

Exchange Rate Policy in Chile: Recent Experience

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I. Introduction

Chile has experienced virtually all the menu of options of exchange rate policies in the last 40 years with the exemption of adopting a foreign currency. From hard pegging in the early 60s and 80s, to the current clean floating, we have been even precursors of some very “innovative” intermediate regimes that later on were adopted by a number of other countries. The crawling peg adjusted to past inflation scheme of the second half of the 60s, the “active” crawling peg arrangement of 1978 (later popularized in Argentina as the “tablita”), and the crawling band of the late 80s and most of the 90s, have been examples of policy makers “ingenuity”. Figure 1 presents the evolution of Chile’s nominal exchange rate from 1984 to present, as well as the crawling band that was in place between August 1984 and September 1999.

The quest for a reasonable exchange rate policy has been inspired in part by the different goals that, through time, policy makers have attempted to achieve with this policy. Goals, in turn, have varied depending on the final objectives with respect to growth and inflation, the “model” of the economy in the policy makers’ minds, or both. Many other factors, including conditions in the world economy, the domestic business cycle, imperfections in the workings of internal markets (like widespread price inflexibility), political economy aspects, and even academic fads, have also played a part.

With the adoption of an inflation targeting monetary scheme in the early 1990s, right when capital inflows vigorously resumed, it soon became apparent the conflict between the targets set for inflation and the commitment with respect to the nominal exchange rate contemplated in the exchange rate policy (a crawling band adjusted with respect to past inflation). Although the inflation target always prevailed in case of conflict, in 1999 the Board decided finally to give up the exchange rate band and replace it with a policy of clean floating.

This paper confronts three questions: (a) Why was the band abandoned and, by the same token, why it took so long to do it; (b) Is floating a better choice than quitting the national currency in the case of Chile?; and (c) How has the floating regime worked so far?

II. Why Was the Exchange Rate Band Abandoned, and Why in September 1999?

II.1 A Preview:

Although the exchange rate band evolved over time since its inception in the mid 80s, it had a few central features that remained unchanged until its abandonment (see Figure 1). The first one is that it was a crawling band whose center or reference value was periodically adjusted to reflect the difference between domestic and foreign inflation in the

preceding month. The second general feature is that the band's width was gradually increased with time, except for a temporary reversal in 1998. And the third one is that intra-band interventions by the Central Bank in the foreign exchange market did take place all along, although in rather circumvent ways.

These features reveal in turn important cues as to what the role assigned to the exchange rate policy was in the last fifteen years. The fact that the band's center followed the difference between domestic and external inflation reveals that there was a concern with misalignments of the real exchange rate with respect to a PPP concept. Although the actual mechanism applied to adjust the nominal exchange rate changed through time, the choice of a PPP criterion at least shows that the authorities had no intention to use the exchange rate policy as a blunt price stabilization tool ¹. This was in total opposition to the 1979-82 experiment with a fixed exchange rate and even with the pre-announced crawling peg of 1978 (later known as "la tablita"), when the exchange rate policy was presented as the nominal anchor of the economy in order to subdue inflation in a short period of time.

As is normally the case, the role assigned to the exchange rate policy at a point in time is directly linked to the lack of success of the immediately precedent role. The fixed-rate episode of 1979-82, which occurred at a time of heavy capital inflows intermediated by highly leveraged and badly supervised domestic banks, was associated to a substantial real peso appreciation and an unsustainable current account deficit. More than that, after a sudden reduction in capital inflows, the episode ended up in the biggest recession of the last 50 years (15% drop in GDP in 1982-83), a very high external debt, and an upsurge in inflation. Fair or not, the nominal anchor role of the exchange rate was in part blamed for the disaster by the general public and many economists. Thus, the reaction was a complete overhaul and switch of macro policies in 1985-90. This time around, there was less concern for reducing inflation, more concern for overcoming the problems posed by the excessive external debt and the scarcity of voluntary foreign financing after the Mexican moratorium of 1982, and more concern for stimulating the economy back to growth again. The formula was to allow the peso depreciate and try to keep it depreciated in real terms, so net exports could go up producing the resources to comply with external debt obligations and bringing dynamism to economic activity. It worked, but not only because of the exchange rate policy chosen, but also because at the same time there was an austere fiscal policy and a stimulative monetary policy on average. In the end, exports grew at a compounded rate of 10,6% annual, while GDP did so at an average rate of 6.5%, between 1985 and 1990. In spite of an inflation rate that remained high hovering 20% per year, that period went to history as a successful one and so the role of the exchange rate policy as a tool to influence the real exchange rate more permanently, right or wrong, was established.

Why then the exchange rate band's width was somewhat increased during this period?² Why not simply obtain the same results by resorting to a plain crawling peg? In part because of fad (exchange rate bands were the new kid in the block in the mid 80s), and in part because of the first attempts of the Central Bank of the time to implement a more

¹ Of course, there was some leeway given by the definition of the band's parameters and width.

² The band started with a 0.5% width in 1984 and had a 5% width in 1990. The changes experienced by the band during its history are summarized in Table 1. See also Figure 1.

modern monetary policy aiming to reduce inflation. This needed some degrees of freedom in the exchange rate market that a straightforward crawling peg was unable to provide.

Two facts made the commitment to a depreciated peso very difficult in the 1990s. First, after the political change in 1990, the new government stayed committed to the pro-market policies followed by the previous administration and thus, capital inflows resumed very strongly. These inflows were also prompted by low interest rates in the US and the rediscovery by foreign investors of a reform-prone Latin America³. The other fact was a newly independent Central Bank with a clear mandate to reduce inflation from rates of more than 20% annual to figures more similar to those prevailing in industrial countries. This mandate was materialized in the adoption of annual inflation targets that aimed to gradually reduce inflation over time, and the implementation of a monetary policy subordinated to these inflation targets.

The substantial inflow of capital during most of the decade, whether exogenous or endogenous, or both, put a lot of pressure for a more appreciated peso, in real terms. This was not in principle consistent with a PPP adjusted crawling band that wanted to keep the peso depreciated. On the other hand, the attempt to reduce inflation by resorting to gradually declining annual inflation targets could potentially clash with the exchange rate band as well. In a sense, having inflation targets and an exchange rate target simultaneously is an over-determination of nominal variables (two nominal anchors). Moreover, the strong growth exhibited during the 90s was associated to important improvements in factor productivity, particularly in the tradable sector, which was an additional pressure for a more appreciated peso (the Balassa-Samuelson effect⁴). At the same time, demand was growing even more than output, forcing on average a strict monetary policy and high domestic interest rates all along, this being a factor in the attraction of foreign capital and compounding the pressure for a more appreciated peso, also in real terms.

The reluctance to abandon the exchange rate band in spite of all these conflicts and pressures forced the Central Bank to try different “second-best” options between 1990 and 1997. The band itself suffered a number of amendments during the decade that aimed to accommodate a more appreciated peso (see Table 1): (a) increasing the band’s width, which went from 10% in 1990 to 25% in 1997; (b) discounting a productivity factor (for the Balassa-Samuelson effect) in addition to foreign inflation in adjusting the band’s center; (c) changing (increasing) the foreign inflation definition; and (d) moving from a dollar reference to a reference to a basket of currencies (the US dollar, the mark and the yen).

This elastic use of the exchange rate band was accompanied by two other complementary policies that attempted to reduce the peso appreciation: (i) the imposition of regulations to the inflows of capital, the most important one being an unremunerated reserve requirement of 30% for the first year of stay of foreign loans and money raised in international financial markets⁵. And (ii) the sterilized accumulation of foreign exchange

³ It is no accident that at that time developing economies were re-baptized as “emerging” economies, perhaps as a symptom of the growing appetite for risk among foreign investors.

⁴ This appreciation of the equilibrium real exchange rate associated to this effect was estimated in close to 1% per year by Valdés and Délano (1998).

⁵ Finally reduced to 0 in September of 1998.

reserves. Forex were 18 billion dollars right before the Asian crisis, up from the 3 billion they were in 1990.⁶

As it could be expected, this policy mix brought costs and benefits. Among the benefits, we could cite the smoothing out of the real peso appreciation that otherwise could have been more intense and drastic, bringing higher real costs in a context of inflexible prices. The costs were essentially of a microeconomic nature, like a misallocation of financial resources and less access to cheaper foreign financing. Whether or not more autonomy of the monetary policy could be ascribed to this rather unorthodox policy mix is more debatable, however. But, in any event, as the main objectives of consistently reducing inflation while the economy was kept growing at a speedy pace, the policy mix found more defenders than detractors.

But someone could argue that while foreign exchange reserve accumulation and restrictions to capital inflows made sense in attempting to avert a rapid appreciation of the peso, an exchange rate band so frequently amended was an increasingly weak instrument. However, the dominant view within the government well until 1999 was that a crawling exchange rate band, no matter how amended and discredited, was instrumental to signal a long term commitment to a certain value of the real exchange rate. And, this line of argument follows, this commitment was key to keep the steam in the exports sector, the “engine of growth” in a small open economy.

