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WHAT DRIVES CAPITAL INFLOWS?
LESSONS FROM THE RECENT
CHILEAN EXPERIENCE

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1. INTRODUCTION

Several Latin American countries have experienced a sharp rise in net capital inflows in the late 1980s and --especially-- in the early 1990s. Although the relevant factors may well vary between countries and types of capital, innovations on both internal and external factors clearly lie behind this trend. Our aim in this paper is to identify the main factors explaining the inflow of capital into Chile during recent years.

A significant increase in capital inflows has been observed in Latin American countries which have followed very different mixes of macroeconomic policy, have pushed forward different economic reform programs, and have experienced different political realities. This has led several analysts to attribute a central role to external factors in explaining this trend (Calvo et al, 1992).

This emphasis, however, has been disputed by others, who have argued that the sharp increase in capital flows into several economies of the region has been the result, to a large extent, of a positive reaction of both local and foreign investors to the implementation of successful stabilization and economic reform programs. Reforms have included, among other measures, some combination of trade and financial liberalization, public sector reform, privatization of state-owned enterprises, and widespread deregulation. Additionally, a sound macroeconomic policy mix --the argument goes on-- has sharply changed foreigners' expectations and risk assessment of domestic financial securities. Thus, external investors have perceived local securities as more attractive --less risky-- and have become willing to hold a larger share of these in their portfolios.
We believe that both lines of argument are part of a more complex story. In our view, this trend results from some combination of external and internal factors which varies by country and by type of financial flows. Stressing one or the other factor requires specifying the type of capital that it applies to. In this paper, we observe that a key separation of capital flows is between short and long term flows, and show how the two respond to a different set of variables. This is a key issue. A clear understanding of the factors behind each type of flow is crucial in the design of policies aimed to attract some types of capital and offset others.

Developing countries face a tricky dilemma in this regard. On the one hand, they want to stimulate the net inflow of long term capital, which is needed to supplement the local saving effort with foreign saving that would help finance their accumulation of productive capital. On the other hand, they face the challenge of managing massive flows of short-term speculative capital, which may lead to excess volatility in key economic variables such as domestic interest rates and the real exchange rate. This induced volatility is likely to have a depressive impact on physical investment (Tobin, 1978; Tornell, 1990; Larraín and Vergara, 1993), on resource reallocation (Krugman, 1987), on exports (Caballero and Corbo, 1990), and thus on economic growth and welfare.

This paper analyzes and provides econometric evidence on the main factors which help to explain the sharp increase in net capital inflows to Chile during recent years. Section 2 documents the increase in capital inflows to Chile since the late 1980s, and briefly describes magnitudes and composition. The next section discusses the main internal and external factors which may
help to explain this trend. Section 4 analyzes how Chile has reacted to this increase in net capital inflows. Section 5 presents econometric results on the factors that appear to lie behind the behavior of both short and long term capital flows between 1984 and 1992. A conclusion closes the paper.

2. THE RETURN OF PRIVATE CAPITAL TO CHILE SINCE THE LATE 1980s

Private capital began to return to Chile in the late 1980s. Total net capital inflows (measured by the capital account surplus plus) went from an average of US$1 billion in 1985-87 to US$3 billion in 1990, and to an average of US$2.4 billion in 1990-93\(^1\). Figure 1 shows the increase of capital inflows to Chile, as a proportion of GDP, since the late 1980s. Capital returned to Chile in many different forms. Foreign investment, short term credits, long term loans, and even repatriation of capital held by Chileans abroad all increased significantly during this period.

This happened as the Chilean economy was in a recovery phase that merged into one of the most successful growth periods in the country's history. Major macroeconomic indicators improved sharply after 1985. GDP growth went from 2.4% on that year, to an average of more than 6.5% in 1986-93. This acceleration in the growth rate came together with a sharp reduction in

\(^1\)Considering US$2.8 billion for 1993.
unemployment --from more than 22% on average for 1980-85 to about 4.5% at the end of 1993-- and a deceleration in the inflation rate --from over 27% in 1990 to 12.2% in 1993. The strength in the country's external position is shown by the accumulation of foreign exchange reserves, which by the end of 1993 had reached US$9.8 billion, or around 12 months of imports. The significant deterioration in the terms of trade during 1993 (its cost estimated at around 2.25% of GDP), however, was the crucial force behind the deterioration in the current account, to a deficit in the order of 5.5% of GDP for the year.

