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Indexing and Chile's economic growth

Abstract

Chile indexed debt contracts to protect against inflation starting in 1967. In 1982, in the midst of the world recession Chile broadened the coverage of its indexing policy to cover a higher portion of debt instruments and also to allow borrowers who owe foreign currencies to pay those liabilities at exchange rates that were not excessively burdensome. This article puts forward the suggestion that this policy was an important contributor of Chile's extremely impressive financial takeoff. The policy might also have led to financial investments in Chile being chosen over investments in new productive capacity.

Keywords: inflation, indexing, financial reforms, economic development, economic growth.
JEL Classification: O23, E4, F3.

Introduction

Chile's economic growth has been a topic for students of economic development, and has given rise to productive debate. Many pre-conditions and many policies contributed to the country's high growth. This paper focuses on one of the policies, that of indexing debt contracts. We illustrate some features of Chile's policy of indexing debt contracts, and argue that indexing protected the purchasing power of debt contracts, and that indexing raised the rate of return that investors obtained from Chilean debt securities. Further, we raise the possibility that indexing made Chilean financial assets attractive enough to favor growth of some activities over other activities.

The present inquiry attempts to add another theme to the debate about why Chile's economic growth happened the way it did. To narrow the question, we query why Chile's financial sector performed so well. A possible explanation might be that the country's financial expansion took place during a time frame when external factors were favorable. It is certainly true that the financial takeoff started from a low point, the worldwide economic and financial crisis of 1982, so any financial recovery would have appeared strong. But Chile's financial growth was stronger than a mere rebound. The famous Pension Law was certainly a prime contributor. But there were more contributing factors, and we point to the country's policy of indexing debt contracts as one that is worthy of notice and further discussion.

This paper begins with a discussion of Chile's reinvigorated indexing policy, which was implemented during the pivotal year 1982. It then shows the purchasing power implications of the indexing policy in the time period of 1985-2009. The question for further discussion and research is whether Chile's indexing policy overcompensated for the inflation that occurred, and in that way made Chile's financial assets attractive. The consequences of that overcompensation would have been a driving force in setting the course of economic growth during the bonanza years from 1984-1997. At a more granular level, we suggest that when the country reformed its national financial system, it reinvigorated its indexing policy, and that helped elevate the role of its capital market, where investors could buy indexed bonds. The commercial banks, which would normally have competed successfully with the nascent capital market, were in the hands of state-appointed stewards in 1982, when the indexing policy was implemented. The commercial banks offered indexed deposit accounts, but did not have other advantages in attracting funds. Investors channeled money into the Chilean capital market, and their decisions to trust their money to the newly reformed system were a contributing factor in the country's financial takeoff. Indexing helped keep local savings from fleeing, and also attracted inflows. If that synopsis is accurate, indexing is a contributing factor in Chile's financial takeoff. It might also have provided a safe alternative for investors at a time when investments in new activities such as export-oriented manufacturing would have been considered risky.

The objective of this paper is to call attention to a policy that strengthened the financial upsurge, and to draw attention to its role in the Chilean miracle.

1. Indexing reinvigorated

Chile's economic policymakers made many decisions during the turbulent year 1982. The decisions had to be made quickly because world financial conditions were deteriorating rapidly, especially from June through August of 1982. The decision to broaden the indexing of debt contracts was one of several decisions announced in that time frame. It was intended to instill confidence and to level the playing field. Lenders needed protection against inflation. In view of the severity of the worldwide recession, there would have been very little lending whether indexing had been mandated or not, but indexing probably kept capital flight from being more severe. It probably had an unintended effect of channeling capital into safe investments, for example into indexed bonds secured by productive assets

that already existed. There might have been Chilean entrepreneurs who would have launched new ventures at that time, but they would have needed to be optimistic, because they faced saturated world markets and also faced great uncertainty about the real burden of debts they already owed. So it is an open question whether indexing discouraged new business initiatives in Chile in the time frame immediately following 1982. Entrepreneurs who were still solvent in the second half of that year had to be wary of taking on new debts, whether denominated in local currency or dollars.