II.2 The 1997-98 World Turbulence and the Reform of Macroeconomic Policies:

The Asian crisis and its aftermath (including the Russian moratorium, the LTCM episode, and the fall of the Brazilian currency, the real) had a severe effect on Chile’s small open economy. Indeed, terms of trade went down by 14% between 1997 and 1999 while the volume of exports to Asia, which accounts for one third of Chile’s total exports, declined by 23% in the same period. Simultaneously, spreads on private corporate debt went from a little bit over 100 basic points (over prime US rates) in 1997 to more than 450 basic points in August 1998, as a consequence of the worsening of the financial turbulence abroad and of a current account deficit of Chile that was threatening to reach more than 8% of GDP. The latter was, in turn, a result of an overheated domestic economy and the trade effects of the Asian crisis.

At first, in early 1998, the main fear of the Central Bank was that the rapid depreciation of the peso in progress was a serious threat to the inflation target set for the year’s end. This concern was based on the high pass-through from the peso depreciation to domestic inflation when the local demand was growing at annual rates of over 12%, estimated then at around 0.6. So, the depreciating pressures were confronted with a combination of open intervention in the foreign exchange market and increases in the monetary policy interest rates. It must be noted that the exchange rate band was 25% wide

⁶ Note that the effect of these measures on inflation were ambiguous. On one hand, trying to reduce the peso appreciation coming from heavy capital inflows favored *less* disinflation through the exchange rate – price of imports – price level transmission channel. On other hand, the intended reduction of capital inflows was also meant to contain a source of stimulus to domestic spending, meaning *more rapid* disinflation.

(12.5% to each side of the center) and that the actual exchange rate was clearly in the lower bound⁷ of the band. Thus, the band's upper limit was clearly not binding. By June 1998, the exchange rate was still 3.5% below the center of the band, in spite of a 10.8% depreciation since October of 1997.

In a very controversial move, the Central Bank decided by the end of June 1998 to narrow the exchange rate band, from the prevailing 25% to 5.5%, 3.0% above the center and 2.5% below it. At the same time the monetary authority reassured its commitment to the inflation target for the end of the year. Although the slope of the daily crawling of the band's center was made somewhat steeper, the main purpose of this decision was to signal the market more clearly what range of values of the exchange rate the Central Bank considered consistent with its inflation target. About US\$ 3.3 billion had been already used to moderate the peso depreciation (close to 18% of total initial reserves) before this move and there was the presumption that too much speculation surrounded the very discretionary intervention policy of the Central Bank within the ample 25% band. So it was hoped that the mere signaling contained in the narrower band brought less speculation and so less intervention.

The big risk taken was that should there be a new negative shock coming from world financial markets, the narrow band could be very costly to defend. Unfortunately, such a negative shock did occur: the Russian government declared a moratorium on the service of its debt and the whole world financial market trembled, severely affecting the availability and cost of external financing of emerging economies, Chile included. The Central Bank this time around did not use foreign exchange reserves but rather defended the peso against an ensuing attack by allowing interest rates to take the burden. As a result, market interest rates skyrocketed and exhibited high volatility. Because of this, on September 16 a new change to the exchange rate band was announced that partially reversed the previous narrowing by increasing the band's width to 7% and a program of gradual widening in the coming months until reaching 10% by the year's end. At the same time the band's center parameters were also modified in order to make room for a slightly faster depreciation of the peso. To safeguard this decision, the monetary policy interest rate was drastically increased (from 8.5 to 14%)⁸.

The tough monetary policy was then gradually but decisively relaxed in the following twelve months, as evidence mounted indicating that the economy was going into a recession and that there were no significant inflationary pressures coming from the peso depreciation. As the world financial turmoil receded, the hawkish Central Bank's position was successful in calming down the foreign exchange market at home. The exchange rate band's width, meanwhile, continue steadily increasing. Therefore, at the time of the abandonment of the band, on September 2, 1999, there was no pressure in either direction in the exchange market and the actual spot rate was very close to the band's center.

⁷ We are measuring the exchange rate as number of Ch pesos per US dollar, so a depreciation of the peso means an increase in the exchange rate.

⁸ Another way to same the same is that the blunt monetary policy decision aimed to drastically cut the current account deficit that was being built, because this objective was paramount to prevent a balance of payments crisis and a much more severe run on the peso. For more details, see Morandé (2001).

Why was the band abandoned? Several reasons can be mentioned. First, after reaching an inflation rate around 3% annual in 1999, a level considered appropriate by the Central Bank as a long term benchmark, the prevailing inflation targeting scheme was modified in order to accommodate that, from then on, the goal was to keep inflation low and stable, rather than reducing it year after year. A longer policy horizon (8 quarters) and increasing transparency were also ingredients in what was called a “new macroeconomic policy”. As part of this upgrade in the inflation targeting scheme, a free floating system was seen as much freer of the risk of conflict with inflation targets than an exchange rate band.⁹ Besides, the pass-through coefficient had proved to be much smaller in the 1998-99 experience than previously thought, so fluctuations in the exchange rate could be seen as having a lesser impact on inflation. To this result would also cooperate that in the previous two years the market of foreign exchange derivatives and hedging instruments had been growing fast, so the private sector was much more ready to undertake exchange rate risks than in the recent past¹⁰. Thus, in this context, the macroeconomic flexibility to absorb real shocks that is associated to a free floating regime was at hand.

In general, is fair to say that the new conditions faced by the Chilean economy starting in 1998 made clear that the prevailing policy mix needed a reshuffling. The old policy mix was devised to combine a steady but persistent reduction of inflation without paying a high sacrifice ratio (meaning keeping a high growth rate and a not appreciated peso), in a context of high capital inflows and positive but declining fiscal surpluses. As this mix was successful on these accounts (inflation and growth), the microeconomic costs and distortions of unorthodox instruments (like the URR and the exchange rate band), as well as actual or potential conflicts between policy goals, were of secondary importance. The new policy mix, including the floating regime, re-focuses objectives and instruments in a more coherent and transparent way, such that it can fit different and opposing conditions in the international front, like changes in terms of trade and swift variations in foreign investors’ mood.

Related to this, a second reason is more in the political economy realm. The staunchest supporters of the exchange rate band, within and outside the government, based this support on the need to keep a real exchange rate that facilitated the international competitiveness of domestic production and exports. In a sense, the policy of trying to keep a rather depreciated peso (or not much appreciated) was supposed to substitute for other forms of industrial policies of “picking the winners”. This proposition was formulated when the trend was clearly in the appreciating side and the government felt that the Central Bank’s interest in reaching the inflation targets and in reducing inflation could have inclined it to pursue policies that prompted a more appreciated peso. Therefore, as the peso actually depreciated in 1998 and 1999 following the external turmoil and the Central Bank changed its commitment from reducing inflation to keep it around the current 3% annual target permanently, the government’s fears were reduced and thus the opposition to abandoning the band were dismissed.

⁹ See Morandé (2001) and Central Bank of Chile (2000).

¹⁰ The Central Bank and the Superintendency of Banks also introduced in 1999 a number of modifications that facilitate these operations.

This line of argument also explains, in part, why it took so long to give up the band. On the other hand, not establishing a free floating before, say in 1998, was a matter of opportunity. At any time during 1998, specially during the episodes of attacks on the peso, abandoning the band could have implied an exchange rate overreaction. And this could have had real effects because of the underdeveloped state of hedging mechanisms to cover exchange rate risks ¹¹.

Finally, the Asian crisis grossly discredited mixed exchange regimes the world over, among academicians, policy makers, and market participants alike. Thus, abandoning the exchange rate band was also coherent with developments in the rest of the world. Although free floating was a kind of natural evolution, there were a few voices – more abroad than inside – that asked why not replacing the band with a currency board or why not give up the national currency. To this issue we turn next.

III. Is Floating a Better Choice than Quitting the Peso?¹²

The choice between maintaining or giving up a national currency is determined by putting on balance the macroeconomic benefits derived from macro flexibility under a floating exchange rate system and an independent monetary policy and the microeconomic benefits derived from lower transaction costs and improved economic integration under a currency union. A precise quantitative evaluation of the latter costs and benefits is not easy. It is hard to draw up a clear-cut counterfactual scenario that isolates regime choice (say, a currency union) from other policy choices (say, fiscal, trade, and financial reform). Second, there is disagreement about the empirical magnitudes involved. In addition, political factors and cost/benefit analysis are as important as purely economic factors in selecting an exchange rate/monetary regime, as shown by the European Monetary Union (EMU) experience.

Aware of these limitations, this section reviews and evaluates the two basic regime choices for the case of Chile. The alternative to the actual regime is giving up the peso, which can take either of two forms. One is “dollarization”, or the unilateral adoption of a foreign currency. The other is monetary union or multilaterally negotiated adoption of a common supranational currency with fellow members of the union.¹³

III.1. Benefits of Giving up the Peso

The benefits of giving up the national currency are microeconomic in nature. We review three potential benefits in the context of Chile.

¹¹ There was “fear of floating”, in Calvo and Reinhart (2000) words.

¹² This section draws heavily on Morandé and Schmidt-Hebbel (2000).

