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José De Gregorio y Andrea Tokman R.

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Economic Policy Papers of the Central Bank of Chile
Huérfanos 1175, primer piso.
Teléfono: (56-2) 6702475 Fax: (56-2) 6702331

Flexible Exchange Rate Regime and Forex Interventions: The Chilean Case*

José De Gregorio
Central Bank of Chile

Andrea Tokman R.
Central Bank of Chile

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Abstract

This paper reviews the recent experience with a flexible exchange rate regime and forex interventions in Chile. It discusses the state of the economy and the policy implications that arise in the new regime; in particular, the reaction of the authorities to unexpected movements in the exchange rate, through monetary policy and sterilized interventions. The low risks associated to financial and price instability, prevailing in Chile, justify limiting policy reaction to exceptional circumstances in the exchange rate market.

1 Introduction

Managed exchange rate was a common feature of the Chilean exchange rate policy during the nineties and before. The move towards a flexible exchange rate at the end of the decade implied a *de facto* compromise away from exchange rate targeting. Macroeconomic stability consolidated with low inflation, sound fiscal policies and a strong financial system made the compromise credible and feasible in the eyes of the market and authorities. However, an escape clause was kept open when flexibility was introduced. The Central Bank reserved the right to intervene in the foreign exchange market under exceptional circumstances, and it actually did in two four-month episodes, in 2001 and 2002.

The purpose of this paper is to analyze exchange rate management in the Chilean economy, within the flexible exchange rate regime. First, in section 2, we briefly describe the conditions under which the flexible exchange rate regime was implemented in September 1999. In section 3 we discuss policy responses to exchange rate variations within the floating regime. We revise the rationale for intervening through interest rates and/or directly in the foreign exchange market, the strategy and

* This paper was prepared for the BIS meeting on "Forex Intervention: Motives, Techniques and Implications." The views expressed in it are those of the authors and do not necessarily reflect those of the Central Bank of Chile.

instruments used and their effectiveness. In section 4 we deal explicitly with the Chilean experience with intervention. Section 5 presents the conclusions and policy implications.

2 The Implementation of the Free Float

Following a long history of managed exchange rate, the Central Bank of Chile decided to let the exchange rate float freely in September 1999. This was a reasonable thing to do; the coexistence of two nominal anchors —inflation and exchange rate— eroded the credibility of the inflation-targeting regime, and undermined its effectiveness. Moreover, although there were risks associated with the float, the benefits far exceeded the potential costs.

Most of the crises and recessions in Chile have been associated with some rigidity in the exchange rate. Most notably, in 1982, a fixed exchange rate, together with a bad international environment and a fragile financial system led to a recession where output fell by 13%. The next recession, in 1999, that caused a decline in output of 1%, was also linked to the difficulties to adjust the exchange rate to the deteriorated international environment and heavy pressures on the peso during 1998, which led to a sharp tightening of monetary policy and a narrowing of the exchange rate band. The main rationale provided for the monetary tightening in the eve of the Asian crisis was the need to reduce expenditure and consequently the current account deficit, then larger than 5% of GDP, which were viewed as difficult to finance in a scenario of a sharp decline of capital flows. In addition, the fear that the inflationary repercussions from a sharp depreciation, and the potential balance sheet effects on the corporate sector, which could contaminate the financial system, were the reasons for defending the currency.

As financial turbulences passed and inflation declined to levels close to 2%, the authorities decided to implement a full-fledged inflation target, which also included increased degrees of transparency of the monetary policy. Since then, the target has been to keep inflation within a range between 2% and 4% within a horizon of 12 to 24 months. As part of this strategy, the implementation of a flexible exchange rate regime was central.

Arguments that favor flexible exchange rates are abundant in the economic literature. The most traditional ones, associated with Mundell (1961), state that flexible exchange rates are key in easing the adjustment to real shocks in the presence of price stickiness. In such case, real shocks will generate movements in the exchange rate that will produce the necessary shift in resource allocation, reducing the impact on output and employment. In contrast, a real shock that calls for a depreciation of the currency is magnified in the presence of a fixed exchange rate. The only way to achieve a more depreciated real exchange rate is through a recession that brings deflationary pressures with it.

Another conclusion arising from the Mundell-Fleming model is that with floating exchange rate regimes, domestic authorities retain the flexibility to use independent monetary policy as a stabilizing tool. Thus, it preserves the possibility of conducting countercyclical monetary policies. Credibility is a key factor for its effectiveness, which can be achieved with and independent central bank, as is the case of Chile. In contrast, under a fixed exchange rate regime, monetary policy becomes subordinated to the commitment with the exchange rate, and fiscal policy remains the only stabilization tool, which has proven to be a titanic task as evidence shows that it is highly procyclical due to poor access to financial markets (Gavin and Perotti, 1997). In Chile, there is still

scope for stabilization through fiscal policy. Indeed, Chile is the only country in the region that can have countercyclical fiscal policy. The government has implemented a rule based on a cyclically adjusted budget deficit. Although the advantages of having fiscal rules and limiting discretionary fiscal policy are beyond the scope of this discussion, the disadvantages of giving up monetary policy and relying only on fiscal policy are evident.

