

## **Chile: Selected Issues**

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CHILE

**Selected Issues**

Prepared by Eliot Kalter (Head), Steve Phillips, Marco Espinosa, Rodolfo Luzio, and  
Mauricio Villafuerte (all WHD), and Manmohan Singh (ICM)

Approved by the Western Hemisphere Department

August 5, 2003

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Chile: Basic Data

I. Social and Demographic Indicators

Area (thousand sq. km.)	756.1	GDP (2002)	Ch\$ billion US\$ billion	45,763 66.4
Population		GDP per capita (US\$), 2002		4,250
Total 2000 (est., million)	15.2	Poverty rate (2000)		20.6
Urban population (in percent of total)	85.6	Indigent		5.7
Density (per sq. km)	20.1	Poor, not indigent		14.9
Annual rate of growth, 1996-2000 (percent per year)	1.4	Health		
Population characteristics (1998)		Population per physician (1998)		840
Life expectancy at birth (years)	75.2	Population per hospital bed (1998)		484
Crude birth rate (per thousand)	17.5	Access to electricity (1996)		
Crude death rate (per thousand)	5.5	Percent of dwellings		
Infant mortality rate (per thousand live births)	10.3	Urban		99.4
Mortality rate between ages 1 and 4 (per thousand)	0.5	Rural		74.8
Income distribution (2000)		Access to safe water		
Percent of total income received:		Percent of population (1995)		91
By richest 10 percent of households	41.0	Urban		99
By poorest 20 percent of households	3.7	Rural		47
Gini coefficient	0.56	Education		
Distribution of labor force, in percent of total (2000)		Adult literacy rate (1998)		95.4
Agriculture and fishing	13.8	Enrollment rates, percent of the age group		
Mining	1.4	Primary education (1998)		98.3
Industry	14.4	Secondary education (1998)		86.9
Construction	7.2	Tertiary education (1997)		33.8
Services and Trade	62.6			

II. Economic Indicators, 1998-2002

	1998	1999	2000	2001	2002
(in percent of GDP)					
<b>Origin of GDP</b>					
Agriculture, forestry, and fishing	5.3	5.3	5.5	5.6	5.8
Mining and quarrying	7.3	8.2	8.1	8.4	8.2
Manufacturing	16.3	16.3	16.3	15.9	16.0
Construction	9.2	8.3	7.9	7.9	7.9
Commerce	11.3	10.8	10.8	10.7	10.7
Transport, storage, communications	6.9	7.0	7.3	7.7	7.7
Other	43.8	44.0	44.1	43.8	43.8
(Annual percent changes, unless otherwise indicated)					
<b>National accounts and prices</b>					
Real GDP	3.2	-0.8	4.2	3.1	2.1
Real GDP per capita	1.8	-2.1	2.8	1.7	0.8
GDP deflator	1.9	2.4	4.4	4.1	3.4
Consumer price index (period average)	5.1	3.3	3.8	3.6	2.5
Consumer price index (end of period)	4.7	2.3	4.5	2.6	2.8
Unemployment rate (in percent)	6.2	9.7	9.2	9.1	8.9
(Ratios to GDP)					
Gross domestic investment	26.9	21.1	21.8	21.9	21.9
Of which					
Public investment	4.8	4.0	3.5	3.6	4.0
Gross national savings	22.0	21.2	20.8	20.1	21.1
External savings	4.9	-0.1	1.0	1.7	0.8
Private consumption	64.9	64.5	63.9	64.0	63.2
Public consumption	11.5	12.4	12.4	12.5	12.6
<b>Central government finances</b>					
Total revenues	21.1	20.4	21.6	22.0	21.4
Total expenditures	21.1	22.5	22.4	22.9	22.8
Of which					
Interest	0.6	0.3	0.5	0.5	0.3
Savings	3.4	1.5	2.5	2.5	2.0
Primary balance	0.6	-1.8	-0.4	-0.4	-1.1
Overall balance	-0.1	-2.1	-0.8	-0.9	-1.4

Chile: Basic Data

	1998	1999	2000	2001	2002
(12-month percentage changes, unless otherwise indicated)					
<b>Money and credit</b>					
Liabilities to private sector	9.7	16.1	9.3	8.7	5.5
<i>Of which</i>					
Narrow money (M1A)	-6.3	25.2	9.3	4.0	17.4
Broad money (M3)	8.4	6.0	4.7	2.9	-0.5
Net domestic assets of financial system 1/	9.3	6.4	8.9	3.3	6.1
<i>Of which</i>					
Credit to nonfinancial public sector (net)	2.1	2.6	1.5	1.4	1.4
Credit to private sector	4.2	2.0	6.5	4.8	4.7
Liabilities to the private sector, in percent of GDP	88.0	100.9	101.8	103.9	103.8
Three-month interest rate (in percent)	16.4	10.7	10.8	7.2	3.9
(In billions of U.S. dollars, unless otherwise indicated)					
<b>Balance of payments</b>					
Current account	-3.9	0.1	-0.8	-1.2	-0.6
Merchandise trade balance	-2.0	2.4	2.1	2.1	2.5
Exports (f.o.b.)	16.3	17.2	19.2	18.5	18.3
Imports (f.o.b.)	-18.4	-14.7	-17.1	-16.4	-15.8
Services and transfers (net)	-1.9	-2.3	-2.9	-3.2	-3.1
<i>Of which</i>					
Interest	-1.5	-1.5	-2.1	-1.9	1.6
Capital and financial account	4.0	3.1	0.2	2.9	-1.2
Foreign direct investment	3.1	6.2	-0.3	3.0	1.1
Portfolio investment	-2.5	-3.2	0.6	0.0	-1.9
Other capital (net)	3.3	0.1	-0.1	-0.2	-0.4
Errors and omissions	-0.2	-1.1	0.3	-1.2	-0.2
Overall balance	-2.2	-0.7	0.3	-0.6	0.2
Exports (in percent of GDP)	26.3	29.6	31.8	33.5	34.1
Imports (in percent of GDP)	29.6	27.3	30.0	31.9	31.8
Current account (in percent of GDP)	-4.9	0.1	-1.0	-1.7	-0.8
Merchandise exports (in US\$, annual percentage change)	-8.7	5.1	11.9	-3.9	-0.7
Merchandise imports (in US\$, annual percentage change)	-4.8	-19.8	16.0	-4.0	-3.6
Terms of trade (annual percentage change)	-4.7	5.9	4.8	-7.9	1.9
Real effective exchange rate (12-month perc. change)	-6.1	-6.2	2.5	-9.5	-6.4
<b>International reserve position and external debt (as of December 31)</b>					
Gross official reserves	16.3	14.9	15.1	14.4	15.4
(in months of imports of goods)	10.6	12.2	10.6	10.5	11.6
Net official reserves	16.3	14.9	15.1	14.4	15.4
Net reserves of the banking system	0.9	3.9	2.9	1.3	...
Outstanding external debt, in percent of GDP 2/	40.0	46.8	48.7	55.7	60.8
Public	7.2	8.0	7.4	8.4	10.8
Private	32.8	38.9	41.3	47.3	50.0
Total debt service ratio (in percent of exports)	19.4	23.1	26.8	27.1	33.3
<i>Of which</i>					
Interest	7.4	7.2	8.9	8.3	7.3
Gross reserves/short-term debt (in percent) 2/	392.4	373.8	229.7	214.8	180.1
<b>IMF data (as of May 31, 2003)</b>					
Membership status:					Article VIII
Quota					856.1
Fund holdings of Chilean pesos					484.7
(as percent of quota)					56.6
Outstanding purchases and loans					None
SDR Department					
Net cumulative allocation					121.9
Holdings					28.8

Sources: Chilean authorities; World Bank; IMF; and Fund staff estimates.

1/ Changes as percent of liabilities to the private sector at beginning of period. Flows based on end-of-period exchange rates.

2/ Excludes short-term trade credit.

## I. OVERVIEW

1. **This report presents analyses of select issues on the Chilean economy, its policies and prospects.** The contributions are grouped in four thematic areas: the macroeconomic and institutional framework; exports, trade policy, and growth; capital markets; and assessing the strength of the economy's financial position.
2. **Chapters II and III examine Chile's macroeconomic and institutional framework.**
3. **Chapter II** focuses on current policy, Chile's macro policy framework—with central bank policies focused on inflation targeting, in the context of a floating exchange rate, and fiscal policy aiming at a structural balance target—is still relatively recent. The inflation targeting framework in Chile currently consists of : (i) a pre-specified *continuous* inflation target band (ii) a pre-announced “policy horizon;” and (iii) timely communication of the authorities' inflation forecast, the rationale for their policy decisions, and the reasons for any temporary deviations from the inflation target. An important supplement to this framework is the absence of an exchange rate target. Exchange rate policy calls for zero intervention under normal circumstances, with the possibility of intervention only under exceptional circumstances. When intervention does take place, the authorities announce the event, do not target a specific exchange rate and the amount of the intervention is revealed.
4. **Chapter II** also explains the mechanics of the fiscal rule. This mechanism has increased transparency and accountability of the Treasury, by defining a specific medium-term fiscal policy path while enabling automatic stabilizers. The rule removes policy discretion and has strict technical requirements. On the latter, the use of expert panels to determine cyclical adjustments to meet the rule has enhanced transparency and credibility.
5. **Chapter III** takes a longer views of Chile's reform experience and considers the role played by institutional factors in Chile's economic performance. A sizable literature has documented Chile's sound economic policies over the last decade, but less attention has been given to the factors behind the adoption and continuation of such policies. A deeper view of the Chilean experience is sought by considering how institutional arrangements may have helped to identify “sound policies” and allow them to be sustained over time.
6. The review of Chile's institutions focuses on four policy areas where it is widely acknowledged that Chile is particularly strong (and which are among the core areas of IMF work): sustaining fiscal policy discipline; policies to maintain price stability; policies that promote financial stability; and an open and stable trade policy regime. Among the numerous institutional arrangements discussed, the constitutional features that have promoted fiscal



discipline—including budget process rules and the tight constraints on subnational governments—and effective central bank independence have been especially important.

**7. Chapters IV and V relate to the role of trade in Chile's development.**

8. **Chapter IV** considers the role, past and prospective, of exports in growth of the Chilean economy. The focus is on export specialization: in the Chilean case following comparative advantage often has meant exporting goods that are natural resources-based. The chapter offers a critical assessment of the notion that such exports are necessarily stagnant and impact negatively on a country's rate of growth. The chapter argues that in the case of Chile such exports were associated with positive spillovers leading to the creation of new products. Furthermore, the chapter suggests the need to promote human capital accumulation in order to take advantage of these spillovers, increase productivity, and continue diversifying the Chilean export basket.

9. **Chapter V** considers Chile's trade policy. The trade policy regime has been highly liberal for quite some time. The trade policy strategy has included the unilateral reduction of tariffs, as well as a wave of trade agreements. The chapter focuses especially on recent trade agreements with Chile's two largest trading partners, the European Union and the United States.

**10. Chapters VI – VIII relate to financial markets.**

11. **Chapter VI** reviews the development of domestic capital markets and corporate financing in recent years and draws on remaining policy challenges going forward. The analysis underscores the role of macroeconomic policies and structural reforms as the driving factors underpinning the development of local securities markets in the 1990s. The presence of a well-developed and large institutional investor base has also played a fundamental role as stable and growing source of domestic finance. While equity markets saw a rapid expansion in the early 1990s, the domestic corporate bond market experienced a remarkable resurgence since 2000 as large corporate firms, in particular, sought to time the market following the sharp drop in domestic interest rates.

12. Despite this remarkable progress, the future development of domestic capital markets faces key challenges related to the low liquidity in equity and corporate bond markets, and the high degree of ownership and investor concentration. Recent changes in financial regulation and legislation have sought to address concerns on the relative depth of capital markets and effectiveness of corporate governance while improving capital markets regulation. Policymakers have thus been actively working to improve financial market infrastructure seeking to establish appropriate incentives to harness market discipline and self regulation. As demonstrated by the recent reforms, the authorities have underscored the role of bridging missing markets, promoting liquidity and transparency, and providing incentives to wider access to investment resources.

13. **Chapter VII** has a narrower focus, on the public sector's role in establishing debt benchmarks. In 2002, the authorities began a program of modernizing debt management procedures, aiming to increase the liquidity, and facilitate the internationalization of the domestic fixed-income securities market. Such internationalization will take time, but careful establishment of benchmarks (as described in Chapter VII) is a step in that direction. The benchmarking initiative builds on earlier actions to reduce the use of inflation-indexed debt and to extend the maturity of public debt. The authorities expect that recent reforms will generate a rising volume of financial intermediation, and allow the market to create new hedging markets for specific risks.

14. **Chapter VIII** summarizes recent empirical work on an important aspect of the monetary policy transmission in Chile: "pass-through" of moves in the monetary policy interest rate to retail interest rates in the banking system. The focus is on a study conducted by IMF staff members for the Sixth Annual Conference of the Central Bank of Chile. The chapter also highlights findings of another recent study, which uses bank-level data. In contrast to some previous findings that the pass-through in Chile is weak, both studies suggest that while there may be some room for greater speed and completeness of interest rate pass-through, during the period studied pass-through was generally adequate and not atypical.

15. **Chapters IX – XII** present several perspectives for assessing the financial position of the Chilean economy.

16. **Chapter IX** provides an assessment of Chile's external position, integrating information on the country's international investment position and structure of external debt. The analysis considers the possibility of an external liquidity squeeze on the balance of payments while testing for potential solvency problems. The approach combines the standard IMF debt sustainability analysis framework and alternative tests using newly published data on Chile's international investment position. The analysis focuses on (i) external debt dynamics, (ii) sensitivity of gross external financing requirements to specific shocks, and (iii) implications of Chile's international investment position for external vulnerability.

17. The analysis underscores the strength of Chile's aggregate external position. In a standard debt sustainability framework, various hypothetical shocks considered would lead to substantial, though temporary, increase in the external debt-to-GDP ratio. However, the risks of these standardized shocks seems remote, given the strength of Chile's current policy framework, as well as the already relatively weak states of such variables as the real exchange rate and copper export prices. Liquidity problems are not expected given the country's significant liquid foreign assets, held by both the public and private sectors. Chile's large foreign asset-liability structure is another source of strength. The large foreign direct investment in Chile helps explain that foreign-owned Chilean resident firms held more than half of Chile's total external debt. Sensitivity analysis using the net international investment position also shows the dampening effects of the large direct investment on the country's aggregate net liability.

18. **Chapter X** looks at some recent cases of distress in Chile's corporate sector, including the first example in years of a sizable Chilean-resident company experiencing

distress. These cases involved companies that are mainly foreign-owned (such companies account for more than half of Chile's external debt), so the behavior of the parent company can be key to the outcome. Importantly, investors' perceptions of Chile and Chilean companies more generally have not been significantly affected by these companies' difficulties.

19. **Chapter XI** examines the public sector financial position. The analysis emphasizes the balance sheet information, and in particular is able to make use of newly-available data on both the debt and financial assets of the Chilean public sector. Much of the analysis is on the finances of the central government, which in Chile has been the key to the evolution of total public debt. Taking into account the government's structural balance target, it is difficult to see debt sustainability problems emerging, as long as this target (or other restrained fiscal policy) is met. The central bank's balance sheet is also examined, including its tendency to run a modest operational deficit, but also its considerable strengths in terms of foreign exchange and liquidity positions. Though the bank's deficit has been fairly stable and has not interfered with its monetary policy objectives, the chapter notes some steps, including a capital injection from the government, that could be taken to improve its financial position. The situation of the public enterprises appears sound, especially in light of their overall profitability and limited debt.

20. Finally, **Chapter XII** provides an update on the Chilean banking system, indicating that it continues to remain robust, also highlighting some structural features and recent developments. In particular, the chapter documents the recent "Inverlink" case, in which a corrupt private financial company fell, after having sold stolen government securities in the secondary market. This case originated outside of, but nevertheless had repercussions for, the banking system. The chapter discusses the responses of the authorities to this episode, both the immediate actions to address liquidity needs, as well as forward-looking measures to improve financial security.

## II. CHILE'S MACRO POLICY FRAMEWORK—AN OVERVIEW AND UPDATE<sup>1</sup>

1. *Chile's macro policy framework<sup>2</sup>—with central bank policies focused on inflation targeting, in the context of a floating exchange rate, and fiscal policy following a structural balance target—is still relatively recent. This note documents the essential points of this framework's design, highlighting aspects that may distinguish it from other countries' related practices as well as some recent refinements. Also discussed are the track record to date and various implementation issues that have turned out to be relevant in the last few years.*

### Box 1. Steps in the Development of Chile's Macro Policy Framework

September 1999	Central bank announces: - continuous inflation target, to start 2001 - elimination of exchange rate band in favor of floating rate (retaining right to intervene in exceptional circumstances only).
March 2000	New government commits itself to a fiscal policy target: structural surplus of 1 percent of GDP to be maintained throughout the government's six-year term.
May 2000	Central bank issues first <i>Monetary Policy Report</i> ; to be published regularly, every four months.
September 2000	Government publishes rationale and methodology for fiscal target. 2001 budget submission formulated to achieve fiscal target.
July 2001	Central bank declares exceptional circumstances, announces first instance of exchange market intervention under floating regime, specifying limits on duration and magnitude of intervention.
August 2001	Expert panel convened for first time to determine reference price of copper to be used in structural balance measure.
August 2002	Expert panel convened for first time to provide inputs to fiscal target's potential output estimate.
October 2002	New debt report clarifies public sector balance sheet, solvency.

<sup>1</sup> Prepared by Steve Phillips and Marco A. Espinosa-Vega.

<sup>2</sup> This note focuses monetary, exchange rate, and fiscal policies. The Chilean authorities have emphasized that these are integrated in a broader policy framework, including as well international financial integration with an open capital account; modern financial regulation and supervision, and prudent management of liquidity in foreign currency.

2. **Inflation targeting in Chile had its beginnings around 1990.** Price stability is one of the primary mandates in the central bank's 1989 charter.<sup>3</sup> From 1989 to 2000, the bank used one year ahead forecasts of end-year inflation to help anchor expectations, treating these forecasts essentially as short-run targets. During those years, the emphasis was on gradual disinflation, and a new, lower short-run inflation target was announced each year. The announced longer-run objective was convergence of inflation to a level similar to that of industrial countries. Indeed, inflation declined gradually, from close to 30 percent in 1990 to less than 3 percent in 1999, though it continued to exhibit some volatility.

3. **Full-fledged inflation targeting emerged more recently.** In September 1999, the BCCh announced its intention to adopt, at the beginning of 2001, what is now known as the *inflation targeting framework (IT)*. The essential elements of IT in Chile include: (i) a pre-specified *continuous* inflation target band (ii) a pre-announced "policy horizon"; and (iii) timely communication of the authorities' inflation forecast, the rationale for their policy decisions, and the reasons for any temporary deviations from the inflation target.

4. **In this framework, the objective of monetary policy is to maintain a continuous target at the mid-point of the 2–4 percent target band,<sup>4</sup> by looking ahead to inflation over the "policy horizon" of 1–2 years** (a widely accepted lag for the effects of monetary policy). The targeted variable is the easily verifiable CPI ("headline") inflation rate. The monetary policy stance is evaluated, and adjusted as necessary, at least once a month, in light of the bank's updated inflation forecast.

5. **The bank's operating target, or policy instrument, is the (nominal) overnight interest rate.** In August 2001, the bank switched to a nominal interest rate target, ending its longstanding practice of targeting the interest rate on the *Unidad de Fomento*, Chile's inflation-indexed unit of account. Since then, the bank has been in the process of "nominalizing" its balance sheet as well, reducing its inflation-indexed liabilities, and extending the maturity range of its unindexed liabilities.

6. **The BCCh regularly forecasts both headline and core inflation; these forecasts are the basis for monetary policy actions.<sup>5</sup>** The bank's inflation forecast relies on econometric models and judgment based on the output gap, the unemployment rate, the

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<sup>3</sup> The central bank has been nominally independent since the passage of the 1980 Constitution. The enactment of the central bank's organic law in 1989 granted full independence to the bank.

<sup>4</sup> Interestingly, by continuously guarding against persistent deviations from either bound, symmetric inflation targets such as Chile's have become an essential tool against deflation.

<sup>5</sup> The core measure excludes fuel and some food items.

outlook for the world economy, commodity prices, the stance of fiscal policy, the exchange rate and firms' mark ups. Monetary aggregates have little weight in the forecasting models, since the bank has found these to have little predictive value for inflation (once other variables are accounted for).<sup>6</sup>

7. **The BCCh's inflation forecast and its view of risks have been clearly articulated** through a number of outlets, including the policy statements of the bank's board, minutes of the regular monthly policy meetings, and a sophisticated monetary policy report issued three times a year. In addition, the bank has made public an overview of its forecasting models and intends to start publishing these on a regular basis.

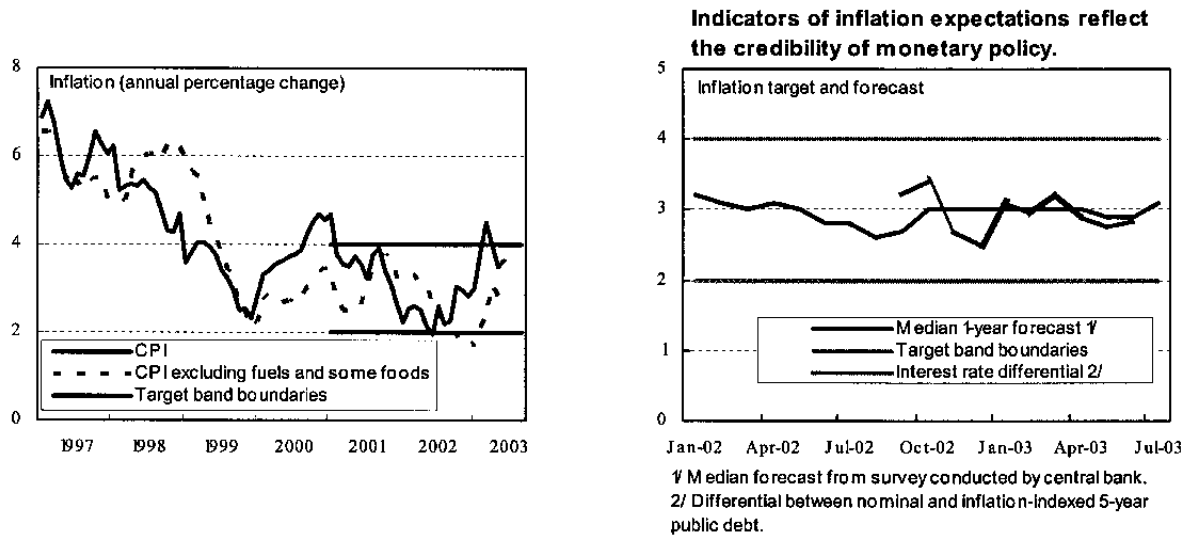
8. **Significantly, Chile's inflation target is not revised in response to unforeseen inflation developments;** indeed, the target has remained unchanged since the adoption of IT.

**The track record under IT has been favorable:**

- **Actual inflation has generally remained inside the target band.** Both headline and core inflation rates, measured on a 12-month basis have generally remained between 2 and 4 percent. Brief stays near the upper and lower boundaries have occurred, in association with temporary sharp movements in key relative prices. The two visits to the top of the band were linked to sharp increases in oil import prices. The visit to the bottom of the band was associated with a brief period of "imported deflation," including from neighboring countries.
- **Indicators of inflation expectations have also been consistent with the inflation target.** In the bank's monthly survey of 12 month-ahead inflation forecasts, the median forecast has been very close to 3 percent. Other expectations indicators, the differentials between interest rates on inflation-indexed and nominal debt at horizons of one to five years, also have stayed close to 3 percent.

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<sup>6</sup> A recent BCCh study shows that in Chile M1A growth has had little predictive power over the inflation rate during the 1986–2002 period, and that the predictive value of M1A is greatly diminished when additional explanatory variables such as external inflation are added to the forecasting model. A recent survey paper from the BCCh also finds that in low-inflation economies where monetary policy enjoys credibility, periods of higher money supply growth have not resulted in higher inflation.



### A. The Floating Exchange Rate Regime

9. **In September 1999, the BCCh announced that it was discontinuing its longstanding exchange rate band, in favor of a floating exchange rate.** More precisely, the bank stated its intention to forsake any intervention in the foreign exchange rate market under normal circumstances. Henceforth, intervention would occur only after the bank had identified exceptional circumstances, in which case the authorities would explain their rationale for intervening and publish data revealing the amount of intervention.

10. **The authorities have clarified their concept of exceptional circumstances.** They consider that exceptional circumstances comprise situations in which a sudden shift in market participants' confidence, *unrelated to long-term fundamentals*, could result in sharp transitory shifts in the value of the peso, a steep reduction of the dollar value of peso-denominated Chilean assets leading to a loss of confidence and expectations of further depreciation of the exchange rate. Such developments could potentially have significant negative real effects or result in a loss of control over monetary policy and interest rates.<sup>7</sup>

11. **Since the free float was announced, the central bank has identified and declared two periods of exceptional circumstances;** one beginning in July 2001 and the other in the October 2002. In both instances, the peso had recently experienced significant depreciation pressures in the face of regional uncertainties (in 2001, related mainly to Argentina, and in 2002 to Brazil). In an effort to pre-empt excessive volatility without targeting a specific exchange rate, both interventions consisted of announcing pre-determined caps on the sale of official reserves in the spot market, and on net issuance of (medium-term) dollar-indexed bonds, over an announced period.

<sup>7</sup> See also the explanation of intervention published in the bank's January 2003, Monetary Policy Report: <http://www.bcentral.cl/esp/estpub/publicaciones/politicas/polit02.htm>

- **During the first such intervention period, the authorities decided to step up issuance of paper indexed to the exchange rate for a period of up to six months, beginning July 2001.** The sales cap on these instruments was set at US\$3.5 billion while the cap on the spot market intervention was set at US\$2 billion. In the event, during the second half of 2001, the bank sold reserves of only about US\$0.8 billion in the spot market, while carried out net issuance of dollar-indexed bonds worth US\$2.3 billion.
- **In the second intervention episode, a similar “package” was again announced at the outset. This included identical caps of US\$2 billion for the net issuance of dollar-indexed bonds and spot intervention for a maximum period of four months—** from early October 2002 to early February 2003. In the event, the bank sold no reserves in the spot market but did raise the stock of its dollar-indexed debt by about US\$1½ billion.

12. **Thus intervention to date has consisted mainly of issuance of (medium-term) dollar-indexed debt.** The authorities have explained their preference to intervene in the exchange rate market via dollar debt issuance aims fundamentally at preserving the bank’s liquidity position in foreign currency. Accordingly, the bank has avoided any short-term issues of such debt; maturities have ranged from two to five years.

13. **The exchange rate interventions, and the authorities’ exchange rate management in general, have been transparent.** On the days when the bank intervened in the spot market, it announced that this had occurred. Every two weeks,<sup>8</sup> the BCCh has released not only its NIR position, but also a table decomposing its recent changes into several sources, of which one represents spot market intervention. As for intervention via issuance of dollar-indexed debt, the amount of such debt is published once a month as part of the IMF-standard template on reserves and foreign currency liquidity; the total is also published on a daily basis on the bank’s web site.<sup>9</sup>

14. **During both intervention episodes, the BCCh made clear that it had no target for the exchange rate.** The pattern of intervention bears out this claim. The issuance of dollar-indexed debt did not respond to day-to-day exchange rate fluctuations; rather it followed a pre-announced schedule over the intervention period and within each month followed a pre-announced schedule. As for spot market intervention, the days on which this occurred do not correspond to times of the greatest weakness of the peso.<sup>10</sup>

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<sup>8</sup> Since mid-2003, reserves data is now published weekly.

<sup>9</sup> See <http://www.bcentral.cl/esp/estpub/publicaciones/financieraycambiaria/finacam01.htm>

<sup>10</sup> Notably, within the pre-announced intervention periods, the bank refrained from intervening: as the peso slid in the days after the September 1, 2001; in late October 2001,



## **B. Fiscal Policy: Targeting the Government's Structural Balance<sup>11</sup>**

15. **Soon after taking office in March 2000, Chile's new government committed itself to an ongoing target for the *structural* balance of the central government.** The government announced that it would measure its structural balance essentially by making two cyclical adjustments to its actual balance: one for the effect of the output gap on government receipts, and the other for the effect of variations in copper export prices.<sup>12</sup>

16. **In announcing that it would seek to hold this structural balance at a *constant level* over its six-year term, the government defined a medium-term fiscal policy path, or rule:**

- The government thus gave up future discretion over the underlying fiscal stance. Henceforth, the level of government expenditure would be tied to the level of *structural* (i.e., cyclically adjusted) revenue. At the margin, any policy proposal that would change government expenditure or revenue would have to be associated with a plan for other, offsetting policy measures.
- By targeting the structural rather than actual balance, the government was able to commit itself to a precise target without having to suppress automatic stabilizers.
- In principle, holding the structural balance steady means a policy of full and immediate policy adjustment to permanent shocks, with zero adjustment to temporary shocks.

17. **Although Chile's fiscal policy is sometimes said to be countercyclical, this term is subject to misunderstanding; it may be better to say that the rule avoids procyclical policies and allows operation of automatic stabilizers.** More precisely:

- The rule does not permit government expenditure to move at all countercyclically; e.g., there is no room to temporarily raise government expenditure during an economic downturn. Nor is there room to cut tax rates.

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when the peso reached its weakest point for that year; and in early February 2003, as the peso approached a new record low.

<sup>11</sup> More detailed discussions of the structural balance target can be found in the 2001. Chilean Ministry of Finance paper documenting its rationale and methodology (available in English at [http://www.dipres.cl/english/docs/structural\\_balance.html](http://www.dipres.cl/english/docs/structural_balance.html)), and IMF Chile: Selected Issues 2001, Chapter II. Refinements made since those papers were prepared are discussed in this note.

<sup>12</sup> The government is sole owner of a copper company, CODELCO.

- At the same time, the policy also does not permit procyclical policy reactions (i.e., expenditure would not be cutback with a view to compensating for lower tax collection in a recession).

18. The essence of the rule is thus the non-response of government expenditure (or tax rates) to temporary fluctuations in output and copper prices. What instead moves in synchronization with these cycles is the actual government *balance*. This fluctuation may be called countercyclical, but it is noteworthy that the authorities have not emphasized the possible Keynesian-type effects of this policy in dampening recessions or tempering overheating.

19. **Rather than a means to stabilize output, the authorities have emphasized several other objectives of their structural balance target.** These include: avoiding inefficiencies of erratic shifts in government expenditure, maintaining the solvency of the state, signaling medium policy intentions; and enhancing transparency and accountability of fiscal policy. They have also emphasized the *consistency of this fiscal policy with the monetary and exchange rate policies of the central bank*. In particular, fiscal discipline allows monetary policy to operate more effectively, and in the absence of an exchange rate target, monetary policy recently has been able to play an active countercyclical role (in the context of the inflation target).

20. **The policy of aiming at a specific, “point” in every year is demanding—in particular, compared to practices elsewhere calling for balance over the business cycle or the medium term.** Relatedly, the structural balance rule is also technically demanding, requiring that fluctuations in output (and copper prices) be identified, as they occur in real time, as either temporary or permanent. Implementation of the rule has to be based on necessarily uncertain estimates of variables. The approach is therefore heavy on technique, and centered on concepts that are abstract and unobservable (e.g., potential output and the underlying price of copper). In such a context, transparency and communication are likely to be especially important, and indeed the authorities stepped up their efforts on these fronts since the rule was adopted.

### **Specific Aspects of the Chilean Fiscal Policy Framework**

21. Before examining implications of these issues, and the Chilean approaches to dealing with them, it is useful to review some of the essential attributes of the Chilean fiscal policy framework:

- **No legal basis.** Among policy rules, Chile’s is relatively informal. The target is a self-imposed commitment of the current government, without a legal basis of its own or any type of formal mechanism to enforce compliance. Instead, the legal basis for the fiscal stance in each year is the annual budget law, which does limit government expenditure; it is the government’s policy to submit to congress each year a budget designed to be consistent with the structural balance target. Because the budget process rules in Chile largely favor the executive over the legislature, the latter is

unlikely to be able to alter decisions made by the former in compliance with the structural balance rule.