¹³ There are additional intermediate forms like negotiated adoption of a foreign currency which for simplicity we are not considering here.

a) Lower foreign-currency transaction costs

Giving up the national currency eliminates the need for currency conversion, thus reducing corresponding international trade and financial transaction costs when trading in the adopted currency. For the case of EMU, transaction cost savings were estimated at 0.4% of GDP per year for the average union member (Emerson et al. 1992). For New Zealand, a hypothetical currency union with Australia is estimated to bring about transaction savings of 0.13% per year (Hargreaves 1999). In the absence of a detailed calculation, we estimate the benchmark EMU transaction savings of 0.4% of GDP as an appropriate upper bound of this benefit for Chile in the event of adoption of the US\$. The corresponding upper bound estimate for a currency union with Mercosur is 0.07% of GDP transaction cost savings.¹⁴

b) Less market segmentation and larger goods market integration

Maintaining a national currency may allow to discriminate prices in different countries separated by different monies. Arbitrage through international trade may be obscured by quotations in different currencies at volatile rates. An additional cost of a national currency stems from home bias on the demand side: people and firms tend to spend relatively more on nationally produced goods and services, after controlling for other demand determinants. International evidence suggests that national spending displays some home bias (McCallum 1996, Wei 1996, Helliwell 1998). It is very hard to quantify the benefits of giving up the currency that arise from lower price discrimination on the supply side and lower home bias on the demand side. These difficulties are not made easier for the Chilean case which lacks any study on these subjects.

c) Larger international trade from lower exchange rate risk and elimination of the exchange risk premium

It seems clear that exchange rates are volatile, and that its behavior is usually unexplained by fundamentals¹⁵. This volatility typically is transferred to the real exchange rate (Taylor, 1995). If financial markets are incomplete and unable to provide hedge against this volatility^{16,17}, the associated uncertainty will imply higher interest rates (due to the risk premium), which in turn can affect the level of investment and growth, as well as portfolio

¹⁴ The latter figure is the product of the transaction cost savings of adopting the US dollar (0.4%) and the authors' estimate of the ratio of Chile's transactions in Mercosur currency relative to transactions in US dollars (17.5%).

¹⁵ Flood and Rose (1999) state that "Macroeconomics appear to be irrelevant in explaining high and medium frequency exchange rate dynamics for low inflation countries."

¹⁶ While there is a strong development of these markets, both internationally and in Chile, there is still a long way to go before reaching a stage where a deep market of exchange forwards and options offers an array of products covering all horizons and customer needs.

¹⁷ Haussman et al. in a series of articles, talk about Latin-American countries' "original sin", a result of their poor and irresponsible macroeconomic management. Their bad reputation forbids these economies from placing debt denominated in their own currency in international financial markets, thus being unable to hedge and remaining exposed to exchange rate volatility. Mussa et al. (2000) state that emerging markets' currencies are not a relevant portfolio choice for international investors. Even if the hedging instruments existed, they could be themselves very volatile, augmenting their cost and making them unaffordable for relatively small financial markets.

decisions. In the case of Chile, this premium on annual maturities ranges currently from 0.57% to 3.7% per year¹⁸. Estimation of the associated output and welfare costs is not easy because they are model-specific and exchange-rate premiums are volatile.

On the other side, volatility could enhance international trade, if it compensates terms of trade shocks. However, Caballero and Corbo (1988) find, for several least developed countries, a strong negative effect of real exchange uncertainty on export performance.

III.2. Costs of Giving up the Peso

Giving up the peso implies losing the benefits of having a national currency. Three policy-making institutions or mechanisms are either abolished or drastically modified when giving up the peso: an independent monetary and exchange rate policy, fiscal instruments dealing with country-specific shocks, and a lender-of-last-resort function.

a) Independent monetary and exchange rate policy

Giving up the national currency abolishes autonomous national monetary policy and eliminates the national nominal exchange rate. This involves incurring in three potential costs:

Importing inflation Obtaining lower inflation was an important motivation for countries with weaker currencies (i.e. higher inflation) in joining EMU. In Chile, however, the institutional foundations – reflected in responsible fiscal and monetary policies and a well-regulated and healthy financial system – secure permanent low inflation, consistent with the Central Bank's long-run target. Little gain, if any, could be reaped from adopting a strong foreign currency. Joining a regional supranational (say Mercosur) currency could even risk obtaining higher long-term inflation.

Loss of exchange rate flexibility and monetary stabilization Losing the nominal exchange rate as an instrument of real exchange rate adjustment involves a cost that rises with the frequency and intensity of country-specific shocks and the extent of domestic price and wage rigidities. In Chile both factors are very much present. Sacrificing nominal exchange rate flexibility can have significant output, employment, and welfare costs.

Similarly, giving up the stabilization role of monetary policy¹⁹ by placing it in hands of a foreign or supranational authority is likely to be costly in a country where temporary nominal price rigidities and asymmetric shocks are intense.

Loss of seigniorage Unilateral adoption of a foreign currency is costly if it precludes an agreement regarding seigniorage. This cost of unilateral dollarization can be estimated as the sum of two components: an initial public-sector cost derived from the need of purchasing all national currency and the properly called seigniorage cost, i.e. the revenue lost to the issuer of foreign currency. For Chile the initial cost is estimated at 2.6% of GDP

¹⁸ This premium, however, is not significantly different to the one paid by Argentina, which has had a currency board for a decade.

¹⁹ Assuming that monetary policy is efficiently conducted.

and the annual seigniorage loss is calculated at 0.19% of GDP (with national GDP growth of 5% and U.S. inflation of 2.5%). At a 7.5% discount rate, the latter annual flow is the equivalent of a once-and-for-all transfer of 2.5% of GDP to the foreign country. This seigniorage transfer, not incurred under a negotiated currency union, may be economically and politically unacceptable to most countries.

b) Fiscal coordination and intra-regional fiscal transfers

Regional coordination of fiscal policies among members of a currency union is desirable to take account of macroeconomic spillovers associated with stabilization policy and externalities related to budget discipline and monetary policy credibility. A separate issue, however, is how to deal with country or region-specific shocks within a currency union. In the absence of high degrees of labor mobility, wage and price flexibility, symmetry of foreign shocks and domestic business cycles, and production and income diversification, adoption of a fiscal instrument is especially important to cushion a region or a country from specific or asymmetric shocks.

Joining a currency union requires developing a system of intra-regional transfers, particularly in the absence of strong labor mobility, significant price and wage inflexibility, strongly asymmetric shocks, and high production and income concentration, as in the case of Chile. Unilateral adoption of a foreign currency without a system of international fiscal transfers would be costly in this regard.

c) Lender of last resort

Historically, the existence of a currency-issuing monetary authority has been linked to its role as a lender of last resort for the national financial system. Recently, market-based arrangements are starting to replace the central bank's or government's role of lender of last resort.

Independently of these developments, adoption of a foreign currency would require a clear redefinition of lender-of-last-resort functions and institutions. Moreover it should include adoption of a banking regulatory and supervisory framework that is similar to those adopted in other currency partners in order to minimize asymmetric exposure to moral-hazard behavior and financial crises among currency area members.

III.3. Cost-benefit evaluation for Chile

As pointed out by 1999 Nobel laureate Robert Mundell in his classical article (Mundell 1961), there are factors related to macroeconomic shocks that constrain the size of an OCA – and hence the desirability for any country to join prospective partners in a currency union. This theory establishes that two countries are closer to form an optimal currency area if:

- They have flexible prices and factor mobility, thus allowing for adjustment in response to shocks (minimizes costs a) and b)).

- External shocks and economic cycles are symmetric between both countries (so a common monetary policy can provide simultaneous stabilization)
- They are open economies with significant bilateral trade (which maximizes the benefits of eliminating risk, enhance integration and reduce transaction costs).
- They have a diversified portfolio and productive structure: this prevents that countries differ significantly in their characteristics and in the kind of shocks they face.

The degree in which those elements are present can be estimated for the case of Chile, comparing the country with some prospective currency partners: Brazil and Argentina (monetary union with Mercosur), Mexico (monetary union with NAFTA), the United States (NAFTA and dollarization) and Germany (monetary union with the European Union).

Contemporary correlations in growth, business cycles²⁰ and consumption growth are non-significant or very small, being even negative in some cases. Thus, Chile's business cycle is asynchronous with the business cycles in prospective partner countries. A similar result is obtained when analyzing terms of trade, an indication that shocks faced by the Chilean economy are unrelated to those affecting other economies. Furthermore, Chile's terms of trade are by far the most volatile among analyzed countries.

Conclusions are not significantly different when studying specific markets. Labor mobility between Chile and prospective currency partners is close to zero, now and for the foreseeable future. Labor unemployment levels differ significantly, and have little (or negative) correlation. Large differences in the levels of interest rates and stock market returns between Chile and prospective partners persist to date. Moreover, correlations of interest rates between Chile are zero (with 3 countries) and when they were positive and significant in the 1980s they declined in the 1990s (with 2 countries). Correlations of stock market returns are positive and significant with the three Latin American countries but zero with the U.S. and Germany during the last 5 years. Chile's low degree of physical capital integration is reflected by a very high 0.94 saving-investment correlation observed since the early 1980s. A summary of correlations is presented in Table 2.