The decision to reinvigorate the long-established policy of indexing was made at the most severe point in the world recession of 1982. To put the government's decision in perspective, and to see the effects that the decision had, it is helpful to consider the pressures that weighed on the minds of Chilean policymakers when they made new and timely use of indexing.

Chile had, in the decades prior to 1982, attempted conventional remedies for its chronic inflation, and those had given discouraging results[1]. To keep inflation from distorting preferences, the country introduced indexing in January 1967[2]. During the Allende period (1970-1973), indexing continued but was of little practical importance because the divergence between the rate of inflation and the exchange rate became too large[3]. In the years of 1974-1982, indexing was the norm in long-term financial contracts denominated in local currency, but was not used as an instrument of policy. Its purpose was to make long-term financial contracts fair to borrowers and lenders[4].

The crisis of 1982, however, was so severe that it brought forth heroic measures. It precipitated a devaluation of the Chilean peso in June 1982. This was a shock to the economy, but was deemed necessary because the country's fixed exchange rate quickly became untenable as the economic crisis worsened. The devaluation in June relieved the pressure on the country's dwindling holdings of foreign exchange, but subsequently posed a severe challenge to Chile's policymakers. They had to contend with shocks that had already dragged down the country's traditional financial system, which had been dominated by banks, with capital markets playing a very minor role in allocating credit[5]. As the crisis unfolded, the policymakers had to postpone, and possibly jettison, long-run objectives. The national development strategy affirmed the widely accepted view that export-driven growth was more robust than import substitution[6]. But the world recession was so severe that Chile had to adopt emergency measures to meet pressing local needs. Its emergency measures shifted short-term priorities away from the efforts to develop new nontraditional exports.

The indexing decision that Chilean policymakers made after the devaluation in 1982 was to broaden the coverage of indexing to include a larger portion of debt contracts, including many that had not been indexed before the devaluation. The broadened coverage also included contracts denominated in foreign currency. This indexing decision had two effects. One was to increase the nominal amounts that debtors owed whose loans had previously not been indexed. That increased the expected cost of repaying loans that previously had not been indexed. The other effect was to give a preferential exchange rate to debtors who owed foreign currency. That part of the new indexing decision was designed to limit the impact that the devaluation would have on an important class of debtors, those who owed foreign currency.

The new policy made sense, because the devaluation was large, on the order of 300%, i.e., from 39 pesos per dollar to a rate that quickly reached 110 to 120 pesos per dollar. The policy of indexing foreign currency debt meant that Chilean companies that owed foreign currency would be allowed to buy dollars at a preferential exchange rate, for example 42 pesos per dollar. That policy cut the burden for borrowers to one third or one quarter of what it would have been if the decision had not been made[7]. Herrera and Valdes report "there was a drastic surge in indexation between 1982 and 1984, whereby indexed instruments increased their share by 30 percentage points"[8].

The decision to index so many debt contracts mush have gone against the grain of the Chicago-trained policymakers because it was an intervention in the

[1] Alberto O. Hirschman, in his famous book *Latin American Issues: Essays and Comments*, devotes a section to inflation in Chile. He surveys the controversy between monetarists and structuralists and does not find that either doctrine is superior to the other.

[2] www.periodismo.uchile.cl/themoroso/2001/nacional/uf.htm.

[3] The rate of inflation in 1973 was quoted at 700% by Prof. Sebastian Edwards, and different sources put it at 1000%. During the first half of that year the official exchange rate was not allowed to fluctuate that much. There were different exchange rates for different categories of imports, so it is difficult to arrive at a single figure for the exchange rate, but all sources agree that the exchange rates were not allowed to fluctuate in tandem with inflation.

[4] Herrera and Valdes (2004). "Dedollarization, Indexation and Nominalization: The Chilean Experience", Banco Central de Chile, Working Papers No. 261, May, p. 11.

[5] Cifuentes, Rodrigo, Jorge Desormeaux and Claudio González. Capital markets in Chile: from financial repression to financial deepening, BIS papers No. 11, June 2002 <http://www.bis.org/publ/bppdf/bispap11g.pdf>.

