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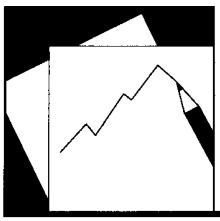

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Capital Account Policies in Chile
Macro-financial considerations along the path to liberalization

Yan Carrière-Swallow

Pablo García-Silva

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Macro-financial considerations along the path to liberalization[1]

Prepared by Yan Carrière-Swallow and Pablo García-Silva

Authorized for distribution by Pablo García-Silva

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Abstract

This paper recounts Chile's experience with capital account policies since the 1990s. We present how two external shocks were confronted under very different macroeconomic and capital account frameworks. We show that during the 1997-98 Asian-LTCM-Russia crisis, a closed capital account and relatively rigid exchange rate severely constrained the monetary policy response to the shock, aggravating the fall in domestic demand. During the 2008-09 crisis, a full-fledged inflation targeting framework allowed the authorities to implement a significant countercyclical response. We argue that domestic stability considerations lay behind the policy regime switch toward capital account liberalization from 1999 onwards.

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Author's E-Mail Address: ycswallow@imf.org and pgarciasilva@imf.org

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CONTENTS

I. INTRODUCTION

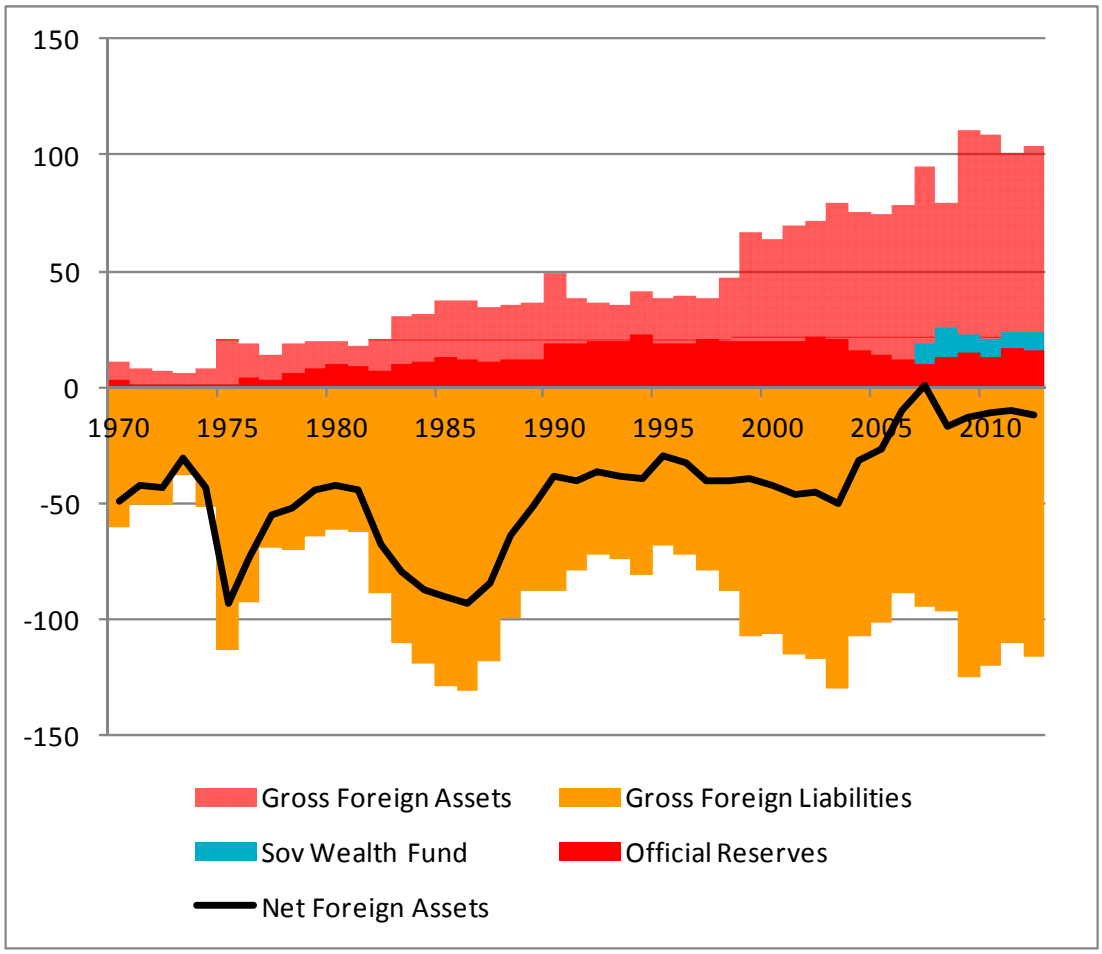
The unprecedented monetary stimulus that has been implemented in various advanced economies since the breakout of the financial crisis in 2008 has featured persistently low interest rates and large-scale asset purchase programs by national central banks. While this policy stance is likely to persist given the struggle to keep a weak recovery on track, sustained growth has continued in many emerging economies. The gap between growth rates in both groups of countries has generated a divergence in relative economic slack, and thus differing paths for monetary policy and short term interest rates. The resulting search for yield has led to large capital flows from advanced to emerging economies. While foreign capital serves as an important catalyst of productive investment that stimulates growth in emerging markets, "too much" of it can also present a number of challenges for receiving countries. These include the impact of real appreciation on the competitiveness of the tradeables sector, vulnerabilities from exuberance and increased leverage, and the threat that an eventual withdrawal of monetary stimulus will trigger sudden capital outflows and financial distress.

The return of abundant international liquidity has therefore rekindled the global debate on the appropriateness of capital controls, or Capital Flow Measures (CFMs) in recent IMF parlance. Authorities in some countries have maintained a liberal policy designed to take the flows in stride, often based on a flexible exchange rate to maintain external balance, while others have implemented a range of measures to try to stem the flows and intervened in the foreign exchange market to dampen their impact. Besides arguments about their desirability, there is also debate over whether controls on capital are even effective at accomplishing their objective in a world of highly sophisticated financial markets.

Against this backdrop, the Chilean experience with capital account policies merits attention. During the 1990s, while also facing a surge of capital inflows in an environment of low volatility and low global interest rates, Chile was an early adopter of CFMs to stem appreciation and current account pressures. In the last decade and a half, however, these types of policies have been conspicuously absent from the actual implementation of policies, and the capital account has seen a process of significant liberalization.

In this paper we provide an overview of the process of implementation of capital account policies since the early nineties in Chile. Figure 1 shows the evolution of foreign assets and liabilities over the past forty years, which can be considered the *de facto* measures of capital account openness. We can see that gross foreign assets and gross foreign liabilities are both currently above 100% of GDP. While liabilities have fluctuated around this level for many years, the main development has been the buildup of foreign assets, from well below 50% of GDP until late in the 1990s to over 100% of GDP today. This has also contributed to a significant reduction in net foreign indebtedness. The net foreign asset position has remained close to balance since 2006, which compares favorably with the previous history of hefty stocks of net foreign liabilities.

Figure 1: Chile's foreign assets and liability stocks (% of nominal GDP)

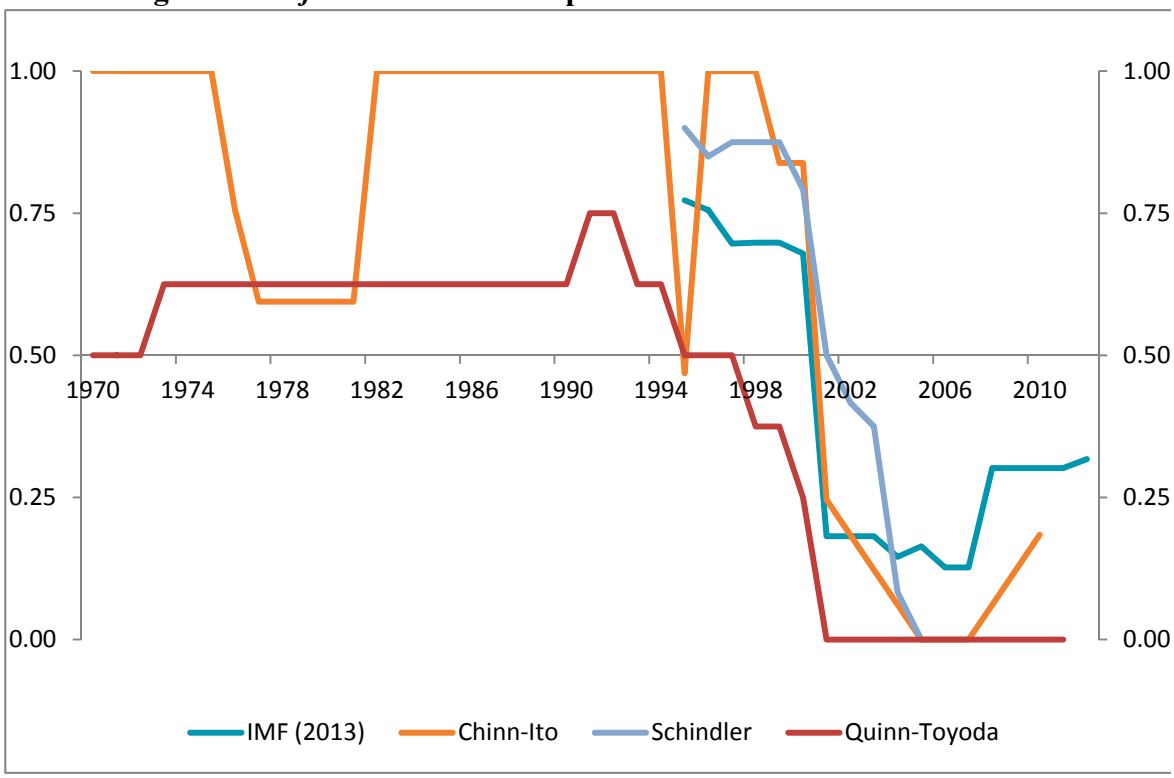


Sources: Official data from Budget Office and Central Bank and updated series from Lane and Milesi-Ferretti (2007).

The significant shift in the net foreign asset position from 2000 onwards has coincided with the *de jure* liberalization process of the capital account. Figure 2 displays a number of capital account liberalization measures constructed by various authors, using the IMF's AREAER database. The indexes have been renormalized such that a value of 1 reflects the most restrictive stance on capital account arrangements, and a value of 0 the most liberalized stance, for all country-year pairs in each sample. All measures clearly indicate a shift towards a more open capital account starting in the late 1990s, which has moved Chile from having a quite restrictive capital account policy to a very flexible one.

