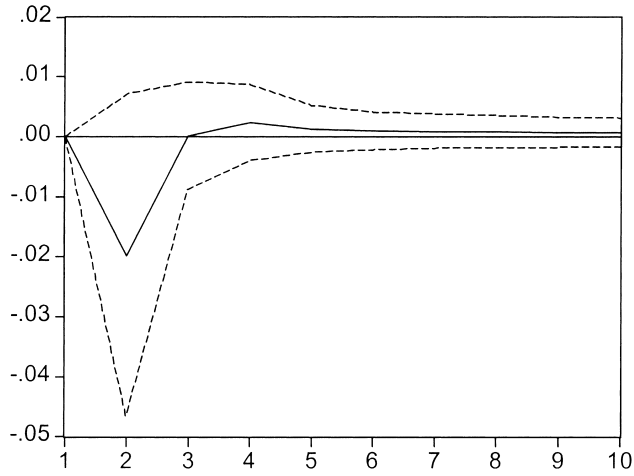

Fig. 2.11 Response to Cholesky one S.D. innovations ± 2 S.E., response of D(LOG(CART_ANEX04/PIB_USD) to D(LOG(ICC))

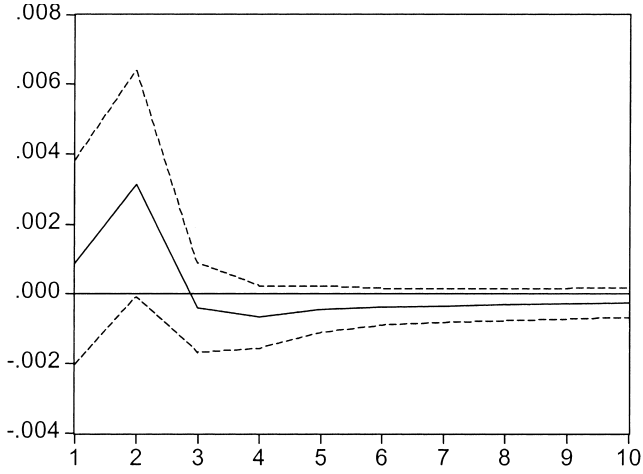

Fig. 2.12 Response of D(LOG(ICC)) to D(LOG(CART_ANEX04/PIB_USD)

items to avoid restrictions imposed on fixed income investments and the minimum terms for offshore funding.

2.4 Cases of Circumvention of Capital Inflow Controls in Brazil

Exchange rate and capital control legislation in Brazil, as previously noted, has a tradition of being highly complex and intricate. However, the Brazilian financial market is also quite sophisticated, particularly in deriv-

atives trading.[16] 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. Furthermore, there are extensive derivatives trading abroad with underlying Brazilian instruments. One example is New York trading of Brazilian Real/U.S. Dollar NDFs (nondeliverable 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. Because 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 percent to 9 percent 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.[17]

In this section (and also in the appendix), 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. Nadal-de-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 Gregorio (2000) concluded that Chile's capital controls effectively changed the composition of capital inflows, increasing the inflows of long-term cap-

16. Years of crowding out and hyperinflation created both a hypertrophy of expertise in fixed income (short-term) and derivatives trading and a hypotrophy of credit granted by financial intermediaries.

17. 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.

ital, 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 (2004) 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 a 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 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 FDIs, which were not taxed; resources were declared as equity investments when in fact they were used to obtain fixed income return, and so on. In the following 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 percent to 9 percent. 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 $\tau^* = \min \{\tau, \text{cost of circumventing inflow control}\}$.

Let us examine a few of the circumvention methods reported.[18]

18. The methods of passing 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.

2.4.1 Disguising Short-Term Investments as Long-Term, Equity, or Trade Finance

Case 1: 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 and employment. It is also thought to be the least fungible because 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 nonremunerated deposits of 10 percent to 30 percent 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 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. Because 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 percent of the shares and subsequently conducted intercompany loans, considered FDIs. This money, then, as the company only existed on paper, would be invested

in short-term 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.[19] 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 in the preceding, 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 to contribute 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 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 offshore 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 in-

19. 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 percent) expenses. The volume invested through this avoidance strategy can be much greater than US$10 million so that τ^* could become negligible.

termediary could also manipulate the company's share prices because it owned a 100 percent 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 in the following, 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, as 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 ninety-six months was established for beginning amortization for principal and interest payments to be exempted from taxes.

At the same time, the use of ACCs 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 as 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 Interbank Certificate of Deposit (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 and then legalize the loan on the parallel market for trading ACC documentation. Because 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 as 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. Because Brazilian exports increased remarkably in the recent 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.

2.4.2 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 NDFs. 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 offshore 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. Because 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 nonarbitrage argument, it is shown that box return must be equal to the benchmark interest rate in Brazil's case, the CDI.[20] A box is, therefore, a financial strategy involving options that is akin to a loan.[21]

Because 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 [SRF]) regulations. This form of tax avoidance ended when the 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

In August of 1995, the government set a 5 percent 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 percent, up to three years, 4 percent; four years, 2 percent; five years, 1 percent; and six years or more, 0 percent.

The market soon perceived in this legislation a chance for circumventing the restriction: it began raising funds 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.

20. The CDI is the base overnight interest rate for transactions between financial institutions.

21. See Hull (2005) for further explanations about box option strategy.

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.

Because 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, become 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 percent IOF tax would be sufficient to counterbalance a devaluation of only 10 percent within a year with a 50 percent probability. After the Asian crisis, the odds for devaluation were certainly much higher than those, which explained why it was worth it to issue a six-year bond and exercise the option, paying the IOF tax retroactively, if the scenario changed. Carvalho (2005) develops a simple 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.

Case 7: Back-to-Back Operations: Blue Chip Swaps and CC-5 Transactions for Avoiding the IOF on Exchange Rate Transactions

In August of 1995, the government tightened capital controls in an attempt to contain excessive financial capital inflows, especially short term. It raised the IOF tax on foreign capital fixed income funds from 5 percent to 7 percent, raised the IOF on overseas loans from 0 percent to 5 percent, prohibited foreign investments in the domestic derivatives market,[22] and established a 7 percent IOF on operations between institutions in the country and overseas through the floating rate exchange market.

The market avoided the IOF on fixed income investments by engineer-

22. The complete prohibition of foreign investors to access domestic derivative markets was the logical culmination of the process that started with the tax on box operations, described in the preceding. After all, there is a theorem in finance that states that any return may be reproduced by option trading if enough options are available. Therefore, taxing one strategy, as the box, would only make the market move to another, still untaxed, one with quite similar results.

ing financial operations like those previously described. But the IOF on operations between domestic and international institutions drove the market to find other loopholes in the exchange rate legislation: they found what they were looking for in the famous CC-5 accounts.

The accounts of nonresidents created by the Central Bank under circular number 5 in 1969 were a resource for facilitating the flow of foreign capital. The CC-5 allowed a nonresident institution to hold an account in Brazil in national currency with greater ease to send funds outside the country. In 1992, the CC-5 was overhauled, giving this channel greater freedom implying higher capital account convertibility. With this new structure, the CC-5 deposit could be freely remitted through the MCTF. Moreover, third-party deposits could be made to the account, which meant third parties then began to make international transfers through the CC-5 account. This type of transfer became known later as the "International Transfer of Reais" (TIR).

Until March of 2005, to send money abroad unilaterally, a resident had to deposit it in the CC-5 of a financial institution residing outside Brazil, then this institution would transfer it to his bank in Brazil, convert it into foreign currency, and send it overseas. The nonresident financial institution was usually an overseas branch of the domestic institution. With changes effected in March of 2005, the resident can now deposit the money directly in his bank. This simplification meant lower transaction costs and greater transparency on transfers.

Figure 2.13 shows the movement of transfers through the CC-5 from January 1993 until 2004. It also contains the covered interest parity differential, which is a measure of country risk. During periods of higher capital inflows to Brazil, even net inflows of capital through the CC-5 occurred, as in 1995 through 1996.[23] In the exchange rate band period (1995 to 1999), the CC-5 channel was more heavily used to send resources abroad. This is associated with the greater restrictions on capital during this period and with the economic turbulence that shook the Brazilian economy, namely the crisis in Asia and the crisis in Brazil itself.

The IOF established in August of 1995 on international transactions between financial institutions was assessed at the time of the exchange rate transaction (like a Tobin tax). So to bypass this tax, the market sought ways to avoid converting currency. One of these was what was called at the time a "Blue Chip Swap." This involved a foreign asset that the investor would transfer to the offshore branch of a Brazilian financial institution against a CC-5 credit of the investor in Brazil. The foreign investor delivered the foreign asset, and the domestic counterpart made the deposit in Brazil in the foreign agent's CC-5 account. Through the CC-5, the foreign investor had

23. As figure 2.4 clearly shows, the CC-5 net balance was clearly one of net transfers abroad. Of course, gross flows occurred both ways.

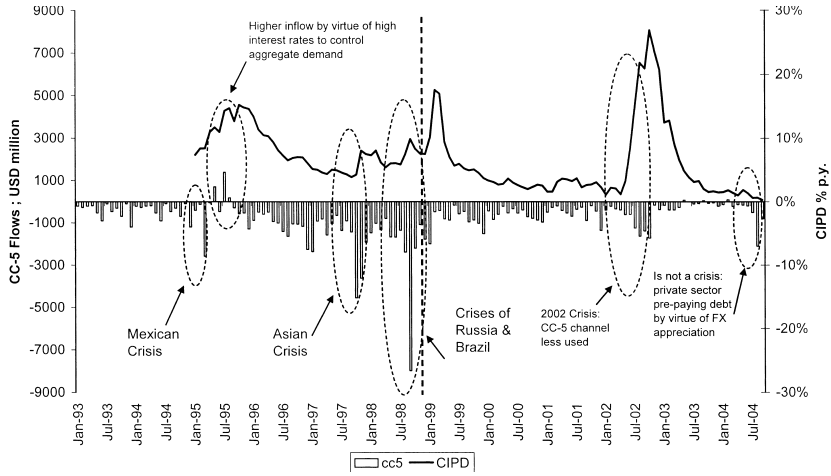

Fig. 2.13 Capital flows through CC-5 and covered interest parity differential (CIPD)
Source: Banco Central do Brasil (all years), Brazilian Mercantile and Futures Exchange (BM&&F), and authors' calculations.

free access to the MCTF and sent the money abroad without restrictions when the operation was finalized. With this, international transactions between financial institutions bypassed the IOF tax by not officially converting currency.