[6] For a critical review of this doctrine, see Love, Joseph L. (2005). "The Rise and Decline of Economic Structuralism in Latin America: New Dimensions", *Latin American Research Review*, Vol. 40, No. 3, October.

[7] The exchange rate at the beginning of June 1982 was 39 pesos per U.S. dollar. After the devaluation the exchange rate was 156 pesos per dollar. A borrower who owed one dollar in June of 1982 would suddenly have had to repay 156 pesos. The decision to index dollar-denominated debts reduced that debt back to an amount much closer to 39 pesos.

[8] Herrera and Valdes, op. cit., p. 11.

market. But the devaluation was also an intervention, so it can be said that one intervention created the need for a second one. Without the indexing decision many debtors who owed local currency would have been allowed to repay their obligations giving much less purchasing than what they had borrowed. And many debtors who owed foreign currency would have been bankrupted. The separate treatment of foreign currency debt helped many local debtors, rescuing them from escalating debt burdens, but it also revealed how vulnerable they had been. If debt contracts had not been indexed in 1982, conditions after the devaluation for borrowers who owed foreign currency would have been crushingly onerous.

It is relevant that financial conditions had been turbulent in the decades and years before the crisis of 1982. Real interest rates had been high in Chile, implying that capital had been scarce. In the years immediately preceding the crisis, real interest rates had fluctuated between 11.4% and 46% during the years of 1978-1981. Banks charged 15% more for loans than they paid to depositors[1]. So it is questionable whether large investments in new ventures, or in any other risky projects, would have gone forward during those years of uncertainty. New ventures would have had to offer very high rates of return in order to compete with safe investments. That was the financial environment preceding the 1982 crisis, and the decision to broaden indexing was taken against that backdrop.

The result of the financial reforms, including the indexing policy, was that after 1982 investment in the financial services sector, and in existing financial instruments, was timely and profitable. This might not have been intentional.

2. Did Chile suffer more?

Chile was not the only country that had to take drastic measures to protect borrowers, and not the only country that faced monetary disruptions. The world recession of 1982-83 triggered spikes in inflation in many emerging countries[2]. It also triggered the Third World debt crisis[3]. Chile's dilemma, however, was especially serious, and for that reason deterred long-term investment more than in many other emerging countries. During the period of June-September 1982, local business people could see how risky new long-term investments would have been. When the crisis was at its worst, Chile's access to foreign exchange was extremely restricted. The government could not hope to borrow abroad, and also could not rely on a quick recovery in its export revenues. As an indication of how severe the global recession was, the world price of copper fell by more than half[4]. And as an indication of how severe the local financial crisis was, at least 16 of Chile's banks failed, and had to be rescued by the government[5]. The Chilean government, despite being ideologically opposed to intervention, and despite having few resources available to it, was forced to engage in an extensive and traumatic intervention in its financial system. The intervention took the form of *de facto* nationalization of private commercial banks. The government acquired shares of the banks and took an active role in managing the recovery and liquidation of the failed banks' loan portfolios. Local investors who had cash and did not owe too much money could buy existing businesses and properties at bargain prices. Many did that instead of investing in new industrial ventures.

Chile's response to the 1982 local financial crisis was a watershed moment, and laid the groundwork for the country's future emergence as an exemplar of financial organization. Many other countries responded in ways that were similar but less drastic. Chile took definitive actions, including jailing bankers, that built the prestige of its national financial system, and also took steps to make sure that a crisis of that sort would not happen again. By 1984 Chile had put into place two different regulatory agencies – one that had responsibility for regulating banks, and a different one that had responsibility for regulating securities markets and insurance companies[6]. That demarcation of regulatory responsibilities signaled that the country was turning away from the traditional bank-dominated mode of allocating capital, to a capital-market-driven mode, and also signaled that Chile was not going to revive the traditional system that had collapsed. From 1984 onward, Chilean commercial banks were still struggling to recover, and were being closely monitored by government regulators, while Chile's economic growth was taking off. Meanwhile the size of its capital markets, i.e., the value of bonds and stocks listed on the Santiago Stock Exchange, grew much more rapidly than the loan portfolios of its banks.