Besides providing a synthetic overview of the path of Chile of international financial integration over more than two decades, analyzing this period allows us to highlight a number of features that are relevant for the current policy debate on capital account policies. First, it allows us to compare two boom-bust cycles in the global environment that Chile faced using quite different policy frameworks. While the country maintained a monetary framework based on exchange rate stability and strict capital controls during the 1990s, currently Chile maintains a monetary

Figure 2: *De jure* measures of capital account liberalization in Chile



Sources: Schindler (2009), Quinn and Toyoda (2008), Chinn and Ito (2008) and IMF (2012). Indicators based on the International Monetary Fund's Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER) database. All series have been normalized to a range of 0-1, with lower figures reflecting less restrictiveness.

framework based on exchange rate flexibility and a relatively open capital account. The run-ups, responses and recoveries surrounding the Global Financial Crisis of 2008-09 and those around the time of the Asian-Russian-LTCM crisis of 1997-98, provide a useful point of comparison for the degree of pro-cyclicality in policymaking and how it interacts with the capital account framework.

Second, given that ebbs and flows in global capital markets are a fixture of the environment, a successful policy framework must be able to deliver growth and stability over the international credit cycle. Whichever macroeconomic framework a country selects, policy makers should be aware that the decisions they take during periods of abundance will largely determine the market's reaction to sudden switches in the environment. As such, policy making during periods of stress will be constrained by how past decisions have shaped private agents' expectations. The market participants' response —particularly domestic institutional investors in the Chilean case— to the outbreak of turbulence, as well as their portfolio allocations in periods of tranquility, are illustrative of how the capital account and macroeconomic frameworks interact.

Third, the long period of time under analysis permits the discussion of the rationales for the choices of specific capital account policies, both in terms of their implementation in the first part of the nineties as well as the subsequent liberalization process. We tackle this issue along two

dimensions. We start by assessing to what extent the shift was motivated by the stated domestic policy goals of fostering stable job creation and economic growth. We then consider to what extent the shift was influenced by external factors, in particular the regular IMF Article IV consultations and the process of trade liberalization through bilateral trade agreements.

As a result, we highlight the following. First, the degree of exchange rate rigidity and the capital account restrictions needed to maintain it largely determined the extent to which countercyclical macroeconomic policies could be deployed in response to large external shocks in 1998 versus 2008-2009. Second, large institutional investors played differing roles in these two crisis episodes, in one case exacerbating domestic monetary tensions and in the latter case helping to ease them. This pattern can be traced to the interactions between the capital account framework, the expected movements in the exchange rate and the portfolio allocations of these institutional investors. Third, the decisions to implement CFMs in the early nineties, as well as the shift towards a more open capital account from the early 2000s can both be traced to domestic stability concerns, mainly the importance attached to securing resilient economic growth and job creation. Moreover, while the International Monetary Fund encouraged the authorities to adopt a more flexible stance on capital account policies in the nineties, it is not apparent that their insistence played an immediate role in the implementation of the new policy framework. In fact, the gradual evolution of the IMF's stance on capital account policies —starting in the case of Chile with the consultations in 1998 and 1999— stands in contrast to the move towards a more open capital account determined by the Chilean authorities.

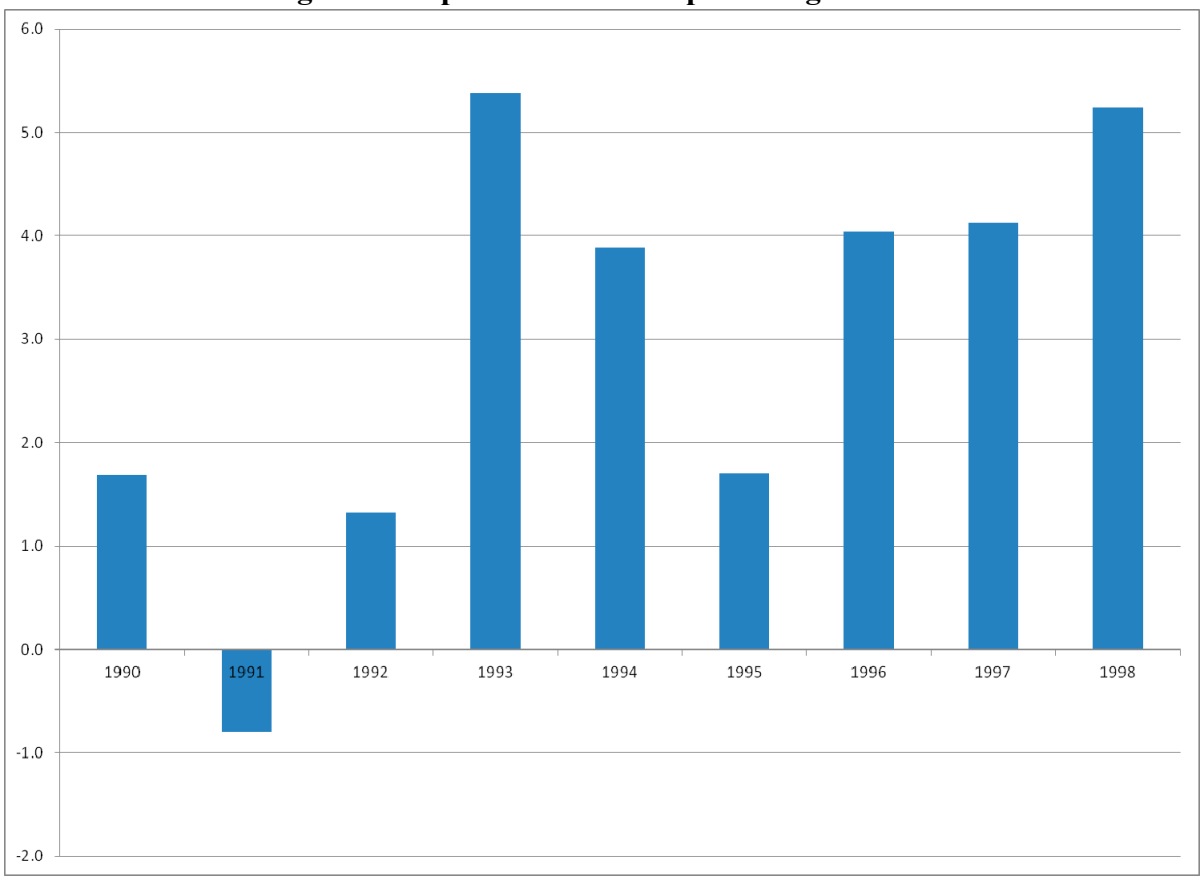
II. AIMING TO SECURE EXPORT-LED GROWTH

A. The implementation of CFMs in the nineties

After the 1982-83 recession and financial crisis, the Chilean economy lost access to global financial markets altogether. The significant macroeconomic adjustment undertaken in 1985-86 aimed at restoring external sustainability by promoting domestic adjustment through significant real exchange rate depreciation. The successful change in relative prices, coupled with a gradual improvement in external conditions, helped to engineer an export-led recovery. Macroeconomic policy was conducive to this environment, thanks to an initial mix of loose monetary policy, a weak real exchange rate, and tight fiscal stance. Output and employment grew rapidly from 1986 to 1989, and this was accompanied by a major improvement in external balances.

Following the successful implementation of the Brady Plan in 1989 —which alleviated the bulk of the external debt hangover in major Latin American economies—, a wave of optimism about the region dominated financial markets during the early to mid 1990s. This was coupled by a sustained recovery in global growth and commodity prices, and a cycle of loose monetary policy undertaken by the Federal Reserve following the shallow recession of 1990 in the United States. The result was a growing appetite for investing in Latin American economies, generating abundant capital flows from the north to the south and historically low spreads on Latin American debt, which dropped steadily between 1990 and 1997.

Figure 3: Capital account as a percentage of GDP

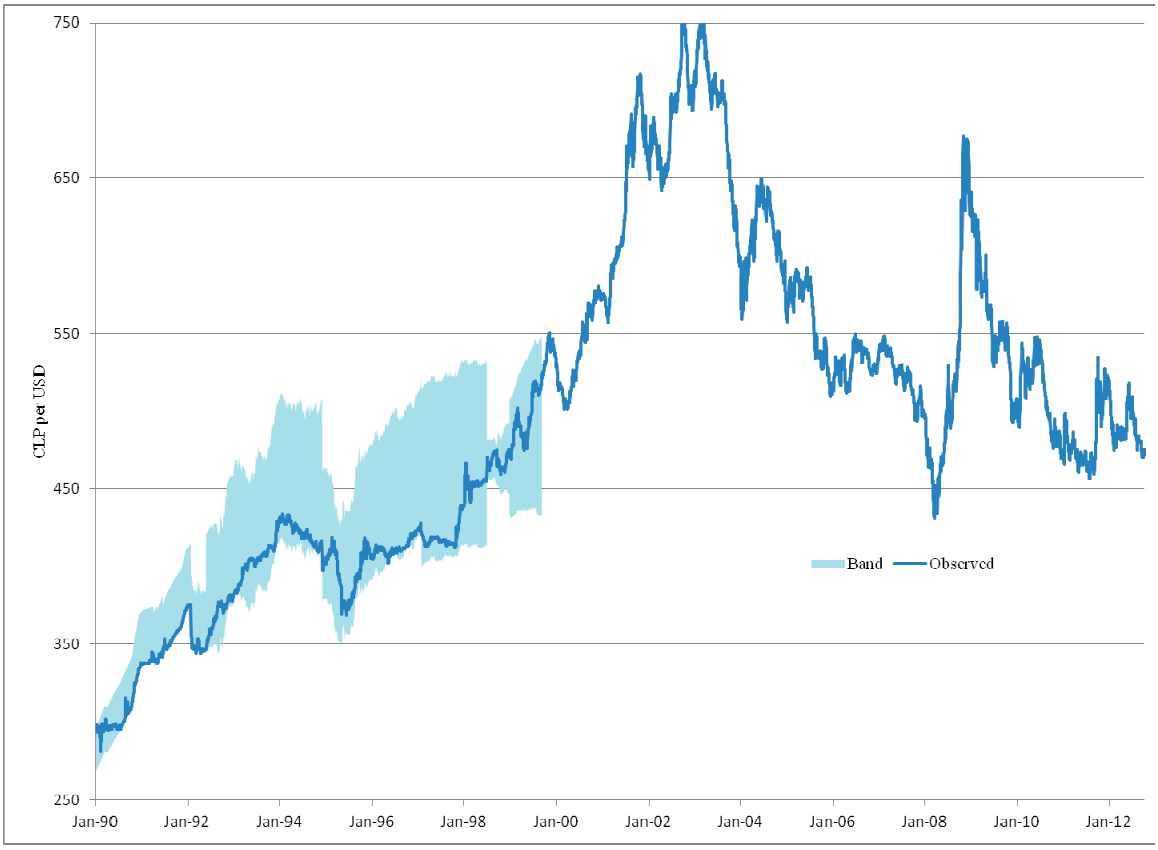


Source: Official Balance of Payments and National Accounts data.