These operations involving unofficial currency exchange, in defiance of the Central Bank's monopoly, were known as back-to-back operations. The Blue Chip Swap is one example of this type of operation.[24]

2.4.3 Disguising Short-Term Investments as Equity and Using Sophisticated Financial Engineering (Derivatives) to Avoid Controls

Case 8: Labeling Fixed Income Investments as Equity Investments II: Share Loans in Brazil and Swaps Abroad

The operation described in Case 3 is designed for a domestic financial intermediary that also seeks to offer offshore mutual funds to foreign investors. In truth, these foreign investors could include Brazilians with nondeclared resources abroad or those seeking to capture the advantages extended to nonresidents of investing in fixed income in Brazil.

The Brazilian financial intermediary would offer its offshore clients a

24. Back-to-back operations are also mentioned as a capital control's circumvention method in other countries. For example, an Argentinean journal (*Ambito Financiero*) published on December 22, 2006 states that the tax charged by the money changers for a simple back-to-back operation was at an unusual rate: 1.25 percent to those willing to have dollars in Argentina and 1.5 percent to those seeking to take them out.

mutual fund in a tax haven that profited from Brazil's short-term interest rates. In theory, using Annex IV to this end was prohibited due to the capital controls. So the financial intermediary engineered a financial transaction that enabled it to invest in fixed income via Annex IV, avoiding the restriction. With this operation, the financial intermediary was also able to save on taxes on the institution's profit in Brazil.

The strategy basically involved the financial intermediary borrowing a company's shares that had low liquidity on the BOVESPA, selling them in a buyback agreement with a foreign investor who entered under Annex IV, then conducting a swap outside the country with this investor to exchange returns. If it so desired, rather than borrowing illiquid shares, the financial intermediary could create a publicly held corporation, as in Cases 1 and 2.

Let us examine the case more thoroughly with the help of figures 2.14, 2.15 and 2.16. In figure 2.14 we present the operation's agents: Bank X, which was Brazilian, had a branch in the Cayman Islands and wanted to offer an offshore mutual fund that earned the returns of Brazil's short-term interest rate and whose quota holders were investors with foreign capital. The branch of Bank X in the tax haven managed this offshore fund, which invested in Brazilian fixed income.

To move the fund's capital into Brazil, an Annex IV Portfolio for equity investments was opened, and it was managed by the securities dealer (DTVM) of Bank X with headquarters in Brazil. With this, the agent of the Annex IV Portfolio was the domestic securities dealer, as required by legislation at that time. Investments regulated by Annex IV of Resolution 1289 had to be made according to this procedure, where a qualified do-

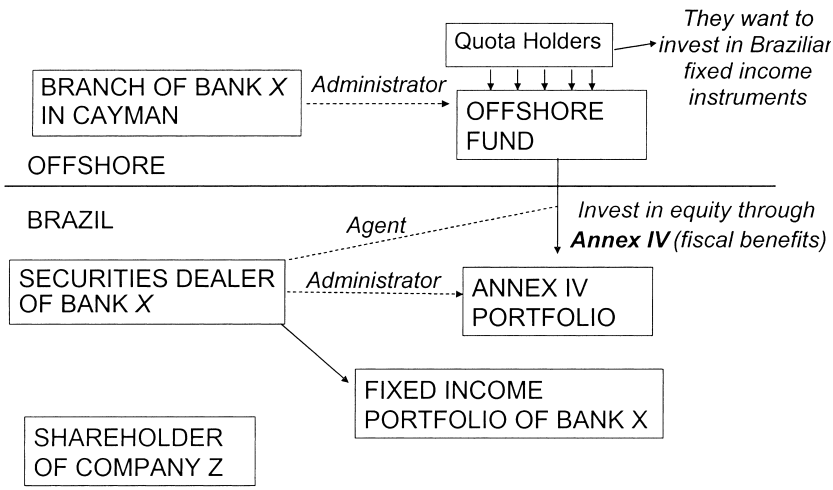

Fig. 2.14 Circumvention Case 3: Actors

mestic financial institution was the agent of the foreign investor's investment portfolio.

The securities dealer of Bank X also retained its own portfolio for investments in fixed income, legally independent of this Annex IV Portfolio. The national resources of Bank X were allocated to this fixed income portfolio to capture the returns of the high domestic interest rate.

The bank also borrowed the shares of a company whose shares were listed on the BOVESPA and had very little liquidity. It's worth highlighting that this was a company that did exist physically, not one created solely for financial transactions. Illiquidity was key to prevent sudden price moves.

In figure 2.15 we present the beginning of the transactions, which we divide into two steps. The second part of the transaction is illustrated in figure 2.16.

(1) The offshore fund invested in its Annex IV Portfolio declaring its objective was obtaining returns on equity investments, which was permitted and had tax benefits. (2) The securities dealer of Bank X borrowed the company's shares, which we will call Z, and (3) sold them through a buyback agreement after a specified period of time to the Annex IV Portfolio of the offshore fund. The buyback agreement established the deadline for recovering the sale of the shares and stipulated that the buyback would be based on the share price on the day the contract expired. (4) The money from the sale of the shares loaned to foreign investors was invested by the securities dealer in its own fixed income portfolio.

The foreign investor, then, brought his resources into the country via Annex IV and transferred them to the securities dealer by purchasing the shares of Company Z. The securities dealer then invested this money in the overnight interest rate.

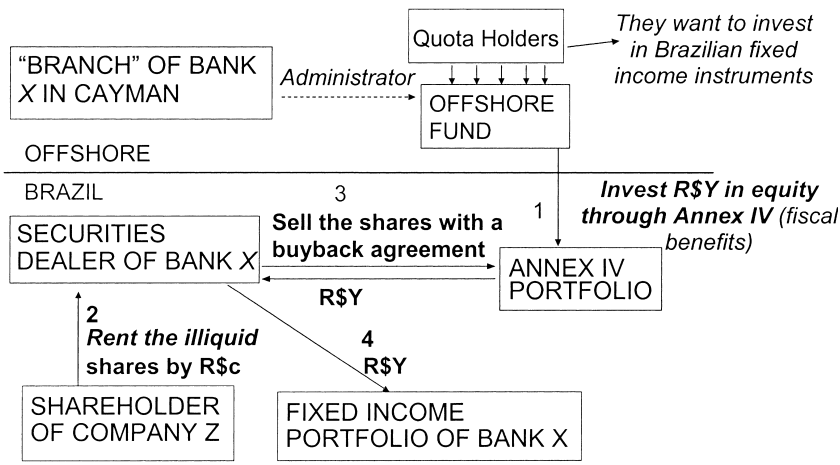

Fig. 2.15 Circumvention Case 3: Operations ($t = 1$)

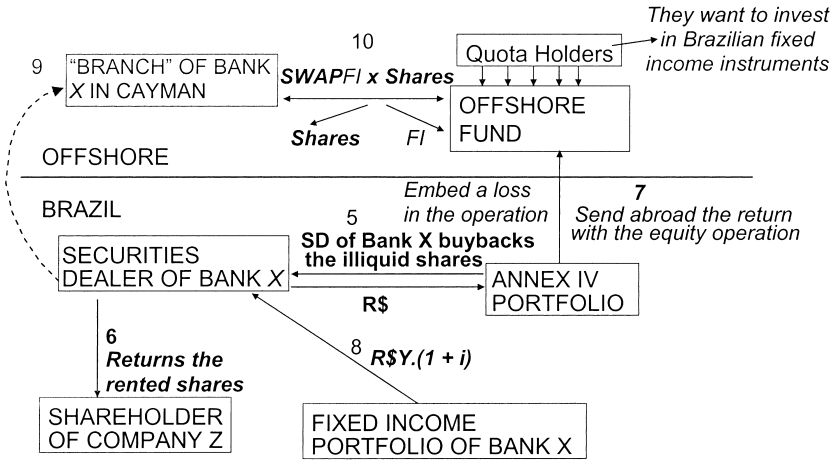

Fig. 2.16 Circumvention Case 3: Operations ($t = 2$)

Figure 2.16 illustrates the operation's unwinding.

(5) The buyback agreement was then settled. The Annex IV Portfolio resold the shares to the bank's securities dealer, but because the shares had very low liquidity, their prices were easily manipulated. The bank drove the share price up and repurchased them at a price higher than that at which he had sold them to the foreign investors. All players on the financial market know that the main rule is "buy low and sell high," but in this case, the bank preferred to sell low and buy high. There was a reason for this: it enabled him to embed a loss for the securities dealer in this operation, reducing his profits. Bank X would then save on Brazilian taxes due to the dealer's profit, and as we shall see, recover the loss in Cayman through the derivatives market.

(6) After buying back the loaned shares, the securities dealer returned them to the Company Z shareholder who had entered into the loan agreement. (7) The return made by the Annex IV Portfolio of the foreign investors on the share purchase operation was sent abroad legally through Annex IV as it was gained on the stock market.

(8) The securities dealer obtained the returns of its fixed income portfolio. (9) The dealer then nationalized the money in its Cayman branch, which was perfectly legal. The amount sent to the tax haven was equal to the principal plus interest earned by the fixed income portfolio, that is, the amount desired by the offshore fund offered by the Bank X branch in Cayman.