But inducing and fostering that change of leadership in the financial sector was only part of the Chilean response to the crisis. The country also publicly blamed the bankers for the collapse and disciplined them. There were legal proceedings, trials, convictions, and jail sentences. Many bankers were ac-

[1] Ibid., p. 15.
[2] Chile's GDP in U.S. dollars was $38.09 million in 1981 and fell to $32.86 in 1983, a decline of 13.7%. Source: http://www.ers.usda.gov/Data/macroeconomics/Data/HistoricalRealGDPValues.xls.
[3] FDIC. The LDC Debt Crisis, <http://www.fdic.gov/bank/historical/history/191_210.pdf>.
[4] http://www.jstor.org/stable/4191264?seq=5.
[5] citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.15.2111&rep, p. 6.
[6] Hornbeck, J.F. Financial Regulation and Oversight: Latin American Financial Crises and Reform Lessons from Chile, *CRS Report for Congress*, August 11, 2009 <http://assets.opencrs.com/rpts/R40751_20090811.pdf>.

cused of fraud, self-dealing, opportunism, falsifying records, and embezzlement. They were subjected to public humiliation, tried, and convicted. At least one of the bankers spent more than ten years in jail[1].

3. Deeper motivations for indexing

During this watershed period from June 1982-1984, Chile's economic policymakers worried that capital might flee the country. The country had suffered periods of inflation in the first ten years of the Pinochet government[2]. Local savers were understandably wary of having their life savings denominated in a currency with such a history. Many savers had habitually converted their savings into foreign currency and hoarded the foreign currency or sent it out of the country. Chilean policymakers needed a way to persuade savers to keep their money in the country.

Consequently Chilean policy was to encourage greater use of the indexed monetary unit, called la Unidad de Fomento (UF). It was indexed relative to purchasing power, and it was equal to 15 U.S. dollars in 1985. That fact is helpful for illustrating how it works. Its value readjusts every day in response to local inflation, and the central bank publishes every day the amount of Chilean pesos that is equal to one UF. Loans in Chile were, by edict, denominated in UF, especially after the new indexing policy went into effect. That way a borrower could not benefit from an unexpected jump in local inflation. Borrowers would have to repay the amount of local purchasing power they borrowed, plus interest. Lenders could make loans denominated in UF without worrying what the rate of inflation would be during the life of each loan. It became customary to quote the terms of a loan in UF. For example, a one-year loan might be quoted at UF plus 8%. That means the borrower would have to pay 8% interest plus the amount of inflation that there had been during the year. If there had been 3% inflation, the borrower would have to repay 8% plus a 3% increase in both the principal and the interest, so to repay a one-year loan of 1000 pesos the borrower would repay approximately 1,112 pesos[3].

The *ex post* evidence is that this convention dealt successfully with the fear of inflation. Lenders continued to demand high interest rates in 1983, but rates declined after that. The *ex post* evidence is also that this convention discouraged capital flight. Fixed investment as a percentage of GDP rose from 10.7% of GDP in 1983 to 20.1% of GDP 1989[4]. That increase in fixed investment was achieved while Chile was repaying its foreign debt, so it is clear that the country was more successful in retaining its citizens' savings in the country.

Classic articles about Chile asserted that Chile's savings rate had been low in the 1950s and 1960s[5]. It was not easy to verify that assertion because capital flight is hard to track. But from 1984 onward the private pension accounts, invested in indexed, ultra-safe bonds, attracted Chilean savings. The amounts that flowed into the system were sufficient to finance the country's high economic growth. Foreign borrowing did not fuel Chile's economic miracle. Contributions to retirement accounts were mandatory for many workers, but many others voluntarily opened accounts and contributed regularly or as frequently as they could. During the 1984-1997 time frame, many Chileans accumulated retirement accounts were large enough to support them comfortably in retirement.

4. Unintended effects of indexing

It is possible that indexing had an unintended consequence. Indexing might have improved the quality of Chilean financial assets so much that the improvement might have been too great. Chilean policymakers, seeking to achieve their objective with incentives and not with coercion, did not want to rely on punitive measures to deter capital flight, and they did not want to have to force Chileans to contribute to their private pension accounts. They also did not want to have to force private lenders to lend. Instead they wanted lenders and borrowers to view the credit process as fair with regard to expected returns.