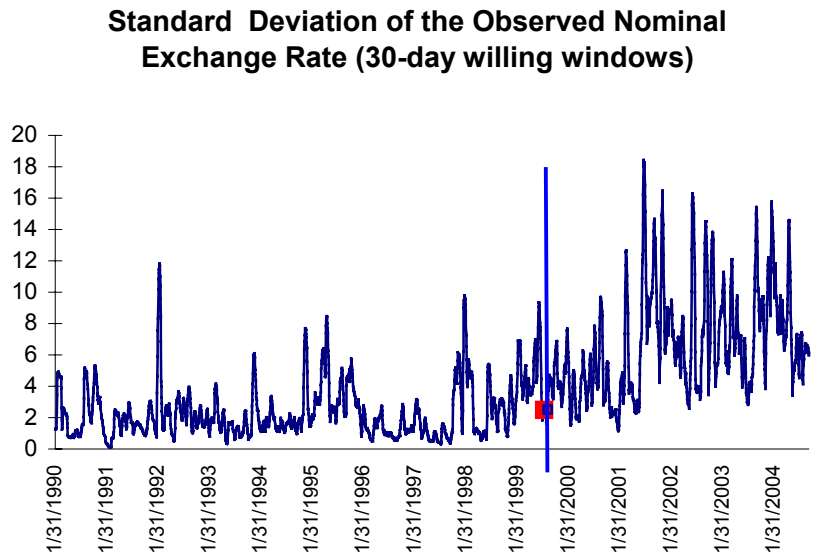
Arguments against a shift towards floating exchange rate regimes are the costs associated with the unsurprisingly increased exchange rate volatility (figure 1). Still, the threat that such increase inflicts on the Chilean economy is limited. First, the relative volatility of the Chilean peso remains within normal levels by international standards (table 1). Additionally, price and financial stability have not been affected since the exchange rate has been floating. The pass-through from depreciation to domestic inflation was relatively small and has declined since the peso began floating. Regarding financial fragility, in late 1999 there was only slight liability dollarization in the banking system, and the corporate sector was adequately hedged to exchange rate risk. Finally, the derivatives market has deepened substantially since the exchange rate was allowed to float. Thus, Chile was well prepared to float, with little reason to fear floating.[1] In such a scenario, the flexible exchange rate system should have operated smoothly, as it has done for most of the floatation period. Nevertheless, there have been a few episodes where the Central Bank has reacted to movements in the exchange rate. These episodes have been extremely rare and constrained enough as to keep Chile within the limited group of countries that are qualified as both de facto and de jure floaters in all international classifications (see, for example, IMF or Levy-Yeyati and Sturzenegger 2003).

3 Policy Response to Exchange Rate Fluctuations: An Overview

The Central Bank of Chile, like most central banks around the world, has responded to exchange rate fluctuations in several ways during the past years: first, during the nineties, with capital controls and reserve accumulation; then, during the Asian crisis, with a combination of monetary and intervention policies. Finally, after the exchange rate was let to float, there have been two periods of sterilized intervention, when the currency was under extreme stress and the monetary authority believed that it was becoming misaligned and the market was overreacting. As such, these reactions have been rare and not automatic.

[1] For further details, see De Gregorio and Tokman (2004).

Figure 1. Nominal Exchange Rate Volatility



Source: Authors' calculations based on data from the Central Bank of Chile.

Table 1. Currency Volatility

	Arg$	Real	Mex$	Chile$	Yen	Aus$	NZ$	Safr$	Can$	Swed$	Euro
1990-1995	1.71	25.25	8.9	7.44	10.67	8.14	6.67	5.93	4.44	11.94	--
1996-2000	0.45	6.68	8.08	4.99	11.79	9.94	10.12	9.58	4.8	9.97	10.62
2001-2004 (oct.)	15.67	16.63	8.02	9.25	9.43	11.41	12.06	18.55	7.18	11.17	10.57

Source: Central Bank of Chile, based on data from *Reuters*.
Note: The volatilities are computed with respect to the US dollar. The methodology used corresponds to "Riskmetrics", proposed by JP Morgan, were a Garch(1,1) approximation is achieved by modifying its specification, so that the standard deviation depends on the first lag in levels and variance of the first differences.

3.1. Monetary policy response

With respect to the reaction through interest rates, the empirical evidence for developed (Clarida et al., 1998) and emerging countries (Mohanty and Klau, 2004) confirms the pattern observed in Chile: inflation-targeting countries do react to exchange rate misalignment. And, as in the Chilean case, it is rarely done in a mechanic way. This is wisely so, given the extreme difficulties that authorities have in predicting future exchange rates and identifying movements away from their equilibrium levels.

Policy rule estimates by Schmidt-Hebbel and Tapia (2002) and Caputo (2003) confirm that there has been a reaction to fluctuations in the exchange rate, over and above its effects on expected

inflation, but smaller than the reaction to expected inflation and output. This appears as if the exchange rate equilibrium was a target *per se,* which is inconsistent with having only one nominal anchor. In such case, even if expected inflation was lined up with the target, the monetary policy would react to deviations of the exchange rate from its equilibrium. This result is not surprising since it was obtained for monetary policy reaction functions estimated during the nineties, where there was a declared objective of exchange rate stability, implemented through an exchange rate band.