2.1. The composition of financial flows

During this recent episode, general balance of payments support loans from commercial banks have not played an important role as they did in the late 1970s and early 1980s. Instead, a large part of medium and long-term private capital flows has been in the form of foreign investment and project loans. Trade loans have also been important.

In fact, the proportion of equity to debt has been much higher in 1989-92 than in 1978-81, the previous period when Chile was subject to massive capital inflows. During 1978-81, foreign investment was on average less than US$250 million per year, or just about 8% of total net capital inflows (including errors and omissions); the equivalent figures for 1989-92 are US$657.4 million, or 41% of total capital inflows. In 1990, foreign investment was about

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2For a more detailed analysis of this issue, see Labán and Larraín (1993a).
3.6% of GDP (US$ 727 million), the highest rate in Latin America. And, once again in 1993, foreign investment into Chile set a regional record, with US$2.7 billion\(^3\), or over 6% of GDP. This is also Chile's all-time record, which is even more remarkable considering that it was reached in a year of Presidential and Congressional elections.

From 1985 to 1989, much of the foreign investment was raised through debt-equity swaps. After 1990, however, the secondary market discount on Chilean debt came down to very low levels (5% or less), and debt swaps virtually ended. Since then, almost all foreign investment has come in through Chile's regular scheme (D.L. 600), which involves "fresh-money". During 1985-89, 66% of total net foreign investment came --on average-- through debt swaps. This fraction came down to 25% in 1990, and was almost nil in 1991. No new debt-swap operations have been registered since 1992.

The composition of capital inflows between debt and equity is not a matter of indifference for a country. Foreign investment flows tend to have a more desirable cyclical pattern than foreign credit. Based on the Latin American experience of the last 15 years, Hanson (1992) argues that credit flows tend to be extremely pro-cyclical. Furthermore, Larraín and Velasco (1990) have shown that profit remittances on foreign investment in Chile tend to be more procyclical than interest payments; thus, remittances tend to be higher --relative to interest service-- in good periods.

During 1990-92, medium and long term net capital inflows to Chile

\(^3\)Including both equity and associated credits.
were US$1,456 million --including both equity and debt instruments--., and short term capital were US$803 million (both figures on annual average).

3. MAIN FACTORS BEHIND THE CAPITAL INFLOWS TO CHILE

The growth of capital inflows to Chile since the late 1980s has resulted from the combination of a number of external and internal factors. Among the external factors are low world interest rates, a poor economic performance in the industrial countries, and a greater availability of international capital. On the internal front, Chile has experienced a number of political and economic developments which have been reflected in a reduction of the risk premium that both domestic and foreign investors require to hold Chilean securities.

3.1. External factors

Culpeper and Griffith-Jones (1992) have presented evidence on net private capital flows to developing economies for the period 1982-91. They show that capital inflows have grown relatively steadily in Asia, have been poor in Africa, and have fluctuated sharply in Latin America, with a major increase since 1989. According to ECLAC, net private capital inflows to Latin America were almost seven times larger in 1991 than in 1988.

On the external front, there has been a number of developments which have increased the flow of private financial resources to Latin America in
The weak macroeconomic performance of several industrialized countries since the late 1980s has gone together with a decline in world interest rates, most notably in the U.S., where political cycle considerations should be added in explaining the "excessively" low level reached by short-term rates. This has made short-term Latin American financial instruments with far higher yields, a more attractive portfolio investment opportunity (Calvo et al, 1992).

Another common factor to the region has been the increase in the world supply of capital. This is partially explained by factors that have contributed to the rapid growth and globalization of world capital markets, such as widespread trade and capital account liberalization, and innovations in financial instruments and techniques. These innovations imply that financial markets are becoming de facto more and more integrated even without the help of deregulation.