Thus, if it were possible to calculate an average correlation²¹ in economic variables between Chile and its prospective partners it would be, if positive, small and non-significant. If we add the fact that Chile is an extremely indexed country, with low diversification in production (see Figure 2), and without a distinctly major trade partner (see Figure 3), it is clear that traditional OCA conditions are not satisfactorily fulfilled by Chile. Thus, a common monetary authority would be probably incapable of simultaneously meeting the needs of Chile and any of the possible partners.

Further evaluation of some issues that have already been mentioned, such as the lender of last resort, strengthens the conclusion. As shown by the EMU experience, the adoption of a common currency was the result of a deep and sustained process of economic integration. This implied a scheduled convergence in macroeconomic variables, with explicit policy coordination and standardized information. Financial systems with

²⁰ Measured as the deviation from the Hodrick-Prescott filter.

²¹ This cannot be done, as correlations are calculated for data sets with different frequencies and length.

homogenous health, depth and regulation among partners was also a distinct feature. Non of these requisites would be met if Chile abruptly adopted another currency. Agreements regarding lender of last resort, transfers and seigniorage are non-existent, and unlikely to be achieved in some cases. A summary of all evaluated criteria (regarding Mercosur and the United States) is presented in Table 3.

Three elements regarding this analysis must be highlighted. The first is the endogeneity of the OCA. Adopting a common currency can enhance trade and integration between two countries leading them to meet the OCA criteria as a consequence of having formed a monetary union in the first place²². Second, the exposed arguments, strictly speaking, build a case against adopting a monetary union, so they do not specifically deal with which is the alternative regime to be preferred. In that sense, it is not a comparison between complete exchange rate flexibility and a monetary union, but an evaluation of the latter. Third, and as a related issue, the analysis presented above is static, and thus may be subject to change if conditions vary in time, especially if some policy choices are made.

IV. How has the floating regime worked so far?

In a very well-known paper²³, Guillermo Calvo and Carmen Reinhart describe the “fear of floating” felt by policy makers in Latin America that inhibit the implementation of clean floating exchange rate regimes in actuality (that is, beyond words). Three reasons could be cited for this fear: (a) the real and financial effects of “excessive” volatility; (b) balance sheet effects of sharp movements in the exchange rate (particularly a depreciation); and (c) a high pass-through from a depreciation of the local currency to inflation. How is the current clean floating scheme in Chile rating in these three accounts? I must say before going any further that Chile’s experience with a free floating regime is very short so far (it started 19 months ago at the time of writing this paper). Therefore most of the evidence to be examined is too short to be conclusive. However, some of the data are very suggestive. Let’s start backward.

IV.1 Pass-through:

Figure 4 shows an estimation of the passthrough from changes in the exchange rate to domestic inflation for an 8 year-rolling sample starting in January 1994. This moving estimator is obtained by a simple linear regression between annual inflation and annual exchange rate depreciation, with 8 year windows. What comes clear from this figure is that the passthrough coefficient is currently at its lowest level in the sample and that it has been declining since 1998. As a reference, the value of this coefficient was estimated at between

²² The argument can be reversed: when forming a monetary union, trade among members will be enhanced, leading to higher specialization. This will make them more asymmetric, failing to meet OCA criteria as a consequence of being part of a monetary union.

²³ Calvo and Reinhart (1999).

0.4 (when the economy was slowing down) and 0.6 (when the economy was booming) in early 1998, based on a sample starting in 1986.

What could be behind this result? We could present several hypotheses, starting with a shift in people's reaction to changes in the nominal exchange rate in the last two years. This shift, in turn, could come from the fact that when the nominal exchange rate was under authority's discretion through the band, the market internalized a significant depreciation (or devaluation) as the failure of authorities to control the currency nominal value because of some changes in fundamentals. So, that depreciation was seen as permanent and it was passed to domestic prices of tradable goods and the price level. This effect could be compounded if there exist backward looking price indexation mechanisms pervasive enough. This was the case of Chile all along. In contrast, under a transparent inflation targeting cum floating regime, with solid institutions and sound macro fundamentals, a depreciation is not necessarily a permanent phenomenon. The market knows the exchange rate might fluctuate more than in other regimes, so agents react to a depreciation with more caution. In addition, credible targets could be more efficient predictors of inflation than the nominal exchange rate. Although this sort of hypothesis has a lot of merit, the fact of the matter is that the big reduction in the passthrough occurred in 1998, in the middle of Asian crisis and before the adoption of a clean floating regime.

Another hypothesis is that the development of financial instruments like futures, forwards, and derivatives in recent years have allowed local producers to hedge the exchange rate risk. Thus, they are not forced to pass a depreciation of the peso to internal prices as long as that depreciation proves to be really transitory. Figure 5 illustrates the increase in the volume of operations in the forward peso/dollar market in Chile since 1998, giving some backing to this hypothesis. However, it is likely that much of this hedging has to do with balance sheet currency mismatches of medium to large corporations in the non-tradable sector that use to borrow in US dollars.

A third hypothesis has to do with reduction of margins in the retail activity, so the declining passthrough reflects efficiency gains in trading probably accruing to more competition in retailing. The January 2001 issue of the Monetary Policy Report of the Central Bank contains a box illustrating how, in the case of some imported home appliances there is indeed a reduction in retailing margins that comes as a trend since 1996. In some other cases of home appliances made in Chile, the margin reduction looks more recent and with a less clear trend.

A related hypothesis is that the margin reduction is essentially a cyclical phenomenon: during a recession or slowdown, retailers have to postpone the passing of any cost increase (for example, the wholesale peso price of an imported good after a peso depreciation) to the final price because of the risk of heavily losing clients and sales because of soft demand. Domestic demand dropped by around 12% in 1999 and even though has been recovering afterward, still remains at levels below those of 1998. Thus, the real test for this hypothesis is still pending.

Finally, the value of the passthrough coefficient also depends on the misalignment of the real exchange rate (vis a vis an equilibrium benchmark agreeable with fundamentals)

at the time of the depreciation. It is clear that in late 1997 the peso was overvalued, so the subsequent depreciation was an equilibrium adjustment in relative prices without large implications on the domestic price level. This would reflect in a transitory reduction in the passthrough coefficient. However, the passthrough has remained low in 1999 and 2000, well after the previous overvaluation of the peso was corrected.

In summary, whatever the reasons, the substantially lower passthrough today allow policy makers to feel more comfortable with a floating regime on this account. Although as domestic demand speeds up in the coming years an increase in the passthrough can be expected, the other factors mentioned above call for low passthrough on a more permanent basis. In addition, the current policy horizon of the inflation targeting regime (two years) make more room for experiencing price effects of even temporary changes in the exchange rate without requiring a policy reaction.

IV.2 Volatility and Risk Premium:

Contrary to what one could have expected a priori, the adoption of a free floating exchange rate regime in September 1999 has not brought a significant increase in exchange rate volatility. Indeed, by applying GARCH models to calculate daily returns on nominal exchange rate fluctuations as a measure of long-term volatility, it turns out that this indicator is 5.8% (annualized) between September 1999 and December 2000, which compares with 5.5% for the period spanning June 1992 and August 1999.

Moreover, Figure 6 shows the evolution of ex ante and ex post volatility and again no indication surfaces suggesting more volatility after the abandonment of the exchange rate band. Ex post volatility is measured as the monthly average of the annualized daily variance of the nominal exchange rate of the last 90 days. It is calculated from June 1992 to December 2000 and although an upward trend can be detected from the lowest values of 1996, the highest variance occurred before free floating. In addition, after September 1999 that trend is much less clear. Ex ante volatility is the monthly average of the volatility implicit in 90 days options in the non delivery peso market (NDPM) in New York. Unfortunately, data for calculating this indicator start just in mid 1998 (coinciding with the increase of trading activity in the NDPM). But, if any thing, what the data show is that the adoption of free floating has brought *less*, rather than more, instability of the nominal exchange rate.

Another piece of information can be found by calculating an indicator of Chile's exchange rate risk premium as the residual of the uncovered interest rate parity equation.²⁴ This measure must be taken with caution since we all know that the UIRP equation is well supported by the data the world over. But still, as Figure 7 illustrates, it shows that there is no sign of an increase of the exchange rate risk premium after the adoption of free floating.

²⁴ The formula deducts the exchange rate risk premium (ERRP) from the equation: nominal interest rate in pesos equals the foreign interest rate in US dollars plus the change in the exchange rate (as a proxy of expected depreciation) plus the country risk premium plus local taxes to inflows of capital plus ERRP.

In summary, there does not seem to exist any ground as of today to fear an “excessive” volatility of the nominal exchange rate in Chile because of a free floating regime. When the band was in place, there was always the possibility of a change in its parameters and then a sudden change in the market exchange rate. Perhaps this is a factor explaining why a more transparent floating does not bring more volatility. If there is more volatility, then the fear of unnecessary real costs associated to this choice lose ground, at least when comparing to alternative regimes of (soft) government support of particular values for the exchange rate.