- **A point target applies to each budget year.** There is no target band to allow year-to-year discretion (nor to suggest what is an acceptable or normal degree of deviation from the target). If the fiscal outturn deviates from the target, the policy target for the following year is not affected; i.e., there is no commitment to offset past deviations.
- **The chosen target level is an annual surplus of 1 percent of GDP for the central government accounts.** The government has explained the need for a surplus in terms of several considerations: offsetting the quasi-fiscal losses of the central bank; as a precaution against several potentially important contingent liabilities; and to at least partly offset the effect on net worth of selling the state's copper resources.
- **Cyclical adjustment is relatively small, for a given output gap.** No allowance for cyclical effects is made on the expenditure side. The adjustment on the revenue side is limited by the approximately 20 percent share of government revenue in GDP (thus as a rule of thumb, each 1 percent deviation of actual from potential output implies an estimated cyclical revenue effect of 0.2 percent of GDP).<sup>13</sup>
- **The total cyclical adjustment includes also a component related to copper price fluctuations.** In 2001 and 2002, years of relatively low copper prices, this adjustment was about 1 percent of GDP.<sup>14</sup>
- **The target applies to the entire government balance—including interest payments and capital expenditure.** Notably, a hypothetical increase in market interest rates faced by the government would require policy measures to raise the primary balance enough to offset the higher interest bill.
- **The structural balance is not derived directly from the official budget and statistical definition of the government balance.** Before cyclical adjustments are applied, the traditional government balance is adjusted in several ways to better capture changes in the government's net worth. However, the authorities are in the process of revamping the official statistics, following the new GFS 2001 standard, with a view to unification of their fiscal presentations.

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<sup>13</sup> In OECD countries, for which estimates of structural budget balances are more familiar than in developing countries, estimates of cyclical effects are usually considerably higher, both because of the larger share of taxes in GDP and because adjustments are also made on the expenditure side.

<sup>14</sup> IMF Selected Issues 2002, Chapter III, examines the long-run properties of copper prices, with a particular application to the Chilean fiscal policy context.

22. **The Chilean approach probably has its closest international parallel in Switzerland's fiscal framework**, in that a specific point target level is established for each year, with a cyclical adjustment made on the revenue side only. As in Chile, the Swiss rule constrains all spending by the central government, not just its current expenditures. However, the Swiss approach differs in several ways, including in being constitutionally based and therefore more permanent in nature, in defining escape clauses from the rule, and in requiring that a shortfall from the target in one year be offset in subsequent years.<sup>15</sup>

### **Some Implementation Issues**

23. **In implementing the target, there is the practical challenge of distinguishing temporary from permanent shocks as they occur in real time.** Since cyclical effects cannot be observed, even ex post, they must be estimated. Contemporaneous estimates of output gaps are known to be especially subject to revision.<sup>16</sup>

24. **Beginning with the 2002 budget, the Chilean authorities refined their fiscal policy framework by delegating to an expert panel the determination of copper price gap; starting with the 2003 budget, expert input was also used to estimate the output gap.**

- A few months before each annual budget is prepared, a committee is convened to directly provide the copper "reference price." Minutes of this meeting are published, including each member's individual forecast. Each member is required to provide a forecast of the average copper price over the coming 10 years (rather than a notional long-run price or equilibrium price). The reference price is then determined as the average of these forecasts, after excluding highest and lowest values.
- To estimate potential output, an expert committee is also convened, though it does not directly provide an estimate of potential output. Rather, each member provides medium-term forecasts of the critical input variables (productivity, capital stock, etc.) for the authorities' algorithm for estimating potential output. This algorithm is based on a published methodology, and combines an estimated production function with the use of the Hodrick-Prescott filter to smooth the data. Within this framework, the

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<sup>15</sup> Strictly speaking, the Swiss approach also differs in that it involves an expenditure, rather than a deficit, target. However, the expenditure target is tied to cyclically adjusted revenue. See Danninger (2001) for a full analysis of the Swiss approach.

<sup>16</sup> Gallego and Johnson (2003) are the first to show confidence intervals for output gap estimates constructed with the HP filter. Looking at the G7 countries, they find that confidence intervals are fairly wide in general and tend to flare out at the end of the sample. BCCh Working Paper No 202 (at <http://www.bcentral.cl/esp/estpub/estudios/dtbc/202.htm> )

committee also engages the authorities in methodological discussions. Minutes of this committee's meetings are made public also.

25. **This use of expert committees in measuring the structural balance is a significant step in assuring the transparency and credibility of the fiscal policy rule.** While this procedure cannot eliminate uncertainty over the accuracy of the structural balance measure, perfect accuracy is not essential to the objectives of the policy.

26. **In the last few years, a variety of shocks have made achieving the structural balance target in a given year more complicated than simply setting expenditure to increase in line with growth of potential output:**

- *Structural revenue is not constant as a share of GDP.* On the positive side, the government occasionally benefits from one-time revenue windfalls; in some cases the government has dealt with these by excluding such revenue from the measured structural balance. Another positive factor for the government has been the real exchange rate depreciation of the last few years, which raised (cyclically-adjusted) copper receipts as a share of GDP.
- *Inflation surprises, in either direction.* For example, in 2002, lower-than-expected inflation led to a revenue shortfall.
- *Revisions to previous estimates of (the level of) potential output.* In preparing the 2003 budget, the government avoided this problem by adhering to its previous estimate of 2002 potential output as a base, applying to that figure the growth rate of potential output determined by the expert panel.

27. Relatedly, in two of the first three years of implementation of the structural balance rule the government announced around mid-year that it would hold expenditure below budgeted levels in order to achieve the structural balance target.

### **Market reaction and Public Ownership**

28. **Market confidence in the soundness Chilean fiscal policy—as indicated by international bond spreads and credit ratings—has continued to be high.** This confidence likely has been supported in part by the self-imposed constraint of the new structural balance rule, though also by a more general faith in Chilean institutions and political consensus in favor of fiscal policy discipline.

29. **Outside of Chile, awareness—and understanding of—the structural balance target has gradually increased.** As many other emerging economies had to run procyclical fiscal policies during the recent downturn in the world economy, many commentators noted—generally with favor—that Chile was allowing automatic stabilizers to operate, in the controlled manner dictated by the structural balance rule. After the 2003 budget was submitted, a few analysts did issue critical reports, arguing that the levels of Chile's fiscal balance and fiscal data transparency did not justify the country's strong credit rating and low

bond spreads. Although the criticism of the fiscal stance was soon rebutted by other analysts, the authorities stepped up their efforts to explain the structural balance rule, issued a new report on the debt and liquid public assets of the entire public sector, and began an enhanced schedule of fiscal data releases.

30. **The extent of ownership of the structural balance target is as yet difficult to judge.** The government's commitment to its own structural balance target appears very strong, indeed as one of the flagship policies of the administration of President Lagos. Given the budget process rules in Chile, this ingredient alone practically assures the implementation of the rule over the final three years of the government's term. Outside the current administration, there seems to be a broad political consensus in favor of the principle of maintaining fiscal discipline; however, it is as yet unclear whether the particular mechanisms of the structural balance rule would be endorsed, in whole or in part, by future administrations. In terms of current political debate, it seems that the structural balance rule has shifted the focus away from the underlying fiscal stance (widely perceived to have deteriorated excessively in the late 1990s before recovering in 2000–01) and toward questions of the appropriate size of government.

### III. THE ROLE OF INSTITUTIONS IN CHILE: A SELECTIVE REVIEW<sup>1</sup>

#### A. Introduction and Summary

1. **This chapter considers the role played by institutional factors in Chile's economic policies and performance.** Chile's successful economic performance is well appreciated and documented. Its economic policy reforms are generally accepted as key to that performance. Less attention has been given to the role played by institutions in this success, either in terms of their direct effects on economic performance or in the establishment of good economic policies.

2. **A particular objective of this chapter is to gain a deeper view of the Chilean experience by considering the role institutional factors have played in *sustaining good policies over time*.** A key motivating idea is that sustaining policy reforms often requires countering negative incentives that had been responsible for existing unsound policies.

3. **The approach taken here differs from most recent applied studies on institutions.**<sup>2</sup> Much of this literature looks at the association of institutions with outcomes for income and growth, not necessarily considering the role of policies. In contrast, the focus of this paper is policy based, taking into account the public sector decision process and the political economy underlying policy actions. Also, much of the recent empirical literature statistically analyzes differences across countries in perceptions and assessments of institutional quality, usually not analyzing differences over time. The so-called "narrative approach" used here does not permit statistical analysis, but it does give a closer view of one country, and a historical perspective of how its institutions emerged and how they helped change—or maintain—policies over time.

4. **The Chilean case is particularly instructive.** Its sustained strong economic performance is still relatively recent—starting in the mid-1980s—and has been tested by episodes of financial crisis that hit the East Asian tigers and other emerging markets in 1997–98, as well as some of Chile's neighbors in 2001–02.<sup>3</sup>

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<sup>1</sup> Prepared by Marco A. Espinosa-Vega and Steve Phillips.

<sup>2</sup> WEO (2003) offers a recent survey of this burgeoning literature.

<sup>3</sup> Over the period 1940-1970, Chile was in many ways typical of much of Latin America, in following an import substitution strategy, giving a heavy role to the state in the economy more generally, rationing foreign exchange, and experiencing high and unstable inflation. Moreover, after major reforms of this old regime began in the 1970s, Chile exemplified a problem that has been familiar elsewhere, with its severe financial crisis of the early 1980s.

5. **This review of Chile’s institutions is selective, looking at those that have been significant in four policy areas in which Chile is widely agreed to be particularly strong:**

- fiscal policy discipline (section D);
- policies to maintain price stability (section E);
- banking policies to promote financial stability (section F); and
- open trade policy regime (section G).

Of course, not every aspect of Chile’s economic policy record can be traced clearly to some institutional arrangement. Other factors—such as consensus on economic issues, the technical expertise or goodwill of policymakers, or cultural factors more generally—also play a role, but these are beyond the scope of this chapter.

#### **Road map and summary of the chapter**

6. **Section B gives a brief comparative economic picture of Chile**, presenting several indicators of economic performance and policies over the years in Chile and a few other Latin American and East Asia countries. Over the last 20 years, Chile comes off especially well—even against relatively strong performers of East Asia—in terms of *stability* of both growth and inflation rates.

7. **Section C looks at the political rules of the game:** aspects of Chile’s constitution and political framework relevant for economic policy outcomes. Chile’s system has a number of characteristics that cross-country studies have found to be associated with sound policies, including a “presidentialist” form of government that avoids frequent government turnover and a majoritarian determination of congressional representation. Moreover, electoral rules create strong incentives for individual political parties to join coalitions, which some observers credit for moderating special interests. Interestingly, the Chilean system gives great weight to the executive in setting the overall the fiscal stance, but in other economic policy areas requires consensus building.

8. **Sections D-G examine the role of institutions in each of the four broad areas highlighted above—fiscal discipline, price stability, banking stability, and trade policy.** For each area, note is first made of the problems any country may face in choosing, implementing, and sustaining good policies, and then the question of how these have been addressed (or not) by institutional arrangements in Chile is examined. Each section closes by noting some pending issues and possible areas for future institutional development. Specifically:

- **Section D considers the role of institutions in Chile’s record of fiscal discipline**, including how they addressed the classic threats of myopic policymaking, time inconsistency problems, and the “common pool” problem (e.g., the incentive of subnational governments to spend without consideration of aggregate consequences).



Constitutional arrangements have addressed such incentive problems at their roots, including by putting a tight budget constraint on subnational governments and by giving the ministry of finance the ability to set the fiscal stance. Arrangements for dealing with shocks are also considered, including the copper stabilization fund and the new practice of targeting the government's structural balance. Though Chile's record of fiscal discipline over the years was achieved without reliance on fiscal rules, and also without a high degree of policy transparency, over the last several years the government has given high priority to both these fronts. Going forward, significant questions are whether the new structural balance target will emerge as an informal institution, and whether steps will be taken to institutionalize it more formally.

- **Section E looks at Chile's achievement of price stability, focusing on the role of institutional arrangements such as central bank independence.** We also discuss how, over time, Chile's central bank has developed credibility and adopted an ever more transparent policymaking approach, coming into its own in the last few years in a full-fledged inflation targeting framework, in the context of a floating exchange rate regime. We emphasize that fiscal discipline has created the opportunity for achieving price stability, and also suggest that central bank independence may, in turn, have reinforced fiscal discipline.
- **Section F considers banking policies, focusing especially on how they promote financial stability—and thus macro stability—by countering moral hazard problems.** By building up a credible policy against indiscriminate bailouts, the Chilean approach to banking supervision, regulation, and safety nets developed in the aftermath of the 1982–1984 crisis has provided appropriate incentives to banking sector participants and thus ameliorated the moral hazard problem.
- **Section G considers how Chile has been able to maintain an open trade policy regime over many years.** Trade policy is of course the classic arena for political lobbying and rent-seeking, with ever-present pressures to reverse trade liberalization. We look at how institutional arrangements such as a quasi-constitutional ban on non-tariff barriers and a uniform import tariff rate have countered the “lobbying problem”.

**In a different vein, section H briefly notes how Chile looks based on the more familiar “institutions indicators” approach,** presenting data from WEO (2003) and highlighting Chile's position relative to a number of other countries. Among the emerging markets, Chile's shows favorable values in indices of institutional quality.

9. **Finally, Section I offers some closing observations,** including in identifying some additional areas in which institutional arrangements may have played a significant role in Chile in the past, and some which may be particularly important looking forward.

## B. An Economic Picture of Chile

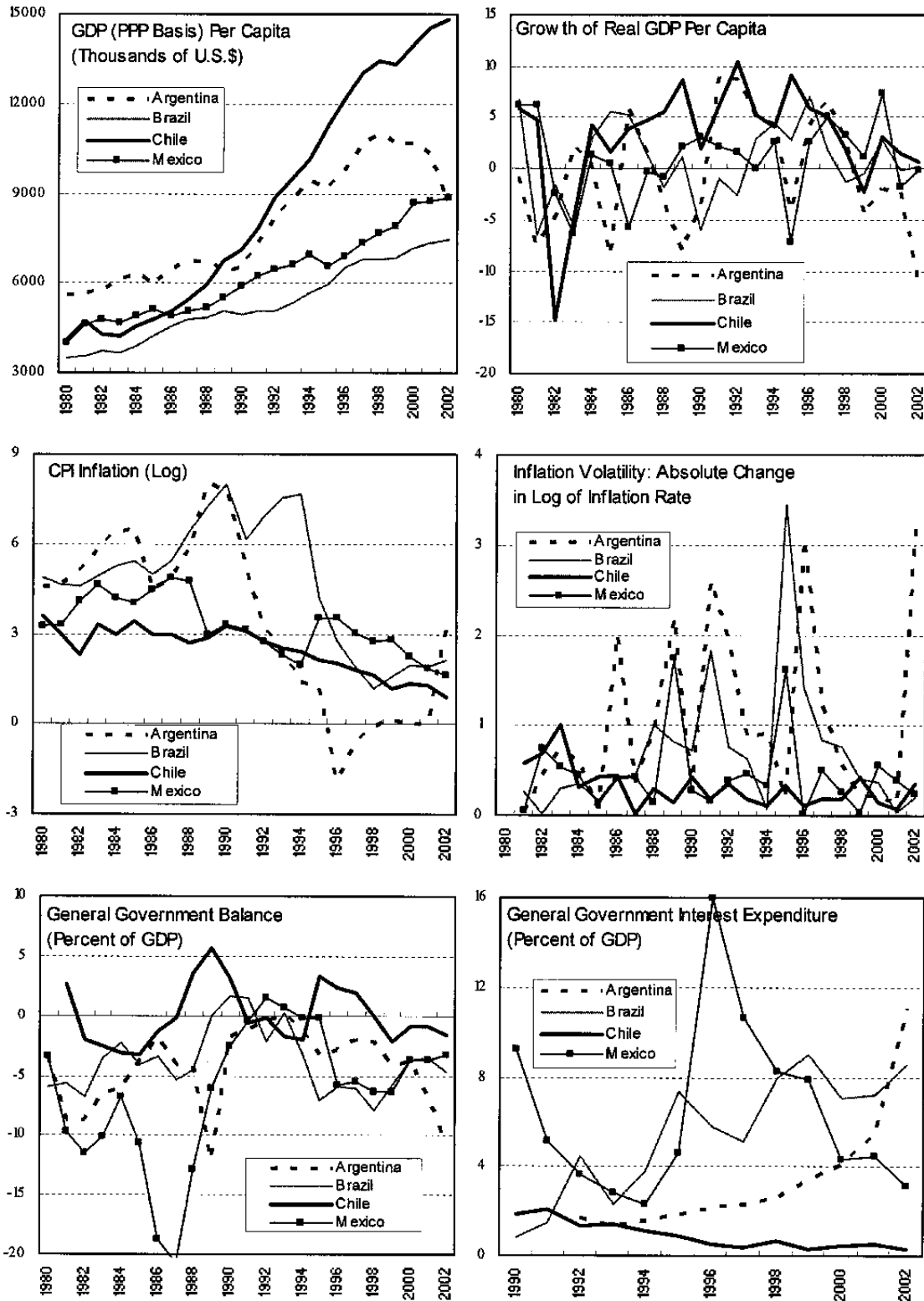
10. As background, we present an economic picture of Chile, highlighting a few key indicators of economic policies and performance over the years, in comparison to the experience of a number of other emerging market countries.

Figure 1a compares Chile's record, for 1980–2002, to that of Argentina, Brazil, and Mexico:

- *Trend growth was faster in Chile (top left panel).* Growth over this period was much faster in Chile on average. In 1980, per capita income (on a PPP-adjusted basis) in Chile was significantly below that of Argentina, essentially the same as Mexico's and not too much above Brazil's. Two decades later, Chilean income was far ahead of the others' (twice that of Brazil, and 1.7 times that of Argentina and Mexico).
- *Growth was also smoother in Chile (top right panel).* Only Chile avoided a major episode of output contraction in the last 20 years. Chile's last crisis episode, in 1982, was however the worst of the group (only Argentina's decline in 2002 comes close). As we will see, this 1982 crisis proved a watershed for Chile, playing a critical role in economic policies and institutions.
- *Inflation was lower—and less volatile—in Chile (middle panels).* This is not to say that Chile has enjoyed a very long period of price stability: serious price stability efforts only got started after 1990, with disinflation proceeding slowly but steadily from then, and reaching the low single digits just a few years ago.
- *Fiscal discipline was greater in Chile.* Looking over the last two decades, only in Chile were years of deficits roughly offset by years of surplus (lower left panel); the other countries display a bias toward deficits. The reward has been a vastly lower debt-servicing burden for Chile (lower right panel), as fiscal discipline resulted not only in lower government debt but also in lower real interest rates for Chile.

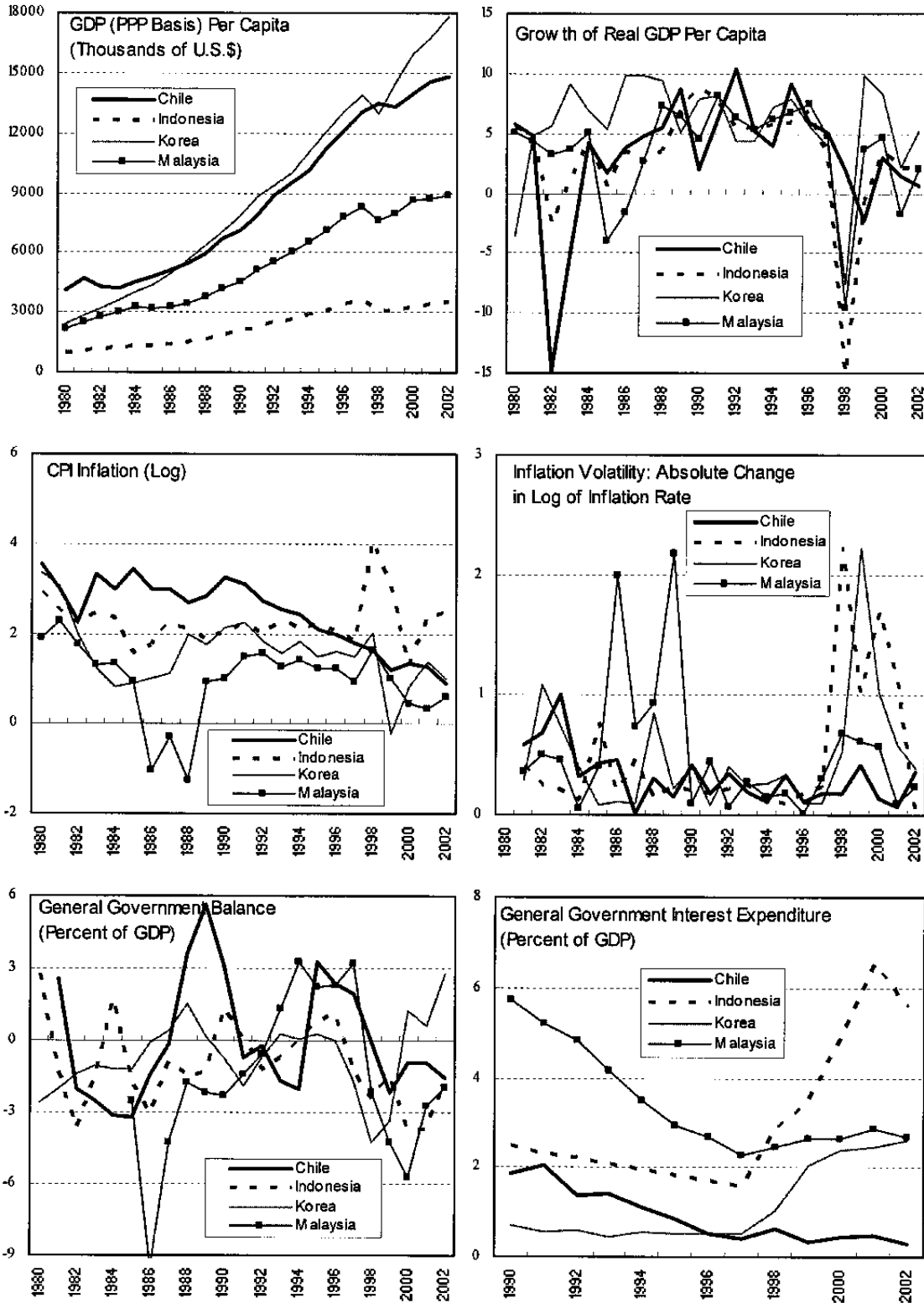
Figure 1b covers the same ground for Chile, but this time with a less-familiar comparison to several East Asian countries: Indonesia, Korea, and Malaysia. Against this group, Chile appears less dominant, as the East Asian countries also showed broad fiscal discipline over the period, and (in most years) had somewhat lower inflation than Chile. As regards growth, Chile did far outpace Indonesia and Malaysia, but could not keep up with Korea (especially recently). Nevertheless, *Chile still stands out in terms of stability*: Chile missed the sharp contractions of output, and bursts of inflation, seen in East Asia.

Figure 1a. Chile and Other Latin American Economies: Selected Indicators, 1980 - 2002



Source: World Economic Outlook.

Figure 1b. Chile and East Asian Economies: Selected Indicators, 1980 - 2002



Sources: World Economic Outlook; IMF staff estimates.

### **C. Political Rules of the Game: The Constitution and Political Framework**

11. **This section presents select aspects of the political framework, especially Chile's constitution, that have significance for economic policies and institutions.** This is essential background, for in a basic sense the political framework has to underlie all Chilean institutions: either the political framework gave rise to these or at the minimum allowed their development.

#### **Aspects and Origins of Chile's Constitution**

12. **Chile's current constitution is still often referred to as the "1980 constitution," and indeed the military government that took power in 1973 had a key role in its development.** Yet the current constitution can also be seen as a modified version of the 1925 constitution.

13. **Some of the most significant aspects of the constitution, relating to the budget process, were introduced in 1970, before the period of military rule, and subsequently retained in the 1980 constitution.** While the 1925 Constitution had given the executive ample powers in many areas, governments had difficulty negotiating and obtaining approval of budgets in a timely and effective way; the reforms introduced in 1970 have "greatly limited the scope for vested interests to lobby on fiscal affairs" (Foxley and Sapelli, 1999). As will be explained in Section D, power in the process of determining the budget was tilted strongly toward the executive.

14. **Although the 1980 constitution took a step toward insulating monetary policy from political pressures, the charter of an independent central bank was established constitutionally only in 1989.** The 1980 constitution prohibited the central bank from purchasing government securities, but left the bank still vulnerable to government pressure and to private sector demands for direct credit. Independence came with the 1989 Organic Law of the Central Bank (as discussed in Section E). This special law has a constitutional character, and any amendments to it would require a 3/5 majority in congress.

#### **The Electoral System**

15. **The electoral system established by the constitution has a number of aspects likely to influence economic policy outcomes, including the following:**

- “Presidentialist,” in that the country’s president is elected in a direct vote, at fixed intervals of 6 years, and does not require congressional support to remain in office;
- Majoritarian, rather than proportional, determination of congressional representation;
- Electoral rules for congressional seats create strong incentives for individual political parties to join coalitions.<sup>4</sup> Most likely as a result of such incentives, the result from since the return to democracy has been two large voting blocs, which so far have proven to be stable. Though at least six political parties of significant size continue to exist, in many ways Chilean politics now approximates a two-party system.

16. **A cross-country empirical literature has found such features to be associated with greater fiscal policy discipline.**<sup>5</sup> As emphasized by Foxley and Sapelli (1999), the incentives in Chile to form coalitions give reasons for political parties to moderate their particular demands, in favor of the common interest. By avoiding political polarization and governmental instability, incentives for policymakers to behave myopically have been reduced. While the country’s president is limited to serving one term, incentives to pursue only short-term gains are put in check the term’s being relatively long, as well as by rules on contracting debt with maturity extending beyond the president’s term.

17. **In the area of establishing the annual budget law, the Chilean system assures a prompt resolution, achieving this by giving a critical advantage to the executive.** In contrast, in other economic policy areas requiring passage of a law, the system is not designed for speed, but rather building consensus. In that sense, the system tends to favor policy stability, something which may give confidence to private agents to make long-term investments.

#### **D. Fiscal Discipline: The Role of Institutions**

18. **In this section we first note the problems to sustaining fiscal discipline in any country, then look at how these have been addressed by institutional arrangements in Chile.** The focus is on the “big picture” institutions, those factors of direct relevance to

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<sup>4</sup> Many systems of voting rules grant an extra degree of representation to an election’s first-place finisher, and this is true in Chile also. What distinguishes the Chilean system is that there is also an extra reward, in terms of representation, to finishing in second-place (as opposed to coming in third). This feature of the voting rules gives political parties incentives to form coalitions, and thus to sacrifice some of their special interests in the process.

<sup>5</sup> An empirical literature has found that large government debt and deficits are more common in countries with proportional rather than majoritarian representation; coalition governments and frequent turnover; and lenient rather than strict budget processes. Many such studies have focused on industrial countries (for a review, see Annett (2002)), but Alesina et al (1999) and Stein et al (1999) also found similar results for Latin American countries.

maintaining fiscal discipline over time (essentially, safeguarding the balance sheet of the public sector).<sup>6</sup> We close by surveying some pending fiscal policy issues in Chile.

### **Inherent Challenges to Fiscal Discipline**

19. **In the fiscal area, we focus on institutions relevant to countering the following potential problems and threats to fiscal discipline:**

- The *common pool problem*. Subnational governments with inadequate budget constraints are a prominent example<sup>7</sup>; more generally, any situation in which a lack of centralized budget decision-making allows particular groups to lobby for public sector actions to their own benefit, without internalizing the associated costs.
- Various *intertemporal problems*. These include time inconsistency issues and resulting “deficit bias.” Another concern is so-called myopia of policymakers without adequate incentives to be concerned with the future implications of policies (often attributed to situations of very frequent political turnover, or to the fact that future generations lack political representation).

Left unchecked, these problems are likely to result in a weak public sector balance sheet: a high level of public debt (up to the limits of market tolerance), but also a risky structure of liabilities, emphasizing forms of debt that are seemingly cheap from a short-term perspective, but carrying high rollover, interest rate and exchange rate risk.

### **Chilean Approaches to Maintaining Fiscal Discipline: Budget Constraints**

20. **The problem of indiscipline by subnational governments has been kept to a minimum in Chile by the simple but tough approach of prohibiting subnational governments from borrowing.** More precisely, subnational governments are prohibited from issuing or contracting financial debt unless a specific authorizing law is passed—something which so far has never happened.<sup>8</sup> Potential budget constraint problems, then, are limited to arrears which may be run with suppliers, something kept in check by the threat of legal action as well as suppliers’ ability to suspend deliveries. In recent years, the central

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<sup>6</sup> That is, we do not survey fiscal policy issues in Chile, such as questions of efficiency of public expenditure and taxation). Nor do we cover all the arrangements that may—or may not—contribute to fiscal discipline (e.g., a good tax administration, in the absence of the right budget incentives, might not be associated with fiscal discipline).

<sup>7</sup> Jones, Sanguinetti, and Tommasi (2000) analyze problems of the Argentine case.

<sup>8</sup> Municipalities do not have to run continuously balanced budgets, as they have the ability to accumulate assets and subsequently draw these down as needed. Taken as a group, however, municipal governments’ overall balance in practice has stayed very close to balance.

government has sought to tie its own hands, to credibly commit not to favor arrears with transfers to local governments, using annual budget laws.

21. **Credibility of the budget constraint on subnational governments is supported by the relatively small size of any one such government.** In Chile, subnational governments refer to municipalities, rather than to a small number of relatively large provinces or regions.<sup>9</sup> Municipalities therefore tend not to be “too big to fail.”

**For the central government, arrangements that harden its budget constraint include:**

- government borrowing being subject to congressional approval;
- public sector borrowing from the central bank being prohibited, and independence of the central bank insulates it from potential government pressure to finance quasi-fiscal expenditure;
- the current Chilean government’s innovative target for its structural balance—discussed below—also encourages attention to an intertemporal budget constraint

#### **Budget Process**

22. **The budget process in Chile contains several features likely to help counter the common pool problem, and that have been found in cross-country empirical studies to be associated with greater fiscal discipline.** The budget process is dominated by the executive branch rather than the legislature, and by the finance ministry rather than spending ministries. Budget reforms introduced in 1970 and retained in the 1980 constitution greatly limit the scope for particular interests to lobby on fiscal affairs. Thus only the executive can initiate fiscal measures, and there is a 60 day limit on congress’ budget approval process. If after 60 days congress has not been able to agree among itself, and with the government, on a modification of the governments’ proposed budget law, then the *government’s initial budget proposal automatically becomes law.*

#### **Responding Appropriately to Shocks**

23. ***Coping with volatile commodity export earnings.*** Chile is a significant exporter of copper, and since the government is owner of large copper producers, government receipts are sensitive to variations in world prices. While governments of some countries have at times stumbled over managing such volatility—often related to oil export earnings—Chile has a number of strategies that seem to have helped. First, the government has not insisted on

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<sup>9</sup> As part of a decentralization effort, regional governments do exist for each of Chile’s 13 regions. However, these are not separate governments in the usual senses: they are not constituted via regional elections, their revenue and financing powers are quite limited, and their expenditures are part of a unified central government budget.



owning all production of the commodity in question, and so has reduced the income volatility it faces. A second strategy involves the Copper Stabilization Fund (CSF), a mechanism established in law. This requires that the government make deposits corresponding to the “excess” income received during periods of higher copper prices, and to make withdrawals from the CSF during time of lower prices. A third strategy is the recent introduction of a target for the government’s structural balance, which makes an adjustment for copper price variations.

24. **Some authors consider that the Copper Stabilization Fund has been a useful device, in particular by helping the government increases its saving during the copper boom years around the middle of the 1990s.** Empirically, Davis et al (2001) found that government expenditure has been less tightly correlated with commodity revenue in Chile than elsewhere. However, the mechanism for this apparent success is not clear, since the design of the CSF does not strictly constrain government spending: in principle, the government could simply borrow to replace the funds deposited into the CSF. Possibly, the CSF was instead useful through its special accounting rules, which allowed the government to avoid showing a surplus and therefore reduced spending pressures.

#### **The Structural Balance Target: An Institution in Development?**

25. **The government that took office in early 2000 committed itself to an ongoing target for its structural balance, a significant innovation with the potential to counter some of the most difficult problems in maintaining fiscal discipline.** Under this informal rule, the government prepares each year’s budget to be consistent with holding steady its structural balance (Chapter II). This new practice:

- Allows tight accountability, yet without need to suppress automatic stabilizers;
- Makes very transparent the government’s budget constraint: any proposal for new expenditure or tax cuts requires an immediate offsetting policy action
- Provides a longer-term goal for fiscal policy, breaking away from year-at-a-time fiscal decision making. This ties the government’s hands against problems such as election cycle spending.
- Provides a systematic approach to fiscal policy’s response to shocks, eliminating room for slippery decisions of whether to adjust now or “later”
- Ensures attention to the government’s intertemporal budget constraint (all but ruling out problems of debt dynamics and sustainability, see Chapter XI)

The practice of targeting a steady structural balance should thus go a long way in avoiding time inconsistency problems and deficit bias of fiscal policy.