However, the above-mentioned results must be analyzed with caution. In particular, a significant reaction to exchange rate deviations might reflect an overestimation of its effects on future inflation. In fact, if the inflation model used by the monetary authority is unable to fully anticipate a permanent reduction in the pass-through, the policy reaction to a given depreciation will be larger, as the expected inflation effect will also be larger. As a result, the ex-post reaction will appear to be bigger than it really is, suggesting a very reactive monetary authority. Alternatively, responding to exchange rate deviations on top of its effects on expected inflation might be reflecting reactions to expected inflationary effects that are farther away in time than the policy horizon. In such a case, the exchange rate reaction term is the response to an omitted variable (inflation in an excluded time horizon).

There is also an issue of endogeneity in the estimation of Taylor rules, as the exchange rate is determined by the interest rate, thus reducing the robustness of results obtained from reduced-form equations. In the same sense, there is an endogeneity problem in estimating whether monetary policy can have an effect on the exchange rate. Indeed, using SVARs for the Chilean economy, Parrado (2001) estimates that a contractionary monetary policy of 100 basis points produces a significant instant real appreciation close to 1%, which is undone by the twentieth month.[2]

The extent to which monetary policy responds to exchange rate shocks should depend on whether the authority has alternative instruments, such as capital controls and forex intervention, their relative efficacy under different circumstances, and the nature and persistence of the exchange rate shock. For example, there should be no monetary policy responses to temporary shocks, as they will not produce lasting effects and therefore will not modify inflation expectations in the policy horizon. However, this depends on the credibility of monetary policy. If credibility is low, temporary shocks will have more persistent effects on inflation, as the public will expect authorities to accommodate to higher inflation. Conversely, its effects will be minimized if the public perceives that monetary policy will be tightened if inflationary repercussions are significant.

One of the main benefits of having a flexible exchange regime is that it allows fast adjustments in relative prices in the face of real shocks, thus reducing its costs. Therefore, it is unlikely that interest rates will need to be moved in the face of exchange rate movements that are a response to real shocks (i.e. terms of trade or productivity shocks), since it is unlikely that they will have an impact on inflation. Indeed, movements in the exchange rate that respond to adjustments in the equilibrium real exchange rate will have less inflationary effects than movements that are not a response to changes in fundamentals. This is the main reason, as we argue below, for exceptional sterilized intervention.

[2] This reaction is found to be small, nearly half of the one found for Australia, Canada and New Zealand (Zettelmeyer, 2000).

Ultimately, in a flexible exchange rate regime, the authorities should react to exchange rate movements only if they impact the rate of inflation in the policy horizon, which, given the estimates of pass-through, is limited. Attempting to target a misaligned exchange rate, for example to artificially reduce inflation, may only bring costs, as the Chilean experience limiting exchange rate adjustments has shown. However, preventing overreactions in the foreign exchange from leading to inflationary pressures through monetary tightening, may reduce the costs of achieving the inflation target.

3.2. Exchange Rate Intervention

Alternatively, or complementarily, many countries react to exchange rate movements through some type of intervention policy. In fact, most countries classified as free-floaters intervene in the forex market.[3] And even those that do not intervene have retained the option to do so in particularly stressful circumstances.

Two interesting issues emerge from the observed reactions to exchange rate movements through interventions. The first has to do with the high support it has received at the policymaking level, given the much more skeptical view in the academic world of interventions effectively producing a change in the exchange rate, its trend, or its volatility. The second is related to the decision to react through the forex market and not through monetary policy. We will leave this second issue for the next sections and will concentrate now on a broad review of the efficacy of interventions. In the next sections we will discuss the intervention experience in Chilean and conclude with a discussion on the optimal response to exchange rate fluctuations.

In the context of a flexible exchange rate regime, there are three channels through which interventions in the forex market affect the exchange rate.[4] The first one is the portfolio channel, whereby changes in the desired allocation of currencies in the portfolios of investors could cause large swings in the exchange rate. In this case the intervention of the central bank could reduce fluctuations by providing the necessary supply of currency to reduce fluctuations. The research that has analyzed the effectiveness of intervention through the portfolio channel concludes, more often than not, that sterilized interventions have very small short-run effects, mainly because intervention volumes are small.

A second channel through which intervention affects exchange rates is signaling. The idea is that intervention provides signals about the future course of monetary policy, which in turn affects asset prices. For example, when intervention is done to avoid depreciation, the next step would be to tighten monetary policy, which should strengthen the domestic currency. This view has received some empirical support, but we do not believe it is very relevant, because many times, and as we

[3] Only New Zealand and Poland have abstained from intervening and can be considered pure floaters. The US, Japan and the EU have intervened in the market at different points in time, but recently have shown a diminishing trend in frequency, while increasing in size. Other examples are the diminishing interventions required by European central banks with the introduction of the euro in 1999, while de European Central Bank has intervened on only two occasions, both in the year 2000; The UK and Switzerland have not intervened since 1992, except in 2000, as a coordinated action to support the euro; and Canada abandoned its mechanical intervention rule, reducing its intervention activity substantially.