Towards the end of the 1980s, industrial countries had reached almost complete financial integration, which has certainly reduced the capacity of the authorities to impose capital controls. Even countries like Japan, Spain, Germany, France, and Italy, which lacked a strong willingness to open the capital account, were "victims" of financial integration. A number of developing economies are starting to experience this same process.

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4 According to Calvo et al (1992), external factors explain a major part of the recent inflow of private capital to several Latin American economies which are pursuing different mixes of macroeconomic policies and have experienced different economic performances.

5 See, for example, Viñals (1990), and The Economist (1992).
External factors certainly help to explain the increase in cross-border private capital flows to Latin America. Even countries with significant macroeconomic and political instability in the region, such as Brazil, Peru and Venezuela have been able to attract capital inflows. Nevertheless, external factors do not explain the variations in the magnitude, composition and conditions of inflows among the countries of the region. Clearly, common external factors do not explain it all.

3.2. Internal factors

Capital flowing into Latin America also reflects the prospects of a better economic future for the region during the 1990s and beyond. These expectations are based on the structural reforms carried out in several countries of the region, most notably in Chile, Mexico, and Argentina. The fact that Chile's reforms were carried out much before the rest of the region, and thus were on a solid base by the late 1980s, explains the fact that capital flowed into Chile before it returned to other countries in Latin America. It also helps to explain why the flows into Chile have been larger relative to the size of its economy than for other Latin American countries.

Among the five larger economies of the region, Chile received the highest private capital inflow as a percentage of GDP in 1989 and 1990 (4.3% and 7.2%, respectively), and accounted for 22% (1989) and 14.9% (1990) of
total private capital flows to the region. In 1990, Chile and Mexico --which had attained macroeconomic stability and reduced their external debt burden-- accounted for 77.6% of total private flows to Latin America. By 1991, Brazil and Mexico accounted for 69% of total private flows to Latin America (Salomon Brothers, 1992).

Additional economic factors contributing to the return of private capital have been the sharp reduction in Chile's external debt burden since 1986, the solid macroeconomic performance recorded since the mid-1980s, particularly in terms of output and trade expansion, and the reduction and elimination of a number of capital and exchange controls.

At the political level, the legitimization of free-market policies, the renewed commitment to sound macroeconomic management after the return of democracy in 1990, and the central role the country has given to consensus in shaping its economic policy and reforms are also important. The approval, almost by consensus, of both a tax reform and a labor reform, and the implementation of contractionary monetary policy in 1990, were strong signals in this direction\(^6\) (Labán and Larraín, 1993b).

Finally, a successful export promotion policy, together with an able management of foreign debt, cut sharply Chile's external debt burden. The stock of total external debt fell from US$19.5 billion in 1986 to US$18.2 billion in 1992 (in nominal dollars), while the debt to GDP ratio declined from 115.9% to 48%\(^7\). Furthermore, lower global interest rates and a very strong

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\(^6\)Private capital flows reached their highest levels in 1990.  
\(^7\)This ratio averaged 81% during the 1980s.
expansion of exports reduced the ratio of foreign interest service to exports from 36.5% in 1986 to approximately 10% in 1992. During 1985-92, Chile reduced its existing foreign debt by US$11.3 billion through several debt conversion programs. In September 1990, Chile reached an agreement to restructure almost all of its remaining commercial bank debt. The much improved external solvency situation of the country has been internalized in the secondary market for Chilean debt, where its discount has declined sharply, from 34% in June 1990 to around 5% in 1993.

Regained confidence by the international financial community in Chile's economic and political prospects was translated in a reduction of the risk premium that foreigners require to invest in Chilean securities. Thus, Chile was removed in 1991 from the list of non-performing economies, those for which U.S. banks are required to make loss provisions on any additional lending. Chile was also granted a triple-B rating by Standard & Poor in 1992, the best risk rating of any Latin American country, and the only one with investment grade. This rating was improved again in 1993.