## Pending Issues in Fiscal Policy Institutions

26. **We have seen that the institutional framework in Chile has important features that tend to promote fiscal discipline, and certainly the record of sustained discipline in Chile is impressive.** Still, it is possible to identify some pending institutional issues:

- *Institutionalizing fiscal transparency.* Chile was able to sustain fiscal discipline over the years without a particularly high level of fiscal transparency; indeed, many of Chile's current strengths in this area are steps taken just in the last few years.<sup>10</sup> Still, transparency may help sustain fiscal discipline in the future, and it could be useful to formally institutionalize many of the recent improvements (many being steps first taken on ad hoc basis). This process seems to be underway.
- *Institutionalization of the structural balance target?* Although this new framework represents a significant advance, it has no legal or permanent status, and some of its potential advantages may not be realized if there is doubt that the policy will be sustained. While the commitment of the current government may well be credible, it cannot extend beyond the 2006 budget year. It may be worth considering more formally institutionalizing at least some aspects of the structural balance target.
- *Too much reliance on a benevolent executive?* Following the literature, we have emphasized the advantages of the dominance of the executive in Chile's budget process. In principle, this reliance could someday backfire, but the remedy is unclear. Assurances seem to come not from institutional arrangements but rather from the roles of political consensus and political accountability, joined in recent years by the increased transparency of fiscal policy.

### E. The Quest for Price Stability: The Role of Institutional Arrangements

27. **Chile has achieved price stability: low *and* stable inflation.** Here we consider the role institutional arrangements—e.g., central bank independence—have played in this success. A recurring theme is that fiscal discipline plays an important role.

28. **Monetary policy frameworks or rules, or exchange rate regimes, in some cases can be seen not only as policies but also as institutional arrangements that may—or may not—promote price stability.** We explain that Chile's inflation targeting framework is contributing substantively to price stability, and moreover that this framework is developing a sort of informal institutional status. On the other hand, we argue that the different exchange rate regime choices of the past worked, in several instances, as a distraction from the price stability goal.

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<sup>10</sup> See the fiscal transparency ROSC (2003).

29. **In any country, a number of potential obstacles and incentive problems need to be countered in order to achieve price stability.** These include, in various combinations: lack of independence of central bank; so-called fiscal dominance; time inconsistency problems and central bankers giving greater weight to objectives other than price stability; unclear mandates and inconsistent policy objectives or unsustainable combinations of policies. As have other countries, Chile struggled with most of these classic problems at one time or other, and we note in this section some of these past difficulties as well as more recent successes. (A more specific possible threat to price stability, constraints on monetary policy imposed by a desire to keep a weak banking system afloat, we will defer to Section VI.).

### **The Independence and Mandate of the Central Bank**

30. **A Chilean institution that enjoys wide credit for contributing to price stability is the independence of the central bank, with its clear mandate to promote price stability.**

31. **The case for central bank independence is well developed in the literature.** Arguments such as those summarized in Box 1 have led a number of countries to institutionalize the independence of the central bank and charge it with price stability.

32. **A number of researchers, including Cukierman (1992), Alesina (1992), and Tabelini (1993) have constructed indexes to measure central bank independence.** In general, they have found a negative relationship between measures of independence and the rate of inflation, in a sample consisting mostly of developed economies.

33. **Until recently, empirical work found little evidence of a relationship between independence of the central bank and good inflation performance for Latin America.** Recently, Gutierrez (2003) suggests this is due to a disconnect between what is stated in central banks charters and their actual degree of independence. Gutierrez constructs an index for Latin American countries that only considers what the constitution states about the central bank and ignores the central bank charter. The way the autonomy of the central bank of Chile is embedded in the constitution leads Gutierrez to rank Chile as third (in a sample of 25 countries) in this refined index of central bank independence. She also finds a positive relationship in her sample between her measure of central bank independence and low inflation.

34. **Chile's 1980 constitution (Article 97, Chapter XII ) granted constitutional status to the existence of an autonomous central bank, defining the bank as a *technical entity with its own equity capital*.** Article 98 states that the central bank may only carry out operations with financial institutions in the public or private sector. The constitution *specifically prohibited the central bank from granting guarantees or acquiring documents issued by the State, its agencies or companies.*

35. **Only in 1989 did the central bank achieve true independence.** Only then were the bank's specific mandate, organization, powers, responsibilities, accountability and

relationships with the finance ministry instituted. The organization and functions of the bank were specified in the 1989 Basic Constitutional Act of the Central Bank of Chile.<sup>11</sup>

**36. The 1989 Basic Act charged the central bank with price stability and the normal functioning of the payments system.** To achieve this, the bank was granted broad regulatory powers over monetary, credit, financial, and foreign exchange activity.

- To solidify the independence of the central bank, the Basic Act established the selection criteria and composition of its Board. The Board consists of five members, nominated by the President and ratified by the Senate. Terms are 10 years, with one member's term ending every two years. The President names one of the board members as President of the Central Bank, for a 5-year term.
- The Basic Act also establishes clear accountability criteria. The central bank is required to inform the Senate and President of the norms it dictates. The central bank is also obligated to testify before congress twice a year.
- The Basic Act also institutes the relationship between the central bank and the finance ministry. In particular, the law states that the finance minister can attend and speak at board meetings, but not vote. If the board does not vote unanimously on an issue, the Minister of Hacienda can suspend the application of any of the board's decisions for a maximum of 15 days.

#### **Did an Independent Central Bank Force Fiscal Discipline?**

**37. *The central bank as an agency of the Treasury.*** An important fact to highlight along Chile's disinflationary journey was a switch in the role of the central bank. During some periods prior to 1989, the central bank functioned as a virtual agency of the Treasury. Morande (2001), for example, states: "As in many other countries, fiscal policy became extremely expansive and eventually irresponsible... Monetary policy was almost always an expression of fiscal needs; high and volatile inflation was an unsurprising outcome."

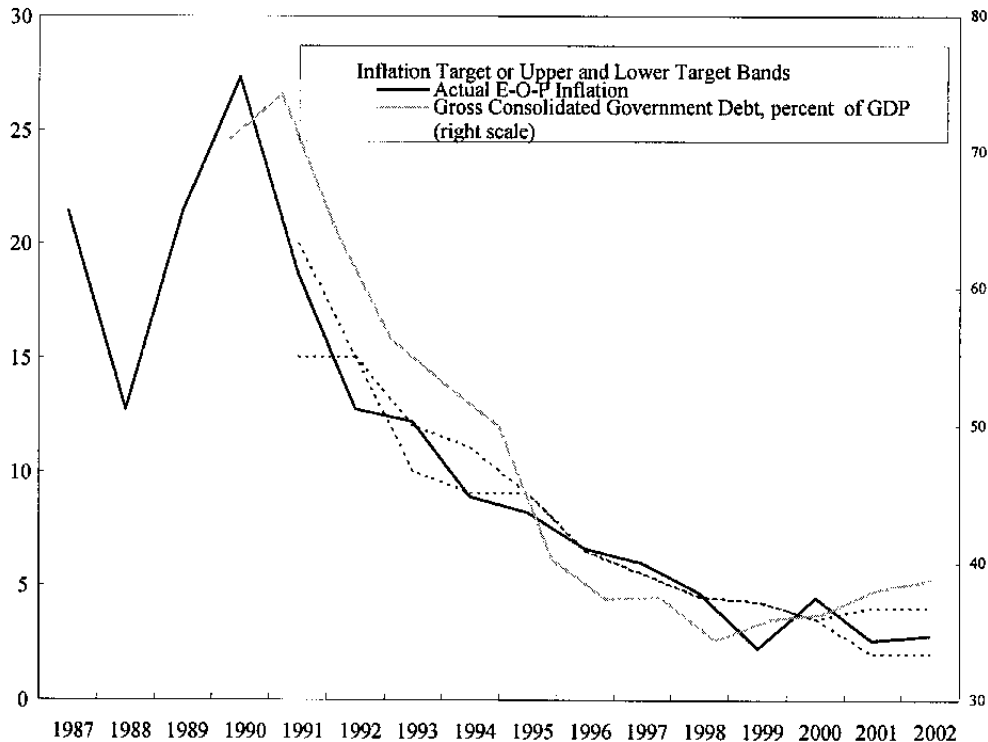
**38. Since 1989, the full-fledged autonomy of the central bank came into existence coinciding with two significant developments in Chile.** After 1989 the government showed remarkable fiscal discipline in the sense of a dramatic strengthening of its balance sheet. Coupled with strong rates of output growth, fiscal discipline resulted in a smooth decline of the consolidated debt to GDP ratio. At the same time, as the Figure shows, the country also initiated its convergence to price stability (Figure 2). Possibly, the full-fledged independence of the central bank helped prompt fiscal discipline and in that way the attainment of price stability as suggested by the theories described in Box 1. Of course, this

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<sup>11</sup> *Ley Organica Constitucional del Banco Central de Chile.*

association is only suggestive, and it is quite possible that the fiscal authority was convinced on its own of the need for fiscal discipline, and not only as a means to price stability.<sup>12</sup>

Figure 2. Inflation and Consolidated Government Debt



### Central bank independence: helpful but not enough for price stability?

39. **Recently a number of authors (Sims (2000), Cochrane (2001) and Woodford (2003)) have revisited the idea that the institution of an independent central bank is enough to guarantee price stability.** Woodford and others show that the central bank could be independent, indeed never monetizing government debt, yet bursts of inflation could still occur in response to sharp accumulation of government debt. This theory would suggest that although helpful, central bank independence may not be enough to assure price stability; it may be a good idea to also institute limits to the debt issuance on the part of the fiscal authority or a rule limiting the budget deficit.

40. **Catao and Terrones (2003) carry out an empirical assessment of theories suggesting the importance of fiscal factors in the determination of a country's inflation**

<sup>12</sup> In his own account of his experience as Chile's Minister of Finance in the early 1990s, Foxley (2003) reports that this was the case.

**rate.** They show that fiscal deficits do matter even for moderate inflation ranges (they also find little evidence that fixed exchange rate regimes help lower inflation on a systematic basis). Although their analysis does not discriminate between the theories in Box 1 or the most recent developments of the fiscal theory of the price level, their finding reinforces the view that fiscal factors matter for price stability.

### **Inflation Targeting: an Emerging Informal Institution**

**41. Credit for Chile's price stability is also due to the practice of inflation targeting, which itself recently has taken on institutional qualities.**

**42. Some form of inflation targeting has been a hallmark of monetary policy-making in Chile since 1990, but in the last several years it has taken a more advanced form, known as an *inflation targeting framework* ("IT," see Chapter II). The question is whether IT has played a substantive role in achieving and maintaining price stability or whether it has been mainly an operational change.<sup>13</sup>**

**43. From 1990 to 1999, inflation targeting was not fully-fledged.<sup>14</sup>** The target sometimes consisted of announcing an upper bound for next year's inflation and sometimes of announcing a band. Each year's announced target was lower than the previous year's, but the level of the target was announced only one year at a time. The target was not continuous but rather referred to end-year outcomes, there was no clear policy horizon, and the inflation objective rested uneasily with the exchange rate target band in place at the same time. That said, this period did see an important, if graded, decline in Chile's rate of inflation.

**44. Following 1999, by which time the bank had achieved its desired steady-state inflation rate and dropped the exchange rate target band, inflation targeting in Chile was developed into a full-fledged framework,** consisting of a pre-announced band, a well-understood measure of inflation and an announced policy horizon.<sup>15</sup>

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<sup>13</sup> For a comprehensive analysis of the inflation targeting experience in Chile and elsewhere, see the conference proceedings of the Central Bank of Chile (2000) [<http://www.bcentral.cl/eng/studiesandpublications/conferences/annual/metast2000.htm>].

<sup>14</sup> As Morande (2001) explains, inflation targeting was adopted in 1990 "in part by accident, in part out of necessity, in part for lack of alternatives and in part in reflection of a longer run view of monetary policy. The move was accidental in that the recently inaugurated independent central bank was required by its charter to present a report to Congress each September, outlining the prospects for the economy for the following calendar year in particular with regard to inflation. A target for inflation fit naturally with the price stabilization goal established in that charter. The inflation projection was treated as a target."

<sup>15</sup> The band centered at 3 percent with a lower bound of 2 percent and an upper bound of 4 percent. The targeted measure of inflation has been in percentage changes in the CPI.

(continued)

45. **The move to full-fledged inflation targeting is more than a change in operational style.** Corbo & Schmidt-Hebbel (2001), and Schmidt-Hebbel & Werner (2002), argue that inflation targeting also has played a substantive role by anchoring expectations and “strengthening the public credibility of monetary policy and official inflation forecasts. The central bank’s announcements of an explicit inflation target is potentially a strong commitment and verification device. Especially in comparison with those offered by alternative monetary frameworks.” Consistent with that interpretation of the Chilean experience, Orphanides and Williams (2003) present a theoretical analysis in which a policy of emphasizing price stability as an operational policy objective, and the periodic communication of a central bank’s inflation objectives, is shown to anchor inflation expectations, in turn facilitating price stability. In the Chilean case, by choosing a well-known price index, and a policy horizon that allows for standard lag effects,<sup>16</sup> inflation targeting may generate greater public understanding of the central bank’s objectives hence increasing the credibility of the framework.

46. **The track record under IT has been favorable.** Actual inflation has generally remained inside the target band. Indicators of inflation expectations have also been consistent with the inflation target. (Chapter II).

#### **Exchange rate arrangements: help or hindrance in the journey to price stability?**

47. **Sometimes fixed exchange rate schemes are adopted as institutional arrangements to attain price stability.** However, no such supporting role is found in Chile’s modern experience. The last attempt to use the exchange rate as a nominal anchor resulted in a *temporary* decline in inflation before ending in failure in 1982.<sup>17</sup>

48. **Subsequently, a kind of hybrid, more ad hoc exchange rate regime, sometimes called a managed float, was pursued from 1985–99, which included an exchange rate band.** However, this policy was not used to help the disinflation objective being pursued during the 1990s: rather than involving an effort to prevent depreciation of the peso and thereby establish a nominal anchor, during much of the 1990s it involved an active effort to

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Recognizing that monetary policy affects inflation with a long lag, the central bank’s policy horizon was specified to be from 12 to 24 months. See also Chapter II.

<sup>16</sup> Schmidt-Hebbel and Tapia (2002) emphasize also that the announced policy horizon allows constrained discretion.

<sup>17</sup> From 1979-1982, the country adopted a hard peg meant to play the role of a nominal anchor by linking domestic inflation to the U.S. inflation. The strategy worked—until losses of official reserves prompted devaluation in 1982, associated with a banking crisis, a burst of inflation and severe recession.

slow down peso appreciation.<sup>18</sup> Significant purchases of foreign exchange during this period required a costly sterilization process, aimed to counteract inflationary consequences of pursuing the exchange rate objective.<sup>19</sup>

49. **The floating exchange rate regime in place since 1999 is fully compatible with the goal of price stability.** The absence of an exchange rate objective allows the central bank more room to pursue its inflation objective, with greater focus.

### **Pending Issues and Questions**

50. **In light of Chile's success in achieving price stability, there certainly is no presumption that important changes in institutional arrangements are needed.** However, a few points could be considered:

- If inflation targeting contributes importantly to price stability, this might suggest formally institutionalizing its practice, as a way to ensure its continuance. Currently, the framework is implemented at the discretion of the central bank's board. However, in the absence of any clear threat to maintaining the best aspects of inflation targeting, any legal changes might be unnecessary (and not worth the possible risks inherent in opening up the central bank law for political discussion).
- More practically, the inflation targeting framework could be enhanced by making more explicit the model and assumptions used in the inflation targeting framework, in particular the methods used to forecast inflation over the horizon used to evaluate the monetary stance. Indeed, the BCCh plans to do this soon.
- As noted earlier in the chapter, Chile's Constitution defines the central bank as an autonomous entity "with its own capital." However, the central bank's tendency to run an operational deficit (Chapter XI) could—if sustained—undermine the bank capital base. A solution to this situation would be for the government to recapitalize the central bank, a move that would also increase transparency of *fiscal* policy, and which would also tend to safeguard public confidence in the future independence of the central bank.

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<sup>18</sup> According to Morande (2002), throughout some of the managed float years, "the concern was not placed in the exchange rate as the anchor to lower inflation, but as an instrument to sustain a depreciated real exchange rate that would boost exports."

<sup>19</sup> Relatedly, measures to limit capital inflows were also applied, but ended in 1998.



### **Box 1. Central Bank Independence**

*To achieve price stability, many governments have turned their attention to the design of institutions such as an independent central bank charged with price stability. Inflation targeting has been a hallmark of monetary policy-making in Chile since 1990, but in the last several years it has taken a more advanced form, known as an inflation targeting framework.*

**In their classic work, “Some Unpleasant Monetarist Arithmetic,” Sargent and Wallace (1981) showed how monetary policy and fiscal policy interact so that the effects of changes in monetary policy may depend on the response of fiscal policy.** In their analysis, the inflationary implications of a change in monetary policy depend critically on how the government manages its debt. For example, a dominant and undisciplined fiscal policy could result in either an explosive government debt path or, if the monetary authority ‘blinked,’ in high monetization of the ever-growing government debt and consequently high inflation down the road—and possibly in the short run.

**A corollary to Sargent and Wallace argument is that under some conditions, monetary policy could impose discipline on fiscal policy.** If there were no question about the monetary policy commitment to low and stable inflation—if the monetary authority “moved first,” and did not, or better yet, could not “blink”—such a commitment could impose discipline on fiscal policy. Knowing that its debt would never be monetized, the fiscal authority would face two choices: continue along an explosive debt path or submit to discipline. The second choice would be more likely because there is a limit to how much government debt can be absorbed by the market.

**Another important reason for the establishment of an independent central bank is trying to address a monetary authority’s *time inconsistency* problem.** Barro and Gordon (1983) present an extension of Kydland and Prescott’s (1977) seminal work on a typical government’s time inconsistency problem. Barro and Gordon showed that even a well-intentioned central bank may be tempted to deviate from the long term optimum, with significant adverse inflationary consequences. An independent central bank may be able to focus on a longer time horizon and thus resist temporary pressures to give in into monetization.

## F. Financial Stability: The Chilean Approach to Banking Supervision, Regulation and Safety Net

51. **This section considers whether Chile's banking regulatory and safety net institutions have been established to maintain stability.** To a large degree this comes down to countering the problem of moral hazard in banking, by providing appropriate incentives to banking system participants, both banks and depositors. Current research has shown that a key condition for bank stability is for depositors and banks to be motivated to act as if a government bail out would be an event both very rare and extremely costly for them.

52. **To understand the origin of Chile's current banking supervision, regulation and safety net institutions, most based in the banking law of 1986, it is useful to start with an overview of the banking crisis of 1982–84.** We then review the characteristics of sound banking policy institutions, and document the considerable extent to which Chilean approach is consistent with these.

### **The banking crisis of 1982–84: setting the stage for reform**

53. **The consensus view (e.g. De la Cuadra and Valdes (1992)) of the banking crisis is that external shocks triggered a chain of events that revealed underlying vulnerabilities.** These included: connected lending; overly generous implicit deposit insurance; lender of last resort operations consistent with excessive risk-taking by banks; and a lack of prudential regulation.

54. **By mid-1982, as problems in the banking system became more prominent, the government bank began casting a wide safety net.** The government began by providing a preferential exchange rate for dollar debtors and buying the bank's bad portfolios at face value. The non-performing assets of commercial banks were replaced by central bank bonds. The government intervened the flagship banks of the two largest conglomerates. Furthermore, the government explicitly guaranteed the total outstanding bank debt. In the end, the bail out led to a substantial build up of central bank debt and quasi-fiscal deficits which continue to be part of today's bank landscape.<sup>20</sup>

55. **The experience of the 1982–84 banking crisis set the stage for breakthrough reform, in the banking law of 1986.** The eventual winners of the new regulation would be the public at large, who had become well aware of the costs of poor regulation. Large conglomerates, and owners of commercial banks were poised to lose as the subsidized connected lending would come to an end. In the aftermath of the crisis, the new law was designed and adopted in a setting basically void of political constraints of special interests normally binding in reform efforts. The large conglomerates, owners of the largest banks, had been hit hard by the 1982–83 crises, two prominent bankers were in jail, and all the

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<sup>20</sup> For a detailed description of the cost of the bail out see, for example, Sanhueza (2001).

banks had solvency problems. The banking interest group was thus in a weak position to lobby against new regulations.

### **Characteristics of stability-promoting banking institutions**

56. **A characteristic of sound banking institutions is that they provide the incentives for depositors and banks to act as if a bail out would be a rare and costly event.** An increasingly accepted approach in assessing the vulnerability of a banking system has been to look at regulatory and safety net institutions simultaneously. The idea is that bank regulations should be viewed as a complement to market discipline. The degree of market discipline may in turn be affected by the specific type of safety net in place. Depositors' incentives to monitor banks will depend on whether full deposit insurance is anticipated. Similarly, if closure procedures are not clearly defined and enforced, and banks can safely bet on an extension of a safety net in times of trouble (e.g., a highly discretionary role of LOLR.

57. More concretely, suppose the Chilean government stated that there would be no repeat of the early 1980's bailout. Such a commitment would be most likely to stick:

- if deposit insurance were not too generous;
- if LOLR facilities were used to face unanticipated short-term liquidity needs of the system;
- if bank regulation were effective in limiting risk-taking;
- if there were timely and public disclosure of relevant prudential and profit indicators of each bank.

### **The banking landscape after 1986**

58. **The Superintendency of Banks and Financial Institutions (SBIF) was created in 1925** and is related to the government through the Treasury. Throughout the years, the SBIF has undergone several changes as part of the country's modernization efforts. The SBIF authorizes the creation of new banks and has increasingly gained powers to interpret and enforce regulations.

59. **The banking law of 1986, and subsequent amendments in 1989 and 1997, provided the SBIF with essential new tools to limit risk-taking by banks:** restriction of business with related parties (Article 84, No. 2); rating the quality of banking investments (Articles 116, 119 and 126); and requiring compliance with Basel capital requirements.

60. **The banking law fulfilled other essential requirements:** allowing the regulatory body to quickly identify compliance failures to prevent equity holders from rolling over loan losses (Article 15); stating explicitly and clearly procedures to deal with solvency problems and close banks (Articles 130–139); and protecting the property rights of bank

creditors and debtors by stating the different capitalization and other workout mechanisms (Article 118, 20–129 & 140).

### **Information to facilitate private monitoring and reduce moral hazard**

61. **To reduce the moral hazard problem:** timely and accurate information should allow depositors to discipline banks and consequently can be an important complement to regulation. When information reveals that banks are engaging in riskier practices, depositors can penalize these banks by withdrawing their deposits. The SBIF and requires banks to publish three times a year a detailed report on compliance with capital requirements and has considerably reduced the scope of the banking secrecy laws.

### **The Safety Net: Deposit Insurance**

62. **In principle, deposit insurance reduces incentives for depositors to use the information available to monitor banks.** There is still some debate about the net benefits of explicit deposit insurance (see, for example, Demirguc-Kunt and Kane (2002)) but there seems to be consensus on the need for the following: an emphasis on the private funding of the explicit deposit insurance; private monitoring should complement official supervision; compulsory membership in the deposit insurance system; and avoiding too-generous deposit insurance.

63. ***Explicit but limited deposit insurance.*** The strategy of the current deposit insurance system has been to state up front less generous deposit insurance rules of the game in order to diminish its negative impact. Prior to the financial crisis of the early 1980s, there had been no explicit deposit insurance in Chile. Yet, in the event of that crisis, the government ended up casting a wide safety net which included 100 percent deposit insurance. Looking forward, such generous deposit insurance can be problematic, inducing moral hazard and undermining the market discipline that would otherwise limit risk-taking. On the other hand, going with no explicit deposit insurance might again end up translating into full implicit insurance. Chile instead moved to an *explicit* but less generous deposit insurance.

64. **In 1986, Chile's new explicit deposit insurance scheme introduced a distinction between sight and time deposits.** Since 1986, there has been an explicit 100 percent coverage to sight deposits but term deposits have a cap (per depositor) of approximately US \$2,800.

65. ***How "generous" is Chile's deposit insurance?*** In principle, deposit insurance reduces the incentives for depositors to use the information available to monitor banks, but judging whether deposit insurance is too generous is a difficult question.

- According to Budnevich and Franken (2003), the current deposit scheme could represent up to 0.7 percent of GDP. This coverage could be classified as relatively less generous when contrasted with other countries' explicit deposit insurance schemes.

- Martinez and Schmukler (2001) contribute an empirical analysis, using bank level data for Chile and other countries. They conclude that deposit insurance in Chile is not so generous as to preclude depositors (both small and large) from disciplining banks for risky behavior.

### **The Safety Net: A Case of Exceptional Liquidity Provision**

66. **An unconstrained LOLR role to banks in trouble will exacerbate the central bank-induced moral hazard problem.** LOLR facilities should not be used to bail out specific insolvent banks. LOLR should be used to either help *solvent* institutions with adequate collateral meet liquidity shocks with the provision of liquidity at market interest rates and to help the banking system meet unanticipated short-term liquidity needs. An example of a recent deployment of Chile's LOLR facilities is the response of the BCCh to the Inverlink affair.

67. **A case of fraud of some significance, involving a financial holding company, emerged in March 2003.** Although this case originated outside the banking system, its repercussions soon extended to the banking system.

68. **In response, from March 10–14 the central bank provided liquidity through its overnight REPO window, and swap operations in U.S. dollars with resale agreements.** As described in Chapter XII, the Central Bank's liquidity provision did not target a specific bank, instead, it provided liquidity to the system and then it was gradually removed.

### **Closure procedures**

69. ***Are Chilean institutions credible in the sense of providing the right incentives to avoid a repeat of the early 1980's bail out?*** More specifically, are closure procedures clearly defined and credible? Brock (1992) reports two examples illustrating closure procedures at work. In 1988, Banco del Pacifico was required to increase its loan-loss provisions by 60 percent against bad loans. The funds came from subordinated debt from another bank. In 1989, the SBIF intervened in Banco Nacional after discovering hidden losses. The government did not bail out the banks in either case.

### **Pending Issues and Questions**

- Do Chile's banking regulators enjoy adequate legal protection in the exercise of their duties? The only protection in place is article 25 of the 1986 banking law but it is specific to the protection of SBIF staff only during a bank intervention.
- Should the structure of the banking system deposit insurance be revised? Consider the following example of how the ever evolving banking system could impact the BCCh deposit insurance implicit liability. In June 2002, the central bank authorized banks to issue interest-bearing sight deposit accounts. So far, the move has not induced a large switch from non-interest bearing to interest-bearing accounts—in part due to the low opportunity cost that the current low interest environment represents.

However, the situation is likely to change as the BCCh switches to a tight mode. Significant increases in sight deposit accounts would represent a larger potential deposit insurance liability for the BCCh. In light of this possibility it might be a good idea to revisit the question of how generous deposit insurance might be.

- Have steps been taken to allow consolidated supervision of the financial system? In response, to the CORFO-Inverlink affair the authorities appended a number of proposals to the capital market reform package that had been already in preparation. Capital Market Reform II (CMII) is an ambitious set of 60 proposals, recently sent to congress, to either modify old or create new laws. CMII included a proposal to improve *coordination* of the financial system supervisory agencies. It does not include the more desirable alternative of consolidation of supervision.

### **G. Maintaining An Open Trade Policy Regime: The Role Of Institutions**

#### **The Problems to be Confronted**

70. **Trade policy is the classic arena for lobbying and rent-seeking.**<sup>21</sup> The essential problem is that from the point of view of an individual industry, trade protection can bring enormous benefits and so gives incentives to lobby for special treatment; on the other hand, the costs of each case of special treatment are usually diffuse, not associated with any particular interest group. One might therefore expect a general tendency toward ever higher and more dispersed rates, yielding high effective rates of protection. Moreover, even if the “common interest” can occasionally break through and generate a reform of the tariff structure, this may prove difficult to maintain, if all the factors that previously generated distortions remain in place.

#### **Chile’s Trade Policy Experience**

71. **In the area of trade policy, Chile has moved from a highly distorted tariff structure to one of the world’s most liberal.** In the period after World War II, Chile shared with other Latin American countries a strategy of import substitution. Indeed, by the late 1960s, Chile was considered to be an extreme case, even for the time, in terms of tariff distortion, complexity, and lack of transparency.<sup>22</sup> The military government that took hold in 1973 soon implemented a major tariff reform, making Chile the first in the region to break

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<sup>21</sup> See Krueger (1974) and Bhagwathi and Srinivasan (1980).

<sup>22</sup> Chile’s trade regime may have been among the world’s most distorted: tariffs not only high but also tremendously varied, and subject to such frequent ad hoc changes that it was humanly impossible to know the tariff structure at any one time (Maloney, 2001).

from the import substitution strategy. Subsequently, there was only one significant slippage in the tariff reform, and this turned out to be temporary.<sup>23</sup>

72. **The return to democracy was followed by further trade liberalization.** In fact there have been two further *unilateral* tariff reductions. In the early 1990s, the uniform external tariff was cut from 15 percent to 11 percent. Starting in the late 1990s, there was a phased reduction of the uniform tariff, from 11 percent to 6 percent (beginning in 1999 and ending in 2003).

### **How Has a Liberal Trade Regime Been Sustained?**

73. **Political economy considerations suggest that a liberal, non-distortionary tariff structure is an economic policy particularly likely to be subject to attack.** Chile's success in sustaining such a trade policy has been facilitated by several institutional arrangements:

- *An outright ban on non-tariff barriers*, which greatly limits room for industries to lobby for special treatment. This ban has a quasi-constitutional status, being embodied in the Organic Law of the Central Bank (amendment of which would require a 3/5 majority).
- *A uniform tariff* which limits the scope for lobbying for special treatment.<sup>24</sup>
- *A transparent tariff-setting process.* Formerly, tariffs were subject to presidential decrees. Foxley and Sapelli (1999) emphasize that the need to discuss tariff changes in congress brought the tariff setting "out of the backrooms of bilateral political deals and into the open arena of competitive politics."

74. **Of course, the effect of these institutional arrangements has been complemented by other factors, such as a deeper appreciation in Chile of the flaws of the import substitution strategy.** Also, as trade liberalization eventually moved resources into the traded goods sector, it created a growing constituency interested in preserving or deepening liberalization.

### **Pending Issues in Trade Policy**

75. **Chile has been extraordinarily successful in creating and sustaining a liberal trade policy regime.** Nevertheless, several second-order issues can be mentioned, in that the uniform external tariff policy does not in fact guarantee a single tariff rate will apply to all imports:

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<sup>23</sup> Prompted by the early 1980s debt crisis, this temporary deviation was essentially an emergency balance of payments / fiscal revenue measure.

<sup>24</sup> See Rodrik and Panagariya 1991 for a review of political economy arguments for a common tariff.

- *“Price bands” scheme for certain agricultural imports.* In place since the 1980s, this system of special, variable import tariffs tends on average to provide some special protection for some agricultural products. However, the list of affected goods is short and has been stable. Moreover, the mechanism for determining these special tariffs is linked to world prices by a non-discretionary formula, a device that both limits the potential distortion and avoids creating room for lobbying.
- *New trade safeguards law.* This WTO-consistent law enacted several years ago opens a door for individual industries to lobby for special treatment. However, institutional checks should help insulate the process from political pressures. Most importantly, Chile’s safeguards law provides for only temporary special protection (expiring automatically after a year, with a maximum renewal of one additional year).
- *Bilateral trade agreements:* during the 1990s, new bilateral trade agreements increased effective protection for many sectors.<sup>25</sup> The significance of potentially resulting distortions seems quite limited, however, since the level of the uniform tariff is now down to just 6 percent.

#### **H. Some Other Research Referring to Chilean Institutions**

76. **Recent empirical research on the influence of institutions focuses on relating proxies for institutions to countries’ level of income or growth rate.** Proxies for public institutions can for example refer to the quality of governance, the extent of legal protection of private property, and limits placed on political leaders. (See WEO (2003) for a fuller discussion.) The focus of this literature is on cross-country differences, since institutional indicators for a given country may not change much, even over long periods.

77. **The hope is to gain insight into the potential rewards to improvements in institutional quality.** For, example, in studying a sample of Latin America countries, Calderon and Schmidt-Hebbel (2003) find that a one standard deviation increase in their index of governance is on average associated with a 0.75 percent increase in the growth rate. WEO (2003) finds that an increase of one standard deviation in an aggregate measure of governance seems to reduce output volatility by over one-fourth on average. That study also finds that the countries with the weakest institutions would benefit the most from an improvement of their public institutions.