[4] In many Latin American countries, including Chile in the 1990s, interventions were done to target a specific level or path for the exchange rate, but we do not examine them here because they are not consistent with the free floating we are discussing here. For further discussion see De Gregorio and Tokman (2994).

argue below for the case of Chile, intervention is done precisely to prevent a monetary tightening to avoid inflationary pressures stemming from excessive depreciation.

There is a third channel, called the information channel. In this case the authorities transmit certain information to the market via intervention and its announcements. In the Chilean case, for example, that the exchange rate was becoming out of line with the evolution of fundamentals. The empirical analysis of the information channel has centered on the microstructure of the foreign exchange market, concluding that the impact of the interventions is bigger the larger the uncertainty in the market, as measured by exchange rate volatility.

While most central bank officers believe that interventions may have an effect on the exchange rate (Neely, 2001), the empirical evidence has been unable to provide a robust support to that notion. In fact, although there have been swings in the prescribed efficacy of interventions through time, today the issue is still open to debate. The relative consensus reached by earlier studies regarding the small effect of sterilized interventions on the exchange rate (Jurgensen 1983), was at conflict with the apparent success of coordinated interventions that followed the Plaza and Louvre agreements.[5] Moreover, numerous recent studies have arrived to contradictory results.[6]

The disparity of results can be partly attributed to the presence of two empirical problems. The first one is lack of data, and stems from the reluctance of central banks to publish official intervention information, which makes the task of gathering statistics tedious and deficient.[7] The second one is the inability to control for the endogeneity of interventions in the estimations of their effect on the exchange rate.

Fortunately, availability of information and reduced endogeneity bias due to the specific characteristics of the intervention policy followed in Chile during the floating exchange rate regime has allowed for an evaluation of its impact (Tapia and Tokman, 2004). The two intervention episodes after 1999 were found to have effects on the exchange rate, and are discussed below.

4 Chile's Intervention Experience

Chile is one of the countries that reserved the right to intervene when it adopted the floating regime in 1999. The monetary authority declared that, during exceptional episodes of uncertainty and volatility, under which there may be adverse economic effects of an overreacting exchange rate, it is desirable that the Central Bank intervene in the exchange rate market.[8] Two such episodes occurred in 2001 and 2002, where the Central Bank, motivated by excessive volatility of the international financial markets and the potentially adverse effects, announced a package of intervention measures to provide more liquidity and foreign currency coverage. The first episode coincided with financial

[5] See, for example, Domínguez and Frankel, 1990 and 1993.
[6] For a description of the later advances, see Sarno and Taylor (2001) and Ramaswamy and Samiei (2000).
[7] Central banks normally do not make public announcements of their interventions, let alone disclose the amounts involved. Even when present, disclosures are few and infrequent in comparison to the time span one expects the market to adjust to intervention, often days or even hours. This deficiency has forced researchers to build indirect intervention series, resorting to sources such as media news, surveys, and movements in international reserves. Since these proxies are far from perfect, it is possible that the intervention series built upon them are inadequate to estimate the true effects of exchange rate interventions.
[8] See box II.4 in the *Monetary Policy Report* of January 2003.

turmoil stemming from the convertibility crisis in Argentina, aggravated by September-11, and the second with turbulence in Brazil during the presidential elections of 2002.

In both cases, there were clear indications that exchange rate depreciation was excessive given the evolution of fundamentals. Chile's trade and financial links with Argentina and with Brazil are small. For example, trade with both countries combined is less than 20% of overall Chilean trade. The sharp depreciations clearly indicated that the market had lost its anchor, and hence they could have had adverse effects on inflation that would have required tightening monetary policy in a period in which the economy was growing slowly and thus there were no inflationary pressures. Then, the intervention was seen as a first line of defense to inflation coming from excessive depreciation. The chance that a bubble would have dominated the market would require actions to verify whether this was truly an overreaction. If the Central Bank had not intervened, the excess depreciation, more than that required for adjusting the real exchange rate, would have resulted in inflation to undo the real effects of the nominal depreciation. Indeed, it is likely that a depreciation that pushes the real exchange rate above its equilibrium level will bring inflation. This inflation, in turn, will validate an initially excessive depreciation. Before tightening monetary policy or giving up with inflation it could be advisable to intervene. This intervention does not pursue a particular level of the exchange rate, but rather to avoid an excessive weakening of the currency. If intervention is not effective, it is an indication that exchange rate movements could be the result of a need for a real depreciation. Given this reason for intervention, it has to last for a limited period, and must be oriented at providing liquidity and reestablish and orderly working of the forex market, rather than looking for a particular level for the exchange rate or to reduce fluctuations. The purpose of the intervention is to prevent a rapid depreciation.[9]

The success of sterilized interventions in Chile showed that indeed the market reactions were unfounded. Otherwise, intervention would have been ineffective, calling for monetary tightening if inflation expectations had been inconsistent with the target.