4. SHORT-TERM VS. LONG-TERM CAPITAL INFLOWS TO CHILE: 1984-1992

So far, we have discussed at a conceptual level the main determinants of capital flows, and have divided them into two broad categories: external and internal factors. Conceptually, however, it is impossible to assign precise weight
to the different elements identified. This is precisely what we turn to do in a simple econometric model. In this section, we study the quantitative impact of several elements that may help to explain the inflow of capital to Chile since the mid 1980s. A key distinction in the analysis is that between short-term and long-term capital flows.

4.1. The Behavior of Short Term Capital Inflows

Short term capital inflows to Chile (SRCF) are affected by a number of external and internal factors. In our simple econometric framework, we focus on the following elements: the gap between domestic and international interest rates, expressed in pesos (IGAP); the foreign debt to GDP ratio (FD*/GDP); the current account deficit (CAD); the rate of GDP growth (gGDP); and the domestic investment to GDP ratio (I/GDP).

External factors are captured in this framework by their impact on the interest rate differential. The IGAP variable was measured with and without adjusting for several policy measures applied during the period: (a) a reserve requirement of 20% on foreign credits, established in June 1991, and increased to 30% in May 1992; (b) an extension of the "stamp tax" (1.2% per year) to foreign credits; (c) several changes in the exchange rate regime, including revaluations of the central rate, widenings of the band, and the switch in the peg of the central rate from the dollar to a basket of currencies.

The coefficient of the IGAP captures how sensitive are short term capital inflows to interest rate arbitrage opportunities, and is expected to have a
positive sign: the higher are domestic interest rates relative to international rates, the more capital is attracted to Chile. The foreign debt to GDP ratio is one of the most widely watched indicators of debt burden, and was included to capture changes in country risk; its coefficient is expected to have a negative sign.

Both GDP growth and the investment to GDP ratio are expected to have a positive effect on capital inflows. Clearly, capital would be more attracted to come into a growing economy, and one that is investing strongly. Finally, the coefficient on the current account deficit is expected to be positive, because a higher deficit will likely require more external financing.

To assess the quantitative effect of these different factors, we run a regression for the Chilean economy using quarterly data for the period 1984:1-1992:4. As shown in Table 1, only the coefficients of the (adjusted) interest rate differential and of the foreign debt to GDP ratio had the correct signs and were statistically significant, with t-Student statistics of 4.49 and -2.31, respectively. The current account deficit had the correct sign, but was statistically insignificant (t-student of 0.27). Interestingly, neither the growth rate of GDP nor the investment rate were statistically significant (and even had the wrong signs). The adjusted $R^2$ of the regression is 0.68, and the D-W statistic is 1.57.
The results strongly suggest that the proper way to measure the interest rate gap must include taxes, reserve requirements, and changes in the exchange rate regime. Indeed, when the unadjusted measure of the IGAP was used, the regression reduced significantly its explanatory power, and the (unadjusted) IGAP coefficient turned out to be not significant. In going from the unadjusted to the adjusted interest rate differential, the adjusted $R^2$ of the regression more than doubled, from 0.31 to 0.66. Moreover, when the interest gap is not measured properly, both the IGAP and the $FD^*/GDP$ variables are statistically significant, and there is evidence of autocorrelation in the residuals (D-W of 0.71).

Based on these results, we can conclude that the sharp increase in short term capital inflows to Chile since the late 1980s is basically a result of
the increase in interest rate arbitrage opportunities and the decline in the foreign debt overhang. The first factor is a result of both external forces (e.g., the decline in US interest rates) and internal factors (e.g., the macroeconomic adjustment program of 1990). It is also important to notice that the decline in short-term capital inflows in mid 1991, is well explained by a reduction on the interest rate differential, as a response to the decline in domestic interest rates and of several policy measures just mentioned that increased the cost of foreign funding. Perhaps surprisingly, the growth rate of GDP and the investment rate did not appear to affect short-term capital flows to Chile.