In Chile, a peaceful transition to democracy was followed by further economic reforms that aimed to deepen the country's commitment to unilateral trade liberalization. A sound fiscal stance and newly independent central bank tasked with reducing inflation generated a welcoming environment for foreign direct investment and portfolio flows. After years of limited access to international capital markets following the 1980s debt crisis, the external financing constraint was lifted and large surpluses returned to Chile's capital account, as shown in Figure 3. As Labán and Larraín (1994) point out, Chile received the largest private capital inflows as a percentage of output among the five large Latin American economies in 1989 and 1990.

When the Central Bank of Chile was formally granted its independence in October 1989, it was given broad attributions to pursue a mandate of domestic price stability. As Chile's inflation rate remained in double digits, reducing inflation to industrial-country levels was seen as an important objective for the country. However, this ended up proving challenging as export-led growth was seen as a bulwark of economic recovery and growth.

Figure 4: The exchange rate band and the nominal observed rate

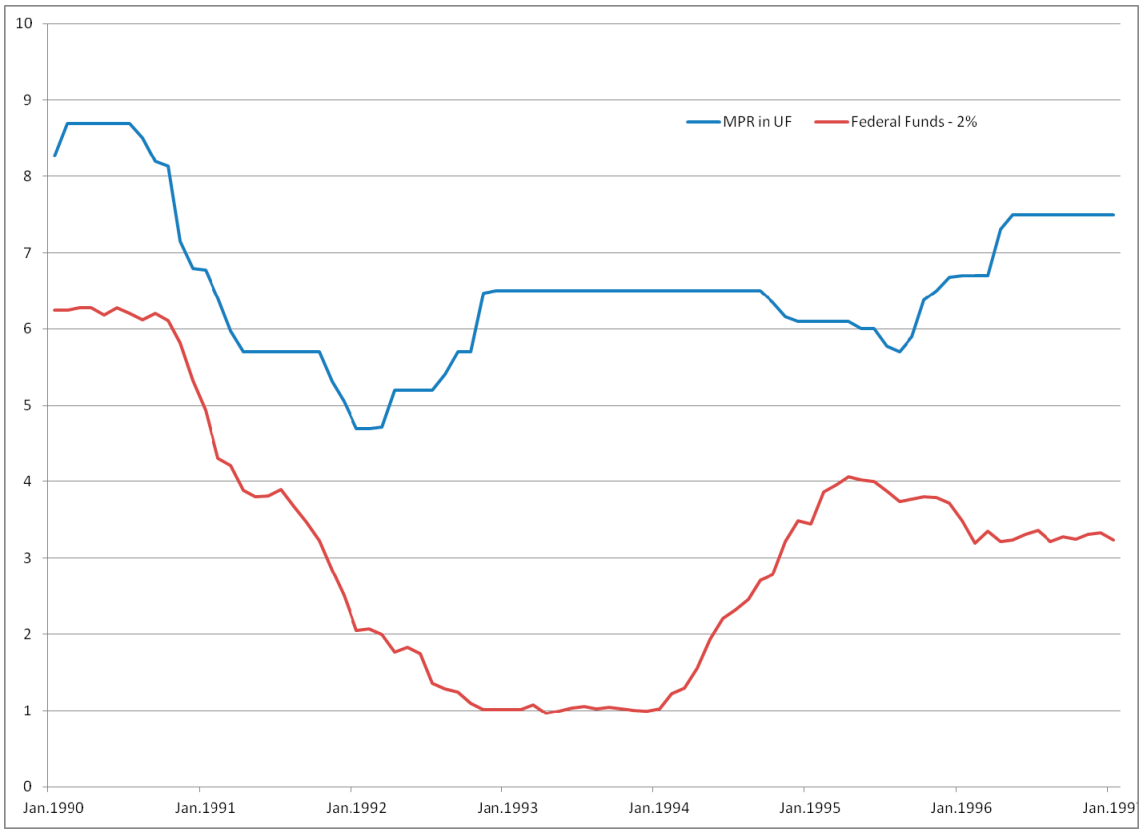


Sources: Bloomberg and Central Bank of Chile.

Indeed, an important objective of the authorities was to maintain a competitive exchange rate in order to favor growth in the tradable sectors. A depreciated and stable exchange rate was seen by fiscal and monetary authorities alike as an important driver of the export-led growth model the country had been successfully implementing since the mid 1980s. Furthermore, a competitive exchange rate was seen as a key element to limit the country's vulnerability to bouts of financial turmoil such as those experienced during 1982. It must be kept in mind that an important ingredient to the outbreak of that crisis had been the overvaluation of the real exchange rate and the accompanying widening of the current account deficit in the years prior to the crisis. These concerns led to the adoption of an exchange rate policy of maintaining the peso-dollar rate within a managed band, shown in Figure 4. In view of avoiding the accumulation of disequilibria, the band was adjusted according to the difference between domestic and foreign inflation rates, and its width repeatedly modified.

This challenging policy environment implied that some measures to constrain the flow of foreign capital needed to be implemented, and the available options were carefully discussed among the economic authorities at the time (Bianchi, 2009). A proposed solution to the dilemma was implemented when, in June 1991, the Central Bank of Chile introduced an unremunerated reserve requirement on capital inflows, known as the *encaje*. Under this policy, 20 percent of certain capital inflows would have to be deposited at the central bank in an account that would

Figure 5: Monetary policy rates, adjusted for inflation



Source: Constructed using data from the Central Bank of Chile and Federal Reserve Bank of St. Louis.

not earn interest. The term of the mandated deposit was equal to either the horizon of the investment or to one year, whichever was shortest. This structure meant that the effective cost of the measure penalized shorter-horizon flows more heavily than longer-horizon flows. In May 1992, the *encaje* requirement was raised further to 30 percent, its term fixed at one year irrespective of the flow's horizon, and extended to a wider range of incoming capital.[2]

From the beginning, the Central Bank was quite explicit in acknowledging the rationale for the implementation of the *encaje*. By effectively taxing foreign credit, it aimed to prevent the breaching of the exchange rate band while implementing an independent monetary policy. Indeed, the exchange rate and capital account policies were aimed precisely at preserving one of the basic objectives of the authorities, which was to maintain the export sector as one of the fundamental pillars of the country's development strategy (Banco Central de Chile, 1991).

By 1993, the authorities also made explicit their objective of using the exchange rate policy to keep the real exchange rate aligned with a sustainable external balance, understood as a current account deficit of between 3 and 4 percent. This implied using policies to limit the volatility of

[2] See a complete discussion of these measures in Cowan & De Gregorio (2007) and De Gregorio (2010).

the exchange rate (Banco Central de Chile, 1993). The main concerns behind the operation of the capital account restrictions and the exchange rate band shifted, as the authorities grudgingly recognized the reality that the real exchange rate appreciation was being driven by fundamentals[3]. However, the achievement of domestic stability was still understood as requiring a significant gap between domestic and foreign interest rates —shown in Figure 5—, which made it impractical and unadvisable to fully integrate fixed income markets (Banco Central de Chile, 1995).

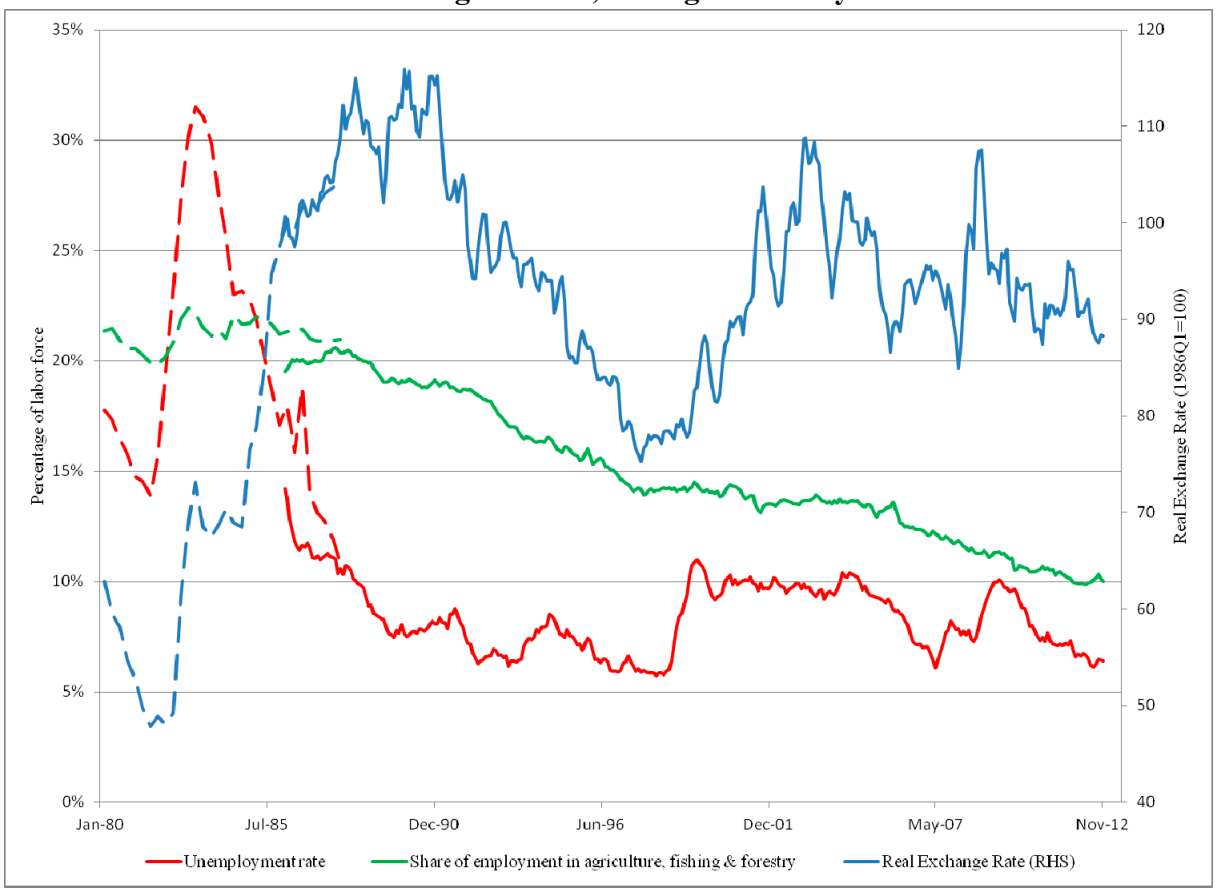
The Tequila crisis in 1994-1995 had a very limited impact on overall macro-financial stability in Chile. Its effects were mainly reflected in equity valuations, with a muted consequence on interest rates and the exchange rate. Capital inflows decreased somewhat, but the balance of payments situation was buttressed by a significant increase in the terms of trade.