The first intervention started on August 16th 2001, when the Central Bank communicated that spot market interventions could occur up to a maximum of US$2 billion, over the following four months. Additional sales for US$2 billion of dollar-denominated central bank bills (BCD) were also announced.[10] During the period, spot market interventions totaled US$803 million, less than half the maximum announced, which represented nearly 5% of the total stock of international reserves. The spot trades of foreign exchange were done in 15 interventions (15% of working days), and were substantially smaller than in the interventions during the crawling peg period, and less than half the amount exchanged during the unsterilized intervention to defend the peso in 1998.

The sale of BCDs, summed up to US$3.04 billion, including the BCDs that were part of the regular program of rollover. These were more frequent than interventions in the spot market and even than sales of BCDs in previous intervention periods. The amount above the regular program of BCDs sales was US$2.3 billion, which led to total intervention of US$3.1 billion. During that time, the exchange rate appreciated 3.9% (partly reversing the depreciation observed until August), although it had accumulated a depreciation of nearly 5% in September. The maximum daily devaluation was 2.8% (September), and the maximum appreciation in one day was 1.8%, in October.

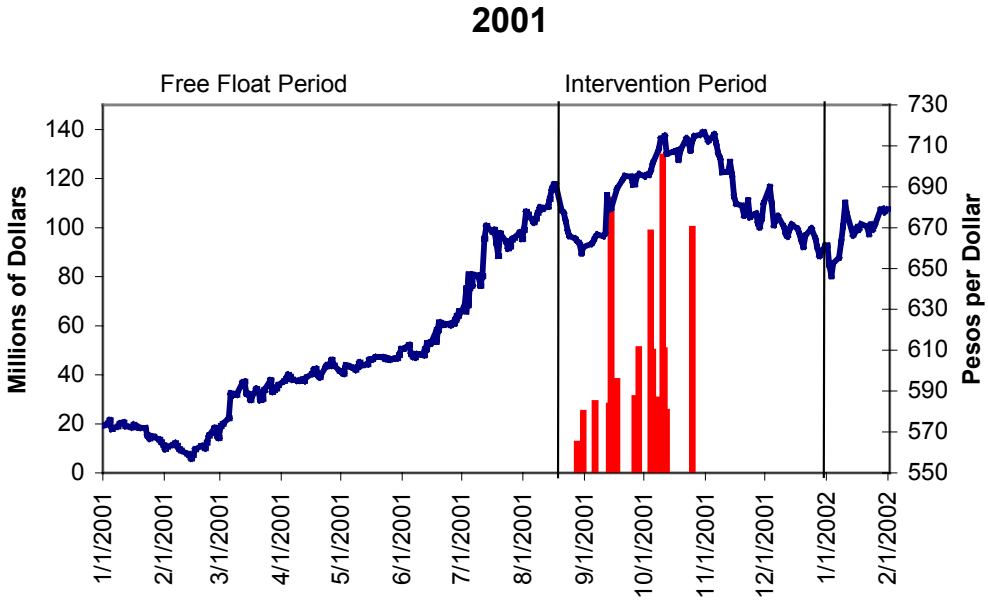
[9] Given that the inflation target in Chile is symmetric, all the arguments given for "excessive depreciation" discussed I the text are valid for "excessive appreciation." We focus on depreciations since they are the relevant issue in Chile in recent years.

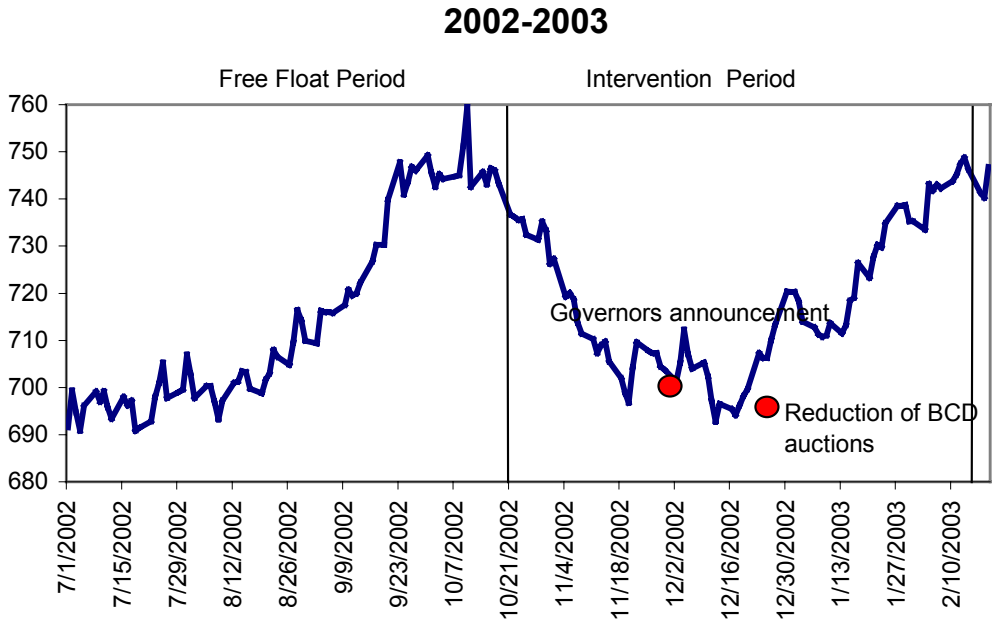
[10] This amount was in addition to that of the regular program of renewal of BCD's issued in 1998.