IV.3 Balance Sheet Effects

Another issue refers to the effects of exchange rate volatility on the firms’ balance sheets. Sudden reversals in the exchange rate would be, for firms with currency mismatch, a significant source of financial distress, which could potentially lead to important real costs. As seen in Figure 8, currency mismatch has increased in Chilean firms since the adoption of the floating regime (from 8% to 16%), although mismatch remains lower than values observed in 1997. These numbers should be taken with care as they represent a relatively small number of large corporations whose stocks are listed in the stock exchange market²⁵. Also, some of these corporations are basically exporters, thus they have a natural hedge that does not reflect on their balance sheets.

Even though this could alarm some people, the low degree of volatility presented by the exchange rate since 1999 and an ongoing process of financial deepening and development of more sophisticated financial instruments offers a relatively promising road ahead. Furthermore, the adoption of a floating regime is, precisely, the way to place incentives to currency matching, as the implicit insurance offered by managed regimes is eliminated, thus avoiding possible moral hazard problems.

V. Concluding Remarks

Throughout its history, Chile has experienced a significant number of exchange rate regimes, from hard pegs to total flexibility, and many experiences ended with negative results and a bitter aftertaste. After the collapse of the fixed exchange rate in 1982, an exchange rate band was adopted, and lasted for almost 15 years. Although it suffered a significant number of changes in its width, parameters and even in the reasons that justified its existence, the band proved itself a successful choice (in a context of almost uninterrupted macroeconomic achievement) and, probably, a (long) consistent transition to the adoption of the flexible exchange rate regime in existence since 1999.

Chile’s transition to a flexible ER regime, triggered by simultaneous events as the effects of the Asian crisis and the achievement of a long run (steady state) inflation

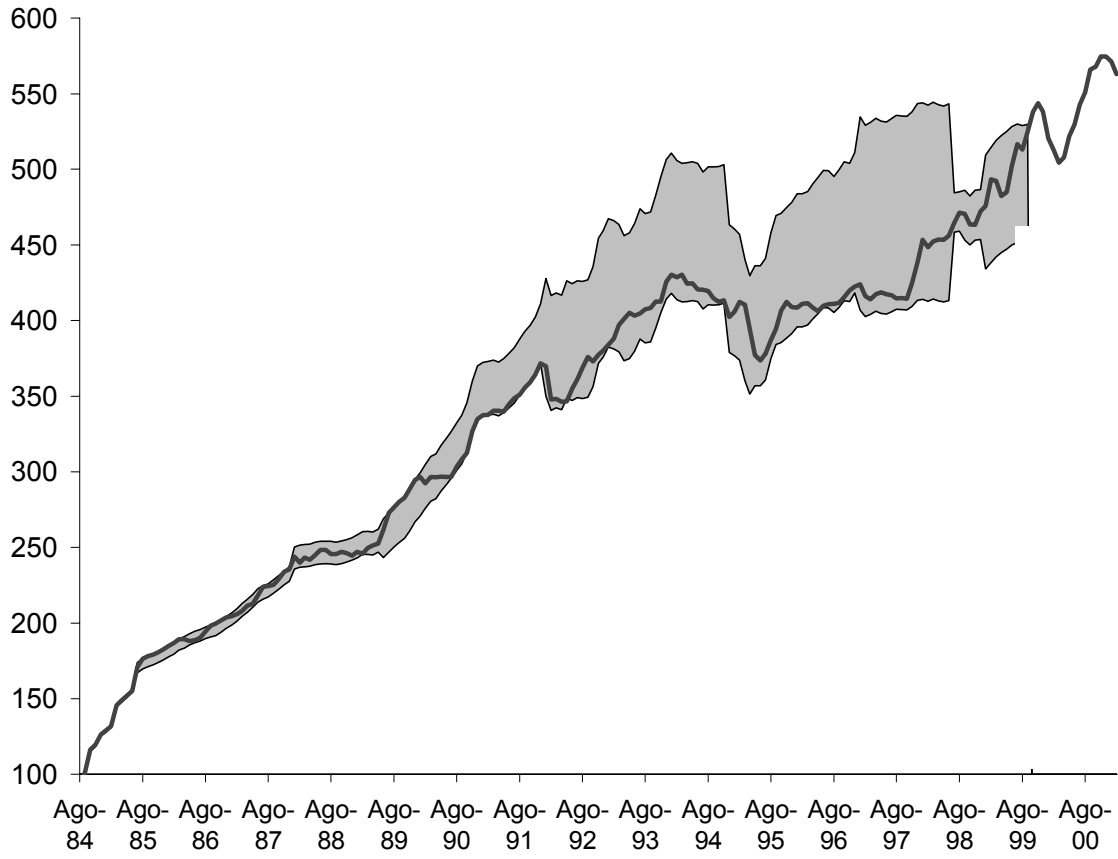
²⁵ By the end of this year, much better information on currency mismatches is expected to exist, as new provisions of the Superintendency of capital markets about the quarterly report of balance sheets of all listed corporations will be in place.

target, was not really a blunt reversal or a sudden change in the direction in which exchange rate policy had been heading. During much of the 90s, the exchange rate band tried to mimic exchange rate flexibility, as its parameters shifted in order to validate market pressures and its width was significantly large. Exchange rate management *per se*, with the exception of some specific episodes of distress, clearly had a secondary position in the Central Bank's policy priorities.

Thus, the choice of a flexible exchange rate was not only consistent with the changes experienced by the inflation targeting regime under low, steady-state inflation and with eliminating a possible source of conflict, but also with the developments and lessons observed during the 1990s. In that scenario, a movement in the other direction (that is, towards higher exchange rate management) would have contradicted the Central Bank's successful monetary scheme, and thus was probably never a valid option. The brief analysis of the adoption of a foreign currency deems that, at the present moment, it would certainly be a bad policy choice for Chile. As "softer" versions of dollarization (such as a hard peg or a currency board) share its lack of flexibility without entirely providing its credibility (see, for instance, Argentina's exchange rate premium, still significant almost more than a decade of fixed exchange rate), a flexible exchange rate was possibly the best available choice.

Chile's experience with flexible exchange rate has been a calm one, as core inflation has remained around the steady-state target and exchange rate volatility has not improved significantly when compared to its pre-flexibility values. The low level of passthrough, although subject to many explanations, weakens the case presented by the advocates of exchange rate management in order to avoid significant shifts in domestic prices. Regarding volatility, the result is somehow striking, as it has been widely reported that exchange rates suffer significant increases (unexplained by fundamental variables) in their volatilities when adopting floating regime. Why has this not been the case of Chile? Our experience with exchange flexibility is too short as to derive definite conclusions or trace permanent trends, so we can just guess a possible explanation as of today. One of them could lie on the features of Chile's financial system. It is likely that financial markets in Chile (due to a relatively small number of participants, low volume of transactions or non-existence of a broad set of financial instruments) lack significant levels of speculation or heterogeneity, features which are a traditional explanation for exchange volatility in industrialized economies. If further development of Chile's financial system (and greater depth reflected in a higher number of market participants and transactions) will indeed increase volatility remains an open issue. However, financial development would also provide more efficient and complete hedges, thus eliminating one possible negative effect of enhanced volatility.

Figure 1
Nominal Exchange Rate and Exchange Rate Band



Source: Central Bank of Chile

Table 1
Summary of Exchange Rate Band Characteristics: 1984-1999

Date	Band Width	Currency Basket Composition			External Inflation for adjustment	Domestic Inflation for adjustment	Real Appreciation (Productivity)
		US\$	Yen	Mark			
84.08 - 85.06	± 0.5%	100%	0%	0%	3.60%	Lagged	0%
85.07 - 87.12	± 2.0%	100%	0%	0%	3.60%	Lagged	0%
88.01 - 89.05	± 3.0%	100%	0%	0%	3.60%	Lagged	0%
89.06 - 91.02	± 5.0%	100%	0%	0%	3.60%	Lagged	0%
91.03 - 91.06	± 5.0%	100%	0%	0%	0.00%	Lagged	0%
91.06 - 91.11	± 5.0%	100%	0%	0%	3.60%	Lagged	0%
91.12 - 91.12	± 5.0%	100%	0%	0%	2.40%	Lagged	0%
92.01 - 92.04	± 10.0%	100%	0%	0%	2.40%	Lagged	0%
92.05 - 92.06	± 10.0%	100%	0%	0%	1.20%	Lagged	0%
92.07 - 94.11	± 10.0%	50%	20%	30%	2.40%	Lagged	0%
94.12 - 95.11	± 10.0%	45%	25%	30%	2.40%	Lagged	0%
95.12 - 96.12	± 10.0%	45%	25%	30%	2.40%	Lagged	2%
97.01 - 98.07	± 12.5%	80%	5%	15%	2.40%	Lagged	2%
98.07- 98.09	-3.0% + 2.5%	80%	5%	15%	2.40%	Lagged	0%
98.09 -98.12	± 3.5%*	80%	5%	15%	0%	Target	0%
98.12-99.09	± 8%	80%	5%	15%	0%	Target	0%