So the return the offshore fund desires was still with the Bank X branch in Cayman, and the loss incurred by Bank X in the share transaction was passed as the profit of the offshore fund. (10) To finalize the operation and meet its objectives, the bank conducted a swap in Cayman between its branch and the offshore fund, where they exchanged the gains from the

share transaction with the fixed income returns. The swap's underlying instruments were the difference between the price of Company Z shares on the BOVESPA and the return on the Brazilian fixed rates, so the fixed income return went to the fund and the profit from the share transaction went to the branch of Bank X.

When concluded, the foreign investors had the fixed income returns and Bank X had saved on Brazilian taxes. The capital inflow cost incurred by this circumvention method, the τ^*, was only the price of borrowing the shares and conducting the swap abroad, plus that of the bank to nationalize the money in its Cayman branch. The latter two items have virtually no cost, so that τ^* is only the cost of the share loan. But because the bank saved on taxes, τ^* could actually be negative as the tax savings offset the cost of the share loan. This strategy provides a clever example of how regular corporate income taxes could also be avoided through a financial operation originally designed to avoid capital controls.

2.5 Conclusion of Cases of Capital Controls Circumvention

In the preceding 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 Cardoso and Goldfajn (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.

Table 2.4 shows the composition of the total portfolio of Annex IV investments from January 1993 until mid 2004 (since 1999, these investments have actually been governed by Resolution 2689).

Between January 1993 and August 1993, the "Others" item in the table accounted for around 15 percent to 25 percent of total investment. This item contained investments in government bonds that were destined for

Table 2.4 **Composition of Annex IV Channel for financial inflow**

	Annex IV Composition (% total)						
	Portfolio value (in US$ billions)	Equity (%)	Derivatives (%)	Debentures (%)	Privatization currency (%)	Others (%)	Fixed income (%)
Jan. 1993	2.37	82.50	0.00	2.30	0.00	15.20	
Feb. 1993	2.35	73.90	0.00	4.80	0.80	20.50	
Mar. 1993	2.49	85.00	0.00	0.30	1.50	13.20	
Apr. 1993	3.42	79.00	0.00	3.80	0.10	17.10	
May 1993	4.05	80.00	0.00	2.20	0.10	17.70	
June 1993	4.83	82.60	0.00	2.70	0.10	14.60	
July 1993	5.15	73.50	0.00	4.80	0.10	21.60	
Aug. 1993	6.88	70.30	0.00	4.00	0.50	25.20	
Sept. 1993	6.76	77.20	0.00	19.00	2.60	1.20	
Oct. 1993	7.45	68.20	0.00	29.30	1.60	0.90	
Nov. 1993	8.96	65.20	0.00	33.60	0.90	0.30	
Dec. 1993	10.38	80.10	0.00	18.50	1.10	0.30	
Jan. 1994	12.12	82.50	0.00	15.90	1.40	0.20	
Feb. 1994	13.23	83.32	0.00	14.14	2.33	0.21	
Mar. 1994	14.51	78.26	4.93	13.31	3.40	0.10	
Apr. 1994	12.83	75.32	4.19	15.97	4.44	0.08	
May 1994	12.97	67.90	7.60	16.10	8.33	0.07	
June 1994	13.57	66.68	8.60	15.16	9.49	0.07	
July 1994	16.15	70.99	5.66	15.12	7.84	0.39	
Aug. 1994	21.31	73.40	5.40	11.20	5.20	4.80	
Sept. 1994	21.61	78.10	3.20	12.30	5.00	1.40	
Oct. 1994	20.77	77.35	4.06	12.72	5.13	0.74	
Nov. 1994	21.83	78.62	4.02	11.15	5.56	0.65	
Dec. 1994	20.97	77.54	3.85	12.41	5.41	0.79	
Jan. 1995	17.84	76.69	1.95	13.93	5.86	1.57	
Feb. 1995	15.76	77.44	3.20	12.20	6.20	0.96	
Mar. 1995	13.30	82.77	1.43	8.43	4.26	3.11	
Apr. 1995	15.08	84.87	2.32	6.80	5.24	0.77	
May 1995	16.99	85.84	1.24	7.89	4.39	0.64	
June 1995	16.92	85.19	2.13	7.61	4.42	0.65	
July 1995	18.58	84.78	2.96	7.57	4.12	0.57	
Aug. 1995	20.63	86.46	3.19	5.94	3.75	0.66	
Sept. 1995	19.75	86.35	3.01	6.02	4.12	0.50	
Oct. 1995	18.97	86.51	1.89	7.22	3.79	0.58	
Nov. 1995	18.81	88.95	0.66	4.95	3.72	1.72	
Dec. 1995	18.65	89.46	1.09	5.54	3.68	0.23	
Jan. 1996	20.29	90.84	0.04	4.72	3.52	0.88	
Feb. 1996	20.33	90.33	0.04	4.46	4.14	1.03	
Mar. 1996	19.27	89.79	0.09	4.75	4.32	1.05	
Apr. 1996	19.77	89.16	0.09	5.64	3.92	1.19	
May 1996	21.21	90.09	0.05	5.66	3.48	0.72	
June 1996	23.33	91.11	0.03	4.48	3.21	1.17	
July 1996	23.28	90.22	0.00	5.65	3.59	0.54	
Aug. 1996	24.07	90.51	0.00	5.52	3.45	0.52	
Sept. 1996	25.03	91.06	0.00	5.63	3.19	0.12	
Oct. 1996	25.71	91.22	0.00	5.58	3.27	–0.07	

(continued)

Table 2.4 (continued)

	Annex IV Composition (% total)						
	Portfolio value (in US$ billions)	Equity (%)	Derivatives (%)	Debentures (%)	Privatization currency (%)	Others (%)	Fixed income (%)
Nov. 1996	26.63	91.53	0.00	5.50	3.20	–0.23	
Dec. 1996	28.16	91.96	0.00	5.72	2.79	–0.47	
Jan. 1997	31.71	92.58	0.00	4.85	2.11	0.46	
Feb. 1997	34.75	93.06	0.00	4.45	1.94	0.55	
Mar. 1997	36.35	93.30	0.00	4.32	1.88	0.50	
Apr. 1997	38.89	94.21	0.00	3.65	1.74	0.40	
May 1997	40.94	94.85	0.00	3.29	0.19	1.67	
June 1997	46.03	95.16	0.93	2.99	0.92	0.00	
July 1997	49.89	95.47	0.69	3.00	0.84	0.00	
Aug. 1997	42.64	94.79	0.63	3.71	0.87	0.00	
Sept. 1997	46.11	95.24	0.56	3.37	0.83	0.00	
Oct. 1997	35.56	94.43	0.88	4.00	0.69	0.00	
Nov. 1997	34.73	95.67	0.52	3.08	0.72	0.01	
Dec. 1997	35.78	96.46	1.39	2.12	0.00	0.03	
Jan. 1998	29.19	95.75	1.93	2.28	0.03	0.01	
Feb. 1998	30.90	96.38	1.48	2.11	0.03	0.00	
Mar. 1998	34.87	97.30	1.27	1.40	0.02	0.00	
Apr. 1998	35.31	96.49	2.04	1.45	0.02	0.00	
May 1998	30.06	96.67	1.57	1.73	0.03	0.00	
June 1998	28.72	96.50	1.57	1.73	0.03	0.17	
July 1998	30.97	96.69	1.66	1.62	0.03	0.00	
Aug. 1998	20.21	94.57	2.53	2.86	0.04	0.01	
Sept. 1998	17.21	95.25	3.48	1.22	0.05	0.00	
Oct. 1998	18.00	95.49	3.37	1.11	0.04	0.00	
Nov. 1998	21.42	96.84	2.30	0.83	0.03	0.00	
Dec. 1998	17.37	94.80	4.16	1.00	0.04	0.00	
Jan. 1999	11.85	94.90	3.85	0.81	0.00	0.43	
Feb. 1999	11.83	95.50	3.59	0.71	0.07	0.13	
Mar. 1999	16.02	97.60	1.61	0.50	0.10	0.10	
Apr. 1999	18.04	97.90	1.42	0.46	0.20	0.03	
May 1999	17.54	98.40	0.90	0.52	0.20	–0.02	
June 1999	18.23	98.76	0.23	0.72	0.29	0.00	
July 1999	17.09	98.95	0.19	0.69	0.15	0.02	
Aug. 1999	15.90	98.72	0.02	0.92	0.10	0.24	
Sept. 1999	17.51	98.72	0.02	0.87	0.30	0.10	
Oct. 1999	17.79	98.70	0.08	0.83	0.28	0.11	
Nov. 1999	20.00	98.77	0.09	0.81	0.20	0.13	
Dec. 1999	23.11	98.98	0.04	0.82	0.02	0.14	
Jan. 2000	22.32	98.48	0.09	1.17	0.01	0.25	
Feb. 2000	22.95	98.49	0.07	1.26	0.01	0.17	
Mar. 2000	23.10	98.44	0.06	1.29	0.01	0.20	
Apr. 2000	22.45	96.83	0.05	1.36	0.01	–0.01	1.76
May 2000	20.05	96.42	0.11	1.19	0.01	–0.01	2.28
June 2000	23.07	94.13	0.10	1.15	0.01	0.01	4.61
July 2000	23.58	91.63	0.05	1.24	0.01	0.45	6.62
Aug. 2000	23.61	92.67	0.13	1.23	0.01	0.19	5.77

Table 2.4 (continued)