On October 10th of 2002, the Central Bank announced a period of interventions very much like that of 2001, 2 billion dollars in spot and 2 billion dollars in BCDs, to end on February 10th of 2003. This intervention occurred with the Brazilian country risk rate climbing and a complex global scenario. The peso/dollar exchange rate depreciated 7% in one month, showing an accelerating trend, and without similar deterioration in fundamentals, except for turmoil coming from Brazil. Thus, these developments suggested that the exchange rate depreciated more as a result of contagion than of fundamentals. Contrary to the previous experience, however, the Central Bank actually did not intervene in the spot market. However, there were interventions issuing dollar denominated debt. Furthermore, in December 2002, the Governor of the Central Bank announced the possibility of redefining the intervention strategy of the second half of the intervention period. A few days later, the BCD sale calendar was cut to half. Five hundred million US dollars in BCDs were sold in each of the first two months, October and November. Subsequently, the Central Bank considered that a milder intervention would suffice, and sold 250 million in each of the following months, December and January. Total intervention in this episode was 1.5 billion dollars, without spot interventions. This episode involved much less intervention than the first one. Reserves did not change and the total stock of BCDs increased to US$5.8 billion.

During this second episode, the exchange rate appreciated by 2.1% (partly reversing the previous depreciation), although by mid December it had appreciated by 8.8%, to relapse in the following months. The biggest depreciation in one day was 1.3% and a 2.3% appreciation occurred the day after the intervention announcement (see figure 2).

Figure 2. Exchange Rate and Spot Forex Interventions
Source: Central Bank of Chile.





During the second episode, the exchange rate gradually approached its initial level (figure 2). The intervention was prompted by unusual increases in spreads in Brazil and emerging markets, but after the announcement that intervention would soften because financial turmoil in emerging markets was diminishing, the exchange rate began depreciating again and at a slower pace than the one that triggered the interventions (August-October). This episode shows, first, that the purpose of the interventions was not to target a specific level for the exchange rate, but rather to reduce the speed of depreciation. And, second, that the reaction of the Central Bank was based on turmoil in financial markets rather than, again, on the exchange rate reaching a certain level.

It is interesting to compare the evolution of the exchange rate in both episodes. As figure 2 shows, turmoil was much more intense in the first period, as even with significant spot market intervention there were strong pressures against the peso. These pressures came not only from the deterioration of the Argentinean economy, but were reinforced by the further weakening of the peso (nearly 2 percent) that followed the terrorist attacks of September 11. In contrast, during the second episode, the reaction to the announcement, despite lower effective intervention, may be explained by the credibility gained during the first episode. Nevertheless, the first impact, associated to the intervention announcement and after controlling for other fundamental movements, was not as strong as that of the first episode, which could also indicate that the market already assigned a high probability that all resources committed to intervene would not be used, as actually happened. Therefore, the lesson is that announcements not followed by actions could reduce their impact on the exchange rate.

In terms of frequency and magnitude of interventions, Chile's intervention policy has been modest. It has only intervened in the spot market on fifteen occasions during the last five years,[11] and amounts have been low, both in absolute terms and relative to the market's average turnover. Spot interventions in 2001 averaged less than 5% of the daily volumes traded in the market, with no spot market interventions in 2002 or 2003. Most interventions have been done by issuing dollar denominated debt.

[11] The median intervention frequency among the central banks surveyed by Neely (2001) was 25 percent of trading days throughout the 1990s.

As for transparency, the two announced intervention periods were very transparent by international standards. Contrary to the worldwide trend towards transparent public policies —following the good behavior codes of the IMF— intervention policies around the world have not been very transparent. Secrecy is still the rule in most countries, although there is a trend towards more public interventions (Chiu, 2003). Canada, Hong Kong and the European Central Bank have compromised to provide information whenever interventions occur (typically through press releases). The US has maintained the possibility to intervene secretly, but has publicly intervened in its last episodes. In Japan, the degree of transparency has fluctuated substantially over time. Moreover, even in those countries that have moved towards more transparent interventions, the amounts involved have been kept secret (only Hong Kong has a real time amount announcement). Most report amounts with delays or in monthly (as has Japan since June 2003) or quarterly (as Canada, ECB and US) aggregate amounts. But in every case the information is provided ex-post or, at best, simultaneously. There is, in general, no evidence of ex-ante information on amounts and dates. In this sense, the last two intervention episodes in Chile were exceptions.