Indexing, combined with the other financial reforms that had been implemented, made Chilean financial assets appealing to foreigners. International portfolio managers noticed that Chilean bonds were of very high quality. In the period of 1985-1997, most of the Chilean bonds that were issued required to be highly rated, with abundant collateral supporting them, and the issuers had to demonstrate sufficient financial strength[6]. Chileans who had money in overseas accounts noticed this. Foreigners also noticed this and

[1] Kalter, Eliot (2004). Chile: institutions and policies underpinning stability and growth, International Monetary Fund.

[2] Cifuentes, Rodrigo, Jorge Desormeaux and Claudio González. Capital markets in Chile: from financial repression to financial deepening, BIS papers No. 11, June 2002, <http://www.bis.org/publ/bppdf/bispap11g.pdf>.

[3] The borrower who borrowed 1000 pesos, after one year, would have to repay 1000 pesos of principal and 80 pesos of interest, both adjusted for the 3% inflation that occurred, so the borrower would owe (1000 + 80)*1.03 = 1112.4 pesos.

[4] Davis, Ricardo Ffrench (2003). *Entre el Neoliberealismo y el Crecimiento con Equidad*, Siglo XXI Ediciones, 3ra edicion actualizada, Editorial J.C. Saez, p. 226.

[5] This often-repeated "fact" appears in Hirschman, Albert O. (ed.) Latin America Issues, Twentieth Century Fund 1961, p. 78. The low savings rate may have been because so much savings took place in unreported transactions. People saved local currency, then converted it to dollars in the black market, and then sent the dollars to banks in countries with stable financial systems.

[6] Famously, a subsidiary of ENDESA Chile was able to issue a 100-year bond with a fixed coupon. Very few companies have ever been able to issue a bond with such a long maturity. http://idbdocs.iadb.org/wsdocs/getdocument.aspx?docnum=822639.

viewed Chile in a favorable light. It soon became obvious that Chile's privatized pension funds were not the only buyers of the newly issued indexed bonds. Chilean individuals investors and foreign portfolio investors also bought them. In 1989 and 1990, net inflows of foreign portfolio investment were U.S.$ 83 million and U.S.$ 360.8 million[1]. Data on annual inflows of direct investment provide a comparison to show the size of the inrush of cash coming from abroad into Chile's securities market.

Direct foreign investment (millions of U.S.$)	
1974	-16.7
1975	-4.2
1976	-1.2
1977	21.4
1978	181.1
1979	244.5
1980	213.2
1981	383.0
1982	400.8
1983	131.8
1984	71.8
1985	72.1
1986	60.3
1987	105.0
1988	124.2
1989	269.2

Source: Central Bank of Chile (Balance of Payments).

These data, though compelling, are not decisive evidence that indexing played a prominent role in Chile's financial takeoff. Indexing was only a part of a combination of monetary policies, including anti-inflationary measures. It is possible that indexing only provided additional credibility to a monetary policy that was already being perceived as prudent. Data show that inflation was decelerating in Chile during the period when the financial system was enjoying the munificent rewards of its excellent design and competent, vigilant supervision.

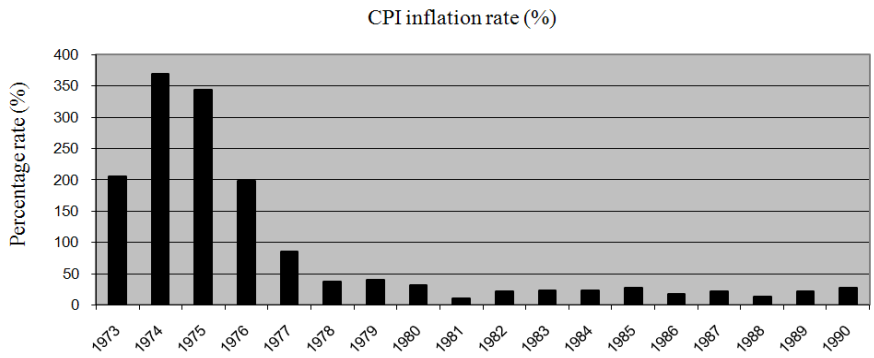

Fig. 1. Consumer price inflation by year

Source: Central Bank of Chile.