78. **Figure 3 gives a sense of how Chile fits into such analyses.** The Figure uses data from WEO (2003) for Chile as well as for a group of Latin American and East Asian economies, as well as New Zealand and the United States, plotting per capita income against each of six indicators of institutions. Chile’s indicators compare favorably to those of the

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<sup>25</sup> Foxley and Sapelli (1999) argue that the benefits of Chile’s uniform tariff were “in some ways jeopardized by bilateral agreements that increased effective protection for many sectors and abandoned the worthy goal of giving all sectors the same degree of protection.”



other emerging markets, but are not as strong as those of New Zealand or the U.S. Interestingly, the Chilean data point tends to lie below the fitted lines also shown in Figure 3, signifying that Chilean institutions are somewhat better than would be expected given the country's income level, but also that income is less than would be expected given the quality of the country's institutions.

## I. Closing Observations

79. **For nearly a generation, the story of Chile's economic development has been mainly a positive one.** This chapter has highlighted some ways in which institutional arrangements have contributed to this success, in particular by fostering the adoption and maintenance of policies, in several key areas. While these institutions did not alone determine Chile's course, they are likely to have played an important role.

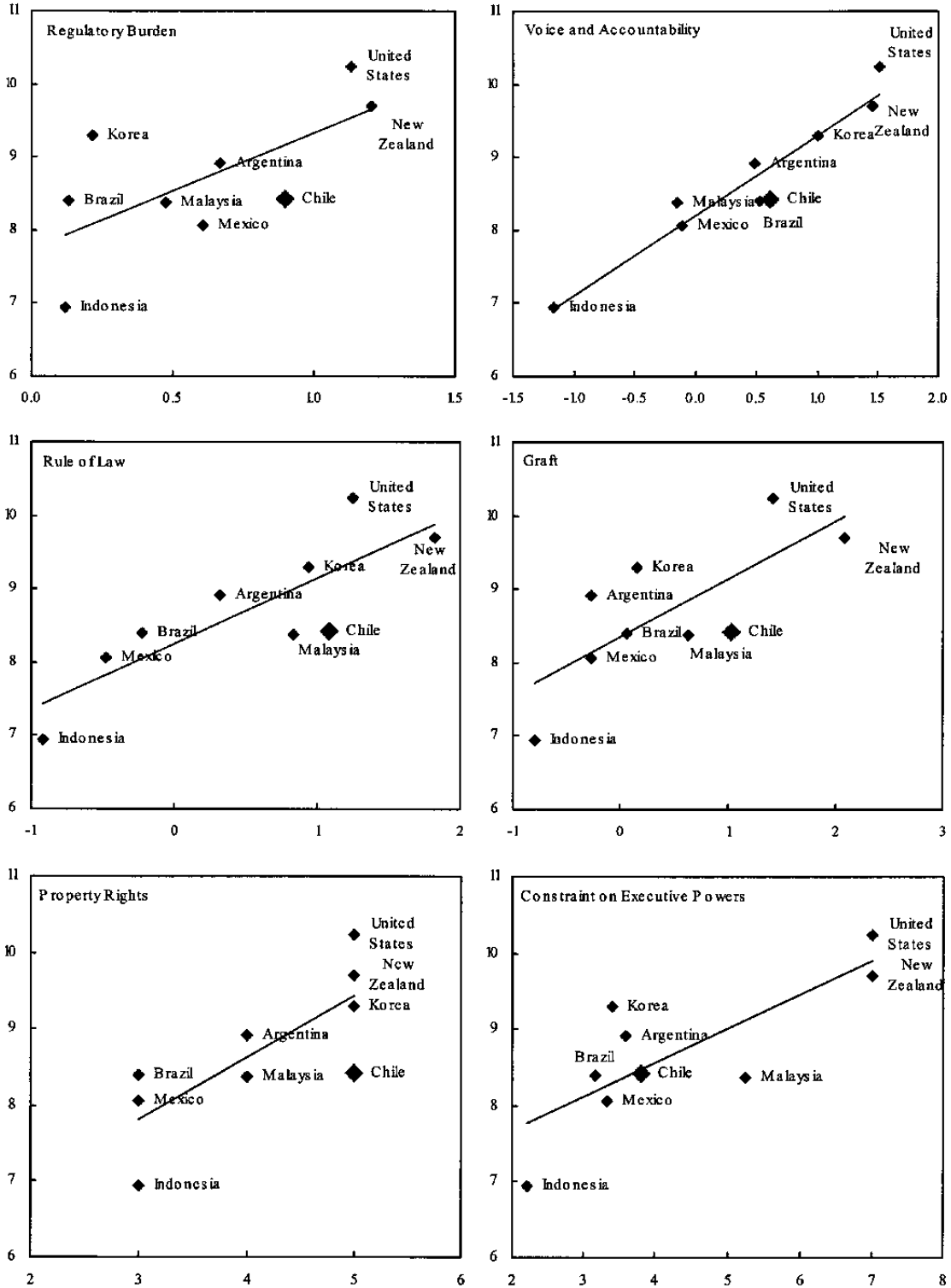
80. **A broader analysis of the Chilean economic experience could look at how other factors, including other kinds of institutional arrangements, promoted favorable decision making by the public and private sectors, and how certain policies may have been self-reinforcing or helped to build institutions.** For example, points along the following lines may have been particularly relevant in the Chilean case:

- protections on private property, including on foreign investment;
- openness to foreign capital in turn generating incentives to move toward international best practices, and to avoid policy errors or unpredictability that might induce capital flight. Similarly, the importance of trade openness may also go beyond the usual gains from trade, serving as an "anchor" for institutional reform.
- international agreements may be serving as commitment devices

Commentators on Chile often emphasize the importance of consensus building in the country's ability to move ahead. While part of the ability to achieve consensus may be due to the political rules discussed in section C, there may be more to the story.

81. **Important work remains for Chile's further economic development, and some of this may be associated with institutional enhancements.** This chapter has noted issues pending in several policy areas, but other areas of institutional reform may be possible, such as public sector reform. Indeed, an atypical wave of public corruption and fraud charges that began in late 2002 has already led to major reform of the public sector (see Staff Report, and fiscal ROSC). The prompt response of the Chilean authorities—and of Chilean society—to these unexpected developments has spoken well of the country's institutions, including policymakers' ability to recognize issues and build consensus to confront them. As these reforms begin to be implemented, it will become possible to assess whether further efforts are needed. Also looking ahead, for Chile as for other countries, there will be the ongoing challenge of keeping financial supervision and regulation up with constantly evolving financial markets. An important stocktaking in that regard will begin with the authorities' participation in the FSAP later this year.

**Figure 3**  
**Income per Capita and Selected Institutions Indicators**  
 (Log of GDP on y-axis)



Source: WEO (2003).

## References

- Alesina, A. and R. Perotti, 1996, "Budget Deficits and Budget Institutions," NBER Working Paper No. 5556.
- Alesina, A. R. Hausmann, R. Hommes, and E. Stein, 1999, "Budget Institutions and Fiscal Performance in Latin America," IADB Working Paper Series 394.
- Annett, A., 2002, "Politics, Government Size, and Fiscal Adjustment in Industrial Countries" IMF Working Paper 02/162 (Washington: International Monetary Fund).
- Barth, J.R., G. Caprio, Jr. and R. Levine, 2002, "Bank Regulation and Supervision: What Works Best?" NBER Working Paper 9323.
- Bhagwathi, J. and Srinivasan, T. N. "Revenue Seeking: A Generalization of the Theory of Tariffs", *Journal of Political Economy*, December 1980, 88(6), pp. 1069-87
- Boyd, J.H., S. Kwak, and B. Smith, 2002, "The Real Output Losses Associated with Modern Banking Crises, or 'The Good, the Bad, and the Ugly'," (manuscript).
- Brock, P., 1992, "If Texas were Chile: A Primer on Banking Reform, Institute for Contemporary Studies, San Francisco, California.
- Budnevich C., and H. Franken, 2003, "Disciplina de Mercado en la Conducta de los Depositantes y el Rol de las Agencias Clasificadoras de Riesgo: El Caso de Chile," (manuscript).
- Calderon, C. and K. Schmidt-Hebbel, 2003, "Learning the Hard Way: Ten Lessons for Latin America," Banco Central del Chile, manuscript, (March).
- Cifuentes R., J. Desormeaux and C. González, 2002, "Capital Markets in Chile: From Financial Repression to Financial Deepening," *Economic Policy Papers* 4, Central Bank of Chile.
- Corbo, V. and K. Schmidt-Hebbel, 2001, "Inflation Targeting in Latin America," Central Bank of Chile Working Paper No. 105.
- Davis, J., R. Ossowski, J. Daniel, and S. Barnett, 2001, "Stabilization and Savings Funds for Nonrenewable Resources: Experience and Fiscal policy Implications," IMF, Occasional Paper No. 205 (Washington: International Monetary Fund).
- De La Cuadra, S., and S. Valdes (1992), "Myths and Facts about financial liberalization in Chile: 1974–83," in P. Brock (ed.), *If Texas were Chile*, ICS Press, San Francisco.

- Demirgüç-Kunt, A. and E.J. Kane, 2002, "Deposit Insurance: Handle with Care," Sixth Annual Conference of the Central Bank of Chile on Banking Industry and Monetary Policy.
- Eyzaguirre, N. and G. Le Fort, 1999, "Capital Markets in Chile, 1985–1997: A Case of Successful International Integration," ed. by Perry, G. and D. Leipziger, *Chile: Recent Policy Lessons and Emerging Challenges*, (Washington: The World Bank).
- Foxley A., 2003, "Development Lessons of the 1990s: Chile," paper presented June 2003 at The World Bank Conference Series *Practitioners of Development* (Washington).
- Foxley A., and C. Sapelli, "Chile's Political Economy in the 1990s: Some Governance Issues," ed. by Perry, G. and D. Leipziger, *Chile: Recent Policy Lessons and Emerging Challenges*, The World Bank, Washington DC, 1999.
- Gallego, F. and N. Loayza, 2001, "Financial Structure in Chile: Macroeconomic Development and Microeconomic Effects," Chapter 8, ed. by A. Demirgüç-Kunt and R. Levine, *Financial Structure and Economic Growth: A Cross Country Comparison of Banks, Markets and Development*, (Boston: The MIT Press).
- Gutierrez, E., 2003, "Inflation Performance and Constitutional Central Bank Independence: Evidence from Latin America," IMF Working Paper 03/53 (Washington: International Monetary Fund).
- Herrera L. and R. Valdes, "Encaje y Autonomía Monetaria en Chile," Banco Central del Chile, (manuscript).
- International Monetary Fund, 2003, *World Economic Outlook May 2003: Growth and Institutions*, Chapter III, (Washington).
- Jacome H., L., 2001, "Legal Central Bank Independence and Inflation in Latin America During the 1990s," IMF Working Paper 01/212 (Washington: International Monetary Fund).
- Jadresic, E., and R. Zahler, 2000, "Chile's Rapid Growth in the 1990s: Good Policies, Good Luck, or Political Change?" IMF Working Paper 00/153 (Washington: International Monetary Fund).
- Jones, M.P., P. Sanginetti and M. Tommasi, 2000, "Politics, Institutions, and Fiscal Performance in a Federal System: An Analysis of the Argentine Provinces," *Journal of Development Economics*, Vol. 61, pp. 305–333.

- Keefer, P., 2002, "Politics and The Determinants of Banking Crises: The Effects of Political Checks and Balances," (forthcoming in *Banking, Financial Integration and International Crises*).
- Krueger, Anne O. "The Political Economy of the Rent-Seeking Society", *American Economic Review*, June 1974, 64(3), pp. 291-323
- Laban, R. and F.Larrain, 1998, "The Return of Private Capital to Chile in the 1990s: Causes, Effects and Policy Reactions," Harvard Working Paper R98-2.
- Le Fort G., and C. Budnevich, 1996, "Capital Account Regulation and Macroeconomic Policy: Two Latin Experiences," The Jerome Levy Economics Institute, Working Paper 162.
- Martinez-Peria, M.S. and S. L. Schmukler, 2001, "Do Depositors Punish Banks for Bad Behavior? Market Discipline, Deposit Insurance, and Banking Crises," *Journal of Finance*, Vol. 56:3.
- Marcel, M., 1999, "Effectiveness of the State and Development Lessons from the Chilean Experience," ed. by Perry, G. and D. Leipziger, *Chile: Recent Policy Lessons and Emerging Challenges*, (Washington: The World Bank).
- Morande, F., 2001, "A Decade of Inflation Targeting in Chile: Developments, Lessons and Challenges," Banco Central de Chile, Working Paper 115.
- Morande, F., 2002, "Exchange Rate Policy in Chile: From the Band to Floating and Beyond," Banco Central de Chile Working Paper 152.
- Orphanides A. and J. Williams, 2003, "Imperfect Knowledge, Inflation Expectations and Monetary Policy," Board of Governors, Manuscript March, (Washington).
- Sapelli, C., 2000, "In Search of a Positive Theory of Economic Policy: Lessons from Latin America," in *La Economía Política de las Reformas Económicas, Cuadernos de Economía*.
- Sapelli, C., 2000, "The Political Economy of the Chilean Transition to Democracy," in *La Economía Política de las Reformas Económicas, Cuadernos de Economía*.
- T. Sargent and N. Wallace, 1981, "Some Unpleasant Monetarist Arithmetic," FRB Minneapolis Quarterly Economic Review, Fall.
- Sanhueza, G. (2001), "Chilean Banking Crisis of the 1980s: Solutions and Estimation of the Costs, BCCh working paper No. 104.

Schmidt-Hebbel, K., and M. Tapia, 2002, "Monetary Policy Implementation and Results in Twenty Inflation-Targeting Countries," Central Bank of Chile Working Paper No.166.

Soto, C., 1997, "Controles de los Movimientos de Capitales: Evaluacion Empirica del Caso Chileno, (manuscript).

Stein, E., E. Talvi, and Alejandro Grisanti, 1999, "Institutional Arrangements and Fiscal Performance: The Latin American Experience," in *Fiscal Institutions and Fiscal Performance*.

#### IV. EXPORT SPECIALIZATION AND ECONOMIC GROWTH IN CHILE <sup>1</sup>

1. **Claims in the recent economic literature that natural resource-based exports have a negative impact on long-term economic growth have raised some concerns about the prospects of Chile's exports.** <sup>2</sup> Exports in Chile have been very dynamic in recent decades but have decelerated somewhat in recent years, while the structure of exports continues to be dominated by natural resources. This chapter (i) asks whether the structure of Chilean exports has worked in favor or against a sustained economic growth, and (ii) looks into how the country could continue to improve its current "export model." It is argued that:

- Chile has not been subject of the "curse" of natural resources endowment, because it has avoided the main factors that the economic literature identifies as reasons for a negative impact of natural resource-based exports on economic growth;
- Chile has developed several export industries based on its natural resources endowments with important spillovers to economic activity, a combination of static comparative advantages with knowledge and innovation;
- government policies should concentrate on improving education levels to increase overall productivity and the diversification of Chilean exports;
- the government should continue to deepen its trade liberalization efforts, with the current "open regionalism" strategy being an adequate mechanism to increase the market access of Chilean exports;
- the recent weak export growth can be traced to the difficult external environment.

2. **This chapter is organized as follows:** Section A examines the reasons why natural resources in Chile have not been detrimental to growth, the factors behind the recent evolution of exports, and the link between exports and growth in Chile. Section B is more forward-looking, with a discussion on potential trade specialization patterns through the creation of new comparative advantages.

##### A. Exports of Natural Resources and Growth in Chile

3. **Can natural resource-based exports help sustain economic growth in Chile?** This question is motivated by: (i) an economic literature claiming a negative impact of natural resources abundance on economic growth rates (due in part to limited spillovers from natural resource-based export products); and, (ii) the recent deceleration of exports growth in Chile. This section presents arguments that largely dispel the concerns associated with each of these critical viewpoints.

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<sup>1</sup> Prepared by Mauricio Villafuerte.

<sup>2</sup> E.g., Sachs and Warner (1995), Auty (1990), Gelb (1988).



## The “Curse” of Natural Resources and Chile

4. **The idea that natural resources endowment could work against economic development is not a new one, but has received increased attention in recent years in light of cross-country empirical research.** In particular, Sachs and Warner (1995) found a negative relation between natural resource exports and growth rates of economic activity, though their findings are not uncontroversial.<sup>3</sup>

5. **The explanations offered by the theoretical literature that postulates a negative impact of natural resources exports on growth can be broadly grouped as follows:**

- Political economy dynamics by which interest groups fight to capture the rents from natural resources. These “voracity effects” (which are particularly acute in the case of government-controlled natural resources) reveal themselves in “rent-seeking” activities, inefficient taxation,<sup>4</sup> and distortionary economic policies in general, and lead to a bad allocation of resources and, hence, lower economic growth.
- Explanations focused on the productive structure of the economy stressing the inability of natural resource exports to generate key linkages among activities generating spillovers on aggregate output. The development literature of the 1940s and 1950s made the case against resource-based growth on (i) the premise of a secular decline in world prices of primary exports relative to manufactures; (ii) poor potential for productivity growth of natural resource sectors; and (iii) small “forward and backward linkages” from primary exports to the rest of the economy.<sup>5</sup>
- Dutch Disease. A boom in natural resource exports leads to an appreciation of the real exchange rate that in turn produces a reallocation of factors of production away from other tradables. In the long-run, this process would increase the dependence on natural resource exports and, hence, limit the sources of economic growth.<sup>6</sup>

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<sup>3</sup> Lederman and Maloney (2002) argued that their findings are probably due to unaccounted country-specific effects and do not hold when applied to other periods of time or after dealing with endogeneity issues. By contrast, they emphasize the negative correlation between export concentration and growth.

<sup>4</sup> Tornell (1999).

<sup>5</sup> A key policy implication of this view was the “Prebisch hypothesis,” which called for reduced dependency on natural resource exports through a state-led inward-looking industrialization process based on high tariff and quota barriers (import-substitution industrialization).

<sup>6</sup> Of course, a limited endowment of production factors (particularly human capital) would exacerbate the impact of the exploitation of natural resources on other sectors, but this

(continued)

6. **In fact, Chile has not been subject to the factors related by the literature to a “curse” of natural resources:**

- the exports of natural resources have not displaced other promising sectors;
- the relative importance of non-processed natural resources exports has consistently fallen;
- productivity in natural resources-based sectors has increased in the last 25 years;
- new export products have been developed, partly on the basis of technological spillovers from natural resource exports (as will be shown below).

7. **The recent copper mining boom (early and mid-90s) is a case in point.** According to some studies, it produced a very limited crowding-out of investments from other sectors and had an overall positive impact on the Chilean economy.<sup>7</sup> A key factor behind this outcome was the opening of the copper industry to foreign investment, which has expanded Chile’s mining production avoiding the crowding out of (limited) domestic capital from other sectors. At the same time, the existence of foreign ownership has helped to limit the impact of increased copper exports on the real exchange rate (Dutch Disease) and to share the risks of international price fluctuations. Another positive factor for Chile has been the application of a prudent fiscal policy that has led to increased government savings in times of high copper prices. The latter attests to the strong institutional framework in place in Chile to prevent the capture of economic policy by interest groups.<sup>8</sup>

8. **There has been a steady (though slow) diversification of Chilean exports away from non-processed natural resources.** Overall, there is a considerable preponderance of natural resources-based exports, but there has been a steady increase in the share of products with more technological content due to the diversification of the country’s export basket. In fact, an analysis of merchandise exports reveals a steady but slow diversification over time (Table 1).<sup>9</sup> The Herfindahl index on export concentration is still higher in Chile than in representative Latin American countries (Table 2), but the gap has been falling. In addition, Chile’s export markets have diversified over time, with an increased share from the U.S. and

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process could self-perpetuate if the abundance of natural resources slows human capital accumulation by making schooling more expensive (Asea and Lahiri (1999).

<sup>7</sup> Ilades-Georgetown (1996). This finding is shared by Lagos (1997) and Spilimbergo (1999).

<sup>8</sup> See the accompanying chapter on Chilean institutions by Espinosa-Vega and Phillips, and in particular the section on the country’s approaches to maintaining fiscal discipline.

<sup>9</sup> The latest numbers reflect partly the recent (sharper) fall in copper prices.

Asia (Table 3). Furthermore, Chile has displayed some ability to reallocate its exports from less dynamic to more dynamic markets.<sup>10</sup>

**Table 1. Chile: Evolution of Export Concentration Indicators 1974 - 2002**

	1974-81	1982-89	1990-96	1997-02
Number of items > 0.5 percent total X	23	24	28	28
Share in exports of:				
Top 5 items	67.5	61.7	56.5	54.5
Top 10 items	77.6	74.5	67.2	65.9
Top 20 items	86.6	85.5	78.3	76.0
Herfindahl index	0.26	0.17	0.12	0.10

Sources: U.N. COMTRADE database and author's estimates.

**Table 2. Herfindahl Index of Export Concentration 1974 - 2001**

	1974-81	1982-89	1990-96	1997-2001
Chile	0.26	0.17	0.12	0.10
Argentina	0.05	0.06	0.04	0.04
Brazil	0.06	0.04	0.03	0.03
Colombia	0.33	0.25	0.09	0.10
Mexico	0.17	0.25	0.08	0.06

Source: UN COMTRADE database and author's estimates.

**Table 3. Chile: Evolution of Export Market Shares**

(in percent)

	1980	1990	2001	Avg annual growth rate
America	38.7	30.1	43.6	7.1
Latin America	24.4	12.5	22.5	6.1
Brazil	9.6	5.6	4.7	3.0
Mexico	1.5	0.7	4.7	12.6
Argentina	6.0	1.3	3.1	3.3
United States	12.6	17.0	19.6	8.8
Canada	1.7	0.7	1.5	5.9
Europe	40.9	39.1	27.8	4.6
European Union	38.7	38.1	25.7	4.5
Asia	18.5	27.0	26.1	8.3
Japan	10.8	16.1	12.1	7.1
China	2.3	0.4	6.1	11.7
South Korea	1.5	3.0	3.1	10.4

Sources: BCCH and author's estimates.

<sup>10</sup> For example, Cabezas (2003) showed that a third of the reduction in exports to Argentina in 2002 were reallocated to other export destinations.

## Recent Evolution of Chilean Exports

9. **One of the concerns about the potential contribution of natural resource-based exports to future growth in Chile refers to the recent slowdown in export growth, and whether it signals structural factors that will also limit export growth in the future.**

10. **In fact, recent evolution of non-copper exports can be clearly linked to the trends of its standard theoretical determinants and there has not been any anomalous break in exports' behavior.** GDP growth of export partners and export prices started to decelerate in the mid-90s, and the Asian crisis clearly affected Chile's export growth.<sup>11</sup> By contrast, the real exchange rate appreciation in the early 90s was linked to a deceleration in non-copper exports, but the depreciation in the late-90s would have helped the recovery in non-copper export growth rates. Non-copper exports and investment flows also appeared to be closely interrelated. A simple econometric estimation of a non-copper export function (Table 4) suggests that the weaker export growth in recent years can be explained by the more difficult market conditions (more than offsetting gains from a more depreciated real exchange rate).<sup>12</sup>

**Table 4. Regression on Non-Copper Export Growth<sup>13</sup>**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(Y_XB(-1))	4.227	1.012	4.176	0.001
D(REER(-1))	-0.375	0.138	-2.714	0.014
PX	0.088	0.066	1.328	0.201
C	-0.501	0.334	-1.503	0.150
D81	-0.229	0.055	-4.142	0.001
D82	0.242	0.064	3.786	0.001
D92	0.160	0.051	3.167	0.005
R-squared	0.808	Mean dependent var		0.086
Adjusted R-squared	0.743	S.D. dependent var		0.095
S.E. of regression	0.048	Akaike info criterion		-2.990
Sum squared resid	0.042	Schwarz criterion		-2.649
Log likelihood	44.380	F-statistic		12.591
Durbin-Watson stat	2.339	Prob(F-statistic)		0.000

Residual tests: Breusch-Godfrey=1.31 (0.52); ARCH=0.78 (0.38);  
Jarque-Bera=2.48 (0.29).

<sup>11</sup> Average of percent changes of data for Chile's individual trading partners weighted by their share in total exports of goods, as calculated in the WEO database.

<sup>12</sup> A least-squares estimation was made on first differences since the variables involved were found to be non-stationary and no cointegration relation was detected for the period under analysis (1975-2002). A battery of tests were performed to confirm the stability of parameters and to ensure that the residuals were well behaved. This finding was confirmed in an analysis by Baeza (2003).

<sup>13</sup> X\_NC stands for non-copper export volume (BCCH data), Y\_XB for export partners' GDP (WEO), REER for real effective exchange rate (IMF's Information Notice System), PX for export prices (price deflator for exports of goods, WEO). All variable in logs.

11. **That behavior, however, does not imply that Chile should not passively accept changes in external market conditions.** International markets are very dynamic, with increasingly tougher demand requirements. This issue is discussed below.

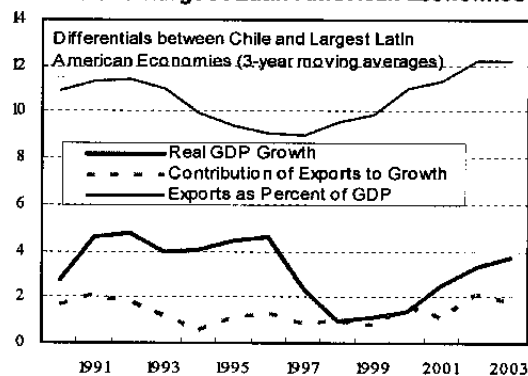
### Exports and Growth

12. **One of the concerns raised by the literature on natural resource-based exports is based on a perception of limited links with overall economic activity.** This section examines this issue both from an aggregate perspective and by looking at sectoral-level evidence in Chile.

13. **Economic theory argues that openness should increase the level and growth rates of income,<sup>14</sup> however the empirical evidence on the causality link between exports and growth is mixed.** In first place, export expansion to foreign markets, by improving resource allocation and production efficiency, can raise the steady-state level of income. On the other hand, exports can become a transmission channel for externalities due to the increased exposure to foreign markets. The endogenous growth models emphasize concepts like *diffusion of technology* and *learning by doing* as mechanisms that would allow countries to achieve higher steady-state growth rates. Thus, exports allow access to imported capital goods with the latest technological improvements and are themselves forced to innovate to keep and expand access to increasingly demanding foreign markets and create so-called dynamic comparative advantages.<sup>15</sup> The empirical evidence on a cross-country basis tends to confirm this link,<sup>16</sup> but it is less conclusive on a country-by-country basis due in part to **endogeneity** between exports and GDP.

14. **In Chile, exports of goods and services have “contributed” annually about 2 percentage points to GDP growth since 1974, with the contribution climbing to about 2½ percentage points since the 1990s (Table 5).** The correlation between exports and GDP growth rates was very high only in the early 90s, when investment growth rates were historically high. By contrast, in part of the 80s there was boost to exports coupled with internal adjustment as a result of the debt crisis, and more recently the deterioration in terms of trade

**Figure 1. Exports Contribution to Growth in Chile and Largest Latin American Economies**



<sup>14</sup> See Berg and Krueger (2003) on openness and growth.

<sup>15</sup> See Giles and Williams (2000) for a survey on the empirical literature on the export-led growth hypothesis.

<sup>16</sup> Gallego and Loayza (2002) found a positive impact of openness on output growth in Chile based on a cross-country panel data estimation.

and in access to international financial markets limited overall GDP growth. The contribution of exports to GDP growth in Chile partly explains the positive growth differential against other Latin American countries in recent decades (Figure 1), which in turn is the result of its significantly larger share of exports in GDP. However, while Chile's integration to the world economy is high by regional standards, the country still lags behind fast-growing economies in South East Asia (Table 6).

**Table 5. Chile: Real GDP and Export Volume Growth**  
Average per Period (In Percent)

	(1)	(2)	(3)	(4) = Contribn.
	Real GDP	Export Goods	Export GNFS	to Growth
1974-81	2.9	10.4	14.4	1.7
1982-89	3.2	7.5	8.0	1.6
1990-96	8.1	10.5	10.4	2.6
1997-2002	3.2	8.0	8.0	2.4

Source: BCCH

**Table 6.- Exports and Total Trade Ratios to GDP**  
(Average 1998-2000, in percent)

	X / GDP	X+M / GDP	GDP p/c (US\$ ,000)
Singapore	139	263	22,435
Canada	38	71	21,798
Australia	16	33	19,926
New Zealand	24	47	14,080
Taiwan Prov.of China	44	83	13,057
Korea	38	69	8,419
Argentina	9	18	7,901
Czech Republic	50	104	5,301
Chile	23	45	5,046
Mexico	18	37	4,909
Poland	17	43	4,217
Brazil	8	17	3,885
Malaysia	105	185	3,524
Colombia	14	28	2,205
Thailand	50	92	1,926

Source: WEO

15. **Regarding the export-led growth hypothesis, a basic cointegration analysis for the period 1975–2002 could not confirm its validity for Chile.** Looking at the evolution of exports and GDP over time it can be noticed that in certain periods a strong expansion in exports coexisted with weak non-exportable production; more recently, the expansion in export volumes has not produced a significant rise in employment because technological improvements increased average labor productivity and has been accompanied by sharp falls in export prices (which affected national income growth).<sup>17</sup> An econometric evaluation detected a cointegrating relationship for a system comprising GDP, gross capital formation and volume of exports, but exports of goods were not found to be weakly exogenous in that estimation (Table 7).<sup>18</sup> These results suggest a (long-run) feedback from output (and investment) to exports.<sup>19</sup>

<sup>17</sup> See Banco Central de Chile's Monetary Policy Report of September, 2002.

<sup>18</sup> Johansen's procedure for a 2-lag (based on Schwarz and Hannan-Quinn criteria) VAR system. Similar results were obtained for a system including non-copper exports volume.

<sup>19</sup> These results contrast with Agosin (1999) time-series analysis for the period 1960–95.

**Table 7. Chile. A Cointegrating Analysis of GDP and Exports**

	Null hypothesis summary test statistics		
	r = 0	r = 1	r = 2
Eigenvalue	0.6512	0.3296	0.2553
Max-Eigenvalue statistic	27.38 *	10.40	7.66
5 percent critical value	25.54	18.96	12.25
Trace statistic	45.45 *	18.06	7.66
5 percent critical value	42.44	25.32	12.25
Weak exogeneity test statistics			
Variable	Y	X	I
LR statistic	1.93	5.02 *	5.03 *
p value	[.16]	[.03]	[.02]
Multivariate statistics for testing stationarity			
Variable	Y	X	I
LR statistic	16.24 **	14.13 **	13.69 **
Statistics for testing significance of a given variable			
Variable	Y	X	I
LR statistic	13.42 **	11.44 **	13.13 **

The VAR includes two lags on each variable, an intercept, and dummies for 1982 and 1985. The estimation period is 1974-2002. (\*\*\*) denotes rejection of the hypothesis at the 5%(1%) level.

16. **The technological dynamism and the spillovers from certain natural resource-based exports to other levels of their production chain and to the development of new export products offer the strongest evidence of the link between them and economic growth in Chile.** A case in point within the agriculture sector is the exports of **fruits**,<sup>20</sup> where Chile was able to transfer, adapt, and extend technologies developed in other countries (with the initial assistance from CORFO). Afterwards, the private sector carried out further innovations at all levels of its production chain (particularly backward linkages) and also disseminated those innovations to other sectors with export potential.

17. **After the trade liberalization process, the manufacturing sector undertook an extensive restructuring centered on (mainly) simpler-technology activities linked to Chile's natural resource endowments.**<sup>21</sup> Evidence at the firm-level suggests that there had been some technological dynamism, especially in product "engineering" and in adaptation to increasingly rigorous international demand requirements thanks to specialized human capital and the support of specialized institutions (such as the private non-profit organization *Fundacion Chile, FC*). Specifically, *FC*'s initiatives for the development and transfer of new commercial technologies have contributed to the dynamism of agro-industry, fishing and forestry sectors, including the salmon industry.<sup>22</sup> The latter expanded rapidly in the mid-90s together with its long chains of upstream and downstream activities (e.g., to feed the fish, to distribute medicines and rafts in which salmon are grown, as well as other specialized equipment). A similar process has marked the development of the wine industry, another

<sup>20</sup> Jarvis (1992).

<sup>21</sup> Pietrobelli (1998), Alvarez and Fuentes (2003).

<sup>22</sup> Fischer (2001). The salmon industry has helped to the establishment of newer fishing industries such as turbot, abalone, and white sturgeon.

high technology sector based on foreign investment and technologies that has gained international recognition and has increased its exports from less than US\$100 million in the early 1990s to about US\$650 million currently.

## **B. The Development of New Comparative Advantages**

18. **How to increase the value and diversification in Chilean exports?** This section argues that the combination of static comparative advantages with knowledge and innovation should lead to increased value added and diversification, together with the stable macroeconomic framework that provides the right incentives to develop growth-enhancing export sectors. Government supporting policies should be concentrated on improving education levels and on deepening the trade liberalization efforts, particularly by ensuring the access of Chilean products to world markets.