The specific form of the intervention packages is of special interest, as it is not commonly observed in other countries. In Chile, interventions have been announced, and the beginning and the end of the intervention period have been made public. In addition, the maximum amount of the intervention in the spot and BCD markets and the calendar for the monthly BCD placements has also been made public. In practice, the only unknown intervention is the daily spot intervention, which is published as official data from the Central Bank every fifteen days. The rationale for the choice of high transparency is twofold. First, because the authorities have made a commitment to intervene in a transparent manner, rather than surprising the market, in order to work through the information channel. Indeed, intervention is done to provide information to the market that the authorities consider the evolution of the exchange rate to be unjustified by fundamentals (short and long-term). Second, and more important, because intervention is intended to provide liquidity and stabilize the market, rather than being a fight against speculators. This strategy avoids becoming "addicted to intervention," especially in a country with a high levels of reserves. There must be a full assessment before intervening, and this requires to introduce some costs to the decision-making process. Thus, intervention is more of a test for a potential bubble, rather than an attempt to manage the exchange rate at levels that could end up in a misalignment. For this reason, it has never been ruled out that an intervention could be ineffective. If this were the case, the conclusion would be that the movement in the exchange rate is much closer to an equilibrium phenomenon than an overreaction.

For the Chilean case, Tapia and Tokman (2004) show that the authorities are capable of affecting the market not only through actual intervention operations, but also by public announcements and commitments regarding them. This is, after all, the mechanism operating in two of the classical channels through which interventions are effective: information and signaling. The information channel refers to views of the authorities that differ from those implicit in asset prices, while the signaling effect is related to the future course of monetary policy, i.e. after an intervention comes an interest rate hike. Public announcements, whether formal or informal, reveal relevant information to the asset market, which should change when news arrive.[12] Indeed, in the case of Chile, the announcement provides information that the Central Bank estimates that the depreciation is excessive.

[12] There is very scarce literature on the role of communication or official central bank statements. Some exceptions are Tivegna (2001), Fatum and Hutchinson (2002) and Hansen and De Haan (2003).

However, the potential use of announcements as an effective intervention tool depends critically on the credibility associated to them. Empty promises that are not backed by actual actions (in the case of the portfolio or signaling channels) or that are made by authorities that are not considered reliable (in the case of the information channel) should have no effect or, if the market was misguided this time, weaken the effect of future announcements. As the empirical methodology cannot distinguish the specific channel through which interventions operate, it is not easy to say if announcements must be followed by actual interventions. Under the portfolio channel, the announcement must be necessarily followed by interventions and, in fact, the Central Bank must have enough reserves for the announcement to be credible to begin with.

More debatable is whether the central bank must intervene when this is used as a signaling device or to provide information. Under the signaling channel, there is no clear need for intervening after making an announcement, because when intervention is used to signal likely future tightening of monetary policy, tightening must happen. Credibility would diminish if monetary policy (not interventions) did not behave as implicitly suggested by the announcement. When the central bank uses intervention to inform the market that it believes there is an overreaction, at some point it will have to "put its money where its mouth is." Therefore, under all channels through which intervention affects the exchange rate, authorities should have to take actions, through either sterilized intervention or monetary tightening.

The findings in Tapia and Tokman (2004) suggest that the relatively infrequent and unique intervention strategy in Chile has succeeded in altering the exchange rate through its effect on expectations caused by the (credible) policy announcements made on both periods. Obviously, this result is conditional on the specific characteristics of the Central Bank of Chile, an independent institution with high credibility and a large stock of international reserves. This suggests that these results, or the policy prescriptions that might be derived from them, cannot be directly extended to other countries. Nor can they be directly extrapolated to other periods in time for the Chilean economy.

In the case of Chile the most important impact of intervention came from the announcement, but in both cases was followed by actions. We do not have evidence to evaluate what would have happened if the Central Bank had not validated the announcement with spot or BCD sales. However, it is most likely that its credibility would have weakened. The absence of spot and/or BCD interventions would have signaled lack of conviction with the announcement. Moreover, it was a reasonable thing to do, considering the availability of reserves and that the depreciation was excessive, there was no reason for not shortening its already very long position in dollars. Furthermore, as the comparison of the two intervention episodes shows, the "open mouth" intervention is not enough and it may loose effectiveness if spot and/or BCD interventions do not follow. In any case, their timing and amounts will depend on the initial effects of the announcement and on the evolution of conditions that triggered the intervention.

5 Conclusions and Lessons on Optimal Policy Response to Exchange Rate Shocks

Chile has moved gradually to a floating exchange rate regime. This has been a reasonable thing to do, especially because most of the recessions that the economy has endured have been associated to exchange rate rigidities: the fixed exchange rate of the early eighties and the narrowing of the exchange rate band in the aftermath of the Asian crisis. Additionally, given the significant exposure to external shocks —particularly terms of trade shocks and fluctuating capital inflows— a regime that allowed a fast adjustment of relative prices was desirable and achievable through the flexibilization of the exchange rate. Instead of being subjected to extreme fluctuations in interest rates and financial conditions as a means to control —often unsuccessfully— the exchange rate, it is sensible to let it adjust, especially because it allows expenditure switching and resource reallocation in the presence of external shocks.