Although a gradual liberalization of foreign currency operations was underway —mainly to unify the formal and informal (e.g. bank and non-bank) foreign exchange markets and to authorize the introduction of foreign exchange derivatives—, further *encaje* restrictions on inflows were implemented. As the capital inflows and exchange rate appreciating pressures continued apace, the Central Bank decided to extend the *encaje* to what were deemed potentially speculative inflows, namely secondary market ADR operations and other portfolio flows (Banco Central de Chile, 1996). This resulted in a significant reduction in the liquidity of the domestic equity market.

With the benefit of hindsight, the policy reforms undertaken in the country and the improved regional financial environment had undermined the Central Bank's ability to achieve both its objectives —lowering inflation while maintaining a depreciated exchange rate— simultaneously. As Magendzo, Rojas and Vergara (1996) point out, the nominal exchange rate spent the vast majority of the early part of the decade against the lower bound (e.g. strong side) of the central bank's exchange rate band, suggesting that the band was consistently out of line with economic fundamentals. Defending the exchange rate thus required constant sterilized interventions in the market, putting operational pressure on the Central Bank of Chile, who aimed to show its resolve at delivering price stability by keeping the monetary stance tight to prevent overheating. Furthermore, sterilizing the inflows imposed mounting quasi-fiscal costs on the Central Bank, since rates paid on its paper were substantially higher than those earned by its foreign reserves. Despite the authorities' efforts, the real exchange rate appreciated at an annual rate of 5.4% between 1990 and 1997, as shown in Figure 6. This trend indicated that the appreciating pressures reflected fundamental shifts that were not easy to discern in real time.

[3] This was arguably not easy to detect in real-time. De Gregorio & Tokman (2005), and De Gregorio, Edwards & Valdés (2000).

Figure 6: The real exchange rate, unemployment rate, and share of total employment from agriculture, fishing & forestry



Notes: An increase in the RER index represents a depreciation. Solid lines correspond to monthly data from the National Statistics Office (INE) and Central Bank of Chile. Dashed lines correspond to historical quarterly data reported in García (1995) and Repetto (1994).

B. Facing the Russian-LTCM crisis

The authorities' commitment to exchange rate stability gradually ran afoul when the global environment deteriorated substantially during 1997 (Céspedes *et. al.*, 2005). While the effects of the forced depreciation of the baht in July 1997 were limited in Latin America —with spreads relatively unaffected and demand remaining strong—, Russia's announcement that it would default on its sovereign bonds was a major shock to capital markets, generating a sudden shift in sentiment towards emerging market economies as a whole. Spreads on Latin American sovereign debt shot up by around 1,000 basis points in the space of a few weeks, and the increase was quickly transmitted to commercial debt markets. The impact of the crisis on Chile's external conditions was severe, as shown in Figure 7. The terms of trade deteriorated markedly. The price of copper —Chile's most important export— fell from a high of $1.19 per pound in mid 1997 to 67 cents at the end of 1998.

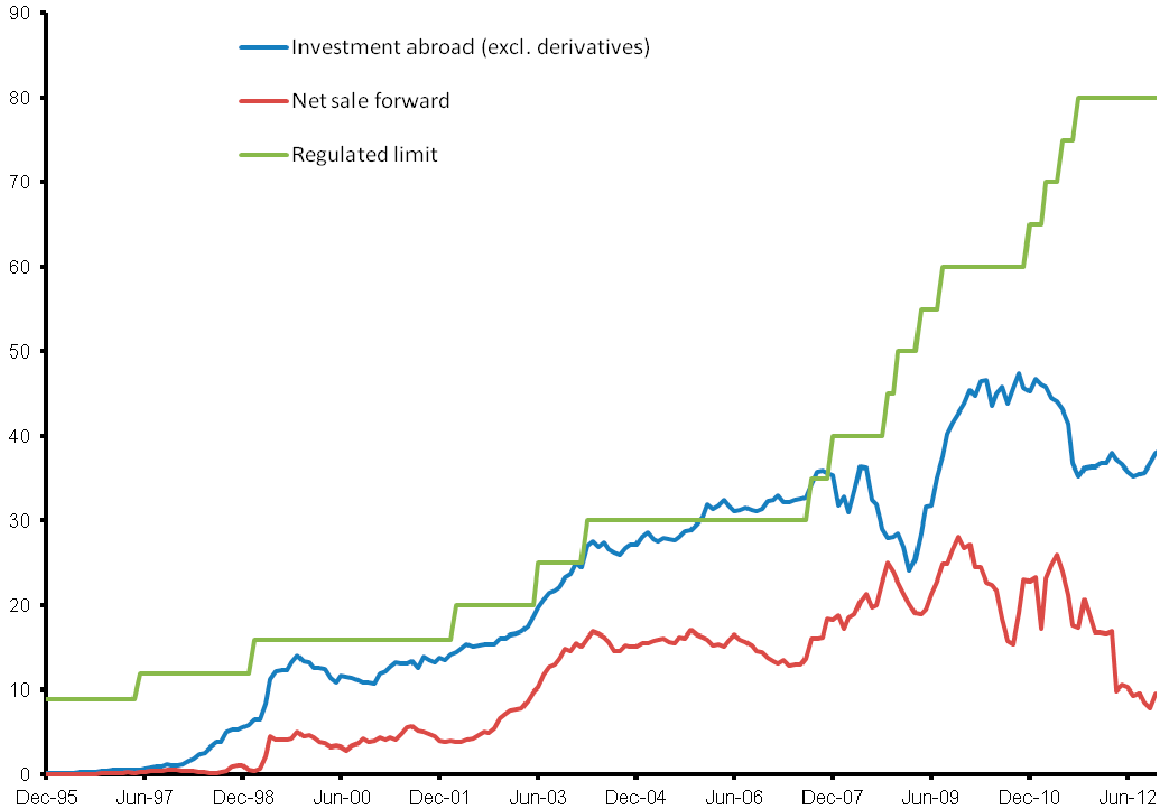
Figure 7: External conditions facing Chile during the Asian financial crisis

Sources: Data from Bloomberg and World Bank GEM commodities database.

Rather than meet the sharp fall in demand with a looser monetary stance, the policy response kept with the framework that had been in place prior to the crisis. The central bank mounted a spirited defense of the stability of the exchange rate, now under considerable pressure towards depreciation. The authorities highlighted that the uncertain consequences both on price and financial stability made abandoning the exchange rate band dangerous and unadvisable.

The decisions taken by financial market participants, and particularly by the country's banks and large private pension funds, were also determined by the policy regime that was in place prior to the crisis. Alongside the ramping up of controls on capital inflows from 1991 through 1996, the authorities had implemented a policy of gradually liberalizing capital outflows. At the beginning of the 1990s, the country's pension funds were limited to investing a maximum of 1.5 percent of their assets overseas, and had to do so in securities approved by the regulator's Risk Classifying Commission. As shown in Figure 8, these restrictions were gradually relaxed throughout the decade, allowing private pension funds (AFPs) to invest an increasing portion of their portfolio overseas. However, as returns in Chile exceeded those in developed economies, a situation that partly reflected the existence of the *encaje*, gains from arbitrage left little incentive for investing abroad. As late as 1998, AFPs had largely refrained from investing their assets abroad, so that

Figure 8: Pension fund assets invested abroad, as a percentage of total assets



Source: Central Bank of Chile.

the regulated upper limit was not binding. Therefore, capital controls biased the portfolio allocation of institutional investors towards domestic fixed income securities in the period of large capital inflows. Arguably, this increased the vulnerability of domestic money market conditions to a sudden change in sentiment regarding expected exchange depreciation, compounding the stress derived from exchange rate rigidities.

When the crisis hit, the sudden deterioration of the terms of trade and the overall negative financial environment for emerging economies put pressure on the currency to weaken. Given the size of the shock, it cannot be ruled out that market participants might also have expected a sudden abandonment of the exchange rate band and a substantial depreciation. Banks increased their uncovered position in U.S. dollars and pension funds shifted their portfolio overseas as far as regulations allowed, exacerbating the existing stress on the domestic financial system. Some authors have therefore argued that rather than a sudden stop in capital flows into Chile —which had triggered the previous debt crisis in 1982-83—, the country suffered a *sudden start* of capital outflows (Cowan *et. al.*, 2008; Valdés, 2008). The outflows placed additional pressure on the currency to devalue, and the central bank responded by further raising the policy rate to support the peso. As liquidity in the domestic financial system disappeared altogether, interest rates in the interbank market reached levels well over 100% during the worst of the crisis.

The result was a significantly pro-cyclical monetary policy response. Coupled with the major deterioration in the external environment, the impact of the crisis was severe and long lasting. Unemployment rose sharply to almost 12 percent in 1999, while the economy experienced its first year of negative growth since 1983. Further, the labor market displayed a striking degree of hysteresis, with unemployment remaining at elevated levels for many years after the shock dissipated. Many analysts —including central bank economists— have estimated that the structural level of unemployment increased over this period. For instance, Restrepo (2008) uses alternative empirical methods to estimate that the NAIRU increased by 1.3 to 3.3 percentage points between 1998 and 2004.