4.2. Explaining Long Term Capital Inflows to Chile

We now turn to analyze the factors behind the inflow of long term capital to Chile (LTCF), using quarterly data for the period 1984:1 - 1992:4. The LTCF variable is constructed adding up medium and long term foreign credits to the domestic private sector and direct foreign investment. As we did with short term capital flows, we will investigate the following factors as candidates to explain LTCF: the (adjusted) interest rate differential (IGAP); the foreign debt to GDP ratio (FD*/GDP); the current account deficit (CAD); the rate of GDP growth (g GDP); and the domestic investment to GDP ratio (I/GDP). We also introduce a dummy variable (DD) to account for any possible effects on capital flows of Chile's return to democracy; thus, DD takes a value of 1 since early 1990, and zero otherwise. (This dummy variable did not turn out to be significant when introduced in the equation explaining the behavior of short term capital inflows.)
The results of this regression are shown in Table 2. In the first exercise shown, the interest rate differential had the correct sign, but turned out to be statistically insignificant; both the foreign debt to GDP ratio and the investment rate turned out to be statistically significant (t-Students of 1.84 and 3.23, respectively) and have the expected signs. The current rate of growth of output, however, was not significant (although had the correct sign), while the current account deficit was both statistically insignificant and had the wrong sign. Finally, the dummy variable for the change in political regime was highly significant (t-Student of 5.68) and had the correct sign. The adjusted $R^2$ of the equation was 0.91 and the D.W. statistic was 1.71.

A second regression was run, leaving out the rate of output growth (as reported in the table). In this case, the results are very similar to those obtained before, with one exception: both the investment rate and the dummy variable turn even more significant. This reinforces our previous findings.
The econometric evidence just analyzed provides a very interesting result. The increase in long-term capital inflows to Chile after 1989 has been basically influenced by domestic factors, namely, the reduction of the debt overhang, better prospects of future economic growth (captured here by a higher investment rate), and the return to democracy. Shorter term considerations, such as interest rate arbitrage opportunities and the current rate of GDP growth, were not significant; neither was the financing of the current account deficit. In fact, the fit of the regression for medium and long term flows was similar with the adjusted and the unadjusted measures of the interest rate differential.

5. CONCLUSIONS

This paper has analyzed conceptually and econometrically the main elements behind the large increase in net capital inflows to the Chilean economy since the late 1980s. At stake have been two conflicting hypotheses. One has stressed external factors as the main element behind these inflows. The other has argued that it is domestic developments, such as stabilization and structural reforms, which have attracted the resources.

Our main empirical results show that it is necessary to be more specific when analyzing capital inflows, because they are not all alike. In particular, the factors explaining the evolution of short term capital inflows to the Chilean economy since 1984 are quite different from those relevant to understand the behavior of medium and long term capital flows.

Short term private capital inflows have been much more sensible to
external factors than long term flows. More precisely, they have responded basically to interest rate arbitrage opportunities—which is a mix of internal and external factors--and to the decline in the country risk, linked here to the reduction of the foreign debt to GDP ratio. In fact, the introduction of reserve requirements to foreign credits in June 1991 and its successive modifications, the extension of the stamp tax to foreign credits, and the successive modifications in exchange rate policy effectively reduced the interest rate gap between Chile and abroad, and appear to have reduced short term capital inflows.

On the other hand, the sharp increase in medium and long term private capital inflows since the late 1980s has been mainly a result of favorable domestic political and economic changes. Among these, the most significant are the reduction of the debt overhang, the better prospects of future economic growth (captured here by a higher ratio of investment to GDP) and the return to democracy. These have been translated in a reduction of the premium that foreign investors require to invest in Chilean long term securities. Our results also show that medium and long term capital has not been sensitive to the interest rate differential.

In summary, short term capital inflows respond to a very different set of factors than long term flows, with one important exception: all sorts of capital appear to avoid a foreign debt overhang. Short term inflows basically look for interest rate arbitrage opportunities. Long term flows do not care about this arbitrage, but rather look at more structural considerations, both economic and political. These results shed light on the kinds of policies that can be used to stimulate or slow some particular type
FIGURA 1

CAPITAL INFLOWS TO CHILE (% of GDP)
of capital inflow. Although the empirical evidence has been obtained for Chile, it is likely that the validity of these conclusions applies to other Latin American countries as well.

REFERENCES