Another possible source of support for the financial takeoff was the array of financial investments available. There were common stocks, but the traditional rules of governance were still in place, so common stocks were not the most attractive assets available. Chilean bonds were especially appealing. Issuance of corporate bonds rose during the latter part of the decade of the 1980s, so that from 1982 to 1990 the amount of corporate bonds outstanding rose 4.62 times[2]. The pension funds were buyers of corporate bonds, and their holdings rose from less than 1% of their total portfolio holdings in 1982 to 22.4% of their total portfolio holdings in 1990[3]. Other buyers, including foreigners, also added to their holdings, so that their holdings went from U.S.$3,688 million in 1983 to 10,871 million in 1990[4].

Those data indicate that Chilean corporate bonds were attractive, and their improved appeal was part of the broad array of improvements in investment opportunities for Chilean savers and for foreign portfolio investors.

It is also important to note that during the period of 1982-1990 Chile was paying its foreign debt, reducing the total amount, and the burden of the debt was declining as a percentage of GDP.

Foreign debt (million U.S.$)	
Year	Total
1980	11,325
1981	15,700
1982	17,263
1983	18,133
1984	19,746
1985	20,607
1986	20,898
1987	20,722
1988	19,012
1989	17,569

Source: Central Bank of Chile.

[1] Banco Central de Chile, Balanza de Pagos 1989-1998.
[2] Computed by the authors from data in: Stallings, Barbara. Finance for Development: Latin America in Comparative Perspective. Brookings Institution, 2006, pp. 158-165.
[3] Computed by the authors from data in Stallings, op. cit. pp. 158-165.
[4] Computed by the authors from data in Stallings, op. cit. pp. 158-165.

The improvements in inflation and the reductions in the foreign debt are combined with the improved design of Chilean bonds and the pension fund purchases to provide a possible explanation for the strengthening of the Unidad de Fomento. During the period of 1985-1997, the value of one UF rose from U.S.$15 to about U.S.$35.

The Unidad de Fomento should not have strengthened that much versus the U.S. dollar, according to conventional economic principles. When the UF was utilized to index the debt contracts denominated in foreign currency, experts knew that the U.S. dollar would not retain its purchasing power. The UF could therefore be expected to strengthen versus the U.S. dollar. Purchasing power parity, a doctrine of classical international monetary economics, predicts that a currency with zero inflation will strengthen versus a currency with a higher rate of inflation. And since the UF was designed to have zero inflation, it was expected that the UF would strengthen against the U.S. dollar at a rate equal to the U.S. inflation rate.

Calculating the value of the UF in that way indicates that by mid 1997 it should have been reached the value of U.S.$ 23.60. Instead it reached U.S.$ 35. That was a huge divergence in favor of the Chilean peso. Its value was 48% greater than purchasing power parity predicted. Of course, there are other measures of overvaluation, and the calculation assumes that the beginning price of U.S.$ 15 was fair. Nevertheless, the calculation does indicate that the Chilean peso became overvalued relative to the U.S. dollar during the 13-year period of Chile's economic miracle. That overvaluation, if it did occur, favored financial investments over investments in producing goods for export.

The effects of indexing did not end there, however. After 1997 the value of the UF fell in response to the Asian crisis. The Chilean exchange rate weakened faster that the U.S. dollar, and its fluctuations did not synchronize with the fluctuations of the US dollar. By 2001, the value of the UF had fallen below U.S.$25. It then rose sharply to U.S.$45 by the beginning of 2008.

Source: Computed by the authors from Central Bank data.