19. **Chile's specialization on natural resource-based exports is in line with the comparative advantage.** Chile has plentiful natural resources distributed in remarkable latitudinal and altitudinal ranges, a small domestic market, and high transport costs to major international markets. Those structural characteristics have initially led to a specialization in goods with a relatively low division of labor and a relatively high value-added per unit weight.<sup>23</sup> At the same time, and as reviewed in the previous section, there has been a gradual increase in the technological content of exports and this process has led to the inception of more (and new) differentiated products for international markets. Notwithstanding, Chile's export basket varies markedly depending on the geographic destination:<sup>24</sup> there is more natural-resources content in the exports to industrialized countries. The latter might be explained by similar natural resource endowment with non-industrialized countries but also by a positive correlation between tariffs and value-added content in Chile's export markets.

20. **There would seem to be benefits from developing new comparative advantages to further diversify the export base and to better respond to changing world demand patterns.** There is a broad agreement in the literature on the negative correlation between export concentration and growth, partly on account of larger volatility in terms of trade and in the real exchange rate. Even though comparative advantages are key determinants in export patterns, they are not necessarily static and can evolve over time based on the relative supplies of production factors and relative productivity levels. De Ferranti (2001) stresses that it not so much *what* a country produces, but *how* it is produced that matters, and that production factors such as knowledge and education should help raise productivity growth, even if a country specializes in "traditional" sectors. In the presence of abundant natural resources, high levels of human capital might not only avoid the crowding out of productive factors to other sectors, but even lead to increased rates of growth since a well-educated labor

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<sup>23</sup> Sachs and Larrain (2001).

<sup>24</sup> Zechner (2002), Ffrench-Davis (2002).



facilitates the movement of workers across economic activities and allows the inception of new industrial activities linked to natural resources (Bravo-Ortega and De Gregorio (2002)).

21. **International experience shows the key role of natural resources in the economic success of some natural resource-abundant countries.** Many industrialized countries based their development strategies (and to some extent continue to do so) on their abundant natural resources. The U.S. industrial success can be considered as one of the most natural-resource rich nation that made a gradual transition to resource-rich manufacturing industries.<sup>25</sup> Exploitation of minerals in the U.S., like in Australia more recently, was the main driving force of growth and industrialization for more than a century.<sup>26</sup> The Nordic countries (which share some characteristics with Chile in terms of geography, market size, and export-orientation) also have become highly competitive exporters of manufactures: Sweden and Finland have become leading exporters of telecommunications equipment; Norway has specialized in engineering and shipping services. Two closely interrelated factors stand out behind the success of their development strategies: openness of the economies and high investment in human capital. The latter helped those countries to absorb technological progress to transform resource-based activities into industries with higher productivity levels.

22. **By contrast, inward-oriented policies and high tariffs have not helped economic growth.** Irwin (2002) shows that inward-oriented policies and high tariffs were not a critical factor behind the late nineteenth century growth experience of high income countries. Noland (2001) suggests that industrial policies made at most a minor contribution to the recent growth experience in East Asia, and that most of its success came from good macro-economic policies, export-orientation, and investment in human capital and in efficient social infrastructure. In Latin America, industrial policies and/or import substitution seemed to work at the beginning but started to crack by the 1960s, partly because of the pressures of interest groups to keep incentives indefinitely; furthermore, several Latin American countries used receipts from natural resource exports to finance industrial policies and protectionism, causing a systematic overvaluation of local currencies and a misallocation of resources that might explain the negative association of natural resources abundance and growth rates.

#### **Accumulation of human capital and technological innovation**

23. **Chile's non-interventionist policies, its stable macroeconomic framework, and its open FDI regime should continue to provide adequate incentives to develop growth-enhancing export sectors,<sup>27</sup> but the country would be better by developing abilities to**

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<sup>25</sup> Irwin (2000).

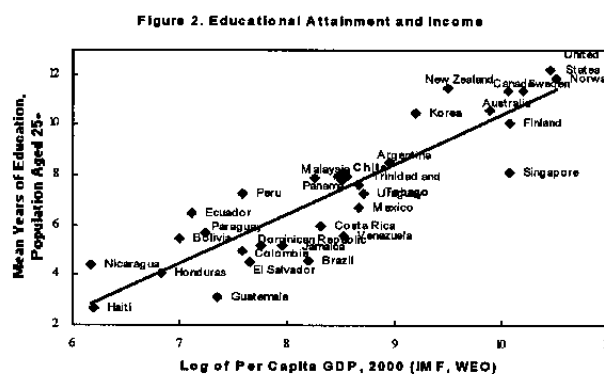
<sup>26</sup> Wright et.al. (2002).

<sup>27</sup> Chile ranked 20<sup>th</sup> between 80 countries in the Global Competitiveness Report 2002–2003 (GCR), 13<sup>th</sup> in the specific Macroeconomic Environment Index and 19<sup>th</sup> in the Public Institutions Index (1<sup>st</sup> in Latin America). More recently, the government established a special tax treatment (no double taxation) for firms using Chile as a regional investment platform.

**innovate and absorb innovation.** The general framework of policies allows an efficient allocation of resources. However, the technological content of Chile's export basket is still not very high. A channel to absorb technology and to innovate is FDI; in this area Chile has been actively signing bilateral treaties with its main investor countries and regions, while the free-trade agreements with large external partners could help Chile become a "hub" for multinational corporations to access larger neighboring Latin American countries.<sup>28</sup>

**24. Another channel of technological innovation and assimilation, the accumulation of human capital, is a key constraint for sustained exports and economic growth.**<sup>29</sup>

- There has been significant progress in educational attainment of the labor force, but even though Chile is in the upper range of educational attainment of Latin America's labor force (7.9 years of schooling in 2000), it still lags compared to natural resource-abundant OECD countries (11.1 years) and "East Asian tigers" (9.7 years).<sup>30</sup>
- However, the schooling attainment levels do not reveal the adequacy of education: a study on adult literacy skills<sup>31</sup> showed that 50 percent of Chile's labor force has a low level of basic reading comprehension and only 20 percent achieved the level considered "adequate."<sup>32</sup>
- An analysis of the quality of current education based on the results of the 1999 international study of student achievement in mathematics and science (TIMSS) suggests relatively low quality (even adjusting for income levels, Figure 3): Chile ranked 35<sup>th</sup> among the 38 countries that participated in the study.<sup>33</sup> Part of the poor



<sup>28</sup> See the accompanying note on Chile's trade policy strategy and the characteristics of recent free-trade agreements.

<sup>29</sup> The critical importance of educational levels in achieving higher growth rates was highlighted in a cross-country panel data regression by Gallego and Loayza (2002): increases in average years of schooling and in the quality of education in Chile to the top 10 percent of the world would lead to a rise in per-capita growth rates of 2 percentage points to 6 percent.

<sup>30</sup> Brunner and Elacqua (2003) provide an assessment of human capital in Chile.

<sup>31</sup> IALS, published by the OECD, as mentioned in Arellano (2001).

<sup>32</sup> To "cope with the demands of everyday life and work in a complex society".

<sup>33</sup> In the Microeconomic Competitiveness Rank of the GCR, Chile ranked about 60<sup>th</sup> in quality of math and science education and of public schools among 80 countries surveyed.

outcome in international tests can be traced to Chile's higher income inequality (Figure 4).<sup>34</sup>

Figure 3. TIMSS Math Results and Income

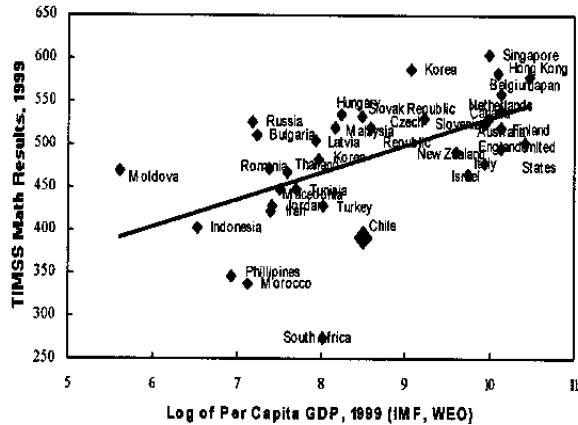
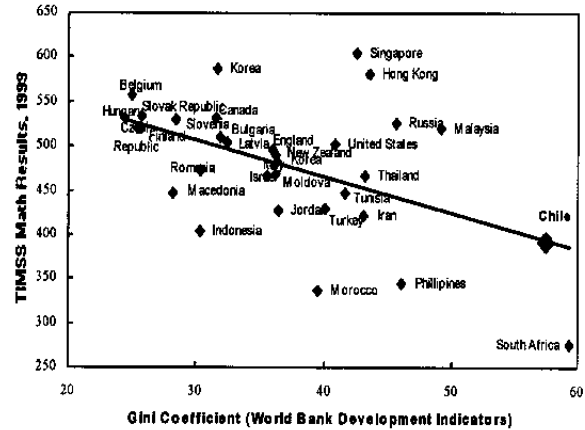


Figure 4. TIMSS Math Results and Inequality in Income



25. **The government could help improve the quality of education by updating curricula, improving teachers' skills, track performance, and improve accreditation systems.**<sup>35</sup> Total (public and private) spending is high compared to countries with similar income levels. The fact that Chile spends relatively more but achieves lower outcomes than for example Mexico,<sup>36</sup> suggests that the emphasis should be placed on increasing efficiency of spending and quality of education. The Chilean government has been undertaking several efforts in this area, including an increased focus on pre-school education, increase in school hours, the review of curricula, and the introduction of standardized admission tests to tertiary education. The World Bank is also assisting in the design of programs to better match labor force skills with the needs of a knowledge-based economy. Increased accountability by public (municipal) and subsidized (through the voucher system for education) private schools should help tackle educational inequalities across income strata; an initiative that might also be considered is to make variable the value of vouchers to broaden students' choices and increase competition within the educational system

26. **Some other microeconomic reforms might also help encourage private sector innovation.**<sup>37</sup> The government could transfer most of its research execution (often disconnected from the needs of the private sector) to the private sector (through bidding processes), strengthen intellectual property rights, and improve patent approval procedures.

<sup>34</sup> The differences in performance take place between schools, which in turn are segmented by socio-economic characteristics. Cuadernos de Economía, December 2002.

<sup>35</sup> World Bank (2003a, 2003b).

<sup>36</sup> OECD (2003).

<sup>37</sup> From World Bank (2003a).

## References

- Agosin, M., 1999, "Comercio y Crecimiento en Chile," *Revista de la CEPAL* 68.
- Alvarez, R. and R. Fuentes, 2003, "Trade Reforms and Manufacturing Industry in Chile," *Documento de Trabajo* No. 210, Banco Central de Chile (Chile).
- Arellano, J.P., 2001, "International Competitiveness and Education in Latin America and the Caribbean Countries," in *The Latin American Competitiveness Report 2001–2002*, World Economic Forum.
- Asea, P. and A. Lahiri, 1999, "The Precious Bane", *Journal of Economic Dynamics and Control* 23.
- Auty, R., 1990, *Resource-Based Industrialization: Sowing the Oil in Eight Developing Countries*, Oxford University Press.
- Baeza, W., 2003, "Exportaciones y PIB Socios", mimeo, Banco Central de Chile (Chile).
- Banco Central de Chile, *Monetary Policy Report*, various issues.
- Berg, A., and A. Krueger, 2003, "Trade, Growth, and Poverty: A Selective Survey", IMF Working Paper 03/30 (Washington: International Monetary Fund).
- Bravo-Ortega, C., and J. De Gregorio, 2002, "The Relative Richness of the Poor? Natural Resources, Human Capital and Economic Growth," *Documento de Trabajo* No. 139, Banco Central de Chile (Chile).
- Brunner, J. and G. Elacqua, 2003, *Informe: Capital Humano en Chile*, Univ. Adolfo Ibáñez
- Cabezas, M., 2003, "Disminución de las Exportaciones a Argentina," mimeo, Banco Central de Chile (Chile).
- Contreras, D., 2001, "Evaluating a Voucher System in Chile. Individual, Family and School Characteristics" *Documento de Trabajo* No. 175, Universidad de Chile.
- Cuadernos de Economía, 2002, *La Economía de la Educación y el Sistema Educativo Chileno*, Pontificia Universidad Católica, (December).
- De Ferranti, et. al., 2002, *From Natural Resources to the Knowledge Economy*, (Washington: The World Bank).
- De Gregorio, J., 2003, "The Role of Foreign Direct Investment and Natural Resources in Economic Development," *Documento de Trabajo* No. 196, Banco Central de Chile (Chile).

- Ffrench-Davis, R., 2002, "El Impacto de las Exportaciones sobre el Crecimiento en Chile," *Revista de la CEPAL* 76
- Fischer, R. and P. Meller, 1999, "Latin American Trade Regime Reforms and Perceptions," mimeo, Universidad de Chile
- Fischer, R., 2001, "Trade Liberalization, Development and Government Policy in Chile," mimeo
- Gallego, F. and N. Loayza, 2002, "The Golden Period for Growth in Chile: Explanations and Forecast," Documento de Trabajo No. 146, Banco Central de Chile (Chile).
- Gelb, A., 1988, *Windfall Gains: Blessing or Curse?* Oxford University Press
- Giles, J.A. and C.L. Williams, 2000, "Export-led Growth: a Survey of the Empirical Literature and Some Non-Causality Results," *Journal of International Trade and Economic Development*
- Hachette, D. and G. Morales, 1996, "Impactos Regionales del Nafta y Mercosur," *Estudios Públicos*
- Harrison, G., T. Rutherford and D. Tarr, 2002, "Trade Policy Options for Chile: The Importance of Market Access," *The World Bank Economic Review*, (Washington: The World Bank).
- Ilades-Georgetown University and Gerens Ltd, 1996, *The Copper Boom in the Chilean Economy; What Should We Expect*, Santiago de Chile
- Irwin, D.A., 2002, "Did import substitution promote growth in the late nineteenth century?" NBER Working Paper 8751
- Jarvis, L., 1992, "Cambios en los Roles de los Sectores Público y Privado en el Desarrollo Tecnológico: Lecciones a Partir del Sector Frutícola Chileno," *Colección Estudios CIEPLAN*
- Krueger, A.O., 1997, "Trade policy and economic development: how we learn", *American Economic Review* 87
- Lagos, G., 1997, "Developing National Mining Policies in Chile: 1974-96," *Resources Policy* 23
- Lederman, D. and W. Maloney, 2002, "Open Questions About the Link Between Natural Resources and Economic Growth: Sachs and Warner Revisited," mimeo, (Washington: The World Bank).

- Macario, C., 1998, "Chile: From Policies That Subsidize Exports to Policies That Enhance Competitiveness," Integration and Trade, IADB
- Martin, W. and D. Mitra, 2001, "Productivity Growth and Convergence in Agriculture and Manufacturing," Policy Research Working Paper 2171, (Washington: The World Bank).
- Oliveira, J. and T. Price, 2002, "International Competitiveness in Argentina, Brazil and Chile: The Role of Policies and Market Structures," mimeo, OECD
- Pietrobelli, C., 1998, "Industry Competitiveness and Technological Capabilities in Chile: A New Tiger from Latin America?" Macmillan Press Ltd.; New York
- Sachs, J., and F. Larrain, 2001, "A Structural Analysis of Chile's Long-Term Growth: History, Prospects and Policy Implications," mimeo
- Sachs, J., and A. Warner, 1995, "Natural Resource Abundance and Economic Growth," NBER Working Paper 5398
- Sachs, J., and A. Warner, 2001, "The Curse of Natural Resources," European Economic Review 45.
- Spilimbergo, A., 1999, "Copper and the Chilean Economy," IMF Working Paper 99/57 (Washington: International Monetary Fund).
- Tornell, A., 1999, "The Voracity Effect," American Economic Review 89
- World Bank, 2003a, Chile: New Economy Study
- World Bank, 2003b, Closing the Gap in Education and Technology
- World Economic Forum, Global Competitiveness Report, various issues, Geneva
- World Trade Organization, 1997, Trade Policy Review Mechanism: Chile
- Wright, G. and J. Czelusta, 2002, "Exorcizing The Resource Curse: Minerals as a Knowledge Industry, Past and Present" ,mimeo, Stanford University

## V. CHILE'S TRADE POLICY: STRATEGY AND RECENT AGREEMENTS<sup>1</sup>

1. **Starting in the mid 1970s, Chile pursued an export-oriented development strategy, eliminating the anti-export bias of trade policy by means of an aggressive unilateral trade liberalization.**<sup>2</sup> Tariffs were lowered sharply and set at a uniform rate for all imports but a few agricultural products that were subject to price bands. The uniform tariff was reduced from 15 percent to 11 percent in June 1991, and even further to 6 percent over the period 1999–2003. The unilateral trade liberalization—together with macroeconomic stability, a “competitive” real exchange rate, and several specific export promotion programs<sup>3</sup>—contributed to the significant expansion and diversification of exports (Box 1).

2. **Chile has actively participated in multilateral trade negotiations within the framework of the World Trade Organization (WTO) and in 1995 incorporated the WTO Agreements into its domestic legislation.** The government considers that subscription to the WTO, despite limited progress in the liberalization of important sectors (e.g., agriculture, textiles and clothing), benefits its exports by strengthening the dispute settlement mechanism, adopting a common set of rules that reduce trade distortions, improving the quality of information regarding market access, and promoting investment flows through clear rules for trade in services and in intellectual property matters.<sup>4</sup> Domestically, the adoption of WTO-consistent legislation should reduce the possibility of adopting discriminatory protectionist policies and reinforces trade-related institutions. The WTO-tariff bound agreed by Chile is 25 percent for most products, 31.5 percent for some agricultural products (wheat, wheat flour, oils, and dairy products), and 98 percent for sugar.

3. **Since the early 1990s, Chile's trade policy has focused in the negotiation of a number of regional (both bilateral and plurilateral) integration agreements (RIA).** This policy has been characterized by the authorities as “open regionalism,” complementary to the multilateral trade strategy, and aimed at ensuring niches for Chilean exports.<sup>5</sup> Under the auspices of the Latin American Integration Association (LAIA), Chile signed economic complementarities agreements with Mexico (1991), Venezuela (1993), Colombia (1993), Ecuador (1994), Mercosur (1996), and Peru (1998), and a partial-scope agreement with Bolivia (1993).<sup>6</sup> Chile signed a free-trade agreement with Canada in 1996,<sup>7</sup> and concluded

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<sup>1</sup> Prepared by Mauricio Villafuerte.

<sup>2</sup> Until the early 70s, Chile had a heavily regulated economy based on an import-substitution development strategy. In fact, the average tariff 1973 was 105 percent, with a range from 0 percent to 750 percent, in addition to some quantitative restrictions.

<sup>3</sup> For a detailed review of those policies, see Agosin (1999) and Macario (1998).

<sup>4</sup> WTO 1997.

<sup>5</sup> WTO 1997.

<sup>6</sup> The agreements with Mexico, Venezuela, Colombia and Ecuador aimed at establishing free trade for about 95 percent of all tariff lines by 2000. The agreement with Mercosur would

(continued)

negotiations for free-trade agreements with the European Union (EU), the United States (U.S.), and South Korea in 2002, and with the European Free Trade Association (EFTA) in early 2003.

### **The Rationale for Regionalism**

4. **In the economic literature, regionalism entails second-best type policies and no general theorem exists to support it.** According to the standard trade theory, there is no additional benefit that could not be achieved through unilateral liberalization.<sup>8</sup> Assuming perfect competition, small economies, constant returns of scale and no transport costs, efficiency in production and consumption is achieved when tariffs (and non-tariff barriers) are zero, even if trading partners do not reciprocate. In this context, increased exports from RIAs do not increase welfare as the resulting producer surplus would be zero. Growth enhancement through the adoption of technological knowledge (following the literature based on endogenous growth theory) could be achieved through unilateral trade liberalization and not only by agreements with developed countries (major producers of technological knowledge). In addition, uniform tariffs (which do not exist in practice under the presence of RIAs) have the advantages of equal effective protection rates across sectors, simplicity that reduces business costs, lower custom administration costs (no need for rules of origin), and lower discretion (with lower incentives for corruption).

5. **Regarding specific costs of RIAs, obviously the most important is related to *trade diversion*, as preferential treatments might lead to welfare-reducing distortions in production and consumption.** The cost of trade diversion depends on the level of overall protection and the advantages that RIA's partners are given. For instance, RIAs with small, developing countries are likely to reduce welfare (as shown for the agreement with Mercosur by Harrison, Rutherford, and Tarr (2002)) as they tend to be based on political considerations. On the other hand, developing countries have limited bargaining power in their negotiations of RIAs with the U.S. and the EU. Hence, some conditions to get an RIA might be tough in areas like intellectual property rights (e.g., patent protection on pharmaceuticals before 1991 given abundance of generic products), and environmental and labor standards. The latter might reduce the flexibility of the economy, which precisely might be needed to facilitate the adjustment to the RIA. Another cost of RIAs involve the need to establish rules of origin to avoid the problem of *trade deflection*; those rules can in turn lead

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establish free trade for at least 75 percent of tariff lines by early-2006 and free trade for all tariff lines by 2014. The agreements also included provisions for the liberalization of investments, establishment of transparent rules for applying safeguard clauses, and commitments to harmonize export incentives.

<sup>7</sup> The agreement with Canada, which entered into force in July 1997, provided for the elimination of most tariffs by January 2003, with the exception of tariffs on some "sensitive" agricultural products which would be phased out until 2014.

<sup>8</sup> Velasco and Tokman (1993).



### Box 1. Evolution of Exports in Chile

Exports in Chile have been very dynamic in recent decades, but have decelerated somewhat in recent years. Exports value in real terms tripled and exports volume quintupled since 1980, substantially above world trends. The increase in exports volume has averaged more than 9 percent in the last 30 years, and has been broadly based (Table 1). However, the export expansion has decelerated recently. Growth in export value (in real terms) has been far more volatile due to sharp fluctuations in export prices.

Table 1. Chile: Export Volume, Average Growth Rates 1986 - 2002  
(In percent)

	1986-89	1990-96	1997-2002
Agriculture, hunting, forestry, fishing	12.0	8.4	4.2
Mining	4.7	9.1	6.9
Manufacturing	15.4	13.3	7.3
<b>Total Exports</b>	<b>9.0</b>	<b>10.2</b>	<b>7.1</b>
Copper	3.5	9.6	7.9
Non-copper	13.1	11.1	6.0

Source: Banco Central de Chile (2002)

The structure of exports has been dominated by natural resources. As shown in Table 2 (which includes refined copper as a non-processed natural resource, ignoring embedded technological improvements), exports of natural resources and processed natural resources have accounted for more than 85 percent of total exports.

Table 2. Chile: Export Structure 1975-2002  
(In percent)

	1975	1986	1995	2002
Natural Resources	74.8	70.2	57.5	51.1
Processed Natural Resources	18.2	25.4	33.5	34.6
Other industrial products	6.9	4.5	9.0	14.2

Source: BCCH and author's estimates.

The performance of exports has been partly the result of an export-oriented policy framework that included an aggressive trade liberalization process, a competitive real exchange rate and several (temporary) export support schemes.

- Starting in the mid-1970s, exports expanded following an aggressive trade liberalization process (through reduced tariffs and elimination of quantitative restrictions) and the utilization of excess capacity in the exports sector.
- After the debt crisis of the early 1980s, exports experienced an increased dynamism on account of a substantial real depreciation and the introduction of several export support schemes, including subsidies (simplified drawback system for non-traditional exports, delayed payment of tariffs on imported capital goods, tax incentives for the forestry sector), financing facilities (through the governmental Corporacion de Fomento de la Produccion, CORFO), institutional support for export activities (ProChile and Fundacion Chile), and incentives for FDI (Chapter 19, debt-equity swaps).
- In the 1990s, exports benefited from the consolidation of a sound macroeconomic framework and a trade policy strategy geared towards the negotiation of regional trade agreements to improve the market access for Chilean exports (in the context of WTO-agreed phasing out of export subsidies).

to additional trade diversion and welfare loss as they are typically hard to enforce, particularly in the presence of overlapping RIAs.<sup>9</sup>

6. **Chile's policy-makers support the regionalist approach on several grounds:**

- Improved market access for Chilean exports and economies of scale that leads to increased efficiency.<sup>10</sup> Through several RIAs Chile will have lowered its preferential tariff to all its major trading partners, with an effect similar to that of unilateral trade liberalization, but with better market access for its export products. In addition, negotiations would allow access for products with higher value added, which tend to be subject to tariff escalations, a factor that has complicated the diversification of exports away from natural resources.<sup>11</sup>
- Protection against potential establishment of protectionist measures, thereby ensuring the stability of exports. For example, the System of Generalized Preferences (SGP) gives preferential access to U.S. market but benefits have to be renewed from time to time and can be eliminated unilaterally. RIAs normally establish dispute settlement mechanisms to increase confidence in the security of market access.
- RIAs in Chile result in relatively low trade diversion costs, since Chile has a low uniform tariff and RIAs do not include non-tariff restrictions to the rest of the world.
- Regionalist strategy is a response to limited progress in multilateral negotiations sponsored by the WTO.
- Strategy is a response to the formation of trade blocs. Being excluded is costly as in the case of NAFTA, since Mexico and Canada are the most important competitors of Chile as providers of natural resources and processed natural resources to the U.S. market.<sup>12</sup> By contrast, when signing several RIAs a country becomes a “hub,” and its partners become “spokes” if they have not signed FTAs between them. In that case, investors would prefer to invest in the “hub” and can reach the “spokes” from there.
- The negotiation of RIAs tend to involve multidimensional aspects complementary to trade relations. For example, in the agreement with Canada (1996) both countries

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<sup>9</sup> Krueger (1997).

<sup>10</sup> The unilateral trade liberalization strategy implicitly assumes that the tariff and non-tariff barriers facing the exports of a country are very low or non-existent (Wonnacott and Wonnacott, 1981).

<sup>11</sup> Harrison, Rutherford and Tarr (2002) show that the strategy of combining free trade agreements with NAFTA, the EU, Mercosur, and the rest of South America produces welfare gains for Chile that are many multiples of the value of unilateral free trade if it were to attain tariff-free access to all these markets.

<sup>12</sup> Campero y Escobar (1992), Zechner (2002).

decided to eschewed antidumping actions against each other. In addition, RIAs normally include specific provisions to promote and protect investment flows between trading partners. The latter would benefit Chile as recipient of FDI flows from developed countries and as investor in other South American countries.

- Negotiation of RIAs could be adapted to the perceived sectoral and regional costs and benefits. In fact, it could be argued that the sequencing of Chile's RIAs (by concentrating on neighboring countries first) allowed Chile to strengthen some of its industries before signing agreements with developed countries (Selaive, 1998). In addition, longer phase-out periods were agreed for sensitive agricultural products.<sup>13</sup>
- RIAs with developed countries should raise credibility of the overall policy framework and governance, helping to differentiate Chile from other countries.

### **Recent Regional Trade Agreements**

**7. Chile concluded negotiations for free-trade agreements with the European Union (EU), the United States (U.S.), and South Korea in 2002, and with the European Free Trade Association (EFTA) in early 2003.** These countries account for about half of Chile's exports.

**8. Chile's agreement with the EU is the first one signed by a Latin American country and also the most advanced trade deal the EU has ever negotiated with a non-member country.** This means that, on top of better access to Chile's export products, there would be an incentive for European investors to establish businesses in Chile as a door to the other Latin American countries. Under this agreement about 85 percent of Chilean exports to the EU would enjoy zero tariff from the beginning, and this share would increase to 96 percent after four years and to 99.7 percent after 10 years.<sup>14</sup> An important feature is the phase out of tariff escalation clauses that historically have hindered diversification of Chilean exports to the EU.<sup>15</sup> Before the agreement, the fishing and wine industries were facing 13 and 10 percent tariffs, respectively, while agro-industrial exports faced tariffs of 40 percent. The agreement covers also investment and services, and establishes a dispute resolution

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<sup>13</sup> Hachette and Morales (1996) provide evidence that the agricultural sector would be the most affected (on the positive and negative sides) by free-trade agreements, but they also note the capacity that the agricultural sector had shown in the past to restructure itself.

<sup>14</sup> Chilean exports to the EU could enjoy this treatment only up to certain quotas of total export to the EU area, but these quotas were so large (larger than total trade with the EU), and growing at about 10 percent per year, that it was unlikely they could ever become binding. The remaining share (0.3 percent) would be subject to a revision clause.

<sup>15</sup> For instance, exports concentration levels to the EU are far higher than to the rest of the world, with exports of processed natural resources (particularly refined copper) accounting for about 73 percent of total exports to the EU (Ministerio de Relaciones Exteriores de Chile, 2001).

mechanism, and reduces sanitary and fitosanitary inspections on Chilean exports by accepting the reports from the relevant Chilean regulatory agencies. The trade agreement with the EU took effect on February 2003. Tariff reductions agreed for goods have already been applied while those for services and investment would take effect only after the agreement's approval by the parliaments in each of the EU member countries. A general equilibrium study reported by the central bank estimated the potential *direct* impact of the agreement on Chilean exports and GDP at 3.2 percent and 0.5 percent, respectively.<sup>16</sup>

9. **The agreement with the United States includes trade, a dispute resolution mechanism, services, investment, and sections on environment and labor standards.** The agreement was signed last June, was ratified by the U.S. Congress this month, would be ratified by the Chilean congress in the next two months, and would go into effect January 1, 2004. The agreement on trade consolidates the market access conditions for Chilean exports (including SGP conditions) and aims at the elimination of all tariffs in a maximum period of 12 years, including on agricultural and textile products. About 87 percent of Chilean exports to the U.S. would enjoy zero tariff from the beginning, and only about 5 percent will be completely liberalized in 10–12 years. All escalation tariffs on Chilean exports will be gradually phased out, while tariffs on textile products are to be eliminated immediately. On capital flows, the agreement states that foreign investors will only be able to protest against restrictive measures by the Chilean government (both on payments and transfers as well as on inflows) only a year after their implementation; this feature would allow Chile to put in place transitory restrictive measures to regulate the movement of capital flows. Consultation mechanisms will be established on environmental and labor issues, with the commitment of both countries to comply with current relevant regulations in that area which are consistent with internationally approved standards. Based on estimates by the Chilean Ministry of Foreign Relations, the potential *direct* impact of the trade agreement (assuming complete liberalization) on Chilean exports and GDP would be 16 percent and 2 percent, respectively.

10. **The free-trade agreement reached with South Korea is the first one agreed between an Asian and a western economy, and between transpacific members of the Asia-Pacific Economic Community (APEC).** Tariffs on Chilean exports would be eliminated in six steps in the next 13 years, with tariffs on 41 percent of exports being eliminated immediately and on 97 percent of exports in the next 7 years.<sup>17</sup> This should benefit Chilean exporters vis-à-vis their main competitors in the South Korean market, i.e., Canada and New Zealand. In addition, the current export basket to South Korea is not very

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<sup>16</sup> General equilibrium model from "Sustainable Impact Assessment" SIA-Chile, referred to in BCCH's Monetary Policy Report (January 2003). However, these estimates are static and conservative since they do not consider other channels, such as better resource allocation; reduced transaction costs; lower uncertainty on policies and a better business climate, all of which would tend to motivate investment in physical and human capital and productivity-enhancing technological exchanges.

<sup>17</sup> Both parties agreed on a list of sensitive products that will be exempted altogether from the free-trade agreement.

diversified and the negotiated tariff reductions would open opportunities for new exports in the agriculture, forestry, fishing, wood, and chemical sectors. This agreement would also open opportunities for South Korean investments in Chile aimed at an expanded Latin American market. The trade agreement with Korea reached on October 2002 is still being drafted into law; there is no specific timetable for the legislation to be discussed in both countries' legislatures, but it would likely be enacted into law in 2004.

11. **The agreement with EFTA includes also a dispute resolution mechanism, removal of antidumping measures, and sections on services and investment.** The trade agreement involves the immediate abolition of tariffs for more than 90 percent of Chilean exports.