III. SECURING STABILITY IN A VOLATILE WORLD

A. The initiation of the liberalization process

It was apparent that the policy framework in place during the 1990s *required* a pro-cyclical response to the Asian crisis, and that private portfolio movements had served to exacerbate financial tensions during the crisis. The large falls in output and employment led to a major revision of the macroeconomic policy framework from 1999 onwards. Even in the midst of the macroeconomic response to the Asian crisis, the Central Bank began taking steps to reduce restrictions on the capital account and moving to a more flexible framework. In particular, the *encaje* requirement was progressively lowered, first to 10 percent in June 1998, and then eliminated completely in September of the same year. Simultaneously, the Bank further relaxed restrictions on capital outflows.

More strikingly, there was a significant shift in the policy framework regarding the interactions of monetary policy and exchange rate flexibility. In assessing the policy response during the Asian-Russian-LTCM crisis, the Central Bank in September 1999 (Banco Central de Chile, 1999) highlighted the various risks that surrounded a depreciation of the exchange rate. It was feared that the loss of a nominal anchor would allow a substantial pass-through of depreciation to inflation —even if the depreciation were temporary— due to the high prevalence of backward indexation in the economy. Furthermore, the very discussion was deemed to have risked undermining market perceptions of the authorities' commitment to macroeconomic stabilization, further threatening the value of the peso. Thus, a narrowing of the exchange rate band was implemented as a way to show resolve and bolster market confidence in the nominal anchor. As the turmoil from the LTCM crisis receded, and with the capital account being gradually liberalized, maintaining both monetary independence and exchange rate stability became even less feasible. The exchange rate band was initially widened over the first part of 1999. In September 1999, the central bank abandoned it altogether and announced a move to a fully fledged inflation targeting regime beginning in May 2000.

The assessment of the role of the exchange rate on this new fully-fledged inflation targeting regime changed markedly. In the new framework, the Central Bank stated that fluctuations in the exchange rate would allow it to deploy its monetary toolkit with more flexibility. This newfound flexibility would allow it to respond to external shocks —such as those to the terms of trade or to financial conditions— and thereby reduce their domestic impact. Moreover, since the inflation

targeting regime's policy horizon would be set several quarters into the future, the inflationary consequences of short-term movements in the exchange rate should largely cancel each other out. As such, the flexibility of the exchange rate should not create major tensions in terms of price stability (Banco Central de Chile, 2000). Furthermore, increased exchange rate volatility would act as a natural disincentive to undertaking short-term capital transactions, the hope being that these funds would be diverted to longer-horizon investments. Overall, the views of the authorities regarding exchange rate flexibility changed markedly in the space of a few months, arguably spurred by the experience of having had to implement significantly pro-cyclical policies during 1998.

In the new framework, interventions in the foreign exchange market are restricted to cases in which the real exchange rate is deemed to have deviated substantially from its equilibrium level, and that this situation is proving to be damaging to the economy as a whole. If overshooting of the exchange rate is in fact taking place, there is a high probability that the intervention will generate a capital gain for the central bank. This feature is important, as sterilizing the interventions imposes a substantial quasi-fiscal cost on the central bank's balance sheet.[4]

In practice, interventions have taken place four times since the exchange rate was floated in September 1999: in August 2001, October 2002, April 2008 and January 2011. These interventions have been carried out by explicitly announcing the quantities of currency involved along with the duration of the program. In keeping with the unique inflation target, they do not involve the announcement of any particular level for the exchange rate nor of any other measurable goal.

There were important domestic motivations for the change in policy. The gradual appreciation of the real exchange rate during the 1990s accompanied important structural shifts in employment and production across sectors. As shown in Figure 6, the contribution of the tradeables sector — and particularly of agriculture, fishing and forestry— to job creation diminished gradually over this period, as did the sector's share of total employment, which decreased from 22 percent of total employment in 1982 to 14 percent in 1997. Besides representing a decreasing share of total employment, the agricultural sector was also making an ever smaller contribution to employment generation. Whereas the agricultural sector was a significant engine of employment growth during the recovery following the 1982-83 crisis, its contribution to aggregate employment generation turned negative during the 1990s. By the mid 1990s, agricultural employment was falling while total employment continued to increase.

This trend facilitated the shift from a relatively limited capital account policy to a more liberalized capital account policy on two grounds. First, the agricultural sector tends to be relatively immune to the domestic business cycle and rather fluctuates according to seasonal effects and idiosyncratic external shocks. Second, the constraints on exchange rate flexibility had severe implications for the role of monetary policy to stabilize employment, as was made abundantly clear during 1998-1999.

[4] A description of the Central Bank's policy regarding intervention in the foreign exchange markets is available in the publication entitled *Central Bank of Chile: Monetary Policy in an Inflation Targeting Framework*, 2007: p. 19.

The capital account was further liberalized between 2000 and 2004. The unremunerated reserve requirement for inflows, the holding period of one year for foreign investments and capital contributions, and the restrictions on channel flows through the regulated banking system were all suspended in 2000-01, while only the statistical requirement for balance of payments compilation was retained. Full integration of the domestic stock exchange was achieved by opening up market participation for non-residents. The investment regime for institutional investors was also liberalized, allowing pension funds and insurance companies to allocate a significant share of their portfolio abroad, as shown in Figure 8. The market risk regulation for banks was revamped, allowing the development of the domestic market for foreign exchange hedging instruments. Some restrictions remain on the mandatory settlement of certain operations through the formal foreign exchange market, which includes banks and several foreign exchange brokers.

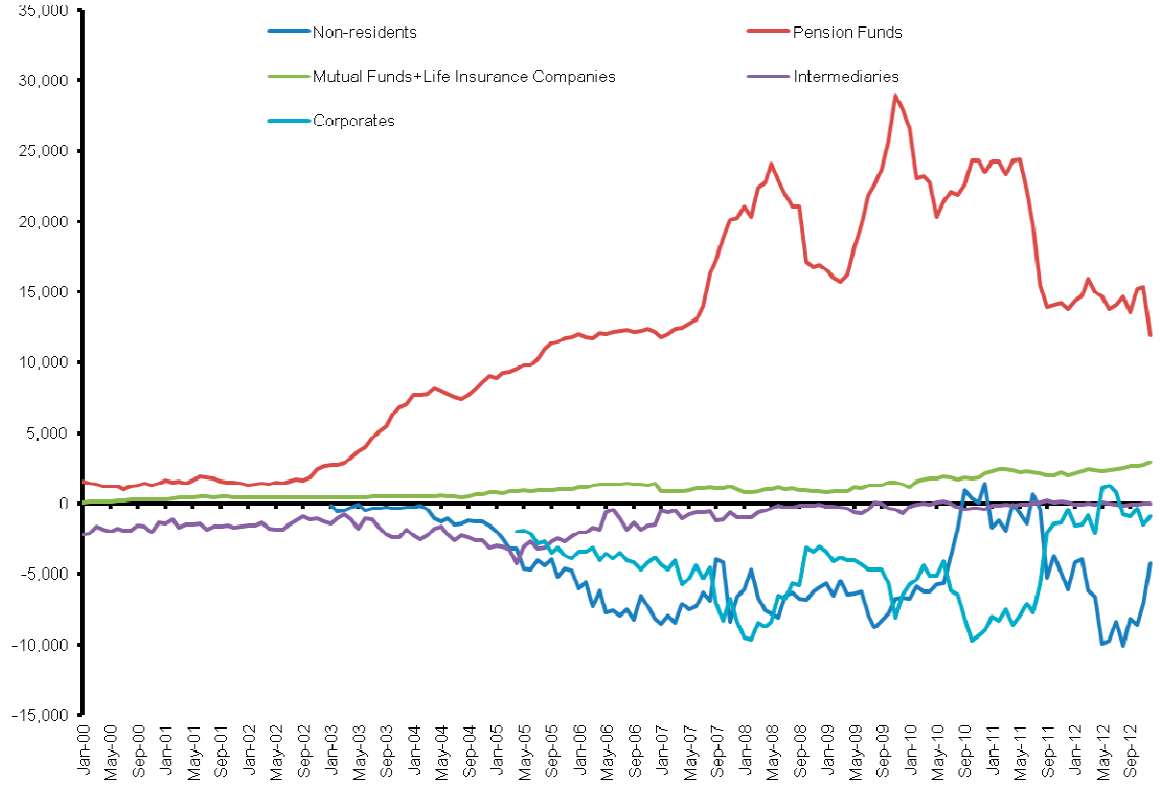
On the fiscal side, the government moved to increase transparency in public spending. To ensure long-term fiscal sustainability, a fiscal spending rule was adopted that established a target of maintaining a structural surplus. The framework incorporated an independent committee attributed with the task of determining the long-term price of Chile's most important exported products, including copper. The aim of this measure was to further isolate fiscal spending decisions from the political and commodity price cycles. The policy of a-cyclical spending involves saving excess revenues during booms while dissaving during slumps, which generates a counter-cyclical fiscal stance while ensuring fiscal balance over the medium-term.

The new policy framework was put to the test only a few years after being adopted. The attacks on the World Trade Center in 2001 and Enron scandal in 2002 caused temporary bouts of volatility in global financial markets that were amplified by regional crises in Argentina and Brazil, generating substantial swings in sovereign debt spreads in Latin America. These conditions posed a challenge to the newly adopted policy framework, which responded by keeping monetary policy loose in spite of a significant depreciation of the exchange rate. In order to accumulate foreign exchange reserves and smooth the movement in the exchange rate, the central bank announced a one-off program to sell U.S. dollars in the spot market, and would sterilize the intervention by selling dollar-denominated central bank bonds. In order to maintain the credibility of the inflation-targeting framework, the amount purchased was pre-announced, and no target for the level of the exchange rate was stated or implied.

B. Domestic financial developments

Over the nineties, the yield curve had been persistently inverted, thanks to the operation of the *encaje* that allowed short-term interest rates to deviate from the international parity conditions. Following the suspension of the *encaje*, the slope of the yield curve shifted appreciably. Flexibilizing the capital market and exchange rate regime was coupled with a reform of the regulatory framework for market risk by the central bank. This helped develop the market for hedging instruments significantly.