The float was implemented in accordance with the development of the financial markets and at a moment when such movement appeared to convey more benefits than costs. Financial stability was not threatened: the extent of currency mismatches in the banking and corporate sectors were small, and liability dollarization of the banking system was also unimportant. Firms have been increasingly able to hedge their currency exposure in the derivatives market. Therefore, balance sheet effects stemming from exchange rate fluctuations pose a threat to neither the financial nor the corporate sector. In addition, price stability was not at risk given the low pass-through from depreciation to inflation.

From a macroeconomic point of view, moving to a flexible exchange rate regime was a necessary step to implement a credible inflation target. In Chile during the nineties, there was exchange rate targeting, with enough flexibility to accommodate the inflation target. This was the reason why, in the context of an exchange rate band, the widths and central parity were frequently adjusted, being also an incentive for capital inflows as the authorities pursued a strategy of gradual appreciation (Cowan and De Gregorio, 2004). Thus, allowing the exchange rate to float would make the inflation target more credible and the economy more resilient to external shocks, as it has proven to be in recent years.

Nevertheless, there have been some instances in which the Central Bank has intervened in the exchange rate market, but they have been exceptions. The most significant drawback of intervention is that authorities start intervening too often, denaturalizing the float, which becomes a *de facto* managed system. In some sense, authorities could become "addicted to intervention." This could work for a while, but in a country like Chile, with bad experiences in times of severe external turmoil, this is dangerous and has proven to be very costly. For this reason, interventions must be rare events and occur only in extreme circumstances. Their credibility, and thus their effectiveness, depends on them being only occasional. Moreover, they should become even more infrequent, as the reasons for fear of floating appear to be fading in time.

For the above reasons, the way to conduct intervention is very relevant. Transparency and clear rules of the game are necessary to make this an exceptional policy. Accordingly, in Chile the Board of the Central Bank is the one that decides exactly when intervention will occur and the maximum amounts of intervention, and explains this clearly to the public. In contrast, if interventions are secret, there is much more temptation to intervene whenever the market becomes volatile.

The question is now, what determines whether the Central Bank should react and how? There is little evidence on such issues, but some things appear to be naturally part of the decision process. In the first place, the potentially adverse effect of the shock must be substantial. In this sense, if the threats of financial instability and inflation are low, as is the case of Chile (De Gregorio and Tokman, 2004), then the need to react is diminished.

Also, the nature and the persistency of the exchange rate shock are important determinants of whether there should be a reaction at all. Real and temporary shocks, most probably are better left alone. And, since in a floating regime a larger proportion of shocks is believed to be temporary, there is a lower probability of having to react to them.

The size of the shock may be important too. As Lahiri and Vegh (2001) suggest, forex interventions may be cost-effective in the presence of large shocks, as their fixed costs are lower than the costs associated with interest rate policies for large shocks. If authorities react by tightening monetary policy when facing a transitory and significant exchange rate shock, they may need to undo the tightening after the shock has passed. This would undermine the effectiveness and credibility of monetary policy as the volatility of the exchange rate increased and the transmission to market interest rates, especially long ones, diminished.

The relative efficacy of different instruments is important too. Monetary policy has effects on the medium to long term, thus any policy reaction that is required to be fast cannot come through that channel. Additionally, there is no robust international evidence that forex interventions can have an effect on the exchange rate in the medium run. For Chile, the efficacy of the latest interventions does not imply that future interventions will have the same effect, given the high reliance they have on the way the public interprets policy actions. In this sense, intervention policy must be limited in order to maintain the credibility in the floating system and induce market participants to maintain hedged balances to avoid unnecessary traumas from sharp fluctuations. If credibility is lost, then monetary policy will have to be tighter in the future, as the effectiveness of sterilized intervention will be diminished.

The primary reason to intervene is that large movements, unwarranted by the evolution of fundamentals, may have an impact on inflation that may require monetary policy actions that could be unnecessary if the forex market were working more smoothly. This was the case in Chile, particularly in 2001, where the deflationary pressures and the positive output gap were suggesting a relaxation of monetary policy. But, the exchange rate depreciation suggested the opposite. After markets calmed down, in January 2002 the Central Bank initiated the most aggressive monetary loosening in Chile, where monetary policy interest rates declined from 6.5% in late 2001 to 1.75% in January 2004. However, eliminating the factors that produce fear of floating should reduce the chances of having to intervene, and improve the workings of the flexible exchange rate regime.

Finally, as to the motives for policy responses, there appears to be broad agreement in claiming that there is no role for the exchange rate target, and that interest rate policy should be constrained with the inflation target. In this context, and under normal conditions, the exchange rate should fluctuate around its longer-term equilibrium, although it could be subject to overshooting and high volatility, but it is difficult to think that authorities have enough information to fine tune exchange rate movements, although in exceptional circumstances it may be justified as discussed in the paper. In addition, the development of derivative markets should help to hedge currency risk, and if

authorities commit to stabilize the exchange rate, they may be providing implicit insurance and inhibiting the development of market-based hedges**.**

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