## References

- Agosin, M., 1999, "Comercio y Crecimiento en Chile," *Revista de la CEPAL* 68.
- Campero, M.P. and B. Escobar, 1992, "Evolución y Composición de las Exportaciones Chilenas, 1986–1991", CIEPLAN
- Hachette, D. and G. Morales, 1996, "Impactos Regionales del Nafta y Mercosur," *Estudios Públicos*
- Harrison, G., T. Rutherford and D. Tarr, 2002, "Trade Policy Options for Chile: The Importance of Market Access," *The World Bank Economic Review*, (Washington: The World Bank).
- Krueger, A.O., 1997, "Problems with Overlapping Free Trade Areas", in *Regionalism versus Multilateralism*, ed. by Takatoshi Ito and A.O. Krueger, The University of Chicago Press
- Macario, C., 1998, "Chile: From Policies That Subsidize Exports to Policies That Enhance Competitiveness," *Integration and Trade*, IADB
- Schiff, M., 2002, "Chile's Trade Policy: An Assessment," Documento de Trabajo No. 151, Banco Central de Chile (Chile).
- Selaive, J., 1998, "Comercio Intraindustrial en Chile", Documento de Trabajo No. 44, Banco Central de Chile (Chile).
- Velasco A. and M. Tokman, 1993, "Opciones para la Política Comercial Chilena en los 90," *Estudios Públicos* 52.
- Wonnacott, P. and R. Wonnacott, 1981, "Is Unilateral Tariff Reduction Preferable to a Customs Union? The Curious Case of the Missing Foreign Tariffs", *American Economic Review*
- World Trade Organization, 1997, *Trade Policy Review Mechanism: Chile*
- Zechner, C., 2002, "Expanding NAFTA: Economic Effects on Chile of Free Trade with the United States," Munster

## VI. CAPITAL MARKETS AND CORPORATE FINANCING IN CHILE: AN OVERVIEW OF RECENT DEVELOPMENTS<sup>1</sup>

### A. Introduction

1. **The development of local securities markets is an important factor driving financial market development and contributing to economic growth.** During the 1990s, Chile experienced a remarkable development of domestic capital markets. Rapid financial integration, capital accumulation and economic growth harnessed a virtuous cycle leading to increasing financial deepening.<sup>2</sup> Following the Asian crisis, the pace of financial deepening in Chile slowed. This change was linked to a number of interrelated developments, including a deterioration of the external environment, a substantial slowdown of real domestic growth and a downward shift in domestic demand, especially for investment expenditure.<sup>3</sup> Net capital inflows from abroad were much reduced after 1998, a shift that appears to reflect reduced demand at least as much as reduced supply of capital.<sup>4</sup> Since 2000, a sharp drop in domestic interest rates has led to a pick up in domestic corporate bond issuance.

2. **The recent resurgence of domestic bond financing has underscored the role of domestic capital markets as providing alternative and flexible sources of financing for the corporate sector.** Given the prevailing low domestic interest rate environment, domestic corporate firms have taken advantage of a burgeoning domestic bond market to reduce their foreign exposure and reliance of bank financing. Institutional investors, led by pension funds, have also increased their demand for fixed-income paper following the lackluster return from equities in recent years.

3. **This chapter reviews the development of domestic capital markets and corporate sector financing in Chile in recent years.** The purpose is to describe the main factors contributing to financial deepening and to draw on the policy challenges to promote domestic

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<sup>1</sup> Prepared by Rodolfo Luzio.

<sup>2</sup> See Eyzaguirre and Le Fort (1999) for an overview of these developments.

<sup>3</sup> See Caballero (2002) for an account of the impact of external shocks on domestic output and the effect of lower external savings on domestic investment. In particular, he notes the financial squeeze on small and medium-size enterprises.

<sup>4</sup> Only for 1998 is it clear that Chilean firms faced restricted access to debt financing, as evidenced by a jump in secondary market bond spreads. Subsequently, such evidence shows that Chilean firms—or at least the large companies that have borrowed externally in the past—have enjoyed ready access to external finance on favorable terms.

capital markets as stable sources of funding for the corporate sector. In doing so, this chapter addresses the following set of questions:

- What have been the main factors underpinning growth of domestic capital markets in the 1990s?
- What are the main sources and features of Chilean corporate financing?
- What are the main characteristics of the investor base and the role of institutional investors?
- What are the main challenges to promote deeper and more liquid domestic capital markets?

4. **The chapter underscores the role of macroeconomic policies and structural reforms as the driving factors underpinning the development of local securities markets in the 1990s.** Sound monetary and fiscal policies allowed a favorable investment environment while structural reforms involving privatization and tax policy provided the appropriate conditions for the development of the equity market. Finally, financial sector reforms through early pension fund reform and banking sector regulation assured the sustainability and continuous growth of financial intermediation and sources of funds for firms.

5. **While equity markets saw a rapid expansion in the early 1990s, domestic bank lending has remained the leading source of (outside) funding for the corporate sector.** The chapter presents some evidence that firms attempt to “time the market” with their financing sources. Large corporate firms sought to shift from external to domestic financing in the late 1990s, and then progressively moved away from domestic short-term bank borrowing towards long-term bond financing since 2000.<sup>5</sup> The sharp drop in domestic interest rates helped reduce the costs of issuing long-term bonds in local currency, thus favoring long-duration debt issuance over short-term bank borrowing. Similarly, given the increase in book-to-market ratios of capital since the late 1990s, equity issuance has collapsed in favor of debt financing.

6. **The presence of a well-developed and large institutional investor base has played a fundamental role supporting the demand for domestic paper.** The large presence of pension and insurance companies has provided a stable and growing source of investment funds for the corporate sector. These investors have allowed increased specialization in the

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<sup>5</sup> Caballero (2002) also provides evidence on the shift of large corporate firm toward domestic banking financing at the expense of small-and-medium size companies (SMEs). The author underscores the perverse economic implications of the crowding-out effect on SMEs, which were severely constrained on the financial side.



investment decision-making process and promoted a sophisticated risk-rating industry. They have also encouraged the development of long-term instruments and contributed to improved corporate governance, transparency and financial sophistication.

7. **Nonetheless low liquidity and high degree of ownership and investor concentration remain important challenges for the development of domestic capital markets.** While low liquidity in the equity market provides a disincentive to investor participation, it is also related to the high degree of ownership concentration. The prevalence of dominant economic groups continues to characterize the corporate ownership structure and helps explain the financing structure of corporations. The large presence of these groups has raised questions about the shallowness of equity markets, the protection of minority shareholder rights and effectiveness of corporate governance. Recent changes in financial sector regulation and legislation have sought to strengthen corporate governance, improve transparency and guarantee minority shareholder rights. Changes in capital market legislation have also included tax incentives to promote liquidity in equity markets and have sought to increase firms' access to capital markets by reducing issuance costs.

8. **Similarly, investor participation has remained concentrated on institutional investors dominated by pension funds and insurance companies.** While the presence of these investors has had several positive effects, they have not contributed to higher market liquidity. These investors have favored buy-and-hold investment strategies and skewed the demand for high-quality paper. Recent changes in financial regulation have sought, however, to ease investment restrictions for institutional investors and promote more flexibility in their investment strategies.

9. **This paper is organized as follows.** Section B provides an overview of the development of capital market in the 1990s noting the factors contributing to financial deepening. Section C describes the corporate sector's increasing reliance on domestic capital markets in the post-Asian crisis period and seeks to explain how firms attempt to "time the market" with their financing sources. Section D characterizes the role of institutional investors as key sources of stability and growth. Section E discusses the main challenges for the development of local securities including recent financial policy reform initiatives to promote financial deepening. The last section concludes.

## **B. Overview of Domestic Capital Market Development and Foreign Financing Dramatic Transformation of Domestic Markets and Large External Capital Flows in the 1990s**

10. **Since the late 1980s, Chile has experienced a remarkable process of financial deepening.** By end 2002, the ratio of total financial assets to GDP was 225 percent, more than three times the ratio prevailing in 1985. By 2002, the stock market capitalization was still the largest single financial market asset, amounting to 75 percent of GDP, while the bank lending portfolio accounted for 70 percent of GDP. Also significant, central bank bonds, which account for three quarters of total public sector liabilities, represented 30 percent of GDP, while non-financial private sector bonds topped 10 percent by end 2002 (see Table 1).

**Table 1. Chile: Financial Assets, Outstanding Stocks 1990-2002**  
(percent of GDP)

	Corporate Sector			Financial Sector		Public Sector		
	Stock Mkt Capitalization	Outstanding Bonds	Bank Credit	Mortgage Bonds	Time Deposits	Central Bank paper	Central Govn't	Public Enterprises
1990	44.9		70.7	5.0	16.9	34.4	20.5	7.6
1991	78.2		59.5	5.0	17.9	31.4	16.9	4.2
1992	66.4		57.3	5.7	19.1	31.0	13.6	3.3
1993	111.5		62.6	6.5	20.3	29.8	11.9	2.6
1994	115.7		51.9	7.6	20.2	30.4	9.6	2.3
1995	101.4	3.4	51.0	8.7	22.0	28.5	6.0	2.2
1996	89.6	3.1	54.4	10.2	25.5	30.0	4.5	2.4
1997	91.0	2.4	57.2	11.8	28.3	31.5	3.4	2.9
1998	67.2	2.9	61.3	11.7	32.0	28.6	3.4	4.2
1999	97.0	3.7	69.2	13.1	34.3	30.3	4.2	4.3
2000	84.7	5.2	69.5	12.9	34.6	31.3	3.9	4.4
2001	85.3	9.3	69.8	13.0	33.6	31.1	4.8	4.9
2002	75.6	11.6	69.2	12.5	34.3	30.5	6.1	6.2

Sources: Central Bank of Chile, Bloomberg; Superintendencia de Valores y Seguros; Superintendencia de AFPs.

11. **From an international perspective, Chile's financial asset accumulation is also remarkable.** From an international perspective, Chile is one of the leading countries in terms of financial asset accumulation. To control for per capita income and output growth, we regress the average market capitalization to GDP and total asset to GDP ratios during the 1990–1997 period on per capita income in 1997 and the average growth of per capita income for a sample of 48 countries.<sup>6</sup> As shown in Figure 1, Chile's relative financial development is above the regression line underscoring the degree of financial deepening after accounting for output growth and per capita income.

12. **International financial integration represented one of the key catalysts driving the rapid deepening of domestic markets.** Asset accumulation accelerated rapidly while capital flows poured in before experiencing a slowdown at the end of the decade. During the decade, foreign direct investment represented the main source of foreign capital flows. By 2002, Chile's liabilities from foreign direct investment had reached 68 percent of GDP, representing about 54 percent of all gross foreign liabilities. Foreign bank loans also became a major source of financing for the private sector. The stock of foreign loans amounted to 41 percent of GDP, accounting for a third of all gross foreign liabilities (see Figure 2).

13. **Compared to other emerging market countries, Chile's international investment position underscores the openness of the capital account and the degree of financial integration.** By end 2001, Chile's total foreign liabilities had reached 122 percent of GDP, the highest level among the selected group of countries shown in Table 3. Nonetheless, the stock of foreign direct investment in Chile was also the largest as a ratio to GDP, and

<sup>6</sup> See Demirgüç-Kunt and Levine (2001) for the data source.

represented more than half of foreign liabilities. Similarly, Chile's *asset* position was also the largest at 80 percent of GDP among the group of countries considered. FDI abroad amounted for a quarter of Chilean assets abroad and was, by a significant margin, the largest share of GDP from the sample (see Figure 3).

### **Sound Macroeconomic Policies**

14. **The resumption of large external inflows in the early 1990s posed a major challenge for policymakers to create a policy framework to reduce the risks of an external credit boom-bust cycle.** Through a balanced policy framework, the Chilean authorities sought to harness financial stability to promote financial market development. They responded by implementing conservative monetary and exchange rate policies supported with strong fiscal performance and only a selective and gradual capital account liberalization.

15. **On monetary policy, the framework until the late 1990s aimed at achieving a gradual reduction in inflation while smoothing currency appreciation and building up a significant foreign position.** The central bank built on its anti-inflationary credibility by continuously meeting its preannounced inflation target. It also managed foreign exchange fluctuations within a reference band and sought to smooth currency appreciation. These policies aimed at avoiding an overvaluation of the currency, and allowing conditions for sustained capital inflows in the context of gradual disinflation.

16. **As a by-product of its sterilization and reserve accumulation policy in the 1990s, the central bank became the largest debt issuer and pursued sound debt management.** The central bank actively sought to build a local benchmark yield curve based on a CPI-linked indexed unit of account (i.e., *Unidades de Fomento*, UF). The development of a UF-denominated benchmark yield curve was one of the key factors contributing to the expansion of money markets and private sector fixed-income securities. In addition to nurturing the short-end of the curve, the central bank sought to lengthen the duration of its domestic liabilities by issuing long-term paper. By the end of the decade, with the convergence of interest rates to international rates, the bank sought to move away from CPI-indexation towards the nominalization of its key monetary instruments and debt issuance at the short-end of the yield curve.

17. **To help contain domestic inflationary pressure, in particular in early 1990s, the authorities also sought to restrict capital flows by adopting a gradual capital account liberalization.** The gradual approach sought to differentiate between different types of capital inflows and promote foreign direct investment. On the one hand, the deregulation of foreign direct investment became a key priority complementing a liberal tax foreign investment law with a gradual easing of limitations on repatriation of profits and capital. On the other hand, other capital flows, including portfolio inflows, were subject to an unremunerated reserve requirement, an implicit tax on capital based on the investment

duration. The objective of this requirement was to reduce the country's exposure to volatile flows and to extend the duration of capital inflows.<sup>7</sup>

18. **On fiscal policy, the authorities sought to preserve strong fiscal surpluses to ease the government's debt burden.** By 1998, the central government's public debt had fallen to 12.5 percent of GDP from more than 40 percent of GDP a decade earlier. The increased financing needs in the late 1990s led the government to seek finance abroad and set an external benchmark for domestic private issuers.

19. **The government's external debt management has sought to build an external benchmark in a position of financial strength in order to improve external financing conditions to the private sector.** In the aftermath of Asian crises, the authorities perceived an inadequate assessment of the fundamentals underlying Chilean corporate debt and sought to increase foreign investor research on the country's fundamentals. The sovereign benchmark has helped improve the pricing of external corporate bonds, though issuance of such bonds has not picked up.

#### **Financial Sector Reforms**

20. **Financial sector reforms have been key factors allowing the development of financial markets in the 1990s.** Following the crisis in the 1980s, the authorities implemented far-reaching reforms to the banking, pension and insurance sectors coupled with an aggressive privatization program and modernization of the securities market regulations. These reforms supported by stringent regulation and supervision of financial institutions worked to reduce the risks of boom-bust financial cycles.

21. **The comprehensive banking sector reform implemented in 1986 supported the stability and strong profitability of the sector while allowing moderate credit growth during the 1990s.** The reform underscored the need for rigid regulation and strict supervision of banking activities drawing its lessons from the experience of the collapse of the banking system in the early 1980s. The framework implemented a partial deposit insurance system to allow for market discipline, established strict monitoring of loan provisioning, centralized debtor risk information, provided strict limitations to related lending, and imposed portfolio restrictions to limit exposure to exchange rate, interest and credit risks.

22. **Pension reform initiated in 1980 shaped the development of capital markets helping finance the privatization process in the late 1980s and setting the development of a sophisticated domestic investor base.** The transition from a pay-as-you-go to a fully funded system together with the austere fiscal policy allowed a stable accumulation of large

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<sup>7</sup> The role and cost-benefit of the capital restrictions in Chile during the 1990s has been a topic of intense debate. See Gallego and Hernandez (2003), for the latest analysis on the costs of these restrictions on firms.

funds to be invested in private sector assets. The reform sought to protect the interest of the contributors to the system, and imposed tight regulations and supervision to fund managers. Stringent limits on types of securities and issuers were imposed based on risk ratings, portfolio diversification, ownership concentration and other specific criteria. Over the past decade, pension regulation has sought to gradually liberalize portfolio investment limits while improving supervision and competition.

23. **The privatization of companies in key industries in the mid-1980s was also a key element contributing to equity market development.** Newly privatized firms in the telecommunications, energy and banking sectors became the flagship companies of the local stock market. The rapid increase in the equity values of these companies in the early 1990s favored the development of conglomerates and economic groups controlling the privatized firms.<sup>8</sup> A wave of mergers and acquisitions, including the large participation of foreign corporations in the late 1990s, contributed to the increased concentration of capital ownership, a key feature of the capital structure in Chile.

24. **Key changes in securities market legislation have sought to strengthen market infrastructure, improve corporate governance and transparency, and expand the set of institutional investors.** Given the large size of the insurance and pension funds, regulatory changes to their portfolio investment set necessarily have a significant impact on the local securities markets. In 1994 and 1995, the authorities' efforts to continue improving capital market regulation paid off with the enactment of the Private Pensions Law, the Securities Market Law and Mutual Fund and Insurance Companies legislations. These laws liberalized pension fund portfolio limits, improved regulations and added security assets and large infrastructure projects to the list of eligible instruments for pension fund investment.

25. **Most recently, authorities have sought to promote further the development of the domestic capital market.** New legislation including the public tender offer law (OPA law, 2000) and the reform of capital markets law (2001) has focused on harnessing corporate governance and transparency while easing access investment restrictions of institutional investors and reducing capital market access cost to small firms. The OPA law provides for strong guarantees to minority shareholder rights and conditions to strengthen corporate governance. It also allows more flexibility to investment funds and regulates the participation of pension funds in initial public offerings. The capital markets law focuses on improving the liquidity and depth of financial markets while facilitating the access to capital markets of emerging firms.<sup>9</sup>

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<sup>8</sup> See Walker and Le Fort (2000) for a more detailed discussion on the formation of economic groups in Chile.

<sup>9</sup> For more detailed analysis of these reforms, see Cifuentes et al. (2002).

### C. The Sources of Corporate Financing

#### Main Characteristics of Financing Flows

26. **Domestic bank credit remains the primary source of corporates' outside funding, but domestic bond markets have become increasingly important.** Domestic corporate bond issuance before 1998 represented less than 1 percent of total corporate debt issuance. Yet by 2001, the annual issuance had reached a quarter of total debt financing. Meanwhile, domestic commercial bank credit to the corporate sector saw a sharp increase from 1995 to 1999. During the period, it doubled in nominal terms and came to account for more than half of total corporate financing. (see Table 2).

27. **In contrast to the increasing domestic debt financing, the corporate sector's external debt financing saw a pronounced drop since 1997.** From 1995 through 1997, external borrowing amounted to almost 50 percent of total corporate sector financing. In contrast, by 2002, the share of external borrowing represented less than 20 percent. External bond financing declined the most as the three-year moving average of bond issuance in 2002 was more than two thirds down from its 1999 level. The retrenchment of foreign bank financing was also significant as the three-year moving average dropped in half in the same period.<sup>10</sup>

28. **Equity financing was the main casualty of the emerging market financial turmoil of the late 1990s.** New ADR placements dried up completely after 1998 from a peak of US\$755 million in 1994. Similarly, after 1997, there were no new initial public offerings in the local stock market. This is not surprising giving the sharply rising cost of capital in the late 1990s. Using the book-to-market ratio as rough proxy for the cost of capital, we find that the cost of issuing equity in the 1998–2001 was twice that of the 1992–1995 period. Since ex-post forward-looking dividend yields were not significantly different between these two periods, we could infer that markets were demanding increased risk premia and discounting share prices accordingly.<sup>11</sup>

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<sup>10</sup> Note that more than half of the foreign bank borrowing in 1999 was accounted by the US\$3.5 billion external loan to Enersis to finance its investments Argentina and Brazil as well as in Chile.

<sup>11</sup> That is, ex-post dividend for the following year assuming perfect foresight.

**Table 2. Private Sector Financing Issuance**  
(in US\$ millions)

	Domestic			External		
	Equity	Bonds	Banks	Equity	Bonds	Banks
1995	223	69	4,419	224	500	1,606
1996	619	133	5,382	297	2,020	3,688
1997	121	83	6,671	67	1,800	5,295
1998	71	798	6,820	-	1,063	3,600
1999	-	745	6,522	-	760	6,181 *
2000	-	1,252	6,221	-	300	4,764
2001	-	2,739	5,545	-	886	2,074
2002	-	1,732	5,068	-	40	1,061

Sources: Capital One, SVS, BCCH

\* In 1999, Enersis' external bank borrowing accounted alone for US\$3,500 million.

29. **The surge in domestic bond market issuance is not a phenomenon unique to Chile as most emerging markets experienced a similar expansion.** In fact, domestic issuance for the sample of emerging market countries considered in Figure 4 grew almost tenfold from 1997 to 2001, making it the single most important source of financing in 2001 for these countries. However, the pattern of corporate funding showed important regional differences. While domestic bank lending in Asia and Eastern Europe remained the largest source of corporate finance during the period, Latin America experienced a sharp bank retrenchment in 2001 compensated by large domestic bond issuance. In the case of Chile, while issuance of external bank credit fell, the financially-strong domestic banks continued issuing new loans, albeit at a much lower rate.

#### **Features of Chilean Corporate Debt**

30. **Despite the central bank's nominalization of the key reference interest rate in 2001 and its recent efforts to create a peso denominated yield curve benchmark, CPI-based indexation in Chile remains pervasive in domestic financial markets.** More than 90 percent of fixed-income securities issued from 2000 to 2001 were UF denominated (i.e., indexed to the CPI), while about half of bank loans were also CPI linked. On the other hand, indexation to the dollar for domestic fixed-income securities remains low, underscoring the role of local markets as a financing alternative to shield from increasing foreign exchange volatility.

**Table 3. Domestic Corporate Bond Market, 1995 - 2002**

(billions of Chilean pesos)

	New Issues		Amount Issued		Indebted Entities		Stock Outstanding		Stock in % of GDP	
	Private	Public	Private	Public	Private	Public	Private	Public	Private	Public
1995	5	0	28	0	44	2	900	81	3.1	0.3
1996	4	1	57	17	45	2	888	95	2.8	0.3
1997	6	1	36	9	41	1	778	59	2.2	0.2
1998	6	1	377	5	40	1	1003	65	2.7	0.2
1999	12	1	393	5	43	1	1287	71	3.5	0.2
2000	20	1	717	12	43	1	2013	73	5.0	0.2
2001	36	4	1793	108	62	2	3832	203	8.8	0.5
2002	35	5	1245	175	66	4	4851	463	10.6	1.0

Source: Superintendencia de Valores y Seguros

31. **Another prominent feature of Chile's securities markets is the long duration of the instruments.** The average duration of corporate bonds was seven years in 2002 with maturities ranging up to 30 years. The long maturities of bonds reflect the predominant role of pension fund and insurance companies. Given the long duration of pension and life insurance liabilities, these investors represent a readily available sources demand for securities with maturities of 20 or more years. In contrast, the average maturity of commercial bank loans was less than two years (partly as a consequence of regulations limiting banks' maturity mismatch).

**Table 4. Private Debt, Issuance Characteristics, Average Maturity**

(in years)

	Commercial Bank			
	Loans Avg. Maturity	Domestic Bonds Avg. Maturity	External Bonds Avg. Maturity	External Loans Avg. Maturity
1997	1.2	13.8	33.0	6.3
1998	1.1	17.7	9.5	4.0
1999	1.3	12.1	8.6	2.8
2000	1.6	13.6	10.0	6.1
2001	1.8	14.3	15.1	3.5

Source: SVS, SBIF, Capital One.

#### D. Investor Base in Chile

##### The Dominant Role of Contractual Savings Institutions

32. **The large presence of pension funds and insurance companies in the financial system in Chile stems from the enormous growth of these industries since the financial sector reforms in the 1980s.** Total assets held by these two industries reached 75 percent of GDP in 2002 with the pension fund assets representing 58 percent of GDP. Excluding equity



assets, pension funds and securities firms accounted for almost half of total financial assets outstanding in 2002. At end 2002, pension funds held 39 percent of government bonds, 50 percent of mortgage bonds, 37 percent of corporate bonds, and 35 percent of time deposits.

**Table 5. Chile: Share of Pension Funds in Financial Markets and Size of Markets**

Year	Government Debt		Time Deposits		Mortgage Bonds		Corporate Bonds		Equity	
	Size	AFP	Size	AFP	Size	AFP	Size	AFP	Size	AFP
	(Bil. US\$)	(% share)	(Bil. US\$)	(% share)	(Bil. US\$)	(% share)	(Bil. US\$)	(% share)	(Bil. US\$)	(% share)
1995	25.8	38.9	15.4	8.8	6.1	65.4	2.2	60.3	71.2	10.5
1996	27.1	42.7	18.7	6.2	7.5	65.3	2.1	61.4	65.8	10.5
1997	29.9	40.8	22.3	14.7	9.3	56.0	1.8	57.2	71.8	9.7
1998	28.0	45.4	24.7	17.2	9.0	57.1	2.1	55.3	51.8	8.7
1999	27.3	44.0	24.2	23.1	9.2	56.6	2.4	53.8	68.3	6.0
2000	27.9	46.0	24.4	27.6	9.1	56.6	3.5	41.3	59.7	6.7
2001	27.0	45.9	22.2	28.0	8.6	53.4	5.8	37.3	56.4	6.2
2002	27.3	39.4	22.0	34.6	8.0	49.8	6.8	37.5	48.6	6.7

Sources: Ministry of Finance; Central Bank of Chile; Bloomberg; *SVS*; *Superintendencia de AFPs*.

33. **This dominant role has helped shape the composition of corporate bond market issuance.** The growth of contractual savings has led to a reallocation of savings toward long-term assets to match the long-term maturities of liabilities. This preference for long-term assets has contributed to an increased demand for public and private sector long-term bonds. Correspondingly, corporate firms have responded issuing bonds in two tranches, one of 8–10 years targeted to pension funds, and the other of 20 years or more targeted to insurance companies. Similarly pension fund and insurance companies induced the development of the mortgage bonds with long maturities.

34. **While contributing to the growth of financial markets in Chile during the 1990s, pension and life insurance sectors have been subject to restrictions regarding the composition of their portfolios.** As shown in Table 6, pension funds and insurance companies have continued to hold a significant share of their assets in public debt—in particular central bank paper—and bank-intermediated instruments. At end 2001, they held only 20 percent of their portfolio in corporate sector securities. Until the mid-1990s, pension funds could not invest abroad. Since 1995, this restriction has been progressively eased, and in response investment in foreign assets has grown considerably reaching 13 percent of their total portfolio in 2002. More recently, the ceiling on foreign investment by pension funds was raised to 25 percent of pension funds' portfolio.

**Table 6: AFP and Insurance Industry Investment Portfolio, 1995 - 2002**

(millions of US\$)

	1995	1996	1997	1998	1999	2000	2001	2002
<b>Total</b>	32,539	36,007	40,722	41,629	45,703	48,176	47,830	48,198
<b>Government Paper</b>	12,814	14,846	15,987	16,624	15,615	16,333	15,119	13,058
<b>Financial Sector</b>	7,549	9,148	12,288	13,339	15,568	17,192	15,771	16,427
o/w: Mortgage Paper	5,302	6,673	7,476	7,672	7,981	8,086	7,283	6,537
o/w: Time Deposits	1,552	1,435	3,474	4,501	5,823	6,980	6,463	7,833
<b>Corporate Sector</b>	11,008	10,457	10,293	7,804	7,614	8,179	9,567	10,070
o/w: Stocks	8,204	7,514	7,557	4,881	4,510	4,407	3,915	3,548
o/w: Bonds	2,077	2,001	1,644	1,885	2,069	2,762	4,679	5,604
<b>Foreign Investment</b>	60	175	458	1,889	4,853	4,156	5,027	6,121
<b>Other</b>	1,108	1,381	1,697	1,974	2,053	2,317	2,346	2,522

	(percent of portfolio)							
<b>Total</b>	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
<b>Government Paper</b>	39.4	41.2	39.3	39.9	34.2	33.9	31.6	27.1
<b>Financial Sector</b>	23.2	25.4	30.2	32.0	34.1	35.7	33.0	34.1
o/w: Mortgage Paper	16.3	18.5	18.4	18.4	17.5	16.8	15.2	13.6
o/w: Time Deposits	4.8	4.0	8.5	10.8	12.7	14.5	13.5	16.3
<b>Corporate Sector</b>	33.8	29.0	25.3	18.7	16.7	17.0	20.0	20.9
o/w: Stocks	25.2	20.9	18.6	11.7	9.9	9.1	8.2	7.4
o/w: Bonds	6.4	5.6	4.0	4.5	4.5	5.7	9.8	11.6
<b>Foreign Investment</b>	0.2	0.5	1.1	4.5	10.6	8.6	10.5	12.7
<b>Other</b>	3.4	3.8	4.2	4.7	4.5	4.8	4.9	5.2

Sources: Superintendencia de Valores y Seguros, Superintendencia de AFP.

35. **From early on, the authorities imposed a tight regulation on the type of assets the funds could invest in with the paramount rationale of preserving safety.** This regulation has taken the form of maximum limits on holdings of particular classes of instruments. More recent regulatory changes have allowed more flexibility on the range of instruments allowed, funds initially had been largely restricted to government securities, financial sector securities and high grade corporate securities.

36. **Key elements of pension regulation and incentives have also led to the concentration of the fund industry.** As argued by Edwards (1996), the combination of the "one fund per AFP" system and the minimum/maximum relative profitability rules (prior to the regulatory changes in 2002), resulted in AFPs having extremely similar portfolio. As evidenced in the literature,<sup>12</sup> the dispersion of returns among competing pension funds had been very small, favoring a consolidation process which saw the number of pension funds drop from 21 in 1994 to 8 in 1998.

<sup>12</sup> See Walker and Le Fort (2002).

37. **The creation of multi-fund system in 2002 is helping to increase investment diversification.** Prior to regulatory changes in 2002, AFPs were only allowed to invest up to 37 percent of their portfolio in shares and were limited to a maximum of 7 percent of an issuer's equity. Since February 2002, AFPs have been allowed to offer five different investment funds (named A through E) with different risk profiles and investment limits. The restrictions on equity holdings now range from up to 70 percent in Fund A to no equity investment in Fund E. Limits on holdings of individual stocks also vary according to the related ownership of the issuer, liquidity, ownership concentration and risk classification.<sup>13</sup>

38. **The low participation of pension funds in the equity market also reflect the changing investment conditions in the 1990s.** The drop in pension funds' investment on local equity follows from the large tender offers by foreign companies that took over control of large local firms.<sup>14</sup> Similarly, the low return on equity investment in the late 1990s also explains the reduced appetite by pension funds.

39. **While the presence of AFPs has been a key factor contributing to the development of the corporate bond market, pension funds face also important limitations in this market.** They can subscribe to a maximum of 20 percent of any bond issue which has to be conducted through open purchases, thus restricting their participation in other placements. As in the case of equity holdings, AFPs are not allowed to invest in below-investment grade bonds. As a result, market access by potential issuers becomes a yes-no matter, based on whether the risk assessment on the quality of supplied asset is above investment grade. In this regard, given the dominant market presence of the pension funds and insurance companies, market demand is skewed toward high-quality issuers.

40. **Nonetheless, the presence of these institutional investors has also important positive externalities.** Walker and Le Fort (2001) find evidence that pension reform facilitates the accumulation of "institutional capital" through an adaptive legal framework and increased specialization in the investment-decision-making process. The presence of these investors also promotes transparency and integrity through the mandatory risk-taking process and strengthening of corporate governance by promoting minority shareholder interests.

#### **Other Investors**

41. **Despite their small size, mutual funds and retail investors also play an important role in capital markets by increasing liquidity, especially at the short range of the bond market.** In particular, mutual funds have seen an important rise in their portfolio holdings from less than 4 percent of GDP in 1995 to more than 10 percent in 2002. Table 7 shows that

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<sup>13</sup> See Chapter 8 in Ferreiro (2002) for a detailed discussion.

<sup>14</sup> Agosin and Pastén (2003) provide a detailed account of the much discussed Chispas case involving the tender offer for Endesis, Chile's electricity flagship company, by Endesa Spain.

mutual fund investment is largely concentrated on the short-term end of fixed-income liabilities. More significantly, the diversity of the funds has contributed to market liquidity at the short-term range of the fixed-income market, especially for central bank paper.

**Table 7: Chile: Mutual Fund Investment, December 2002**  
(in million of US dollars, unless otherwise indicated)

	Fixed income	Equity	Mixed	Other	
	Short Term	Medium-Term			
Number of Funds					
National	55	34	27	7	8
International	13	32	57	40	1
Value of Funds					
National	3524	2	81	165	36
International	469	1	56	66	5

Source: Asociacion de Fondos Mutuos.

42. **The presence of foreign investors has largely been associated with the development of ADRs in the early and mid-1990s, but has experienced a significant retrenchment ever since.** By end 1996, total ADR holdings were significant, at US\$6.4 billion. More than 60 percent of firms included in the stock market (IPSA) index were cross-listed as ADRs in the United States. The preference of ADRs by foreign investors was likely related to higher liquidity and better information and disclosure practices.<sup>15</sup> Nonetheless, despite the suspension of capital controls and elimination of capital gains taxes for foreign investors, the presence of international investors has fallen as reflected by the sharp drop in ADR holdings since 1996.