Discrete adjustments in band's center		
Date	Change	Sign
1984.09	23.70%	Devaluation
1985.02	9.10%	Devaluation
1985.07	8.50%	Devaluation
1991.04	1.40%	Revaluation
1991.06	2.00%	Revaluation
1992.01	5.00%	Revaluation
1994.12	9.70%	Revaluation
1997.01	4.00%	Revaluation

Table 2
Simple contemporary correlations: Chile and prospective monetary union partners

	Argentina	Brazil	Mexico	United States	Germany
Annual Unemployment (1990-1998)	-0.47	-0.71	-0.28	0.47 (quarterly: -0.07)	-0.62
Quarterly Real Interest Rate (1986-99)	-0.04	0.27	0.41	0.03	-0.09
Real Stocks Quarterly Return (1990-1999)	0.37	0.17	0.4	0.15	0.07
Annual Terms of Trade (1980-1995)	0.27	0.14	0.25	-0.49	0.20
GDP's Quarterly Growth (1986-1998)	-0.09	-0.08	0.04	0.09	0.38
GDP's Annual Growth (1980-1998)	0.20	0.21	0.26	0.44	0.29
GDP's Quarterly Cycle (deviation from trend) (1986-1998)	-0.02	0.09	-0.21	0.03	-0.02
GDP's Annual Cycle (deviation from trend) (1980-1998)	0.22	0.38	0.38	0.36	0.47
Private Consumption's Annual Growth (1980-1998)	0.20	-0.02	0.42	-0.22	0.33
Private Consumption's Annual Cycle (deviation from trend) (1980-1998)	0.18	-0.07	0.33	-0.21	0.43

Source: Morandé and Schmidt-Hebbel (2000). Statistically significant correlations are presented in bold letter.

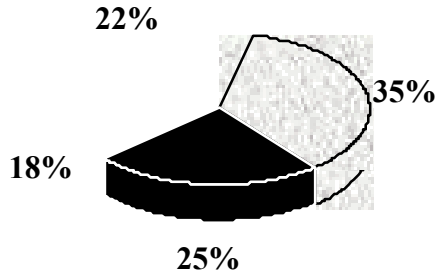
Table 3
Summary of Evaluation OCA Criteria: Chile with Mercosur and the United States

Traditional Criteria	Mercosur-Monetary Union	United States-Dollarization
Income and development	Similar	Very different
Inflation	Similar	Similar
Labor Mobility	Low	Very Low
Unemployment Rate Correlation	Very Negative	Positive
Financial Mobility	Moderate/High	Moderate/High
Capital Account Liberalization	Moderate and similar	Moderate and smaller
Real Interest Rates Correlation	Zero	Very Low
Real Stock Returns Correlation	Positive	Zero
Saving/Investment Correlation	High	High
Share of Chile's Trade	Moderate	Moderate
Terms of Trade Correlation	Low	Negative
GDP Growth Correlation	Zero	Zero
GDP Diversification	Low	Low
Exports Diversification	Very Low	Very Low
Labor Market Flexibility	Moderate	Moderate
Wage and Price Indexation	Very High	Very High
Non-Traditional Criteria		
Depth of Structural Reforms	High and Similar	High and Similar
Fiscal Stance	Strong and Different	Strong and Similar
Fiscal Coordination/Regional Transfers	Negotiation Possible	Negociación Improbable
Seigniorage	High, diminishing	High, diminishing
Lender of last resort	Negotiation Possible	Negotiacion Unlikely

Source: Morandé and Schmidt-Hebbel (2000).

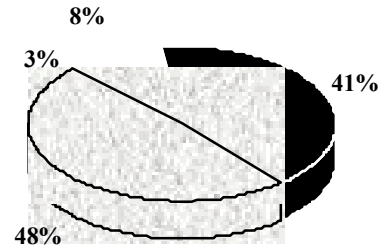
Figure 2
Shares of Trade: Chile and 3 Trade Blocks

CHILE



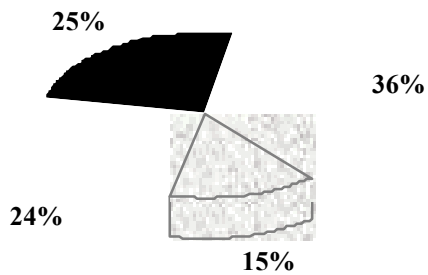
■ Mercosur USA EMU □ Others

EMU



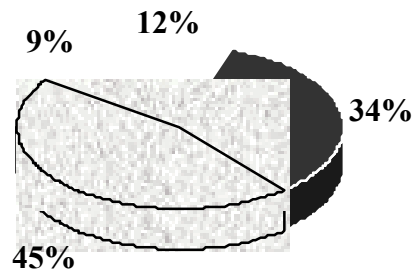
□ EMU Japan USA ■ Others

MERCOSUR



□ Mercosur NAFTA ■ EMU Others

NAFTA



□ NAFTA Japan EMU ■ Others

Figure 3
Diversification of GDP and Exports in 4 Latinamerican Economies

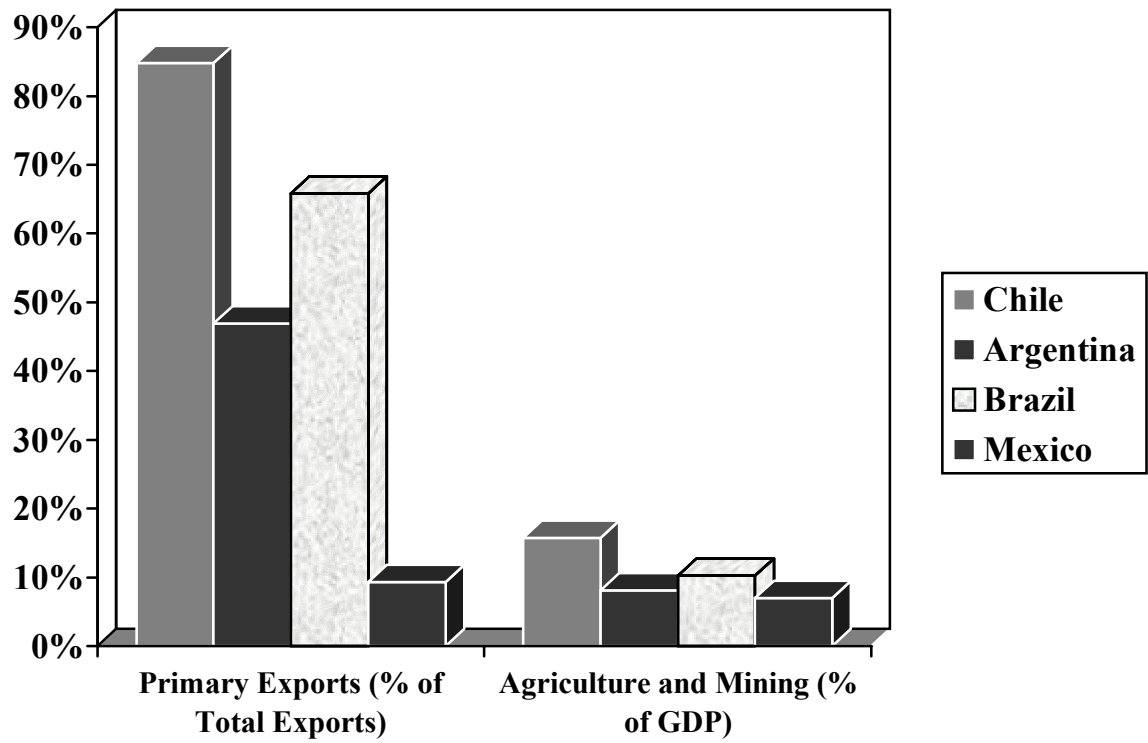
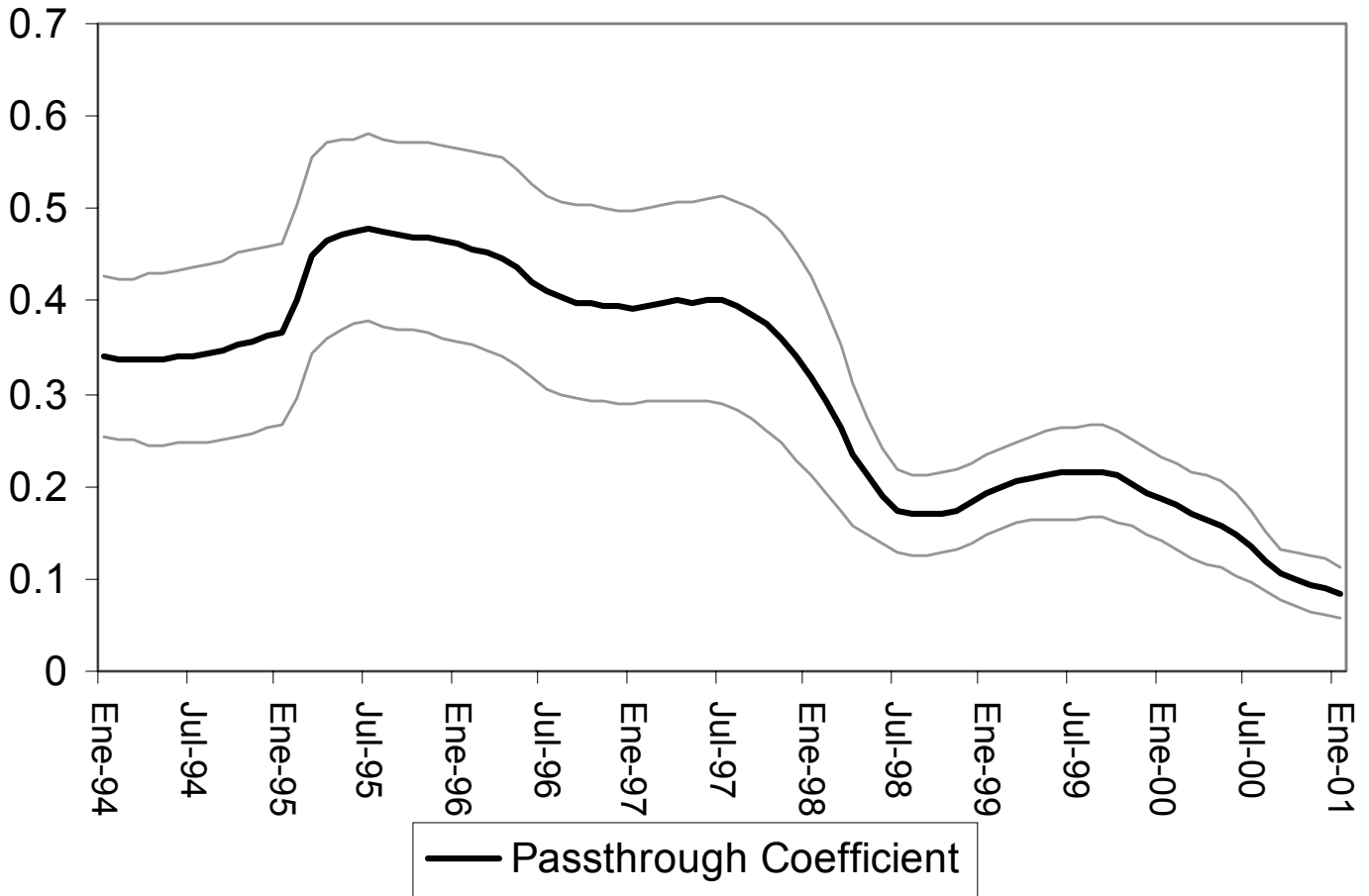