	Annex IV Composition (% total)						
	Portfolio value (in US$ billions)	Equity (%)	Derivatives (%)	Debentures (%)	Privatization currency (%)	Others (%)	Fixed income (%)
Sept. 2000	21.09	92.52	0.16	1.27	0.01	0.12	5.92
Oct. 2000	18.93	91.48	0.15	1.31	0.01	0.12	6.93
Nov. 2000	17.78	90.89	0.24	1.26	0.01	0.10	7.50
Dec. 2000	18.53	91.92	0.05	0.91	0.01	0.07	7.04
Jan. 2001	21.25	92.58	0.10	0.89	0.01	0.05	6.37
Feb. 2001	18.55	92.35	0.05	0.67	0.01	0.08	6.84
Mar. 2001	17.09	89.71	0.16	0.78	0.01	0.07	9.27
Apr. 2001	18.65	89.20	0.26	0.84	0.01	0.03	9.66
May 2001	17.75	88.32	0.23	0.80	0.01	0.04	10.59
June 2001	17.82	89.47	0.14	0.72	0.01	0.04	9.61
July 2001	15.81	87.17	0.15	0.70	0.01	0.04	11.93
Aug. 2001	14.62	86.47	0.55	0.72	0.01	0.05	12.20
Sept. 2001	13.99	75.99	0.70	2.33	0.01	0.03	20.94
Oct. 2001	13.67	78.67	0.16	2.79	0.01	0.85	17.52
Nov. 2001	14.42	85.02	0.50	1.54	0.01	1.07	11.86
Dec. 2001	15.50	88.45	0.29	0.73	0.01	1.20	9.32
Jan. 2002	14.59	87.44	0.75	0.67	0.01	1.41	9.73
Feb. 2002	16.57	89.08	1.97	0.34	0.01	0.22	8.37
Mar. 2002	16.34	90.24	0.41	0.60	0.01	0.22	8.52
Apr. 2002	16.78	89.55	1.48	0.59	0.01	0.11	8.27
May 2002	15.02	89.72	1.38	0.59	0.01	0.11	8.19
June 2002	12.31	87.50	2.03	0.67	0.01	0.11	9.68
July 2002	9.18	83.20	4.21	0.57	0.01	0.11	11.90
Aug. 2002	10.22	85.56	3.64	0.43	0.01	0.20	10.16
Sept. 2002	9.96	77.29	5.19	0.43	0.01	0.16	16.92
Oct. 2002	8.95	79.97	3.14	1.01	0.01	0.20	15.67
Nov. 2002	9.06	78.75	3.02	1.11	0.01	0.17	16.94
Dec. 2002	10.40	74.70	2.35	1.15	0.01	0.27	21.51
Jan. 2003	10.04	73.84	1.88	1.24	0.01	0.30	22.72
Feb. 2003	9.85	72.13	3.26	1.29	0.01	0.32	22.99
Mar. 2003	10.68	76.43	2.85	1.47	0.01	0.31	18.93
Apr. 2003	12.48	78.05	2.69	1.43	0.01	0.40	17.41
May 2003	12.64	80.01	1.71	1.39	0.01	0.38	16.50
June 2003	12.80	80.30	1.20	1.40	0.01	7.19	9.90
July 2003	13.31	80.94	1.44	1.50	0.01	0.51	15.60
Aug. 2003	14.60	82.81	1.19	1.38	0.01	0.48	14.13
Sept. 2003	15.05	83.94	1.07	1.24	0.01	0.48	13.26
Oct. 2003	18.68	76.76	4.61	0.95	0.01	0.43	17.23
Nov. 2003	17.64	86.10	0.82	0.94	0.01	0.50	11.63
Dec. 2003	20.12	86.79	0.62	0.68	0.01	0.30	11.60
Jan. 2004	20.02	86.84	0.61	0.57	0.01	0.28	11.69
Feb. 2004	20.72	86.30	0.50	0.60	0.01	0.29	12.30
Mar. 2004	20.96	86.02	0.55	0.57	0.00	0.35	12.51
Apr. 2004	20.40	85.21	2.29	0.57	0.00	0.26	11.67
May 2004	18.41	87.40	1.10	0.65	0.00	0.23	10.62
June 2004	18.50	87.67	1.31	0.84	0.00	0.24	9.94

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 percent of "Others" in the portfolio has fallen to approximately just 1 percent as 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 percent to 9 percent.

However, in the month following this prohibition, September of 1993, the percentage of debenture investments jumped from 4 percent to 19 percent, reaching 34 percent 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 in the preceding). The table shows that the percentage of privatization funds rose in September of 2003 and peaked at almost 10 percent of the Annex IV Portfolio in June of 1994. The government then prohibited NTN investments (Treasury bonds) with privatization resources,[25] 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 ninety days without paying the 5 percent IOF tax.

The market, then, appears to always find a means of circumventing re-

25. Funds in privatization funds were allowed to be invested in domestic bonds until the privatization took place. However, investors parked their funds in the bonds indefinitely to avoid the tax, without true intention to participate in privatizations.

strictions 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.[26]

As expressed in Forbes (2004), 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. Forbes states, "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" (2004, 18). 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.[27]

26. "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).

27. One market player remarked that things may have changed somewhat in regard 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.

2.6 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 the 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 policymakers 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.

Appendix

Other Circumvention Methods

Case 9: Privatization Currency

Another loophole in Brazil's capital control legislation between 1993 and 1995 was that it granted permission for funds investing in the country's privatization to use Annex IV for investing in national treasury notes (NTNs). Initial legislation sought to encourage inflows of foreign capital directed at investments in privatization, but the market began establishing short-term fixed income investments as privatization investments, thereby capturing the tax benefits of investing in Brazil's domestic debt through Annex IV. This method of capital control avoidance seemed to be widely employed. One indication is that the flow for privatization via Annex IV between April and July of 1993 averaged US$4.36 million. In August of 1993, a capital control was applied that prohibited fixed income investments via Annex IV and permitted only investing through specific fixed income funds that were subject to a 5 percent IOF tax. In September of 1993, the flow declared as privatization resources rose to US$176 million. This means that when fixed income investments were restricted, the flow declared as destined for privatization increased more than 3000 percent in less than two months.

Case 10: Resolution 63 "CAIPIRA" ("Country 63")

Another strategy for raising foreign funds with tax benefits was provided for by Central Bank of Brazil Resolution number 63 for agriculture financing. The operation was similar to those involving ACCs. Rural producers were permitted to borrow abroad, with tax benefits, and began selling them to financial investors so that short-term loans declaring agricultural destinations were a common market practice. The loan, however, was redirected to financial market transactions.

In general, the cost of these loans was also less than the CDI. This meant that the same strategy undertook with ACCs could be replicated with the "63 Caipira," that is, raising funds at a cost well below the CDI and investing the money in the overnight market or in margin deposits required by the BM&F interest derivatives. The capital that in theory was for agriculture investments was actually redirected to short-term fixed income investments. The transaction was strictly within legal boundaries because rural producers officially took out the loans.

Through this 63 Caipira strategy, investors raised funds at short-term rates to perform the carry-trade. At the same time, investors with foreign capital could use this channel to invest in fixed income given the ease with which it was redirected to the financial market. This legislation loophole meant gains for both the borrower and the lender.

Only in 1996 did the Central Bank limit transactions using Resolution 63. The institution's 1996 Report clarified: "In order to *avoid the application of resources from long term loans in speculative investments.* Circular No. 2.660, of 2.8.96, limited the alternatives for investing funds raised under Resolution 63 when not used by their final borrower" (107).

The next case of circumvention involves a loophole in legislation that permitted investments in debentures under Annex IV. Prices of some of the debentures were linked to Brazil's benchmark interest rate, opening a door for bypassing restrictions on fixed income investments.

Case 11: Siderbrás Debentures and Others

One method for avoiding the restriction on fixed income investments with tax benefits provided for by Annex IV was to take advantage of the loophole in legislation that permitted investing in debentures through this channel. Between August 1993 and November 1993, this loophole allowed investors to earn the returns of fixed income by investing in debentures that were linked to the base interest rate. One example involved the debentures of the company Siderbrás.

In August of 1993, the volume of debenture investments under Annex IV was US$275 million, or 4 percent of the total Annex IV Portfolio in the country. In September, after the capital control was introduced, this amount jumped to US$1.3 billion, and in November of 1993 reached its highest to date at US$3 billion, or 34 percent of the portfolio. In November of 1993, the government prohibited debenture investments using Annex IV, closing the door on this form of circumvention.

In this section's conclusion, we exhibit a table with the composition of the total Annex IV Portfolio in the country, and we analyzed, as in Garcia and Barcinski (1998), the dynamic of flow shifts among items in Annex IV prompted by capital controls.

The cost of bypassing controls by investing in debentures, the τ^*, was zero, because the yield of these debt instruments was tied to the interest rates sought by investors and, moreover, offered the tax benefits of Annex IV investments.

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Comment Gustavo H. B. Franco

The issue of the effectiveness of capital and foreign exchange controls in general, and their relevance for emerging markets in particular, has always been a high temperature one, though in recent years, given advanced globalization, banking and financial crises, and the worldwide adoption of the Basel Accord, new ramifications in the basic issue of effectiveness are yet to be properly addressed. While old-style foreign exchange controls are being phased out around the world, adversaries of globalization increasingly align capital controls as one crucial mechanism to sand the wheels of international finance. The notion of an international Tobin Tax has been especially appealing to these audiences and popular to some politicians though no practical application has yet been truly discussed. Mainstream economists and central bankers do not generally take proposals along these lines very seriously, most usually dismissing capital controls across the board with the same arguments normally thrown at price freezes and other forms of artificial intervention in the working of markets. It is true, however, that the velocity with which antiglobalization proposals to limit capital mobility are sidelined is not the same at which public policy has advanced in the topic of capital account convertibility as a general proposition. In fact, the 1997 defeat of the proposal to advance in this realm in the context of the Articles of Agreement of the International Monetary Fund (IMF) can be taken as an eloquent demonstration that there was less certainty in this field than many people thought. Indeed, an indication toward this ambiguity is the development of two distinct branches of empirical literature: one positive, on the association of measures of capital mobility, or convertibility, and economic growth, and another negative, on the association between capital mobility and currency crises; neither, actually, is especially conclusive. Indeed, the successive episodes of instability, sudden stops, banking and currency crises, not to mention the growing concern with money laundering and terrorism's money, have made deregulation in the financial industry, especially when it involves international transac-

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tions, a very cautious process. Yet in one way or the other, the debate on the regulation of foreign exchange transactions, and within which the scrutiny on capital flows, has been kidnapped into the grand world controversy around globalization where it was torn by ideological misconception and prejudice. While antiglobalization groups intend to save the world with capital controls, mainstream economics seems unprepared to concede *any* role for capital controls or regulation even in times of unambiguous exuberance.