Figure 9: Evolution of Chilean currency derivatives market; net forward positions, million USD

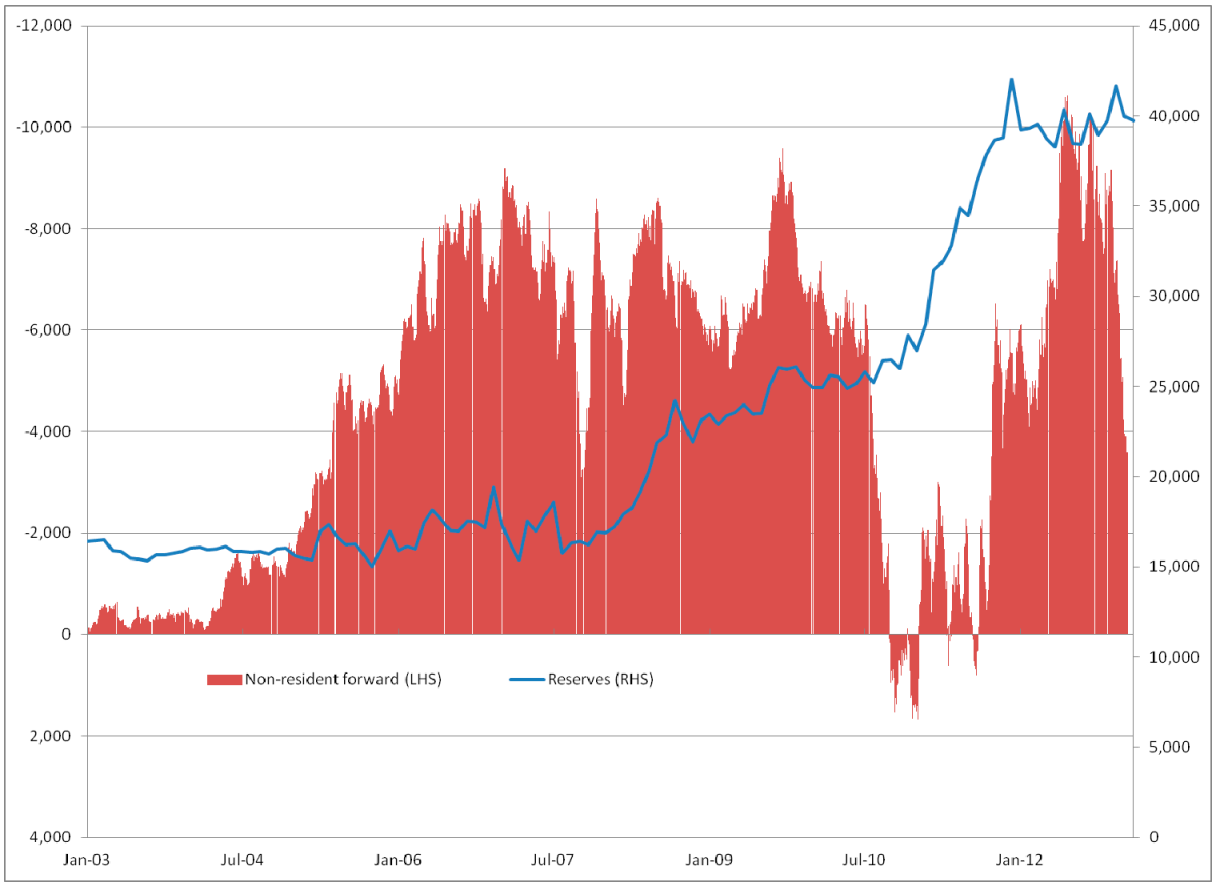


Source: Constructed using data from the Central Bank of Chile.

Note: A positive value indicates the sale of dollars forward to the counterparty.

The regulatory expansion of investment opportunities for pension funds and other institutional investors allowed them to broaden their portfolios of foreign assets significantly, as shown in Figure 8. In doing so, it also generated a demand for hedging the currency risk involved, leading to the development of an increasingly liquid currency derivatives market. Pension fund demand for hedging currency risk worked as a counterpart to the hedging need implicit in the liability management of large non-financial corporate actors, which have been the natural issuers of long-term external debt in Chile. Banks —until a few years ago the only entities allowed to offer foreign currency hedging to institutional investors— played the role of intermediaries. Demand for spot market dollar liquidity by institutional investors looking to construct their foreign asset portfolios is satisfied by the domestic banking system, which in turn finances itself through lines of credit with foreign bank counterparties. On the other hand, institutional investors sell part of their spot dollar exposure in the forward market, again with domestic banks playing the role of intermediaries. The evolution of the net forward positions taken by each institutional group is presented in Figure 9. Any major imbalance in the market between the positions of institutional investors and non-financial corporate actors is covered by banks with forward positions with non-residents, implemented using non-delivery forward contracts cleared abroad. This is because market risk regulations impose a significant capital charge to banks for un-hedged currency risk.

Figure 10: Net external position in NDF contracts, and international reserves; millions of U.S. dollars



Source: Central Bank of Chile.

The regional and domestic financial environment since 2003 was conducive to this positioning. Deleveraging following the Asian/Russian/LTCM crises and an unfavorable external environment lead to subdued economic performance from 1999 to 2004, allowing the Central Bank to pursue a loose monetary policy over this period. From 2004 on, the Chilean economy and the region as a whole performed remarkably well. From 2003 on, as the Chilean peso and the Brazilian real floated fairly freely and with a high correlation, the large difference between yields in short-term interest rates in Brazil and Chile provided incentives for regional carry trade. This resulted in the accumulation of a significant short position in pesos by non-residents, as shown in Figure 10. Thus, as it was liberalizing its regulations on inflows and outflows of capital and easing foreign exchange restrictions, this factor put pressure on the peso to depreciate, in part counteracting the full appreciation that might have taken place otherwise.

On the fiscal front, a large surge in the price of copper generated substantial fiscal income. In the face of heated political pressure to spend the windfall from the commodities boom, the authorities stuck to the fiscal rule and channeled large fiscal surpluses into a sovereign wealth fund held abroad. This policy created substantial fiscal space, and by 2006 the Chilean government had become a net external creditor.

The interrelation of broader investment opportunities by pension funds, access to external finance by the banking sector, and an active positioning by non-resident in the NDF market for pesos, would however pose some challenges for the smooth operation of domestic money markets when the global financial situation worsened later in the decade.

C. Facing the global financial crisis and the Great Recession

Following a period of abundance from 2003 to 2007, the new framework faced its first real crisis. Between August 2007 and August 2008, external demand and financial conditions facing Chile deteriorated markedly, but risks appeared initially well contained. International inflation then accelerated substantially due to high global food and energy prices, spilling over to the local economy and causing inflation to run up to 9% by mid 2008.The Central Bank responded by keeping the monetary stance tight. Emerging markets remained dynamic as developing countries entered recession in 2007-08, giving rise to talk of the "decoupling". This put substantial appreciating pressure on the peso to appreciate during 2008. Perceiving some evidence that the real exchange rate had deviated from its equilibrium, the central bank undertook a currency intervention in April to address the overshooting. The intervention came just as the U.S. sub-prime crisis was ramping up, with the Bear Stearns rescue and merger taking place just a few weeks prior. Overall, the peso depreciated approximately 15% between April and July. Following the precedent set during previous interventions, the operation was carried out in mechanical fashion: an announcement of exceptional circumstances was made by the Board, and an explicit mechanism was announced ex ante, including the disclosure of amounts to be purchased.

After the collapse of Lehman Brothers in September 2008, measures of uncertainty such as the VIX index reached record levels, as counterparty risk and overall macro risk ran amok. While the exact magnitude of the shock remained difficult to ascertain, it rapidly became clear that Latin America would be hit by a reduction in global demand as well as lower commodity prices. The combination of these shocks implied the need for further real exchange rate depreciation, and the peso lost an additional 25% of its value against the U.S. dollar by the end of the year. Although the Central Bank did not conduct outright sales of foreign exchange in the spot market, it did undertake a series of measures to address the lack of dollar and peso liquidity in the domestic financial markets (García, 2009).

The sharp correction in equity prices had some amplification effects in domestic money markets. As the market value of equity investments held abroad by institutional investors plummeted, their long dollar position also shrank while the forward dollar sales in the domestic market retained their dollar valuations. Thus, pension funds had to either quickly unwind these forward positions, or else increase their purchases of spot dollar liquidity in order to comply with regulatory limits. Both factors would add to the depreciating pressures, at a time when the providers of dollar liquidity for the banking sector —the NDF market for forward positions and the international banking system for spot liquidity— were themselves retrenching from their exposure to emerging markets.

Figure 11: External conditions facing Chile during the Lehman crisis

Sources: Bloomberg and World Bank's GEM Commodities.

From a fundamental point of view, private portfolio rebalancing served to counteract the liquidity crunch rather than exacerbate it, as it had done in the Asian crisis. The inflation-targeting framework implied that in the face of falling commodity prices, a weakening economy and reduced inflationary expectations, the Central Bank would respond by aggressively cutting rates and allowing the peso to depreciate. On the one hand, market participants shifted their portfolios to lock in long positions at higher long-term rates in pesos, causing a fall in long-term rates on central bank bonds. On the other, the incentives to reduce dollar exposure in the face of a large transitory depreciation were evident. On the whole, these portfolio adjustments implied a repatriation of foreign assets by pension funds, helping overall macroeconomic adjustment in the face of volatile external conditions. The changing composition of capital inflows towards more stable forms of external financing also helped prevent a repeat of the sudden outflow episode experienced in 1998. Inflows during the 2000s were made up of less debt and more Foreign Direct Investment than during the 1990s, such that FDI came to represent over 60% of external liabilities by 2007.

The monetary policy rate was indeed aggressively cut starting in early 2009, rapidly reaching the zero lower bound. Non-conventional stimulus was then executed to continue monetary easing, with the Central Bank offering fixed rate, six-month repos (the *Facilidad de Liquidez a Plazo*, or

FLAP, described at length in Céspedes, Chang and García-Cicco, 2011). On the fiscal side, the government repatriated a substantial amount of foreign assets in order to finance a large fiscal stimulus package totaling approximately 2% of GDP.

The economic recovery from the crisis was very quick, thus initiating the withdrawal of monetary and fiscal stimulus by 2010. No significant financial fragilities were exposed and all banks remained solvent throughout the crisis. The recovery turned out to be highly robust, and was not significantly affected by the massive earthquake and tsunami that hit the country in February 2010. Overall, the inflation-targeting framework, open capital account, flexible exchange rate regime, in the context of a sound fiscal framework, was flexible enough to face the tensions of 2008-09. This was also likely the case in other financially stable inflation targeting economies (Calani *et.al.*, 2010). This framework was both facilitated and helped by the successful implementation of the existing regime during 2000-07, when credibility regarding the actual operation of a floating exchange rate regime was established.