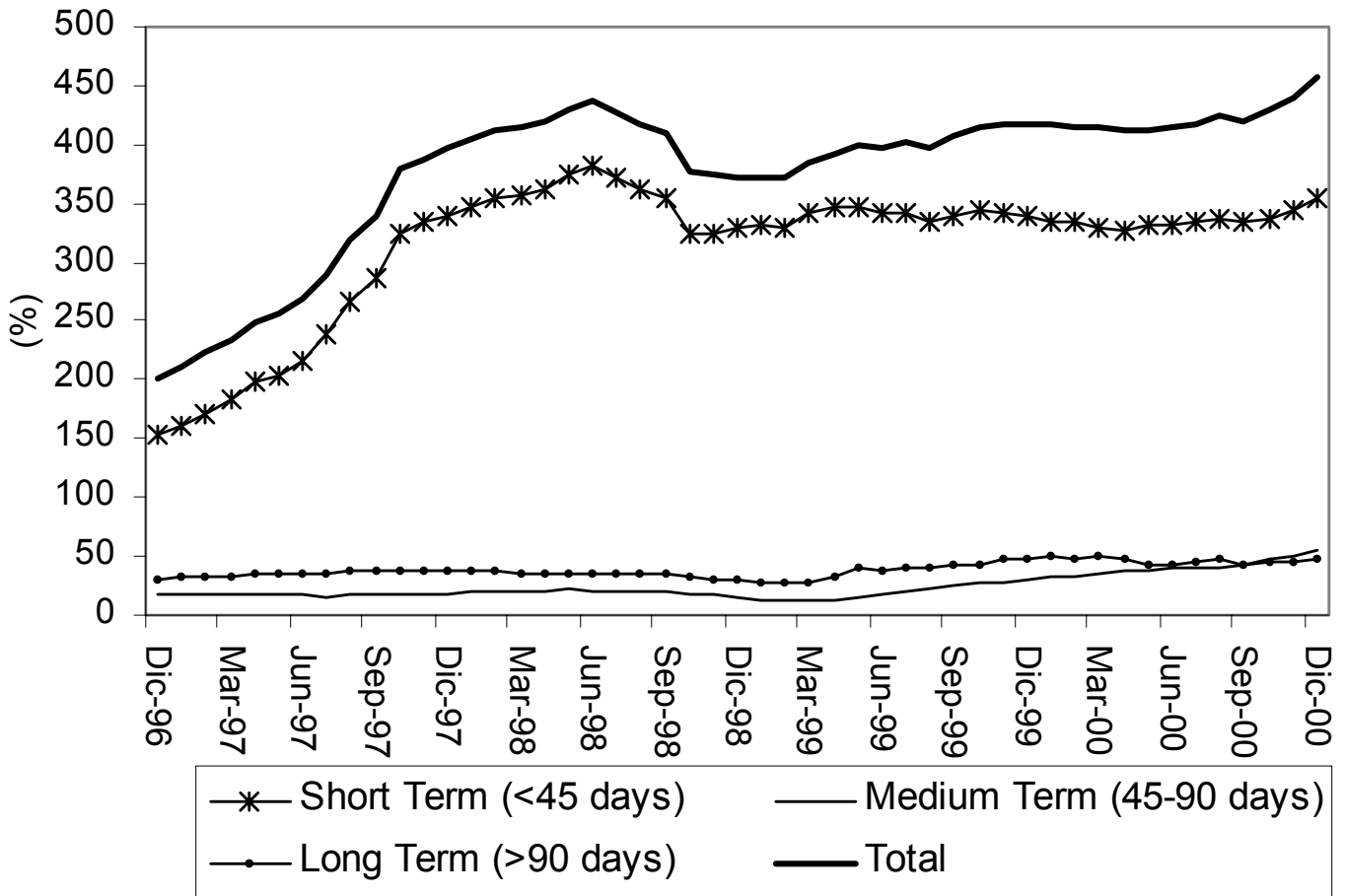
Figure 4
Passthrough Coefficient



Notes: 1) +/- 2 St.D. 2) 8 year-year rolling sample.

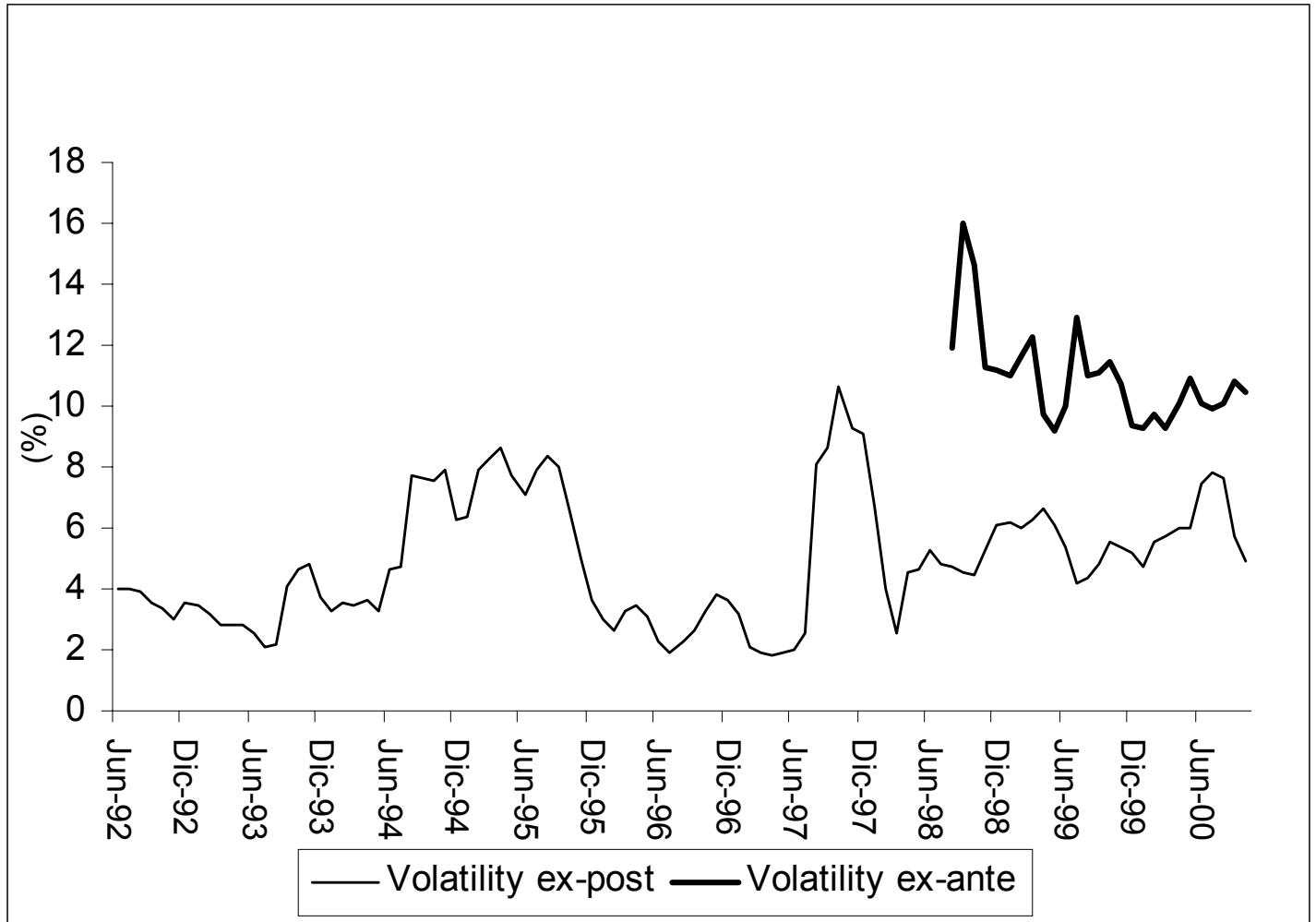
Source: Monetary Policy Report (Central Bank of Chile).