The question to address, however, in connection with Carvalho and Garcia's paper, is very much circumscribed to a specific context, namely, whether there is some middle ground between these extremes, when one considers a brief but relevant episode of targeted restrictions to short-term capital *inflows* into 1993 to 1998 Brazil, *combined* with a liberalization of *outflows,* and during years in which there was little doubt that a "capital surge" was taking place. My personal position at the Central Bank, starting in October, 1993 as deputy governor in charge of International Affairs and directly responsible for the creation and implementation of the regulatory changes in the field of foreign exchange regulation through 1997, when I was elected governor, where I stayed until early 1999, places me at a privileged position to look back at the episode from a firsthand practitioners' point of view, though in a somewhat uncomfortable position to judge "ineffectiveness," as argued by Carvalho and Garcia. The reader should be warned of the presence of bias in the views expressed in what follows, which, I guess, might be a redundant advice in this profession.

Some context is also very much required. In the early 1990s, Brazil was still enforcing old-style foreign exchange controls, though with great strides toward liberalization. Foreign exchange shortage seemed to be the rule since the 1950s, and the notion of *excessive inflows,* bound to deserve *restrictions* rather than incentives, was by all means novel. Indeed, in the early to mid-1990s, these were times in which the concern with "capital surges" and its consequences to exchange rates (and the concrete threat of the "Dutch Disease" phenomenon) led to academic production and also practical experiences with various sorts of impediments to capital inflows deemed of a "lesser quality," as in Calvo, Leiderman, and Reinhart (1993), Corbo and Hernández (1996), Dooley (1995), Gavin, Hausmann, and Leiderman (1995) and Schadler et al. (1993).[1] More specifically, the experi-

1. The conclusion of Calvo, Leiderman, and Reinhart (1993, 149) may offer a fair summary of the wisdom of these years.

> To summarize, there are grounds to support a mix of policy intervention based on the imposition of a tax on short term capital imports, on enhancing the flexibility of exchange rates, and on raising marginal reserve requirements on short term bank deposits. Given the likely fiscal cost, it is hard to make a strong case in favor of sterilized intervention, unless countries exhibit a strong fiscal stance and capital inflows are expected to be short lived. In any case, we believe that none of the above policies will

ence of Chile, and also of some Asian countries, received some attention in the late 1980s and early 1990s while excess liquidity had been there, in some cases, for more than a decade, and there are mixed reviews as to the effectiveness of controls. Yet as the pendulum of world liquidity retreated from abundance to scarcity a few years later after the Asian, Russian and other crisis that followed, it was curious to see that capital account convertibility fell into disregard, and the idea of restriction to inflows, as a way to reduce the impact of sudden stops, regained some popularity even where it was criticized. As put by Fischer (2002, 12–13):[2]

> The IMF has cautiously supported the use of [*market-based capital inflow controls,*] Chilean style. These could be helpful for a country seeking to avoid the difficulties posed for domestic policy by capital inflows. The typical instance occurs when a country is trying to reduce inflation using an exchange rate anchor, and for anti-inflationary purposes needs interest rates higher than those implied by the sum of the foreign interest rate and the expected rate of currency depreciation. A tax on capital inflows can help maintain a wedge between the two interest rates. In addition, by taxing short-term capital inflows more than longer-term inflows, capital inflow controls can also in principle influence the composition of inflows. . . . In a nutshell: capital controls may be useful provided they are exercised with care; they are likely to be transitional—albeit possibly in use for a long time—and caution is likely to be necessary in removing them.

Restrictions are never popular in this profession, nevertheless, and looking back at the specific Brazilian 1993 to 1998 experience with *controls imposed on inflows,* even considering that this was *combined with deregulation on the outflow side,* it is not too uncommon to see economists attempting to fit these measures into the stereotype of bureaucrats trying to fight market fundamentals with pointless controls. Capital and foreign exchange controls are easy targets, and mainstream profession would always be willing to welcome the claim of ineffectiveness of controls in general, and the one provided by Carvalho and Garcia for the Brazilian experience in particular, especially if we miss the details, and these details can be very confusing to academic researchers with incidental contact with the practitioners' world. Carvalho and Garcia's paper has the undisputed merit of penetrating the obscure realm of the trading desks to see what *actually* takes place

drastically change the behavior of the real exchange rate or interest rate. The choice of appropriate policies, however, could decidedly attenuate the detrimental effects of sudden and substantial future capital outflows.

2. Italics are mine. Perhaps it would be more appropriate to say that, as to the restrictions to capital inflows in Brazil, the Fund had mixed views and loudly ignored what was going on for quite some time. By 1997, in view of the commitment to the attempt to amend the Articles of Agreement toward capital account convertibility, there was some indication that the Fund did not like the restrictions Brazilian style.

in response to specific policy or regulatory measures. Whether they succeeded in forming a comprehensive picture and a fair judgment is an entirely different matter. In fact, in what follows, it is argued that the eleven alleged examples of circumvention of controls and restriction to inflows are not as nearly relevant as argued. If not outright unimportant, then some of the examples are such as to deserve so many qualifications that Carvalho and Garcia's conclusion is mostly invalidated. Yet in arguing along these lines, one does *not* intend to make a case for exchange controls or capital controls *in general,* neither a case for the effectiveness of restrictions to inflows as a general proposition, in times of capital surges. The point here is that under the particularly exuberant circumstances lived by Brazil in the mid 1990s, and having in mind a number of institutional features of the relevant market environment and associated regulation and institutions, the regulatory innovations for both inflows and outflows were relevant and effective *given their terms of reference.* The relevant metric to assess effectiveness as we move into the third- or fourth-best realm where the practitioners are found are difficult to obtain. Yet a look at the data on the amounts of taxes (on capital inflows) collected and on the nature of inflows (average tenor, spreads, volumes) also help to raise serious doubts on Carvalho and Garcia's conclusions.

The rest of this comment is divided into three sections: the first section draws attention to the new regulatory realities and particularly to the role of controls to banking operations in a world ruled by the Basel Accord within which it is quite important to have in mind the size of the penalties, and even criminal implications, of evading or circumventing the regulator's directives. The second section provides specific clarifications on each of the circumvention possibilities and indications on how the Central Bank acted on each situation. The last section presents numbers for the collection of taxes on capital inflows of several types, which are significant, thus weakening the circumvention claim. In addition, the data on the nature of the mainstream capital inflows into Brazil 1992 to 1999 reveal a clear trend toward extended maturities in external loans, even with significantly decreasing spreads. The aim of restrictions, the improvement in the quality of inflows, was accomplished; the precise magnitude of their contribution of restriction certainly deserves more work.

Controls and Compliance after the Basel Accord

As a background to more specific observations as to the alleged eleven ways to circumvent controls to inflows, one should bear in mind that, notwithstanding undisputed sophisticated financial markets creativity and the fact that capital can move around under countless types of disguises, foreign exchange transactions are basically *banking transactions* and, as such, subject to the scrutiny of regulators on several grounds. As one asks

whether capital controls on inflows are *possible at all* and, further, whether *selective* controls on capital inflows are feasible or even when one argues that such controls are effective *only in the short run,* what is at stake is whether the Central Bank is capable of looking into specific operations of banks and imposing limitations to certain families of transactions. In fact, there is no reason to assume that forex transactions are any less an object of the regulators' surveillance than any other banking transaction. In fact, these days past the Basel Accord, most controls directed to banking activities have been internalized through compliance rules that aim at aligning interests of the regulator and its subjects. Internal compliance rules have been created and developed by all banks around the globe with the more specific objective of minimizing problems with the regulator in all its areas of concern, from risk-weighted capital, credit scoring, and derivatives exposure to the precise identification of clients and the nature of foreign exchange operations. Indeed, the control of capital inflows can be seen as an activity conducted by banking supervision departments, which are perfectly capable of monitoring individual transactions and exercising the discretionary power to veto specific trades or deals as they are seen as possible violations in existing regulations, whether targeting risk, crime, or other endeavors.

It is a fact that banks comply with directives of central banks as a general proposition, even when they restrain their activities and profit possibilities. In many cases, banks go beyond the Central Bank's directives. If, for instance, the Central Bank issues guidelines regarding foreign exchange transactions aiming at preventing money laundering, it is common to see banks *expanding* the directive into their compliance departments in order to prevent any questioning that might be transformed into very costly liabilities or damages to the bank's reputation. It is rare to see anyone questioning the overall compliance, for instance, to Basel rules regarding risk weighted capital, even though the bypassing may be as profitable as the bypassing of capital controls. Why then should one assume that banks would be willing to jump at any possibility to bypass regulatory directives in the subject of limitations to capital inflows of certain kinds when banks tend to be "well behaved" in other areas?

Indeed, there is no literature or bias in the issue of alleged ineffectiveness of Basel rules or banking regulation at large as there is in the case of capital controls. However, as it is common to see in the regulation and in the "crime and punishment" literature, one may say compliance is a game involving a payoff highly dependent on not being caught breaking the law. Yet in the repeated game between banks and their regulators, and in view of the importance of reputation in this business, and also for the normal flow of banking, one hardly see banks challenging aggressively and repeatedly regulatory directives, especially when the negative payoff of a controversy with the regulator may be very costly penalties possibly en-

dangering the continuity of the bank. It is common to see controversies and discrepancies in views during the course of the banking supervision activity and a wide range of activities, from credit scoring and associated provisioning to foreign exchange transactions, but the instruction of the regulator is always the final word in practically all matters related to banking supervision. Why does this propensity to discipline not exist when directives are concerning controls to capital inflows? Why is this particular subset of regulations less effective than the rest?