### E. Challenges for the Development of Domestic Capital Markets

#### Equity Market Liquidity

43. **Despite Chile's high equity market capitalization, equity turnover is below compared to that of other bourses in the region.** As shown in Table 8, equity turnover in Chile is well below that of other countries in the region even though Chile's degree of financial development compares favorably to the sample countries.<sup>16</sup> More significant, equity turnover ratio remains below its peak in 1995 and has continued to decline in recent years (Table 9). It is important to note, however, that traded volumes tend to be low when returns

<sup>15</sup> Cross-listed firms go through the mechanics of standardizing accounting practices and information disclosure on regularly and timely basis.

<sup>16</sup> See Demigürcü-Kunt and Levine (2001).

are low and when overall economic activity slows down. Hence, the economic slowdown following the Asian crisis could partly explain the lower traded volumes.

**Table 8. Latin America: Liquidity in Fixed-Income and Equity Markets**

	Equity		Fixed Income	
	Market Capitalization (in percent of GDP)	Turnover (in percent)	Transactions (in US\$ billion)	Turnover (in percent)
Argentina	11	28	17	600
Brazil	19	83	109	...
Chile	84	10	62	274
Colombia	13	18	35	...
Mexico	32	47	1	33

Source: FIBV.

44. **Taxation could be another factor affecting stock market liquidity.** Cifuentes et al. (2002) notes that the applications of taxes on the secondary markets of ADRs in 1995 could have contributed to the drop in liquidity in domestic markets. Yet, these taxes were temporary as all controls on capital flows were phased out beginning in 1998 and completely eliminated in 2001. Nonetheless, high marginal income rates and capital gains taxes created a bias against the domestic stock market in the case of retail and foreign residents. In this regard, the capital market reform in 2001 eliminated the tax on capital gains for high-turnover stocks and short sales of stocks. Yet despite these changes, equity market liquidity did not experience a significant improvement in 2002.

#### **Fixed Income Market Liquidity**

45. **Liquidity in fixed-income markets is significantly higher than that in equities, but it is largely driven by transactions in central bank paper and mortgage bonds.** As shown in Table 9, fixed income transactions also fell noticeably in 1999 and 2000, which could also be explained by lower economic activity. Another potential factor is the changing composition of central bank paper over the past three years as the importance of inflation-indexed bonds fell relative to dollar-linked and nominal paper.

46. **Buy-and-hold investment bias of institutional investors together with increased concentration in the pension and insurance industries could also help explain low liquidity in bond markets.** As shown earlier, these investors play a dominant role in the bond market. The process of pension fund and insurance company consolidation coincided with the drop in bond transactions. Cifuentes et al (2002) show the relationship between

rising measures of concentration in the pension fund and banking industry with the downturn in transactions.<sup>17</sup>

47. **More recently, however, corporate bond market transactions have seen a large increase as bond financing has grown rapidly.** The low interest rates and recent legal changes have favored this development. In particular, the capital market reform in 2001 has introduced greater flexibility to access capital markets and has introduced the possibility of issuing commercial paper for short-term financing limiting the application of stamp taxes. Relaxation of portfolio limits for mutual and investment funds have also increased activity at the short-term range of corporate bonds.

**Table 9. Chile: Liquidity in Fixed-Income and Equity Markets**  
(in millions of US dollars, unless otherwise indicated)

	Equity		Fixed Income			
	Transactions	Turnover (in % of stock)	Total		Of which: Private sector bond	
			Transactions	Turnover (in % of stock)	Transactions	Turnover (in % of stock)
1996	8,208	11.5	69,513	323.3	1,906	19.8
1997	7,308	11.1	74,817	334.7	2,708	24.4
1998	4,409	6.1	79,627	336.2	4,353	38.9
1999	6,873	13.2	45,520	198.3	2,971	25.4
2000	6,250	9.2	42,483	185.4	4,927	39.0
2001	4,138	6.9	66,536	274.2	4,987	34.5

Source: Cifuentes (2002), FIBV.

### High Ownership Concentration

48. **The high degree of ownership concentration remains a main feature determining the structure of corporate finance and characteristics of capital markets given its implications for corporate governance and minority shareholder protection.** Recent studies by Walker and Le Fort (2000) and Agosin and Pastén (2003) note the prevalence of economic groups, which account for 91 percent of total assets of non-financial firms registered in the SVS. Walker and Le Fort show that firms affiliated to conglomerates obtain a higher proportion of outside finance and get significantly more long-term debt financing than non-affiliated firms. They find that controlling shareholders tend to have more equity than strictly needed for control, suggesting that the inside cost of finance for the conglomerates is lower than the cost of outside financing.

<sup>17</sup> The paper shows the Herfindahl Index for both the pension fund and banking industry increasing since 1995.

**Table 10. Chile: Ownership Concentration, 1998**

Conglomerates	Total assets		Debt		Equity				
	US \$ billion	Relative size (%)	US \$ billion	% of assets	Controlling shareholders		Minority shareholders		
					US \$ billion	% of assets	US \$ billion	Pension funds (%)	ADRs (%)
5 largest	37.7	54.0	17.3	46.0	10.7	28.6	9.5	27.8	27.5
10 largest	49.3	70.0	22.1	44.9	15.2	30.8	11.9	32.0	28.0
20 largest	57.5	82.0	26.3	45.7	17.6	30.5	13.7	26.6	25.8
all conglomerates	63.9	91.0	29.8	46.7	19.4	30.4	14.6	26.5	24.4
Non-Affiliated	6.1	9.0	2.5	42.7	3.2	53.6			
Total	70.0	100.0	32.5	46.4	22.6	32.4			

Source: Walker and Lefort (2000)

49. **Compared to other emerging market countries, the investor concentration in equity markets in Chile remains noteworthy and could explain the low participation of international investors.** Figure 5 uses a measure of “free float” of outstanding equity, which is the proportion of the outstanding equity market available for purchase in the open market by international investors.<sup>18</sup> Chile’s free-float measure is among the lowest when compared with other emerging markets.

50. **The high degree of ownership concentration raises questions about the relative depth of the capital markets and effectiveness of corporate governance.** However, Agosin and Pastén (2003) argue however that the existence of well-developed institutional investors have provided an important counterweight to controlling investors. These investors have played an important role of monitoring controllers and limiting rent. While the low turnover of equity reflects the degree of ownership concentration, these institutional investors could be a factor to increase transparency in corporate governance.

51. **The new tender offer law enacted in 2000 has been an important step to strengthen corporate governance.** The new framework for public tender offers aims at increasing protection of minority shareholders’ rights and reducing rent extraction from controllers. It requires public tender offers to be made open to all shareholders for shares of a large or controlling percentage of a company’s shares. The law also attempts to minimize insider agency problems through independent auditing committees with ample powers of oversight over corporate activities. In addition to attempting to improve corporate governance and promoting minority shareholders’ rights, the new law has also sought to affect financial deepening by allowing more flexibility to investment funds and regulating the participation of pension funds in public tender offers.

<sup>18</sup> The non-free float shares include shareholdings by the government and affiliated entities, corporate treasurers, banks, principal officers, and board members of firms including shares owned by individuals or families that are related to the company.

## F. Concluding Remarks

52. **This chapter has identified important challenges for the development of domestic capital markets.** In particular, low liquidity in equity and bond markets as well as high degree of ownership concentration remain important impediments. Given the structure of the domestic investor base, the dominant presence of pension funds and insurance companies with buy-and-hold investment strategies helps explain the reduced liquidity. More important, the high ownership concentration remains an important feature determining the corporate finance structure and characteristics of capital markets.

53. **Recent changes in financial regulation and legislation, however, have sought to address concerns on the relative depth of capital markets and effectiveness of corporate governance while improving capital markets regulation.** The OPAs law in 2000 aimed to increase the protection of minority shareholders' rights and tightened corporate governance standards. The Capital Market Reform I enacted in 2001 included tax and regulatory measures to promote market liquidity, improve firms' market access to finance and encourage voluntary savings to increase the depth of capital markets. The creation of multi-fund pension system is also helping to increase investment diversification. The most recent legislative proposal advancing the second stage of capital market reforms seeks to foster the development of the local venture capital industry as well as tighten market regulation.

54. **Policymakers have thus been actively working to improve financial market infrastructure, tightening corporate governance standards and market regulation.** As demonstrated by the recent reforms, the authorities have underscored the role of bridging missing markets, promoting liquidity and transparency, and providing incentives to widen access to investment resources. At least two important broad challenges remain: (i) the internationalization of the investor base, and (ii) the optimal portfolio allocation of pension and insurance companies while guaranteeing their investment safety.

55. **Higher participation of foreign investors in domestic markets would foster market development, increase investment resources and allow higher risk diversification.** The presence of international investors would help promote the development of new financial instruments and could increase market resilience to external shocks by reducing the balance sheet effects of currency mismatch for domestic companies. While there is no magic policy to ensure foreign investor participation, developed countries' experiences underscore the importance of continuously improving financial market infrastructure and safeguarding investors' rights.

56. **The optimal portfolio allocation of contractual savings, bearing the trade-off between investment efficiency and safety, remains a major policy challenge.** Recent changes in regulation have progressively eased investment restrictions of pension and insurance companies and are helping improve the efficiency of domestic capital markets. The difficult policy question behooves the role of contractual savings in promoting capital market development while preserving the safety of these investments.

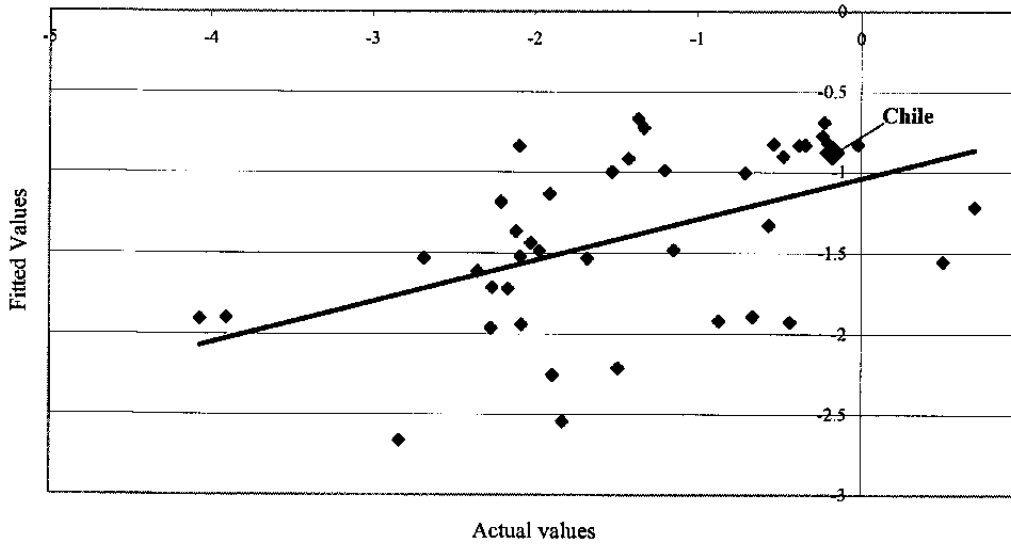


## References

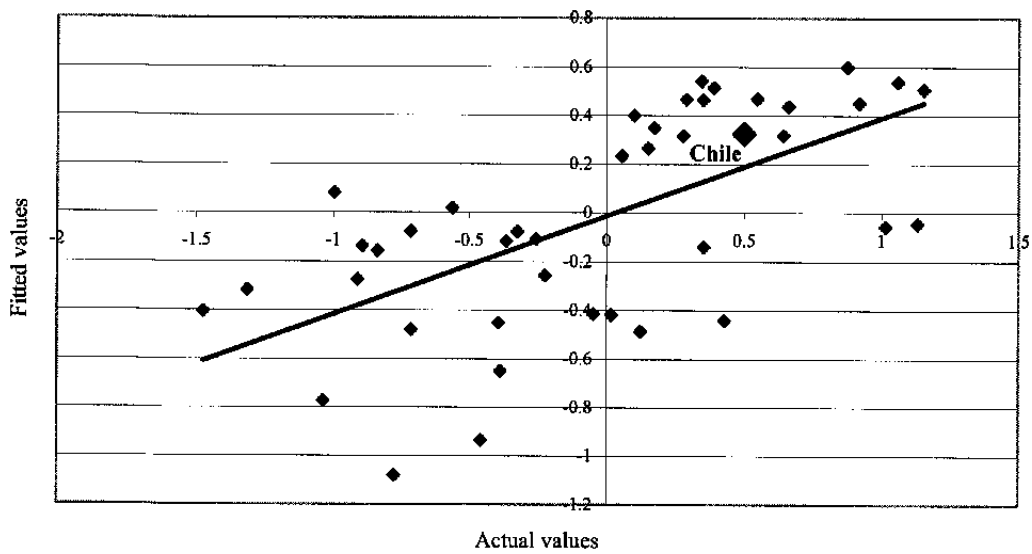
- Agosin, M. and E. Pastén, 2003, "Corporate Governance in Chile," Central Bank of Chile Working Paper, 209 (February).
- Budnevich, C. and J. Quiroz, 2001, "Un Análisis de la Evolución Reciente de la Fragilidad Financiera del Sector Corporativo en Chile: Aspectos Estructurales y Coyunturales," *Universidad Finis Terrae*.
- Caballero, R., 2002, "Coping with Chile's External Vulnerability: A Financial Problem," in N. Loaysa and R. Soto (ed.), *Economic Growth: Sources, Trends and Cycles*, Central Bank of Chile, (Chile).
- Catalan, M., G. Impavido, and A. Musalem, 2000, "Contractual Savings or Stock Markets Development: Which Leads?" Policy Research Working Paper 2421, (August), (Washington: The World Bank).
- Cifuentes R., J. Desormeaux and C. González, 2002 "Capital Markets in Chile: From Financial Repression to Financial Deepening," Economic Policy Papers 4, Central Bank of Chile, (Chile).
- Demirgüç-Kunt, A. and R. Levine, 2001, "A New Database on the Structure and Development of the Financial Sector," *The World Bank Review*, 14(3), 597-606, September.
- Eyzaguirre, N. and G. Le Fort, 1999, "Capital Markets in Chile, 1985-1997: A Case of Successful International Integration," in Perry, G. and D. Leipziger (eds.), *Chile: Recent Policy Lessons and Emerging Challenges*, (Washington: The World Bank).
- Forbes, K., 2002 "One Cost of the Chilean Capital Controls: Increased Financial Constraints for Small Firms," MIT mimeo, (November).
- Gallego, F. and N. Loayza, 2001, "Financial Structure in Chile: Macroeconomic Development and Microeconomic Effects," Chapter 8 in A. Demirgüç-Kunt and R. Levine (eds.) *Financial Structure and Economic Growth: A Cross Country Comparison of Banks, Markets and Development*, Boston, the MIT Press.
- Gallego, F. and L. Hernandez, 2003, "Microeconomic Effects of Capital Controls: The Chilean Experience during the 1990s," *Central Bank of Chile Working Paper*, 203.
- International Monetary Fund, 2002, "Emerging Equity Markets," *Global Financial Stability Report*, Chapter IV, (June).
- Holland, S. and F. Warnock, 2002, "Firm-Level Access to International Capital Markets: Evidence from Chilean Equities," *Emerging Market Review* 4, 39-51.
- Lefort, F., and E. Walker, 2000, "Ownership and Capital Structure of Chilean Conglomerates: Facts and Hypotheses for Governance," *ABANTE*, Vol. 3 (1), 3-27.
- Levine, R. and M. Carkovic, 2002, "Finance and Growth: New Evidence and Policy Analyses for Chile," Central Bank of Chile Working Paper, 157, (May).
- Walker, E. and F. Lefort, 2002, "Pension Reform and Capital Markets: Are There Any (Hard) Links?" *SP Discussion Paper* 0201, (Washington: The World Bank).

Figure 1. Level of Financial Development for a Sample of Countries

Log of market capitalization to GDP



Log of total assets to GDP



Source: Demircug-Kunt and Levine (2001)

Note: Fitted value results from regression on average per capita GDP growth from 1990-1997 and log of per capita income for 1997.

Figure 2. Chile: International Investment Position, 1997 - 2002  
(in US\$ billions)

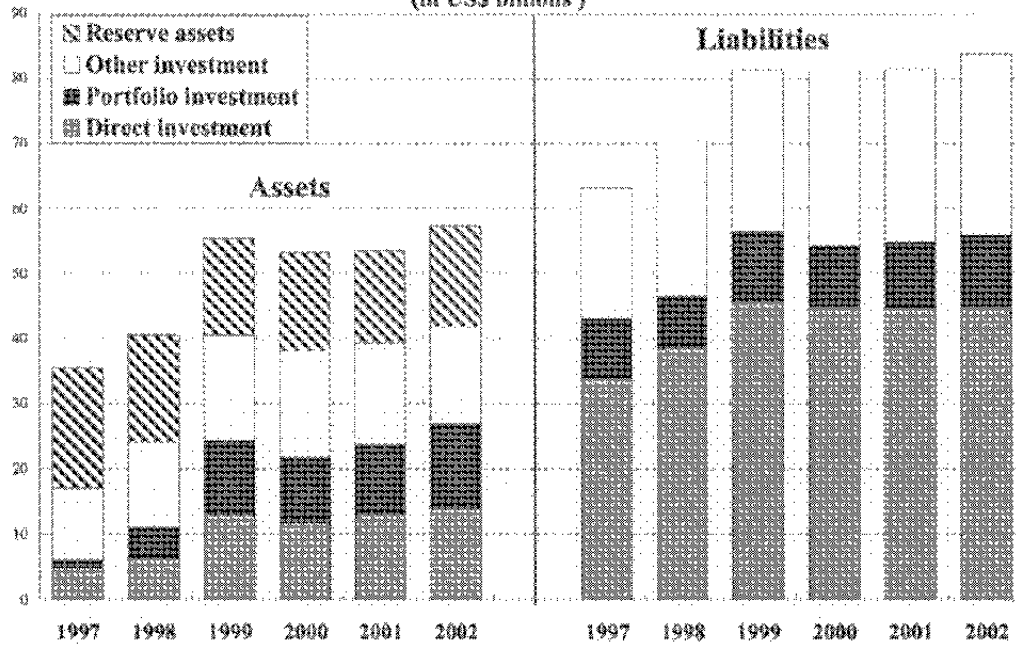


Figure 3: Selected Countries: International Investment Position, 2001  
(in percent of GDP)

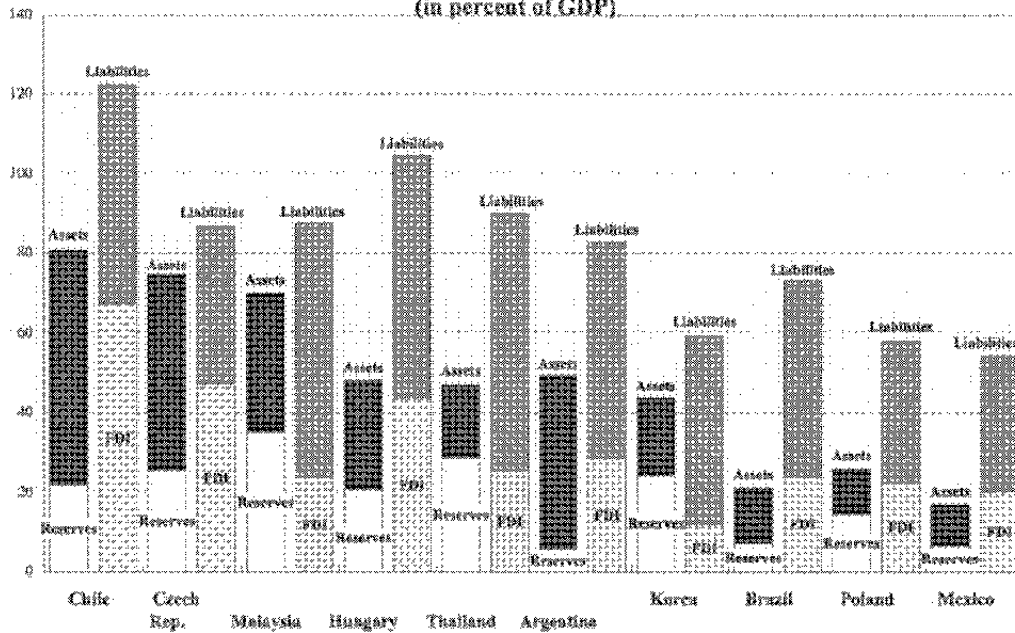
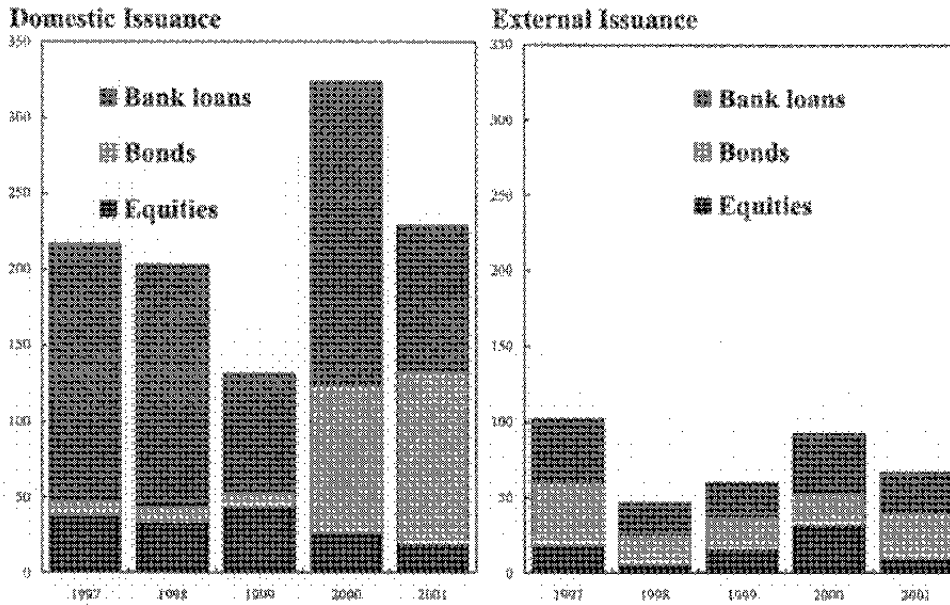
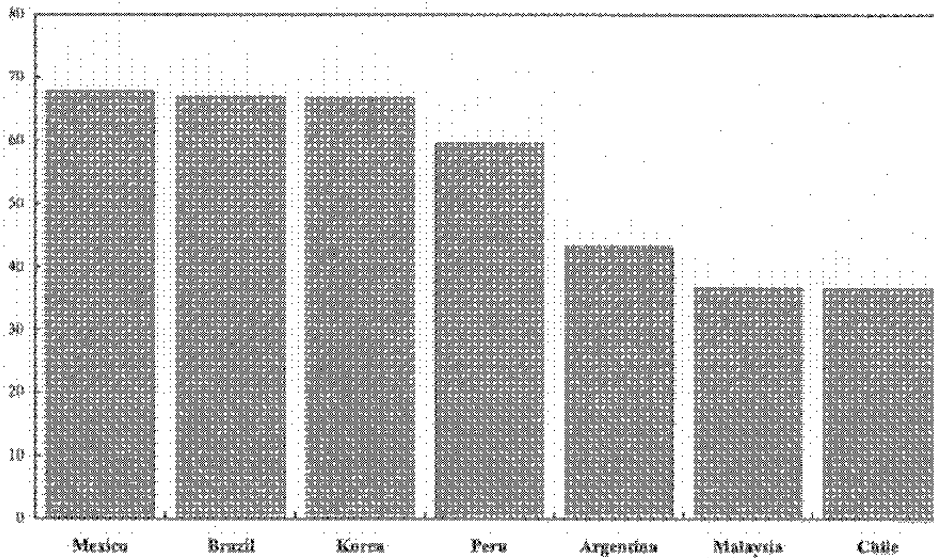


Figure 4. Emerging Markets: Private Sector Issuance



Source: Capital One  
 Emerging markets: China, Hong Kong SAR, Malaysia, Singapore, South Korea, Thailand, Argentina, Brazil, Mexico, Chile, Czech Rep., Hungary, Poland

Figure 5. Selected Countries: Free-Float Measure 1/



Sources: Morgan Stanley's Composite Index, Bloomberg.  
 1/ The proportion of outstanding equity market available for purchase in the open market by international investors.

## VII. ESTABLISHING DEBT BENCHMARKS IN CHILE: THE ROLE OF THE PUBLIC SECTOR<sup>1</sup>

1. **Public debt management has been receiving increased attention in Chile, including with regard to promoting development of financial markets.** While the total stock of public debt owed to the domestic private sector has not been rising significantly—it has been broadly stable at around 30 percent of GDP for some time—it is substantial enough for its management to be of consequence, for both the public and private sectors.
2. **To date, the management of public domestic debt has been a task for Chile’s central bank, since nearly all such debt is found on its balance sheet.** As of end–2002, the central government still had essentially no debt to the domestic private sector, though the Ministry of Finance has indicated that it is considering a domestic bond issue.<sup>2</sup>
3. **In September 2002, the bank began a program of modernization of its debt management procedures, with these objectives:**
  - Increasing the liquidity, and facilitating the internationalization of, the domestic fixed-income market;
  - Deepening the process of “nominalization” of Chilean financial markets, encouraging the private sector to continue shifting away from use of inflation-indexed instruments;
  - Prompting greater capital market efficiency, including development of markets for private debt and hedging instruments.
4. The bank considered that these moves would serve its broader objectives of deepening and modernizing capital markets and enhancing the economy’s integration with Chile’s main trading partners.

### **The specific actions that the central bank took include:**

- Following international standards in the design of its debt issues, using “bullet” amortization, and interest paid twice a year;
- Increasing the stock of instruments that would serve as references or *benchmarks* for debt markets, with a view to establishing a yield curve based on liquid markets for

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<sup>1</sup> Prepared by Manmohan Singh.

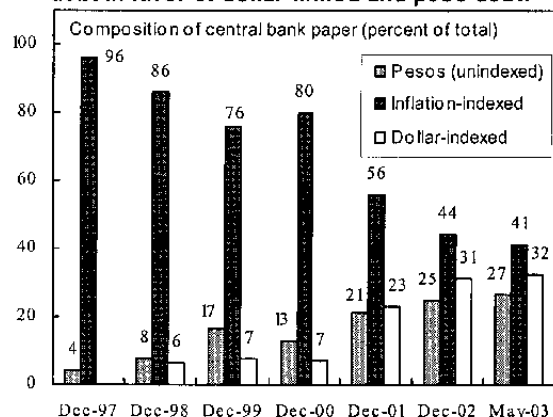
<sup>2</sup> Domestic debt of the public enterprises is limited mainly to a few recent issues, including by the state-owned copper company CODELCO and the Metro. Subnational governments have no financial debt.

low-risk instruments at various maturities.<sup>3</sup> Following international standards for liquidity, a minimum size for each issue would be US\$300 million.

- Increasing both the relative share and average maturity of its (nominal) peso debt issues, beginning with a new 5-year maturity (previously, the longest maturity of peso issues had been only 2 years);

5. **These steps build on earlier actions by the central bank that have shifted its liability structure away from inflation-indexed debt in favor of both peso and dollar-indexed debt.**<sup>4</sup> The greater use of longer-term debt denominated in the domestic currency in particular is widely considered essential in the maturation of emerging economies and in particular reducing their vulnerability to external financial crisis. In that vein, the eventual goal would be to persuade international investors to hold peso-denominated instruments issued by the private sector. Establishing benchmarks, and otherwise promoting the development of the domestic market for such instruments, is seen as a step in that direction.

**The central bank has reduced inflation-linked debt in favor of dollar-linked and peso debt.**



6. **The bank expects that the reform of its debt structure, by generating a rising volume of intermediation, will allow the market to create new hedging markets for specific risks.**

7. **A further benefit of the new debt issues has been the information about inflation expectations now conveyed by interest rate differentials between inflation-indexed and non-indexed debt.** On the new five-year issues, such differentials have stayed close to the bank's inflation objective (i.e., to the midpoint of the 2–4 percent target bank).

8. **The size of the BCCh balance sheet creates the opportunity to create a considerable range of benchmarks—not only at different maturities, but also in**

<sup>3</sup> For the time being, the bank is concentrating its new issues at original maturities of two and five years, for both nominal peso and dollar-indexed debt. For inflation-indexed debt, the bank is issuing at maturities of 5, 10, and 20 years.

<sup>4</sup> The greater issuance of peso-denominated debt is part of the bank's "nominalization" strategy, begun in 2001, when the bank switched its operational target from an inflation-indexed interest rate to a simple nominal interest rate (see Country Report No. 02/155; 7/31/02).

domestic debt is not expected to grow very significantly via fiscal deficits, given the government's commitment to fiscal discipline.<sup>5</sup> Still, simply on the basis of existing central bank debt—on the order of US\$20 billion, to be compared to the above-mentioned US\$300 million standard for minimum issue size—it is clear that the central bank has the opportunity to provide a considerable range of benchmarks. Of course, at the margin benchmarking in any one instrument type reduces the scope for benchmarking in others.

9. **Going forward, the bank's announced policy is to hold constant the share of dollar-indexed instruments in its debt liabilities.**<sup>6</sup> BCCh debt is now divided (in increasingly equal shares) between inflation-indexed peso debt, dollar-indexed peso debt, and simple peso debt, as shown in the figure. Although the rise in the share of dollar-indexed debt since 1997 may appear as an upward trend, in fact it occurred in three discrete episodes (in 1998, 2001, and 2002), in which the bank's motivation was foreign exchange market intervention rather than benchmarking.

10. **In the last few years, the BCCh has reduced the share of inflation-indexed (UF) instruments in its liabilities significantly, by roughly half.** This decline has come at the shorter maturities; indeed, all of the BCCh's debt having maturity greater than five years continues to be in UF form. This pattern reflects the BCCh's deliberate policy of promoting "nominalization" of private balance sheets in general, at the same time recognizing that a market preference for inflation protection will likely persist in long-maturity market segments (e.g., mortgages and pension savings). Looking forward, the 0–5 year market will be increasingly nominalized while the longer-term issues, from 5 to 20 (and possibly more) years will be in UF.

11. **The BCCh's strategy thus entails the eventual loss of the traditional shorter-term UF benchmarks.** Such a change naturally involves some costs, at least during a period of transition. One such area may be the interest rate swap (IRS) market, which is not yet fully developed in Chile. The IRS market is relatively illiquid, as the end of short-dated UF issuance has made the market less complete in the 0–2 year segment, and the UF curve does not provide a continuous reference point to price IRS contracts.<sup>7</sup> Looking forward, further

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<sup>5</sup> The (temporary) deficits permitted under the structural balance rule tend to be moderate in size. Debt issues by the public enterprise sector might play a greater role, though in the past most such debt financing has been from external sources.

<sup>6</sup> Although as always the bank reserves the right to for-ex intervention if it identifies exceptional circumstances.

<sup>7</sup> A further indication of illiquidity in the shorter-term UF market is that UF interest rates are not quite as far below nominal peso rates as indicators of inflation expectations would predict. For example, in June 2002, one and two year yields on inflation-indexed instruments were only about 240 basis points below yields on nominal peso issues with corresponding

(continued)

progression of the nominalization process will allow the market to price IRS off the curve for nominal peso debt.

### **Aspects of the Chilean Market for Foreign Exchange (FX) Hedging Instruments**

**12. The Chilean market for FX hedging instruments primarily uses the spot and the NDF (non-deliverable forward) markets.**

**13. The market for FX hedging is fairly liquid, with transactions in the spot and NDF market reportedly reaching daily volumes of US\$1.4 billion.** Most contracts are valued from US\$3–5 million, and monthly demand for corporate hedges tends to be about US\$4–6 billion. The usual tenor for FX hedge contracts is between 90 days and two years with ample liquidity; corporates typically roll over their hedges for a longer duration. Cross-currency swaps are available for up to five years, with typical fixing at 30 day intervals.

**14. In recent years, a significant outside stimulus to the private hedging market has been the BCCCh's net issuance of dollar-indexed debt.** The bulk of this injection was in the second half of 2001, when the stock of such debt rose to more than 7 percent of GDP, from about 2 percent of GDP in the previous year; a further increase, to 9 percent of GDP, occurred in 2002. Both increases were part of periods of exceptional intervention to support the Chilean peso. Looking forward, the bank's announced policy is to hold steady the share of dollar-indexed instruments in its total debt liabilities.

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maturities. Surveys of inflation forecasts, however, suggested somewhat higher expected inflation rates, closer to 3 percent.



## VIII. INTEREST RATE PASS-THROUGH<sup>1</sup>

### A. Introduction

1. **When the Central Bank of Chile started easing its policy rate at the beginning of 2002, there were some media reports of a sluggish pass-through from the monetary policy rate to bank deposits and lending retail rates.** If the pass-through were sluggish and/or incomplete, the effectiveness of the monetary policy transmission mechanism could be reduced quite significantly. Two recent empirical studies—Berstein and Fuentes (2002) and Espinosa-Vega and Rebucci (2003)—take a close look at the interest rate pass-through in Chile from April 1993 to September 2002

2. **This chapter summarizes the findings in Espinosa-Vega and Rebucci (2003) and provides some highlights on Berstein and Fuentes (2002).** Espinosa-Vega and Rebucci compare the speed and size of pass-through in Chile to those in other countries using aggregate data. The Berstein and Fuentes study's main focus is the analysis of the interest rate pass-through at the individual bank level.