Figure 5
Forward Market Transactions (% of M2)
One-year rolling sample (aggregate.)



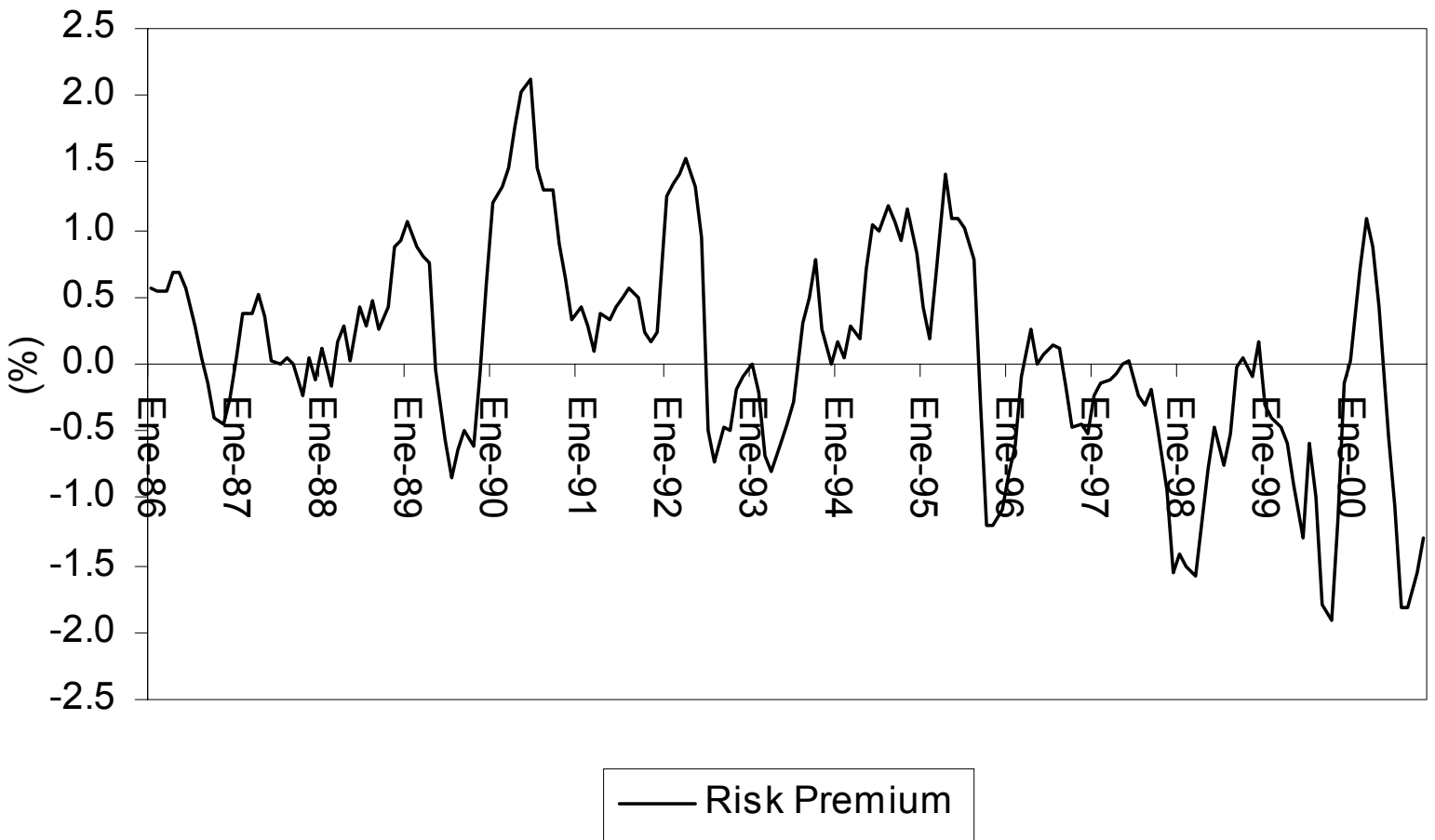
Source: Central Bank of Chile

Figure 6
Exchange Rate Return Volatility



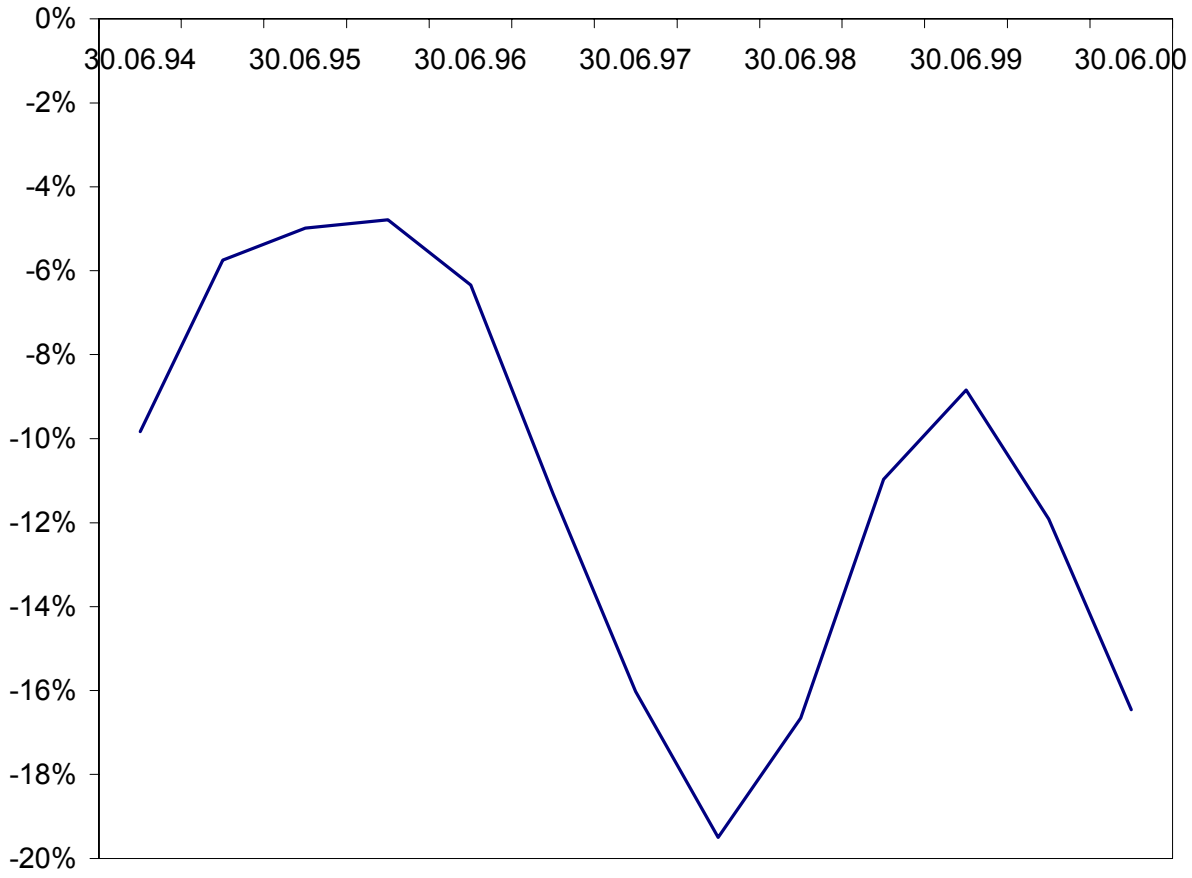
Source: Author's calculations.

Figure 7
Chilean Exchange Rate Risk Premium
(controlling for expected devaluation, URR, and Country Risk Premium)



Source: Author's calculations.

Figure 8
Foreign Currency Mismatch in Chilean Enterprises
(In relation to capital and reserves)



Source: Central Bank of Chile

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