It is true that there were times past, long ago, in which foreign exchange regulation was so unrealistically restrictive that one would see the development of black markets and curb markets, yet not usually within the banking system and mostly involving cash transactions. It is hard to imagine that controls to capital inflows would be such as to provoke any major dislocation toward the black market or that the restricted portions of the capital account of the balance of payments could be channeled into transaction technologies and platforms mostly used by criminals. As a practical matter, it is not possible in Brazil for the parallel market to develop outside the financial systems in a dimension large enough to disturb macroeconomic policies. It is well known that a black market remains in existence in Brazil, as in any other country in the world, in which transactions are almost exclusively in cash and related to crime.[3]

In addition to the argument made in the preceding that banks strive to preserve a good working relationship with the regulator when it comes to compliance, it is also important to clarify the exact nature of penalties and problems related to the violations that may be involved in the eleven alleged circumvention operations described by Carvalho and Garcia. Seven of these eleven Cases (1, 2, 4, 6, 7, and 9) involve penalties defined in Article 23 of Law 4.131/62, according to which, the furnishing of "false information" (paragraph 2) in foreign exchange operations contracts and "fraud" (or "false identity," paragraph 3) in such contracts would trigger penalties of up to 100 percent and up to 300 percent of the value of the contract respectively. In both cases, penalties are applicable not only to the seller of foreign exchange but *also to the bank, sometimes to their directors,* and to the broker if acting on the operation. This is an incredibly powerful directive as it makes the bank a partner to the sponsor of any wrongdoings associated with the foreign exchange transaction. This is reason enough for banks to be very selective when it comes to creative operations or more compliance prone in this area than they normally are.

These seven operations also involve violations in tax laws as they result in evading the tax due at the time of the foreign exchange sale (often the tax on financial operations [IOF] but also, sometimes, on the withholding tax

3. For a review of empirical findings on the size and scope of black markets around the world with much consideration given to developed countries, see Galbis (1996).

on income earned) and the attempt to disguise the liability. Penalties are a multiple of the tax values due and unpaid and are comparable to the ones applicable by the Central Bank for the violation of foreign exchange regulations (which are proportional to the principal amount involved), but their consequences are far worse as tax evasion is also a crime. Furthermore, in these seven transactions, in addition to tax evasion, there are also other crimes involved such as financial fraud and conspiracy. In fact, both the foreign exchange authority and the tax authority are obliged to inform the Public Prosecutor (*Ministério Público*) of the *possible* presence of crime (if they do not inform, these authorities may face criminal charges themselves). Based in such reports, prosecutors usually do not hesitate in starting criminal investigations, often followed by wide press coverage, on the parts involved. It is not hard to imagine the amount of the damage that could do to banks and the effort of compliance units to prevent any occurrence that might possibly entail such course of events.

In view of the preceding, it seems hardly likely that any significant number of banks would enter in any significant amounts of transactions of these types considering the risks of getting caught and the consequences of such conducts. Compliance units exist with the precise aim at avoiding conducts that might lead to confrontations with the regulator. Of course, lots of anecdotal evidence may be collected on ideas or attempts of bypassing regulations on capital inflows, especially amongst traders, as one considers the agency problem that evolves as traders try to force quasi or even fully illegal transactions onto their employers as they would earn the bonuses before the regulatory, tax, and criminal charges and liabilities are presented later on, when traders have already moved into different banks. These were the years in which Nick Leason was active in Singapore; something along these lines may have taken place in Brazil, though with little macroeconomic relevance. The collective memory of trading desks from times of regulatory change must be treated with considerable caution as it moves into the realm of the academic debate on the effectiveness, however defined, of the regulatory policy mix implemented in 1993 to 1998 Brazil.

The "Circumventions"

After these general comments, we turn to specific observations on the eleven models of transactions depicted as ways to circumvent controls or taxes on inflows of capital. It is useful to group the transaction according to their nature and examine what took place separately.

Disguised FDI

From the onset, one should squarely disregard Cases 1 and 2 that, in the point of view of the undersigned, belong in the realm of fantasy. Given the documentary needs of companies with foreign ownership in Brazil, the

"disguise" is very simply impossible and also way too risky in view of the sanctions mentioned in the preceding. It is true that the Central Bank saw a more intensive usage of inter company loans, and very specifically in 1993, but the increase in foreign direct investment was much larger, dissolving the impression that multinationals could have been using loans to undertake financial arbitrage and in excess of what would be normal to expect in light of their equity investments into Brazil.

Portfolio Investment under Annex IV

It should be said from the start that the misrepresentation, on the part of the investor and the bank undertaking the forex transaction, of a given investment through the regulatory window for inflows of foreign portfolio investment (Cases 4, 7, and 9), known by an acronym related to the regulatory directive, "Annex IV,"[4] would involve the violations and penalties as described in the preceding. The problem here was not circumvention but *grandfathering fixed income investments made before the restrictions,* thus avoiding complaints along the lines of disrespect of contracts and preserving the ex ante character of the restrictions. In fact, in order to be worthy of what Stanley Fischer described as "market-based" restrictions, a key aspect of the restrictions would be that their nature and cost should be fully known *before* the foreign investor decides to invest. In this connection, Brazil preferred to work with a tax paid at the moment of entry, with no other obligations in the future, than the Chilean system of a quarantine, necessarily involving the Central Bank receiving, managing and remunerating deposits from investors for prolonged periods of time.

Yet the problem with Cases 4, 5, and 7 was that foreign investment into some specific fixed income instruments in Brazil before December 1993 could take place through the portfolio investment foreign exchange window—Annex IV—without any misrepresentation. Commodities mutual funds, debentures, privatization currency (securitized Treasury bonds), and derivatives (entailing constructions such as the box with options deals, producing a synthetic of a fixed income instrument) were all permitted up to mid-1993. From then on, each such instruments was withdrawn from Annex IV in a sequence and moneys invested thereof had to be reallocated. In each case, as time was given to investors to reallocate their investments into different instruments, one saw a sequence of shifts of resources in a succession as resources into commodities mutual funds flew partly into debentures then partly to box with options, until all varieties of fixed income instruments were formally forbidden. The fact that these restrictions were not done all at once, but in sequence, produced these shifts, which

4. Resolution 1,289 of the National Monetary Council (the regulatory body with the legal competence to issue foreign exchange regulation) regulated portfolio investment in its varied forms. The annexes of the Resolution had regulations for each family of investments. The most popular was Annex-IV, regulating investments into the Brazilian stock exchange.

gave the impression of a cat and mouse game. More essentially, however, there was little or no circumvention as resources were *already invested within the country* in Real denominated instruments. At the end of 1994, all new flows into the portfolio investment window fell to US$5.0 billion, from US$6.5 billion in 1993, while the inflows into the special class of fixed income funds created for the specific purpose of removing all fixed instruments, even synthetics from the portfolio investment rules, received US$1.3 billion, with all taxes duly paid, as seen in table 2C.1 in the following. Another vehicle, "Privatization funds," was created to capture investors' interest in privatization, received US$1.9 billion in 1994. The fact was that after the grandfathering was completed through 1994 and after, there was practically no claim or indication of any fixed income investments into Annex IV, except for rumors of operations known as Blue Chip Swaps examined later.

The CC-5 Accounts

Case number 10 involves nonresident banking accounts within Brazil (known as "CC-5 accounts") that enjoy full convertibility. Indeed, because the nonresident that can open such an account must be a bank, and this bank can transact on behalf of third parties, one is right in pointing out that this vehicle, in theory, represents a full fledged opening of the capital account. The interesting question to raise here is why this platform is not used more widely as there is no restriction whatsoever in the amounts and on the nature of the transactions made *at the outflow end.*[5] Interestingly, the problem here is disclosure. Any such transactions would necessarily involve the full identification of the parties involved and all explanations as to the nature of the transaction made. And, of course, at the inflow end, if the transaction is identical or even similar to the ones that involve a special tax payment or any other restriction, the Central Bank will make sure that restrictions are obeyed and taxes paid or simply instruct the bank not to do or to undo the transaction. The public and the regulator scrutiny on the movements in the CC-5 accounts is very severe, given cases of fraud, misuse, and money laundering, and for this very reason banks and individuals tend to be extra careful with transactions of this kind; it does not seem plausible that operations to circumvent restrictions to inflows were made in this channel in any significant way; it suffices to look at the flows that are chronically negative. In any event, explicit taxes on inflows through CC-5 accounts were enacted by mid-1995 in line with the taxation of fixed income mutual funds.

5. For a review on the status of the capital account liberalization in Brazil, see Franco and Pinho Neto (2005).

Leads and Lags

Case 5 in Carvalho and Garcia treats as circumvention what may be described as an exception. In Brazil, exporters are allowed to enjoy leads, that is, to anticipate export revenues through bank lines offered by local banks against the collateral of the export receivables. These advances were made and continue to be made at international costs and indexed to the dollar. They are perfect to allow exporters to arbitrate interest rate differentials, and surely a very relevant part of the profitability of exporting from Brazil is related to this possibility. Many see this as a financial subsidy, as exporters are thus capable of undertaking interest rate arbitrage in ways that were forbidden to financial players more generally by this time. Yet the fact that restrictions and taxes to short-term inflows could not reach leads and lags undertaken by exporters and importers meant that these groups were exempted from the restrictions, which, however, did not seem to bother regulators at all as any help into exporters profitability and into the increase in import penetration ratios was warmly welcome in times the foreign exchange anchor was deemed crucial to end hyperinflation. There was some concern, however, with the case of a nonexporter who could go into a Brazilian bank, draw funds from a line backed by export receivables he did not actually possess, and use the resources to invest in fixed income instruments. The only condition this fellow had to obey was to actually prove the shipment of such exports after a maximum of 180 days. There were some such cases, and what happened, though in a small scale, was that this fellow would have to purchase export performance from an exporter that did not advance receivables. The exporter would sell his rights at a premium, capturing most of the gain of the arbitrageur. Again, the exporter would stand to gain, even if some of the gain is reaped by the financial middlemen. Again, there was no circumvention, or loss of effectiveness, as described.