IV. EVIDENCE FOR THE EFFECTIVENESS OF CAPITAL CONTROLS

Financial mobility is generally thought to increase the efficiency of the economy by permitting increased risk sharing and better allocation of resources. However, some economists have long proposed that volatile flows may have harmful destabilizing effects on real allocations, such that placing controls on short-term cross-border financing may improve economic performance (Tobin, 1978; Krugman, 1987).

A number of papers have attempted to model the impact of introducing capital controls. In an early contribution, Herrera and Valdés (2001) build a model of international investment based on an assumption of covered interest rate parity, and use it to quantify the impact that capital controls could be expected to have on this market. In their model, an unremunerated reserve requirement is thought of as a fixed proportional tax that investors pay to move capital into the country. Once they have paid it, they cannot recover it later. Since investment has been made partially irreversible, uncertainty in underlying fundamentals generates a band of sustainable interest rate differentials within which capital will not seek to flow into or out of the country. Their framework implies that the impact of capital controls is considerably smaller than what is commonly believed. When parameterized for the Chilean economy, for instance, their dynamic model predicts that a 1-year 30% URR generates a spread on 3-month rates of approximately 310 basis points.

More recent theoretical contributions have focused on using capital controls as a macro-prudential tool. One strand of the literature has proposed that imposing capital controls may be optimal in the face of certain external shocks facing a small-open economy with nominal rigidities or a fixed exchange rate regime (Farhi & Werning, 2012). Another line of research has proposed the use of capital controls in order to help agents internalize the pecuniary externality caused by their external borrowing when the economy faces an aggregate budget constraint (Benigno *et. al.*, 2011).

Notwithstanding their desirability in theory, imposing capital controls does not guarantee that they will function as planned, primarily due to evasive financial transactions. A large literature has attempted to estimate the effectiveness of controls on capital inflows, and many empirical papers have focused on the Chilean case study. As we have discussed, the Chilean capital controls aimed to reduce the volume of short-term inflows and to shift the composition of flows towards longer maturities. These proximate goals were in turn thought to deliver some degree of monetary independence by decoupling domestic and foreign interest rates while shielding the nominal exchange rate from arbitrage conditions, and also to reduce the risk of sudden reversals in the face of external shocks. Since each of these goals is associated with a different empirical testing strategy, several measures of "effectiveness" appear in the literature.

One approach is to test whether the controls effectively reduced the net volume of short-term capital inflows into the economy in comparison to some counterfactual. Valdés-Prieto and Soto (1998) estimate that the URR led to a substitution between taxed and exempt short-term flows. Overall, the total net short-term inflows to the Chilean economy during 1991 to 1996 remained unaffected by the measure. As a result, the authors conclude that the controls were unsuccessful at delivering monetary independence to the central bank. This result challenged an earlier empirical finding by Labán and Larraín (1994), which had found that the introduction of capital controls in 1991 coincided with a substantial reduction in short-term flows and a reduction in the degree of capital mobility, suggesting that the measures may have delivered degrees of monetary policy independence to the authorities.

Using a threshold approach, Larraín, Labán and Chumacero (2000) identify a regime switch in the determinants of capital inflows in 1990, which coincides with the drastic reduction in external debt and institutional changes related to the return to democracy. By taking this characteristic of the data into account, and by using a data set that better distinguishes between public and private flows, the authors overturn the ineffectiveness conclusion: increasing the reserve requirement indeed reduced total short-term inflows while permanently shifting their composition.

Another empirical study by Gallego, Hernandez and Schmidt-Hebbel (1999) also find a significant impact of the *encaje* on the decoupling of domestic and foreign interest rates, having contributed an increase in spreads of 100 to 200 basis points, and in shifting the composition of the flows towards longer maturities. Overall, the measures effectively reduced the aggregate volume of capital inflows into the Chilean economy. Taken together, the authors suggest these impacts may have placed the country in a more favorable external position from which to face the Asian crisis than would otherwise have been the case. However, as De Gregorio, Edwards & Valdés (2000) point out, the magnitude of the impact the authors estimate is actually relatively small when compared to the total stock of debt, reducing cumulative inflows from 29 to 27 percent of GDP over the period of 1991 to 1997.

These mixed results are confirmed by De Gregorio, Edwards & Valdés (2000), who find that the capital controls implemented in Chile had a limited impact on the magnitude of capital inflows, interest rate differentials, and the real exchange rate, particularly at longer horizons. The authors do find a significant effect on the composition of the capital inflows, with the *encaje* having shifted inflows towards longer term maturities, such that short-term debt came to represent a

much smaller share of total debt over time. They estimate that the measure reduced the amount of short-term debt by between 0.5 and 1 percent of GDP.

Through this composition effect, the *encaje* allowed short-term interest rates to deviate from the international parity conditions, leading to an inverted yield curve for most of the decade. This allowed the real (inflation-indexed) policy rate maintained by the Central Bank of Chile to remain substantially higher than the rate maintained by foreign central banks, such as the Federal Reserve in the United States (see Figure 5). This de-coupling would have allowed for a small degree of monetary policy autonomy while maintaining a stable exchange rate.

In a recent contribution, Edwards and Rigobón (2009) revisit the unsettled question using higher frequency data and a more sophisticated empirical approach to test the impact of the capital controls on the behavior of the nominal exchange rate. The authors find evidence that the controls were more effective than previous studies suggest. In particular, tighter controls are associated with a depreciation of the exchange rate and a reduction in its vulnerability to external shocks. This would suggest that the measures did indeed deliver some degree of monetary control.

Overall, the empirical literature coincides that the measures did contribute to the decoupling of domestic and foreign interest rates, allowing the central bank to gradually reduce domestic inflation rates over the decade without abandoning the depreciated exchange rate policy in place since the mid 1980s. There is also evidence that the measure had some impact on reducing net short-term inflows and shifting the debt profile towards longer maturities, but that this impact was relatively small. Beyond the assessment that capital controls in place prior to the crisis effectively reduced the magnitude of capital inflows during the boom, the Chilean experience suggests that the policy framework characterized by exchange stability and capital controls ended up constraining monetary policy during the Asian crisis, requiring a pro-cyclical response. Thus capital controls were ineffective at delivering the desired monetary policy independence without compromising exchange rate stability in the face of an important external shock.

V. EXTERNAL INFLUENCE ON THE SHIFTING STANCE OF CHILEAN CAPITAL ACCOUNT POLICIES

Given the evolution of capital account policies in Chile since the early nineties, and the narrative in the previous sections, it appears that the most important determinant of the shift in stance regarding capital account policies (first the imposition of strict CFMs, and then the gradual liberalization of the capital account) was domestic stability concerns.

In the quest for a resilient framework for economic growth and job creation, it must be noted that the overall macroeconomic stance in the late eighties achieved a very quick exit from the debt crisis and the extremely high unemployment rate that accompanied it. The bulk of this process was facilitated by a weak real exchange rate, boosting jobs in the tradables sector (mainly in agriculture), and starting a successful experience of export-led growth. Figure 6 shows the share of total employment in the agricultural sector from 1980 through 2010. Not only did the unemployment rate fall rapidly from a high of over 30% during the crisis to mid-single digits by

the transition to democracy in 1990, but these rates were substantially lower than those that prevailed during the pre-1982 boom. It is understandable that the economic authorities aimed at preserving the basis of an economic policy framework that had been extremely successful in disentangling the country from the depths of the 1982-1983 Depression. The political transition towards a democratic regime highlighted the need to secure this framework of strong employment growth, and this was evident in the challenges that the newly established —and quite autonomous— Central Bank would face. According to its Organic Charter, the Central Bank was not only charged with implementing monetary policy, but also with regulating foreign exchange transactions.

Furthermore, the exchange rate regime was made more flexible, and capital account regulations were relaxed, as the costs of excessive rigidity in the monetary framework was brought to the fore in 1998-1999. The overall appetite in global financial markets for capital flows to emerging economies had waned significantly, and external conditions were not conducive to strong export performance. Therefore, a liberalization of the exchange rate regime was able to accommodate a gradual depreciation of the exchange rate in early 2000.

Still, the question lingers as to whether external commitments to trading partners and relationships with international organizations also contributed to the change in policy. One such aspect has been the agreements and memberships negotiated by Chile, including its accession to the OECD in 2009, and the free trade agreements signed with the United States in 2002 and with the European Union in 2003. Throughout these negotiations, the legal toolkit available to the Central Bank regarding the eventual implementation of foreign exchange policies and restrictions has remained intact in its constitutional charter. Therefore, none of these agreements have changed the Central Bank's exclusive and broad legal attributions to regulate the foreign exchange market under its Constitutional charter. A limited set of constraints exists though in the FTA with the United States, where appendix 10-C establishes that claims arising from capital account restrictions be submitted only after one year has passed following their imposition, and that such claims be limited to the reduction in transfers and not include incidental damages or loss of profits.

What role, if any, has the guidance of international financial institutions played in the different changes of Chile's capital account policies? The country's authorities maintained a constructive and collaborative relationship with the Fund throughout the transition to democracy, and their guidance of the economy was consistently applauded by IMF officials. The central bank's official policy framework in the early nineties was to maintain a real interest rate target "believed to be consistent with broad objectives as regards economic growth, inflation, and the balance of payments".[5] As we have pointed out, this objective was accompanied by a widespread concern for maintaining an activist exchange rate policy aimed at bolstering the tradables sector. As of 1991, this exchange rate policy was viewed by the authorities and by the IMF as having "served to safeguard an adequate level of competitiveness that was essential to the achievement of export-led growth".[6] As we have discussed, the result was that the return of capital inflows was

[5] IMF (1989) "Staff report for the 1989 Article IV consultation", p. 14.

[6] IMF (1991), "Staff report for the 1990 Article IV consultation", p. 14.

met by a policy framework that aimed to manage them in order to maintain exchange rate stability.

The use of capital controls was a point of contention between authorities and the International Monetary Fund missions to Santiago during the country's regular Article IV consultations. During the initial increase of capital inflows, IMF staff recognized the policy dilemma facing the Central Bank of Chile, whereby the high interest rates needed to reduce inflation would lead to further inflows, causing appreciation and loss of competitiveness. However, both the missions and the institution's Executive Directors in Washington consistently urged the authorities to further liberalize the capital account in order to deepen domestic capital markets and integrate them to international finance. Over this period, the authorities argued that the costs imposed by controls on inflows were largely outweighed by the benefits of increased monetary stability and strong export-led growth.