Fig. 1. Value of the UF in U.S. dollars (1985-2009)

This volatility hurt exporters, at least in relative terms, without doing as much harm to Chile's reformed financial system. Chilean pension fund administrators and insurance companies were able to adjust their portfolios so that they did not suffer much from the strengthening of the local currency from 2002-2008. For exporters, in contrast, the volatility was a serious complication in their lives. The erratic and sometimes precipitous strengthening of the Chilean peso hurt their profits and also diminished their ability to compete for access to credit. They could not offer enough tangible collateral and their cash flow was unstable, so conventional lenders did not increase the lines of credit to the exporters very rapidly[1].

There is an anecdotal evidence that indexing the currency succeeded too well: the Chilean government felt the need to adopt a policy called the *encaje*. This was a requirement that the government imposed formally in 1991[2]. The regulation required foreign portfolio investors to deposit a portion of the money they wished to invest in a peso-denominated account that paid no interest. The foreign investors were required to leave the money in that account for a year. Then they could withdraw it and convert it back to foreign currency. This measure reduced the rate of return that short-term portfolio investors would earn. The objective was to discourage inflows of "hot money" that were destabilizing the exchange rate and distracting attention away from longer-term investment[3].

[1] Marshall, Enrique. "El Acceso de la PYMES a los servicios financieros" Presentation by Enrique Marshall, Superintendente de Bancos e Instituciones Financieras al Club Monetario, Universidad Finis Térrea, Decembere 2004. The presentation contains the following assertion: Lo Anterior es consistente con una tendencia global a focalizar los negocios en la banca corporative y en la banca masiva de personas. http://www.sbif.cl/sbifweb/internet/archivos/DISCURSOS_2616.pdf.

[2] De Gregorio, op. cit., p. 14.

[3] Jeter, Jon. A Smoother Road To Free Markets, *Washington Post*, Pg E01, January 21, 2004.

The decision to impose the *encaje* may have been a consequence of the earlier decisions that improved the quality of Chilean financial assets, but what triggered the decision was the huge inflow of foreign investment (direct and portfolio) in 1990. The inflows were large from 1985 onward, and reached 9.5% of GDP in 1990, a strikingly high figure[1].

A wave of investor approval favored Chile in 1988 and 1989: investors in the rich countries became enamored of investing in emerging markets. Ironically, by then Chile no longer needed inflows of foreign capital as much as in earlier time periods. But the foreign money came, and fueled more economic growth. The result was that the returns to investors who took the risk of putting money into Chile and other emerging markets during the years of 1988-1992 were high, and sometimes very high[2].

The *encaje*, a brake on capital inflows, was deemed necessary and was kept in place until 1998, after the Asian crisis. In 1998, the government did not eliminate the *encaje*. Instead the policymakers reduced it to 0%[3]. That way they could raise it quickly if the need arose. The cautious way they took off the restriction showed that they were still worried that the Chilean peso might become overvalued, or that inflows of capital would destabilize the economy. It also suggests that the government wanted to keep the success of the financial reforms from overshadowing and marginalizing the non-financial sectors of the economy.

Conclusion

The decision to convert loans denominated in foreign currency to loans denominated in indexed pesos was a remedy that solved a pressing problem but possibly had unintended consequences. It is possible that policymakers sought to create a credible currency unit and succeeded too well. They created a stable currency unit and adopted other reforms that established the credibility of Chilean fiscal and monetary policies. The combined effect of the reforms strengthened the Chilean currency, creating a financial windfall for Chilean middle-class savers. The windfall coincided with the period when enrollment in private pension funds was ramping up.

The Chilean economic miracle had many dimensions, and is all the more remarkable in view of the disheartening century-long monetary history that preceded the country's vertiginous rise to financial prosperity. The Chilean miracle provides abundant material for students to sift through, and continues to reward researchers with new insights into the mysteries of rapid economic growth.

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[1] The quoted figure comes from Le Fort and Lehmann (2000). "El Encaje, Los Flujos de Capitales y El Gasto: Una Evaluacion Empirica, Banco Central de Chile, Working Papers, February, p. 8.

[2] The Templeton Emerging Markets Fund, a high-profile closed-end mutual fund marketed to U.S. investors, delivered high yields during those years. Its average annual compound yield for the two-year period from January 1988 to December 1989 was 59.4%. That fund continued to deliver high returns until 1994.

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