Derivatives, BTBs, and BCSs

Case 11 is not really a transaction; it is more like a statement of fact, or faith, that in a world so rich in derivatives, including specifically nondeliverable forwards (NDFs) traded over the counter in New York or futures in the Chicago Mercantile Exchange (CME), anything is possible, namely a "synthetic" of a fixed income investment can be made in New York or in the Caribbean without anybody bothering with foreign exchange and banking regulations in Brazil. Yet this is only true if *some connection* is established with the fixed income market in Brazil; if not, how can the interest rate arbitrage be done?

With derivatives, loans, or stocks, one can indeed build what has been called a "back-to-back" (BTB) operation. Case 7 is one such operation, not quite the typical one. The most common was what was called the "blue chip

swap" (BCS) mentioned a bit out of context by Carvalho and Garcia in connection with CC-5 accounts, and also mentioned in the preceding as related to Annex IV. It consists of two theoretically unconnected transactions done in Brazil and offshore. A bank buys, for instance, Petrobras American depository receipts (ADRs) with a repo in New York, and the Brazilian branch of the same bank sells the same stock with a reverse repo agreement. The foreign leg of the deal was exactly the opposite of the Brazilian leg, the short and long positions in the same asset cancel out, but the different financing cost at both repo and reverse repo operations is where the interest rate differential could be captured, if and only if the same entity could bank the two legs at the same balance sheet and other market risks are controlled for.

As these deals started to appear, many regulators, in Brazil and abroad, jumped in to understand the transaction and fit it into their rules. Tax authorities in Brazil grasped the spirit of the transaction, as it involved very visible fingerprints in the stock exchange, and attacked very directly all parties suspect of such dealings. The Central Bank, in turn, leveraged the attack as the foreign exchange regulation forbids what is called "private compensation," or schemes through which parties evade a foreign exchange transaction offsetting credits and debits on shore and offshore. Penalties here may go up to 100 percent of the values transacted.

The BCS deals existed much more as legend than fact, and known deals were subject to very high penalties whose values were made public to further discourage banks from undertaking such risks.[6] The BTB deals became a primary model of laundering moneys offshore that could not enter the country either in view of tax consideration or worse. During the course of 2005, in a high profile Congressional Commission of Inquiry, it was found that the Workers Party appeared to have entered into several BTB transactions to use illegal campaign money held abroad to pay for things and bribe people within the country. This deal certainly belongs to the circumvention family described by Carvalho and Garcia: moneys held offshore by Partido dos Trabalhadores (PT) could have been deposited in an offshore branch (or parallel bank) of a Brazilian bank, which, quid pro quo, lent money to PT in Brazil through an intermediary, entirely out of market conditions, especially regarding collateral.

Indeed, as a conclusion, one may admit that there are many theoretical ways to circumvent banking and foreign exchange regulations and undertake fraud. It is an entirely different matter to presume that this could be done on large scale to the point of turning regulations into a pointless exercise, given compliance discipline and penalties involved.

6. Often the Central Bank implemented its penalties and informed the tax authorities, which, however, queue the process so as to apply the penalty only at the year before the expiration of the five-year prescription period.

IOF Collection and the Nature of Inflows

Last, some interesting pieces of evidence could be offered to provide some comfort to taxpayers, understandably concerned about Carvalho and Garcia's allegations. One of the most important restrictions to inflows subject to the accusation of ineffectiveness, given alleged circumvention possibilities, is the IOF, the financial transactions tax due after the liquidation of certain foreign exchange transactions. I searched my archives to find the documents used at the time by the Central Bank to indicate the amounts to be collected by the tax authorities. Table 2C.1 offers the estimates of the Central Bank of the amounts collected in the several varieties of incidence of the IOF tax through time. Even though these amounts are *not* the ones reported by tax authorities based on actual collection,[7] there is no reason to doubt that these amounts were actually paid as the Central Bank works technically as a substitute to the tax authority requesting the proof of tax payment in order to confirm the registration of foreign capital along the lines of existing legislation and to authorize any remittances such as interest and repatriation.

Table 2C.1 provides a history of the IOF usage for that purpose as it covers all changes occurring between November of 1993—when the first presidential decree was issued creating the possibility of taxing certain foreign exchange transactions at certain rates and delegating to the Finance Minister limited powers to change the tax rate—until June of 1996. This specific cutoff date is arbitrary; the active use of the IOF continued more or less unchanged at a restrictive stance until the Asian crisis, when most restrictions were removed and tax rates changed to zero. Early in 1998, however, after what was seen as a very successful response to the Asian crisis—a combination of a fiscal package with monetary tightening—capital inflows regained momentum very rapidly, international reserves reached their all time high, and, as a consequence administrative restrictions to inflows were reinstated, and the IOF tax on certain types of inflows was reestablished very quickly. A few months later, with the Russian and long-term capital management (LTCM) crisis, such restrictions were removed and were not to be seen again.[8] Table 2C.1 does not cover the whole period in which the IOF and other restrictions to inflows were deployed—November 1993 to mid-1998—but its coverage and numbers provide important indications as to the impacts of the IOF on capital inflows.

During the period covered by table 2C.1, the total amount collected was

7. These, by the way, are not published with this level of detail.

8. The procyclical character of restrictions to capital inflows should be seen as an obvious thing, at least in the minds of those, amongst whom I am included, who created and managed these instruments through time: for what *other* possible reason would the authorities possibly introduce such restrictions? Yet for those interested in econometric technique to set proof of firsthand accounts of declared intentions, please refer to Cardoso and Goldfajn (1997).

Table 2C.1 **Some forms of capital inflows into Brazil, IOF tax rates,[a] and estimates of amounts collected,[b] December 1993 to June 1996 (monthly flows, in US$ millions)**

	Fixed income funds			Privatization funds			Borrowing abroad (all formats)[c,d,e]				
Time period	Inflows	Rate (%)	$	Inflows	Rate (%)	$	Inflows	Agriculture	Taxable	Rate (%)	$
Dec. 1993	80	5.0	4	0	0.0	0	1,714	0	1,714	3.0	51
Jan. 1994	82	5.0	4	0	0.0	0	745	0	719	3.0	22
Feb. 1994	82	5.0	4	0	0.0	0	770	0	563	3.0	23
March 1994	102	5.0	5	6	0.0	0	714	0	710	3.0	21
April 1994	119	5.0	6	137	0.0	0	932	0	498	3.0	28
May 1994	68	5.0	3	232	0.0	0	283	0	256	3.0	8
June 1994	450	5.0	23	266	0.0	0	304	0	241	3.0	9
July 1994	6	5.0	0	54	0.0	0	351	0	348	3.0	11
Aug. 1994	81	5.0	4	87	0.0	0	349	0	348	3.0	10
Sept. 1994	216	9.0	19	60	0.0	0	540	0	529	3.0	16
Oct. 1994	226	9.0	20	846	0.0	0	925	0	824	3.0	28
Nov. 1994	0	9.0	0	174	0.0	0	1,404	0	1,370	7.0	96
Dec. 1994	2	9.0	0	77	0.0	0	1,459	0	1,300	7.0	102
1994 total	1,434		89	1,939			8,776	0	7,706		374
Jan. 1995	0	9.0	0	16	0.0	0	401	0	200	7.0	28
Feb. 1995	0	9.0	0	79	0.0	0	193	0	193	7.0	14
March 1995	0	5.0	0	128	0.0	0	103	0	79	7.0	7
April 1995	1	5.0	0	67	0.0	0	650	0	635	0.0	0
May 1995	64	5.0	3	95	0.0	0	858	0	850	0.0	0
June 1995	1	5.0	0	120	0.0	0	2,839	5	1,804	0.0	0
July 1995	91	5.0	5	164	0.0	0	2,383	85	1,497	0.0	0
Aug. 1995	41	5.0	2	484	0.0	0	2,318	98	1,832	0.0	0
Sept. 1995	0	7.0	0	62	0.0	0	1,121	383	688	2.7	31
Oct. 1995	0	7.0	0	170	0.0	0	1,786	112	1,549	2.2	39

Table 2C.1 (continued)

	Fixed income funds			Privatization funds			Borrowing abroad (all formats)[c,d,e]				
Time period	Inflows	Rate (%)	$	Inflows	Rate (%)	$	Inflows	Agriculture	Taxable	Rate (%)	$
Nov. 1995	12	7.0	1	219	0.0	0	1,275	187	996	2.9	37
Dec. 1995	1	7.0	0	351	0.0	0	1,768	189	1,481	2.5	45
1995 total	211		11	1,955		0	15,695	1,059	11,804		201
Jan. 1996	2	7.0	0	2	0.0	0	1,359	112	949	2.7	37
Feb. 1996	4	7.0	0	4	5.0	0	1,677	203	1,392	3.3	56
March 1996	2	7.0	0	2	5.0	0	1,467	258	876	2.1	30
April 1996	3	7.0	0	3	5.0	0	1,670	499	1,107	2.1	35
May 1996	0	7.0	0	0	5.0	0	2,717	397	2,228	1.2	33
June 1996	0	7.0	0	0	5.0	0	3,343	585	2,090	1.7	58
1996 total	11		1	11		0	12,233	2,054	8,642		249
Grant total	1,736		105	3,905		0	38,418	3,113	29,866		875

Source: Banco Central do Brasil, Personal Archive.