In 1995, when authorities were considering strengthening controls on capital inflows, IMF staff argued against these measures on the grounds that they would increase the cost of capital and distort resource allocation, and also that they were unlikely to effectively deliver the desired result. Instead of quantitative and price-based capital controls, the IMF maintained that the problems caused by inflows could be better addressed by tighter fiscal policy, carrying out sterilized intervention in the foreign exchange market, and further liberalization of capital outflows. Although the loosening of controls on inflow would lead to increased pressure on the peso to appreciate, staff argued that this was consistent with the country's strong export performance. As such, allowing greater flexibility of the exchange rate would ease the burden on monetary policy by allowing it to focus on stabilizing inflation.

The authorities argued that fiscal spending was being directed to important social programs that were required to reduce poverty and to cement the country's fledgling democracy, and thus did not have the space to offer much additional consolidation. While the monetary authorities agreed on the desirability of liberalizing outflows —a program they phased in progressively throughout the 1990s—, they did not heed the IMF's advice and chose to go ahead with the increased controls on inflows in 1995. This involved extending the scope of the URR to include Chilean stocks traded on the New York Stock Exchange using ADRs, to foreign direct investment and to bond issues.

Following the Asian financial crisis, there was a change in the tone of the IMF's recommendations regarding capital controls. At a meeting in February 1998, "[Executive] Directors considered that Chile's restrictions on external indebtedness in the form of a one-year unremunerated deposit requirement had played a useful role in reducing the volatility of capital inflows and in lengthening the maturity of external obligations."[7] However, an in-depth study commissioned as part of the 1998 Article IV review concluded that it was difficult to establish the effectiveness of the URR in Chile, and the institution never went so far as to express support

[7] IMF (1999) "Staff report for the 1998 Article IV Consultation", p.4.

for the measures.[8] As Chile began dismantling its controls on inflows in 1998, the issue became moot. The institution gradually became more tolerant of such measures over time, but it was not until 2012 that the IMF officially changed its institutional stance to include capital controls among its set of acceptable policy tools, and only for use under limited circumstances (IMF, 2012).

Therefore, it is clear that the decision to shift the monetary policy framework in 1998-99 was engendered by domestic considerations more than from external pressure. Indeed, Chilean authorities consistently defended their policy framework in the run-up of 1991-96, and only decided to modify the framework once IMF pressure had grown silent following the crisis.

VI. CONCLUSIONS

We have argued that the monetary policy framework currently in place in Chile, characterized by a flexible inflation targeting regime with an open capital account, was well equipped to handle the 2008 financial crisis. The country performed favorably in comparison to the 1997-1998 Asian-LTCM-Russian crisis, during which a monetary policy of maintaining an exchange rate band led the Central Bank to raise rates aggressively in order to defend the currency, thus exacerbating the liquidity crunch. Subsequent research has yielded mixed evidence on whether Chile's capital controls were effective in shielding the exchange rate from external shocks.

The development of local capital markets under the liberalized capital framework also helped the economy adjust to the transitory shock. The absence of capital controls and a more developed futures market for trading currency contracts allowed for the rapid repatriation of pension fund assets at the onset of the crisis, without generating a large uncovered mismatch. The central bank was able to respond aggressively by cutting rates and extending long-term liquidity facilities to stimulate domestic absorption. Meanwhile, a substantial depreciation of the currency supported the country's exports in the face of very weak external demand.

The shifts in the policy stance regarding the use of capital account policies in Chile present an interesting perspective. Firstly, as the global conditions have rekindled the debate regarding the usefulness of these policies, the Chilean authorities have refrained from adopting them even as they were strong supporters of said measures two decades ago. Secondly, from our narrative it appears that the adoption of a hands-off approach to capital account regulation, along with a flexible exchange rate and a fully-fledged inflation targeting regime, were motivated by domestic stability concerns. The latter framework has allowed significant policy activism and helped limit the real costs in terms of output and jobs of the Great Recession. Thirdly, this last point is made even sharper by the limited role that external drivers, such as the accession to the OECD, free trade agreements, and IMF Article IV consultations, have had on the Chilean authorities' evolving stance regarding capital account policies.

[8] IMF (1998), "Capital Account Restrictions in Chile in the 1990s", Selected Issues paper, chapter IV. An expanded version was later released by Nadal-De Simone & Sorsa as IMF Working Paper WP/99/52 (1999).

It is important to keep in mind that lessons from Chile's experience might not translate directly to other economies. Two caveats are in order. First, in larger and more diversified emerging market economies, with a more important manufacturing base, exchange rate fluctuations can have real effects on economic activity. In contrast, in Chile and other resource-intensive economies, the main effect of exchange rate movements is to shift nominal income between sectors, while their impact on overall economic activity is limited. In mining or agriculture in particular, the response of supply and employment to short term movements in the exchange rate are more muted than in the manufacturing sector. For other economies, the volatility of the exchange rate might generate larger real effects than in Chile. Second, the existence of a large domestic capital market with well regulated institutional investors has allowed a broader process of financial integration. This has prevented the emergence of the intrinsic vulnerabilities of bank-based financial integration, which could create term and liquidity mismatches that correlate strongly with commodity prices, and thus introduce dangerous financial fragilities.

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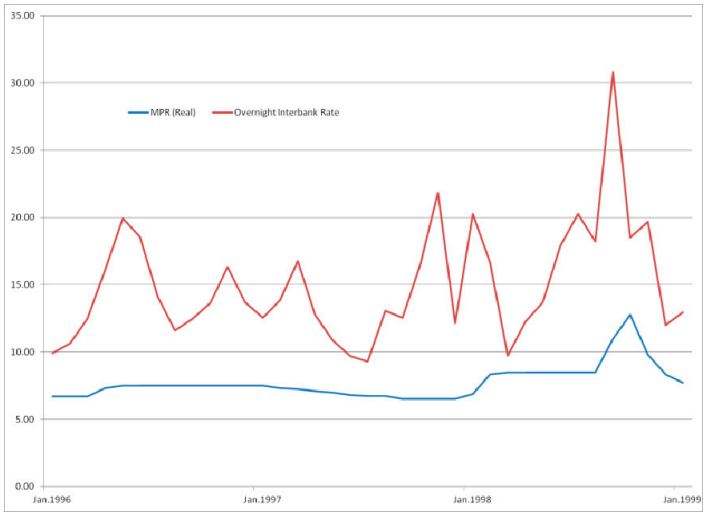
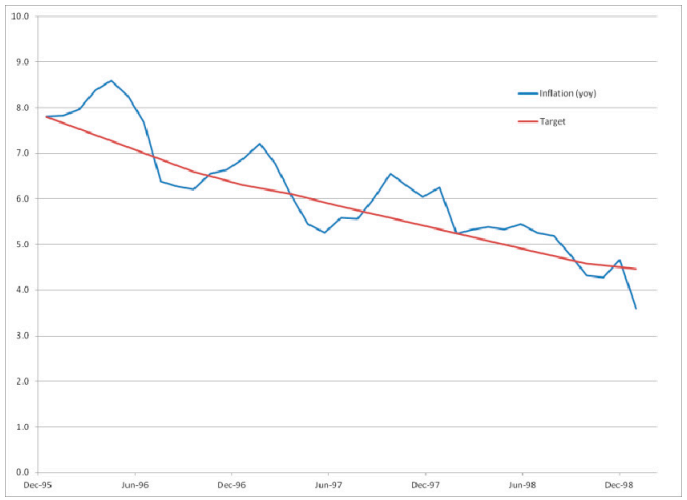
Figure A1: The Chilean economy during the Asian crisis

A. Peso-dollar exchange rates

B. Interest rates



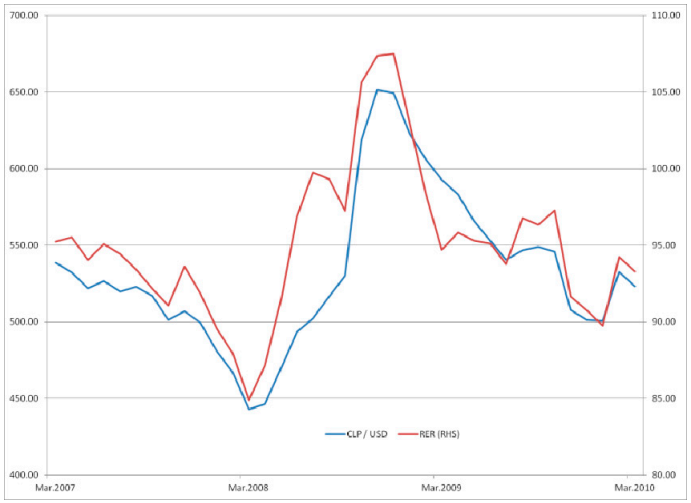
C. Inflation



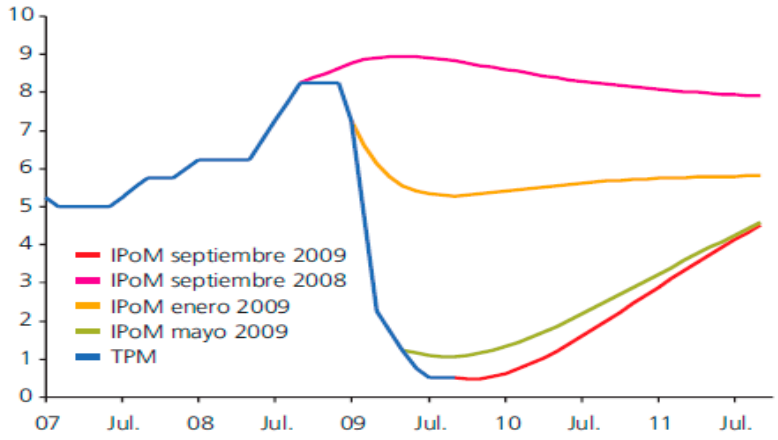
D. Demand aggregates

Figure A2: The Chilean economy during the Lehman Brothers crisis

A. Peso-dollar exchange rates



B. Expected and actual MP rates



Fuente: Banco Central de Chile.

C. Inflation

D. Growth in demand aggregates