[a]Legal instruments: Decree 995, Nov. 25, 1993—3 percent IOF on fixed income funds and 3 percent on foreign borrowing generally defined. Finance Minister Directive (*Portaria*) n. 534, Oct. 19, 1994—9 percent IOF on fixed income funds, 7 percent on foreign borrowing, and 1 percent on inflows of portfolio investments (stock exchange); *Portaria* n. 95, March 9, 1995—5 percent IOF on fixed income funds, zero for all other inflows; *Portaria* n. 202, Aug. 10, 1995—7 percent IOF on fixed income funds, 5 percent on foreign borrowing, 7 percent on CC-5 accounts inflows, and zero for portfolio investments (stock exchange); *Portaria* n. 205, Aug. 15, 1995—zero for loans directed to agriculture; *Portaria* n. 228, Sept. 15, 1995—5 percent on foreign borrowing with tenors up to two years, 4 percent for those up to three years, 2 percent for those up to four years, 1 percent for loans up to five years, and zero if longer; *Portaria* n. 28, Feb. 8, 1996—adds a 5 percent IOF on inflows to privatization funds; *Portaria* n. 149, June 11, 1996—exempts BNDES.

[b]Values for taxes due listed according to the date of the inflow, not the date of payment.

[c]There are other nontaxable forms of borrowing not included in the table, such as import financing, leasing contracts, and flows from multilateral agencies.

[d]After September 1995, rates are averages, as they depended on the maturity of each loan.

[e]Taxes due might be larger than taxable inflow multiplied by the rate given taxation, not reported in the table, of similar transaction made through CC-5 accounts.

slightly over a billion dollars, including what is reported in the table, in addition, (a) the revenues produced by the IOF on inflows directed to the stock exchange, which were taxed with a rate of 1 percent between November of 1994 and March 1995, with estimated revenues of US$88 million; and (b) the revenues produced by the 7 percent IOF on CC-5 based inflows in force from September 1995 to the last month covered by the table, with total revenues of US$24 million.

Table 2C.1 shows that the fixed income funds lost their popularity after the 9 percent IOF tax, the same happening to privatization funds after the 5 percent IOF tax early in 1996. In any event, the largest part of the *taxable inflows* was in the foreign borrowing column; it was on this region that most of the Central Bank's action—through the IOF and through minimum tenors—was conducted. Table 2C.2 helps complete the picture of the impact of restrictions to capital inflows into Brazil during these years.

The numbers in table 2C.2 cover the most part of the capital account so that if there is any field of play as regards the impact of restrictions, whether taxes of minimum tenors, it is here. The period covered starts when the concern with excessive capital flows started and goes up to the first quarter of 1999. It is very clearly visible that the number of issues and volumes grew constantly, with some seasonal variation and also with declines entirely within what would be expected in mid-1994 (critical months of the Real Plan), early 1995 (Tequila Crisis, very short lived) and 1997-IV (the Asian crisis). The impact of the Russian and LTCM crisis is way much larger than all the other crises, as we all know.

The one interesting aspect of this table in connection to the topic of this note refers to the average maturity and the spreads. The trend toward lower spreads only highlights the importance of the fact that tenors are extended more or less constantly through time.[9] One should note that IOF taxes pictured in table 2C.1 combines with direct impositions as to minimum tenors, for instance, in order to affect the outcomes reported in table 2C.2. There seems to be no doubt that as one looks into the evolution of these flows that the quality (tenors and spreads) improved through time, just as aimed by the regulatory restrictions, whether tax or administrative. In order to argue the ineffectiveness of regulatory policies toward improving the quality of capital inflows, one has to seek alternative explanations for the developments shown in table 2C.2. The course of economic reforms and the success of the Real Plan are surely very relevant explanations to the improved access to international capital markets, but most likely with a little help from regulatory restrictions to short-term inflows.

9. Carvalho and Garcia rightly remark that since withholding tax on interest on foreign loans depended on the maturity and that there were restrictions as to minimum maturities, there were several cases of "puts" and "calls" designed to shorten the maturity, if necessary. These options were reported to the Central Bank and were denied if their exercise would conflict with minimum tenors required, but accepted otherwise. In these cases, the withholding tax was charged as if the loan was shorter.

Table 2C.2 **Foreign borrowing from Brazilian residents in the form of registered loans: number of issues, volume, average maturity, spreads, and costs, from 1992-I to 1999-I (quarterly flows, in US$ millions)**

Year/quarter	No. of issues	Value (in US$ millions)	Average tenor	Average spread	Total cost (%)
1992					
I	49	1.551	2.6		12.02
II	84	1.763	3.0	568	11.32
III	38	1.130	3.7	532	10.27
IV	31	1.127	3.7	614	11.38
1993					
I	47	1.879	3.5	704	11.68
II	81	3.977	3.6	713	11.67
III	65	2.749	4.8	609	10.7
IV	74	3.544	4.4	534	9.92
1994					
I	79	5.019	4.0	497	10.17
II	57	1.587	6.0	453	10.9
III	39	1.813	5.1	526	12.05
IV	55	3.153	4.8	490	11.87
1995					
I	42	1.496	5.1	436	11.82
II	57	3.325	4.4	527	11.27
III	91	5.866	4.1	529	11.26
IV	68	3.630	6.2	517	10.92
1996					
I	66	4.688	6.6	462	10.52
II	113	6.488	7.0	465	11.11
III	77	3.735	7.2	465	11.28
IV	110	6.657	7.7	407	10.22
1997					
I	71	3.712	8.1	352	9.77
II	79	9.433	12.4	436	11.02
III	95	6.865	8.5	386	10.09
IV	82	5.852	7.4	407	9.94
1998					
I	120	12.076	7.1	464	10.12
II	104	11.121	9.0	571	11.24
III	96	16.939	8.1	532	10.53
IV	77	3.094	6.2	779	12.45
1999					
I	98	4.165	4.2	604	10.87

Source: Bulletin of Banco Central do Brasil, Personal Archive.

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Comment Marcelo Abreu

It is perhaps important to insist on the persistent relevance of the issue in Latin America as populist strains of economic policy prove to be extremely resistant in several economies, and a backlash does not seem out of the question in the more extreme cases. Only last Monday (November 28, 2005), Brazilian newspapers carried an article by a former Finance Minister who feigned surprise to find out that there were still economists who proposed a deepening of the liberalization of capital controls in Brazil.

Carvalho and Garcia's paper is structured in three parts. There is a perhaps too short history of capital controls in Brazil, followed by a detailed discussion of cases of circumvention of capital controls between 1993 and 2000, and a vector autoregression analysis testing whether controls on capital inflows in Brazil have been effective in reducing the inflow of financial capital.

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It would be interesting to have a bit more material and also more precision on the historical aspects on capital flows. It does not ring true that exchange rate controls did not apply to foreign direct investment in the past. Recurrent wrangles about how reinvestment should be treated both in the early 1950s and in the early 1960s had to do with registration of reinvestment as foreign direct investment and so with capital controls even if in a roundabout way. Still clearer is the relevance of circumvention of desincentives of foreign direct investment inflows implied in the incredibly complex multiple exchange regimes adopted in the 1950s. The possibility of importing capital goods without going through the foreign exchange market was a vital discretionary element in the attraction of foreign direct investment coupled with all sort of subsidies, absolute protection, and carefully controlled right of establishment.

The treatment of a long list of techniques used to circumvent capital inflow control is extremely interesting. But perhaps too many circumvention cases are examined in detail in the paper, with a resulting loss of focus. It would be useful to have such cases classified under some taxonomy. Focus could then be centered on those circumvention techniques that are less country specific or relatively more sophisticated. Good candidates would be short-term capital flows disguised as foreign direct investment (Case 1), labeling fixed investments as equity investments (Cases 2 and 3) and investing through box operations with options for earning fixed income returns (Case 4). And also swaps of blue chips and CC-5 (nonresident accounts) positions (Case 10) and trade in international derivatives markets (Case 11). The other cases—privatization currency (Case 5); ACC (foreign forward currency arrangements; Case 6); Central Bank of Brazil (BACEN) Resolution 63, so-called Caipira operations (Case 7); Siderbrás debentures (Case 8); bond issues with options to exceed the minimum loan terms (Case 9)—seem all to be of relatively secondary interest and too specifically focused on Brazilian recent experience. It would have been good to get a clearer picture of the relative actual and potential importance of such circumvention techniques even if based on rough estimates of market size.

The econometric analysis depends crucially on measures of the importance of capital controls. The indexes for capital inflow and capital outflow controls are derived from the accumulation of specific measures introduced by the Brazilian authorities updated to 2004 (Cardoso and Goldfajn 1998). These indexes are a rather crude proxy to measure restrictions imposed by capital controls as recognized in a specific note. But the acknowledgment is perhaps not enough to reassure us. Very significant measures are deemed to have had the same impact as rather minor ones, for instance, for the period before 1995, minor changes in travel foreign exchange allowances and major changes in the taxation of foreign borrowing. It would perhaps pay to go beyond counting and look more closely

into specific measures and assess their relative importance so as to capture their different intensity.

It is slightly disturbing that indexes purporting to measure the impact of capital controls inflow do not somehow reflect the paper's essential idea, which is that capital controls lose power over time. The paper's conclusion would seem to imply a criticism of the index used to measure capital controls.

In any case a list of measures that were considered relevant in 1995 to 2004 would be welcome and complete extant lists for the former period (Cardoso and Goldfajn 1998).

The vector autoregression analysis testing whether controls on capital inflows in Brazil have been effective in reducing the inflow of financial capital covers only the 1995 to 2001 period. Does the number of observations warrant too strong conclusions based on the vector autoregression analysis? Zero impulses are included within intervals of confidence in all four exercises based on different capital inflow measures. These problems should have been explicitly discussed.

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