3. **Both articles suggest that while there may be some room to improve the speed and size of interest rate pass-through in Chile,** during the period studied, the properties of interest rate pass-through in Chile have been generally adequate and not atypical, relative to those of the other countries in the sample.

### B. The Espinosa-Vega and Rebucci [E-R] Study

4. **E-R compare the dynamic relationship between the money market interest rate and retail bank rates for Chile, Canada, the United States, Australia, New Zealand and a number of European countries.** To this end, the paper estimates pass-through in the short run (on impact, within a month) and in the long run (in a steady state), as well as the number of months it takes, on average, for the retail rate to reach its long-run level after a change in the money market rate (the mean lag).

5. **These estimates are obtained from an auto-regressive distributed lag model re-parameterized as an error correction specification.** For Chile, the paper also investigates whether there are any asymmetries in the pass-through process, and whether there is any instability. The scope of the paper is limited: to try to determine whether interest rate pass-through is different, in Chile, than in more mature economies, without trying to analyze how differences in the degree of interest rate pass-through may affect the monetary policy transmission mechanism. Although the paper suggests an alternative to banking structure

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<sup>1</sup> This chapter was prepared by Marco A. Espinosa-Vega. It summarizes a paper coauthored with Alessandro Rebucci written for the Sixth Annual Conference of the Central Bank of Chile, December 2002.

differences as the source of cross-country differences in the degree of pass-through, it does not try to fully explain the differences detected.

6. **For Chile as well as for most countries, the paper finds that both the size and the speed of the pass-through decline as the maturity of the bank instruments considered increases.** Unlike the studies reviewed in the E-R paper, for Chile, they do not find evidence of significant asymmetry in the pass-through. They do find some evidence of parameter instability over time, especially around the 1997–98 Asian and Russian crises, but do not find marked evidence that there has been any significant difference after the nominalization of Chile’s interest rate targets.

7. **A distinctive institutional feature of Chile is that there are two different types of domestic currency deposits and loan instruments:** standard nominal instruments and instruments denominated in the *Unidad de Fomento* (UF), a unit of account that indexes financial contracts and transactions to the previous month’s inflation rate. They look at both nominal and UF interest rates, but find that the results are broadly comparable, especially in the long run: the size of the long-run pass-through is about the same across these instruments. In the short run, instead, the pass-through for most UF rates appears slightly smaller than the pass-through for nominal rates.

8. **E-R interpret the evidence they report on the *symmetry* and *instability* of the pass-through in Chile** as suggesting that the behavior of retail banking interest rates is more likely to be affected by factors other than market power in the banking system, of which they suspect especially external shocks.

### C. Some Details of the E-R Model

E-R first specify and estimate the following simple auto-regressive distributed lag (ADL) model:

$$(1) \quad R_{tail}R_t = \alpha_0 + \alpha_1 t + \alpha_2 MMR_t + \alpha_3 R_{tail}R_{t-1} + \alpha_4 MMR_{t-1} .$$

Here *RtailR* is the relevant bank interest rate, *MMR* is the money market rate, and *t* is a time trend. The trend is intended to capture the disinflation process and other factors that change only slowly over time. (Examples may include financial market liberalization and other structural reforms.)

9. For all the countries considered, they specify equation (1) including only one lag of both the retail and the policy interest rate, here assumed to be exogenous—a reasonable assumption within the month. For Chile, standard lag-length selection criteria over the entire sample period cannot reject this one-lag specification. This suggests that there is no serial autocorrelation in the residuals and thus no need to consider a higher order dynamic (results not reported). For the other countries, however, they impose this lag-structure a priori, without testing its adequacy, in order to assure full comparability with the Chilean specification.

10. **When comparing time series models across countries, there is always a trade-off between the need to implement the comparison as neatly as possible and the need to fit models as best as possible to individual countries.** By using different lags for different countries, they would run the risk to lose full comparability. By running the exercise with a common specification across countries they run the risk of comparing Chile with other countries on the basis of a model that is possibly misspecified for other countries. In principle, one could try to determine the optimal lag-length for each interest rate series and country considered (a core set of about 60 regressions in their analysis). They opt for a common parsimonious specification across all countries and interest rate series because it would be difficult, if not impossible, to uncover the “true” lag-length for all cases considered. Moreover, as the sample period is not very long, one would risk efficiency losses when considering specifications with longer lag structures.

11. Following Hendry (1995), they re-parameterize and re-estimate the ADL in (1) as the following error correction model (ECM):

$$(2) \quad \Delta RtailR_t = \alpha_2 \Delta MMR_t + \beta_3 (RtailR_{t-1} - \beta_0 - \beta_1 t - \beta_2 MMR_{t-1})$$

where

$$(3) \quad \beta_0 = \frac{\alpha_0}{(1-\alpha_3)}, \beta_1 = \frac{\alpha_1}{(1-\alpha_3)}, \beta_2 = \frac{\alpha_2 + \alpha_4}{(1-\alpha_3)}, \beta_3 = (\alpha_3 - 1) .$$

12. The parameters of equation (2) are linked to the parameters of equation (1) by equation (3). Hence, estimating the former equation allows all the parameters of the latter to be recovered and vice versa without altering the estimated residuals. From a statistical point of view, however, the two representations are not equivalent: if the series are stationary, or non-stationary but co-integrated, then the parameters of (2) may be estimated more efficiently because the error correction term and individual series represented in first differences are less likely to be collinear. If the series are integrated but do not co-integrate, then neither representation is statistically satisfactory.<sup>2</sup>

13. In equation (2), the term  $(RtailR - \beta_0 - \beta_1 t - \beta_2 MMR)$ , the lagged deviation of the retail interest rate from its steady state value, can be interpreted as the solution of an

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<sup>2</sup> As noted, all Chilean interest series are stationary, while most non-Chilean series appear to have a unit root. Therefore, in the case of Chile, it would be pointless to investigate the presence of co-integration between the money market and retail interest rates. For the other countries, they find that a standard ADF test on the estimated long-run relation  $(RtailR - \beta_0 - \beta_1 t - \beta_2 MMR)$  rejects the null of unit root in most cases. This suggests the presence of co-integration in the vast majority of the cases analyzed.

optimization problem of a representative bank, as for instance in the model developed by Bondt (2000) and those reviewed by Freixas and Rochet (1998, Chapter 3). Nonetheless, since the empirical analysis is not tied to any particular structural model, they use equation (2) simply to characterize the dynamic, reduced form relation between retail and money market interest rates.

14. **The empirical results focus particularly on the degree of pass-through in the short term** ( $\alpha_2$ , the size pass-through on impact and thus within a month), the degree of pass-through in the long run ( $\beta_2$ , the size of the pass-through in the long run or in steady state), and the speed of adjustment to the long-run value ( $\beta_3$ ), which together with  $\alpha_2$  determine the average number of months needed to reach the long run of the pass-through ( $1 - \alpha_2 / \beta_3$ , sometimes called the mean lag).

#### D. Results

15. **In Chile, the pass-through appears incomplete even in the long-run, but this is also true for most European countries, New Zealand, and Australian deposit rates.**<sup>3</sup> Pass-through appears complete only in the case of the Australian lending rate analyzed, Canada, and the United States. For Chile, however, the size of the short-term pass-through is larger than in Europe, Australia or New Zealand. As a result, the Chilean mean lag is markedly smaller than in Europe, and is comparable to that in the United States, Canada, Australia, and New Zealand. In fact, the mean lag for Chile is at most four months compared with a mean lag of at most two months for the United States and New Zealand.

16. **As one might expect, the shorter the maturity of the bank lending or deposit instrument, the larger and faster the pass-through.** For given maturities, there appears to be only a small difference between deposit and loan rates. Moreover, in the case of Chile, they find little difference between the pass-through to UF and nominal interest rates.

17. **Chile and Europe display slightly less than full pass-through, but the reasons appear different.** In Chile, incomplete but relatively fast pass-through appears more likely to be due to external macroeconomic factors than to market power in the banking system, if one is willing to assume that lower persistence in interest rates is primarily due to external shocks. In the case of Europe, the existing literature points to some role for market power in the banking sector.<sup>4</sup> As can be seen from equation (3), for a given size of the short-term pass-

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<sup>3</sup> The reported estimate for Europe is an average of the individual country estimates. As known in the literature on dynamic panel data models (e.g., Pesaran and Smith, 1995), such an average may yield a consistent estimate of the typical relation in the cross section. Indeed, its efficiency may be questioned in this case given the small number of country estimates available, but such an averaging is statistically legitimate and economically sensible.

<sup>4</sup> This interpretation is consistent with the observation of Cottarelli and Kourelis (1994) that reducing the fluctuations in money market rates could help enhance the size of pass-through,

(continued...)

through  $(\alpha_2 + \alpha_4)$ , the size of the long-run pass-through ( $\beta_2$ ) is an increasing function of the persistence parameter,  $\alpha_3$ , which in turn is a decreasing function of interest rate volatility. Chile's long-run pass-through and the correlation between money market and retail interest rates is comparable to Europe's (Table 1). At the same time, the short-term pass-through is higher in Chile than in Europe, while interest rate persistence (and volatility) of both money market and retail interest rates is lower (higher) in Chile than in Europe.

18. **How to interpret these results? Chile has a financial structure in which domestic capital markets have played a progressively more important role over the last decade.** In addition, the Chilean banking system is not only exposed to competition from domestic capital markets but also from foreign banks. As a result, the Chilean banks might have limited market power even if the banking system exhibits some degree of concentration—at least with regard to the largest borrowers that have access to both domestic and foreign capital markets.

19. **This conjecture is not incompatible with some role for banks' behavior in the explanation of incomplete pass-through,** but it de-emphasizes the role of market power to highlight the role of the relatively high degree of openness to trade in goods and assets of the Chilean economy. If incomplete pass-through were due mainly to market power in the banking system, one would expect that this would result in an asymmetric pass-through while analyzing periods of increasing and decreasing in interest rates. On the other hand, if external shocks were the main factor affecting pass-through incompleteness, one would expect to find evidence of a more complete pass-through before the Asian, Russian, Brazilian, and Argentine crisis that buffeted Chile after June 1997. Without pretense to be able to discriminate between these two competing hypothesis, based only on aggregate macroeconomic data, they try to assess the robustness of the benchmark estimation and their interpretation.

#### **Is Chile's Interest Rate Pass-Through Asymmetric?**

20. To investigate this hypothesis, following Sarno and Thornton (2002), they create a dummy variable that is equal to one if the retail rate is above or equal to its long-run equilibrium level—given by the estimated error correction term ( $R_{tailR} - \beta_0 - \beta_1 t - \beta_2 MMR$ )—and zero otherwise. They then re-estimate the model in (2) by interacting the coefficients  $\alpha_2$  and  $\beta_3$  with this dummy.<sup>5</sup> As a result, they obtain estimates for the size of the short-term pass-through and its speed of adjustment in the two states of the interest rate cycle, which we shall call interest rate “tightening” and “easing,” respectively.

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although they tie a reduction in the money market rate volatility to structural regulatory changes, rather than external shocks.

<sup>5</sup> Note that  $\beta_2$  is kept constant in this exercise. Sarno and Thornton (2002) keeps also  $\alpha_2$  constant.

21. **They find that there is little evidence of asymmetry in the pass-through for Chile when measured in this manner.** In most cases, either the estimates of the parameter of interest in one state are not statistically different from those the other state or the significant differences have the wrong sign.
22. **The approach used by Sarno and Thornton (2002) to investigate these asymmetries does not take a stand on whether the deviations from the long-run equilibrium relationship are caused by changes in the stance of monetary policy or other temporary shocks.** To explore the possibility that asymmetric behavior is more pronounced when the deviation from the long run equilibrium are associated with policy shocks, they experimented with a different dummy.
23. **This variable tracks “tightening” and “easing” in the monetary policy stance more closely and is based on the publicly announced target for the money market interest rate (Figure 1).**<sup>6</sup> Irrespective of the source of the deviation from the long run equilibrium, they find little evidence of asymmetry in the pass-through for Chile.
24. **Hannan and Berger (1991) and Neuman and Sharpe (1992) found evidence of asymmetric pass-through for deposit rates in the United States and concluded that the most likely explanation could be banking market power.** It might be possible to conclude, on the basis of their argument, that the lack of asymmetric pass-through for the Chilean banking system means absence of market power. However, this evidence cannot be conclusive.
25. **Berstein and Fuentes main focus is the analysis of the interest rate pass-through at bank level.** Their methodology is inspired by Cottarelli and Kourelis (1994) who tried to measure and compare the degrees of lending rate pass-through in a number of different countries, developed and developing. Bernstein and Fuentes identify a number of variables such as the size of the bank, the size of the loan and other factors likely to influence the demand elasticity faced by the different banks in Chile.
26. **Berstein and Fuentes find noticeable heterogeneity in the degree of pass-through across banks and type of instrument with the largest loans getting the highest pass-through.** This evidence could be interpreted as suggesting that market power may be present in some segments of the Chilean banking system. They also find that on average there is a sizeable

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<sup>6</sup> This variable, called “forward” (backward) dummy in Figure 1, is equal one if the next (or previous) policy change is and interest rate target decrease. This approach is similar to the one used by Mojon (2000), who identifies interest rate cycles directly by inspecting plots of retail interest rates. They also considered the possibility of disentangling the impact of the banking structure on the pass-through by comparing the response of retail banking rates with that of market interest rates of similar maturities. However, data availability prevented us from carrying out this type of analysis.

but incomplete pass-through in the short-run. In the long-run they find that there is close to full pass-through for the lending rates they consider.

### **Is Chile's Interest Rate Pass-Through Stable Over Time?**

27. To determine whether Chile's interest rate pass-through has changed in recent years due to international crises, changes in the exchange rate regime, and, most recently, the nominalization of monetary policy, E-R follow Morande and Tapia (2002) by reestimating the model over three progressively longer samples: a sub-sample that excludes the Argentine crisis and the nominalization of monetary policy (so that it ends in June 2001), a sub-sample that excludes the whole free-floating period (this sample ends in June 1999), and a sub-sample that excludes the entire Asian-Russian financial crisis period (and subsequent periods, ending in June 1997).

28. **The evidence on parameter stability suggests that there might have been some slowdown in the pass-through in the post-1997 period.** But there is less evidence that things have changed further after 1997. The estimates for interest rates *denominated in UF terms* based on the sample through June 1997, in particular, do appear to differ somewhat from those obtained on longer samples. Interestingly, these estimates display larger pass-through in the long-run than those based on longer sample periods.<sup>7</sup>

29. Summary statistics on the row data are consistent with this econometric evidence: as can be seen from Table 1 the standard deviation of interest rates in UF terms through June 1997 is only about a third of that computed on longer sample periods, while persistence (Table 2) of the money market rate was about 25 percent higher. Thus, suggesting a break after mid-1997. The fact that the break occurred at the time of the Asian and Russian crises brings some support to the view that pass-through incompleteness, in the case of Chile, is more likely due to external shocks rather than market power in the banking system.

30. **The changes in exchange rate and monetary policy regimes that took place in September 1999 and August 2001, respectively,** do not appear to have had much impact on the interest rate pass-through over and above the impact of the external environment. The estimates based on the two sub-samples through June 2001 and June 1999 are essentially identical to that based on the entire sample period (through September 2002). In particular, though it might be early to assess the effects of nominalization of monetary policy, these results suggest that nominalization has had no significant impact on the interest rate pass-through.

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<sup>7</sup> Note that those estimates of the long-run pass-through based on the shortest sample period appearing equal to zero result from an estimated  $\alpha_4$  of the equal size but opposite sign than  $\alpha_2$ ; thus, annihilating the term  $(\alpha_2 + \alpha_4)$  and hence also the long-term pass-through. These are cases in which a different, possibly even shorter, lag-length would likely be appropriate (say including only contemporaneous variables).

## E. Conclusions

31. **Based on broadly comparable aggregate monthly data from 1993 to 2002 and an identical standard error-correction econometric specification, E-R find that, overall, Chile's pass-through is not atypical.** Although the results indicate that Chile's pass-through is incomplete in the long-run, the same holds for most of the other countries considered. Chilean interest rates are more volatile and less persistent than in many other countries. However, the pass-through in the short term is larger than in many of these countries. Chile's pass-through is also faster than in most other countries.

32. **Slow and/or incomplete pass-through is usually attributed to market power in the banking system.** This paper, however, suggests that external volatility should be considered more carefully as a possible factor giving rise to pass-through incompleteness in small open economies.

33. **E-R do not find significant evidence of asymmetric behavior across states of the interest rate cycle, regardless of the criterion used to identify different states of the cycle.** On the other hand, they do find some evidence of parameter instability around the time of the Asian crisis. The pass-through mechanisms appear faster and more complete before June 1997 (i.e., before the Asian/Russian crises), especially for interest rates in UF terms. However, E-R shows that neither the switch to a fully flexible exchange rate regime in 1999 nor the adoption of nominal interest rate targeting in August 2001 seems to have affected pass-through markedly.

34. **These results are consistent with the view that the differences between Chile and the other countries studied, may be due mainly to external shocks, rather than differences in market power in the banking system or the recent changes in Chile's exchange rate and monetary policy regimes.** They propose to study this hypothesis using micro data based on the predictions of a banking sector model of imperfect competition in an open economy.



Table 1. Sample Mean of Interest Rates, April 1993 - June 2002 1/

	mmr	dst	dmt	dlt	lst	lmt	llt	lwt
Chile (Nominal, Full Sample)	12.92	11.12	11.79	14.14	15.36	22.13	25.17	17.40
April 1993 - June 1997	16.33	14.05	14.61	16.43	18.12	25.50	28.60	18.11
April 1993 - June 1999	15.82	13.45	14.30	16.78	17.50	24.99	27.34	18.70
April 1993 - June 2001	14.10	12.09	12.76	15.33	16.35	23.13	26.15	17.90
Chile (U.F., Full Sample)	6.53	--	5.93	6.35	--	8.45	8.34	8.41
April 1993 - June 1997	6.85	--	6.43	6.75	--	9.08	8.93	8.84
April 1993 - June 1999	7.78	--	6.92	7.16	--	9.48	9.19	9.52
April 1993 - June 2001	7.08	--	6.42	6.80	--	8.92	8.70	8.79
United States	4.80	4.89	4.95	5.25	7.79	--	--	--
Canada	4.66	4.75	4.84	--	6.37	6.79	7.57	--
Belgium	4.28	3.33	3.62	--	5.18	8.14	6.95	--
France	4.45	3.53	--	4.58	--	6.34	6.38	--
Germany	4.10	3.06	3.52	3.71	--	8.52	11.61	--
Netherlands	3.94	0.58	--	3.90	--	4.43	--	--
Spain	6.02	3.38	--	4.92	--	7.01	8.59	--
Australia	5.61	4.41	4.79	5.33	--	--	--	9.12
New Zealand	6.66	4.44	6.59	--	--	--	--	10.55

Sample Standard Deviation of Interest Rates, April 1993 - June 2002 1/

	mmr	dst	dmt	dlt	lst	lmt	llt	lwt
Chile (Nominal, Full Sample)	6.35	4.92	4.74	4.94	5.00	5.87	4.61	3.40
April 1993 - June 1997	5.64	4.28	3.48	3.15	4.55	5.08	4.01	2.73
April 1993 - June 1999	5.73	4.26	3.69	3.54	4.60	5.09	3.87	3.56
April 1993 - June 2001	6.00	4.57	4.31	4.15	4.61	5.63	4.17	3.38
Chile (U.F., Full Sample)	3.36	--	2.09	1.76	--	2.07	1.67	2.03
April 1993 - June 1997	0.50	--	0.45	0.39	--	0.42	0.53	0.41
April 1993 - June 1999	3.09	--	1.52	1.27	--	1.53	1.22	1.76
April 1993 - June 2001	2.98	--	1.64	1.36	--	1.70	1.43	1.87
United States	1.28	1.29	1.31	1.22	1.28	--	--	--
Canada	1.28	1.31	1.34	--	1.30	1.16	1.08	--
Belgium	1.64	0.97	1.31	--	1.25	1.42	1.11	--
France	1.59	0.63	--	1.49	--	1.67	1.69	--
Germany	1.25	0.93	1.00	0.87	--	0.99	1.39	--
Netherlands	1.19	0.11	--	0.84	--	1.21	--	--
Spain	2.66	1.54	--	2.35	--	2.67	2.80	--
Australia	1.13	1.06	1.20	1.31	--	--	--	1.28
New Zealand	1.80	1.51	1.45	--	--	--	--	1.33

1/ Data for Chile are through September 2002, except weighted average loans, which are from January 1995 through June 2002.

Table 2. Sample Persistence of Interest Rates, April 1993 - June 2002 1/

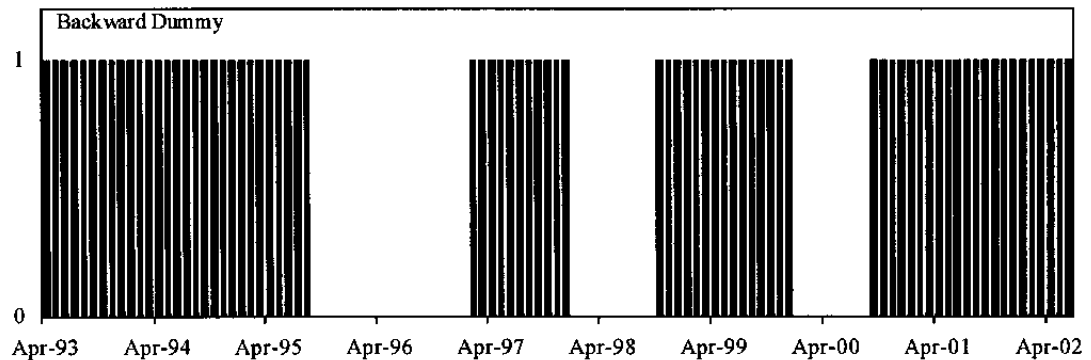
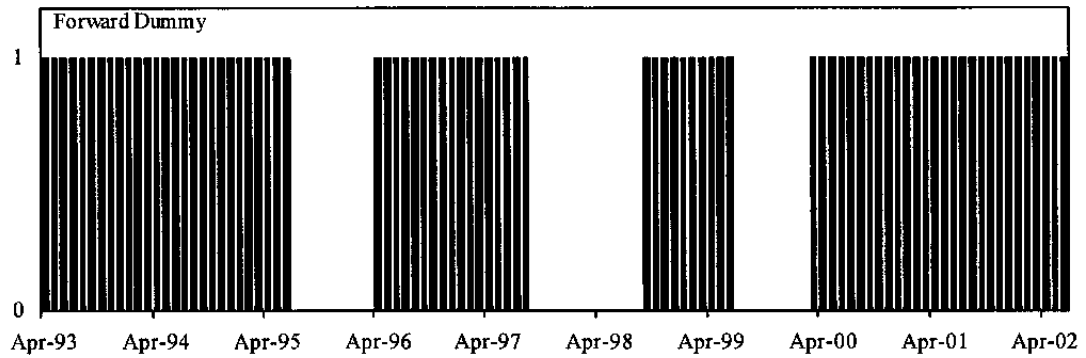
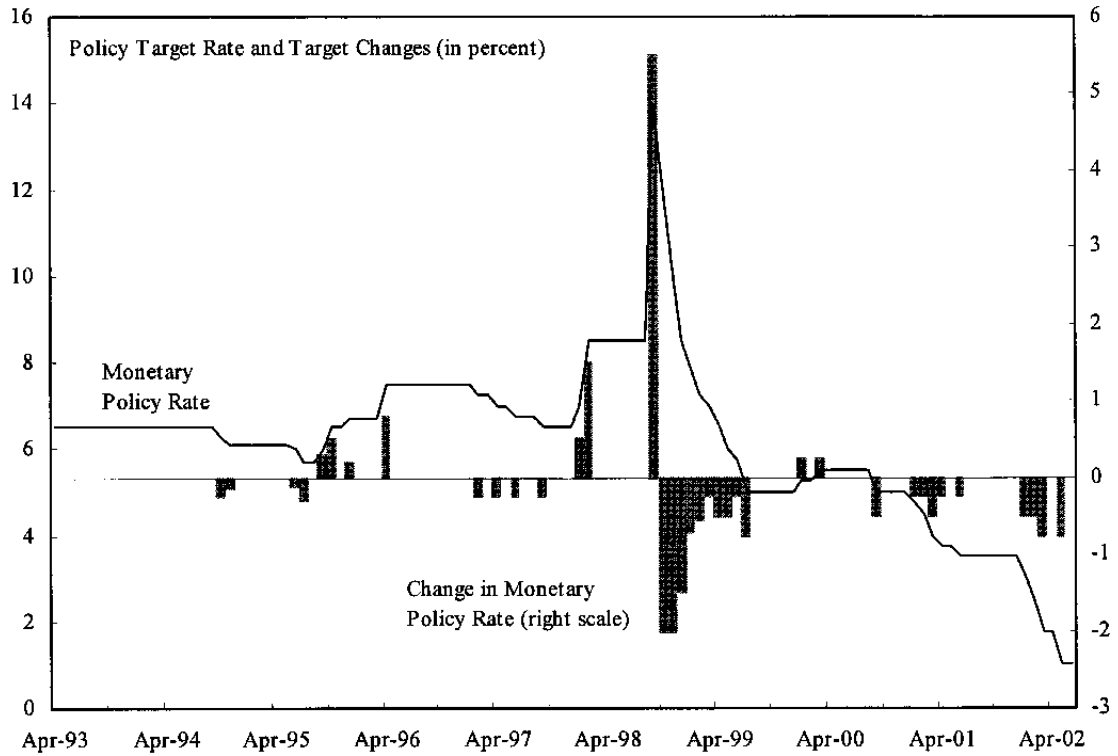
	mmr	dst	dmt	dlt	lst	lmt	llt	lwt	
Autocorrelation of rate with rate at (t-1)									
Chile - Nominal, Full Sample	0.68		0.72	0.79	0.93	0.75	0.87	0.92	0.72
April 1993 - June 1997	0.47		0.50	0.52	0.94	0.62	0.79	0.87	0.65
April 1993 - June 1999	0.47		0.50	0.53	0.85	0.61	0.76	0.87	0.61
April 1993 - June 2001	0.61		0.65	0.73	0.89	0.69	0.85	0.90	0.68
Chile - U.F., Full Sample	0.64	--	0.88	0.92	--	0.87	0.87	0.87	0.87
April 1993 - June 1997	0.82	--	0.92	0.92	--	0.90	0.53	0.87	0.87
April 1993 - June 1999	0.54	--	0.82	0.84	--	0.76	0.75	0.76	0.76
April 1993 - June 2001	0.62	--	0.87	0.89	--	0.85	0.85	0.85	0.85
United States	0.99		0.98	0.99	0.98	0.99	--	--	--
Canada	0.96		0.96	0.97	--	0.97	0.95	0.93	--
Belgium	0.97	Administered Rate	0.98	--	0.97	0.97	0.97	--	--
France	0.97	Administered Rate	--	0.97	--	0.98	0.99	--	--
Germany	0.99		0.99	0.99	0.99	--	1.00	1.00	--
Netherlands	0.99	Administered Rate	--	0.98	--	0.99	--	--	--
Spain	0.99		1.00	--	1.00	--	0.99	1.00	--
Australia	0.98		1.00	0.99	0.98	--	--	--	0.99
New Zealand	0.96		0.98	0.98	--	--	--	--	0.97

Sample Correlation of Interest Rates, April 1993 - June 2002 1/

	mmr	dst	dmt	dlt	lst	lmt	llt	lwt	
Contemporaneous correlations with policy rate									
Chile (Nominal, Full Sample)	1.00		0.94	0.84	0.76	0.94	0.92	0.77	0.65
April 1993 - June 1997	1.00		0.91	0.70	0.61	0.93	0.89	0.69	0.87
April 1993 - June 1999	1.00		0.90	0.71	0.58	0.92	0.88	0.63	0.87
April 1993 - June 2001	1.00		0.93	0.80	0.70	0.93	0.91	0.71	0.87
Chile (U.F., Full Sample)	1.00	--	0.89	0.84	--	0.88	0.81	0.74	0.74
April 1993 - June 1997	1.00	--	0.88	0.72	--	0.80	0.33	0.91	0.91
April 1993 - June 1999	1.00	--	0.89	0.86	--	0.89	0.78	0.89	0.89
April 1993 - June 2001	1.00	--	0.90	0.87	--	0.90	0.81	0.91	0.91
United States	1.00		0.99	0.98	0.92	1.00	--	--	--
Canada	1.00		0.99	0.97	--	0.99	0.89	0.72	--
Belgium	1.00	Administered Rate	0.98	--	0.94	0.98	0.59	--	--
France	1.00	Administered Rate	--	0.99	--	0.84	0.88	--	--
Germany	1.00		0.99	0.99	0.96	--	0.97	0.83	--
Netherlands	1.00	Administered Rate	--	0.85	--	0.98	--	--	--
Spain	1.00		0.98	--	0.98	--	0.99	0.99	--
Australia	1.00		0.73	0.91	0.88	--	--	--	0.88
New Zealand	1.00		0.92	0.96	--	--	--	--	0.94

1/ Data for Chile are through September 2002, except weighted average loans, which are from January 1995 through June 2002.

Figure 1. Chile: Timing of the Monetary Policy Cycle, 1993 - 2002



Sources: Central Bank of Chile; IMF staff estimates.

## References

- Berstein S., and R. Fuentes, 2002, "From Policy Rate to Bank Lending Rates: the Chilean Banking Industry," Paper presented at the Sixth Annual Conference of the Central Bank of Chile, December.
- Cottarelli, C., and A. Kourelis, 1994, "Financial Structure, Bank Lending Rates, and the Transmission Mechanism of Monetary Policy," *IMF Staff Papers*, Vol. 41, No. 4, pp. 587–623.
- Espinosa-Vega M., and A. Rebucci, 2003, "Retail Bank Interest Rate Pass-Through: Is Chile Atypical? IMF working paper WP/03/112.
- Hannan, T., and A. Berger, 1991, "The Rigidity of Prices: Evidence from the Banking Industry," *American Economic Review* Vol. 81, pp. 938–45.
- Morande F., and M. Tapia, 2002, "Exchange Rate Policy in Chile: From the Band to Floating and Beyond," Central Bank of Chile Working Paper No. 152.
- Neuman, D., and S. Sharpe, 1992, "Market Structure and the Nature of Price Rigidity: Evidence from the Market for Consumer Deposits," *Quarterly Journal of Economics*, pp. 657–680.
- Sarno, L., and D. Thornton, 2002, "The Dynamic Relationship Between the Federal Funds Rate and the Treasury Bill Rate: An Empirical Investigation," *Journal of Banking and Finance* 666, (forthcoming).

## IX. AN ASSESSMENT OF CHILE'S EXTERNAL POSITION<sup>1</sup>

### A. Introduction

1. **This chapter provides an assessment of Chile's external position, integrating information on the country's international investment position and structure of external debt.**<sup>2</sup> The objective is to analyze the possibility of an external liquidity squeeze on the balance of payments as well as to test for potential solvency problems. The approach followed combines the standard IMF debt sustainability analysis framework and alternative tests using newly published data on Chile's international investment position. The analysis focuses on (i) external debt dynamics, (ii) sensitivity of gross external financing requirements to specific shocks, and (iii) implications of Chile's international investment position for external vulnerability.

2. **The main results underscore the strength of Chile's aggregate external position.** We summarize below our key findings.

- Using the standard debt sustainability framework, we see that various hypothetical shocks during 2003–04 would raise the external debt-to-GDP ratio during those years, but would still be consistent with a gradual decline in the debt ratio thereafter. Moreover, although some of the shocks considered would substantially raise the debt ratio for a time, the risks of these standardized shocks seems remote, given the strength of Chile's current policy framework.
- Liquidity problems are not expected given the country's significant international reserve holdings.<sup>3</sup> A drawdown in international reserves would be sufficient to cover Chile's annual gross external financial requirements under all stress tests considered.
- Chile's foreign asset position is a source of strength. Liquid external asset holdings by the private sector were more than sufficient to cover the country's total external

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<sup>1</sup> Prepared by Rodolfo Luzio.

<sup>2</sup> Current work at the Central Bank of Chile (BCCh), in preparation of a Financial Stability Report, has focused on developing a more detailed and comprehensive assessment of Chile's external position.

<sup>3</sup> The analysis in this chapter does not refer to the more demanding question of the optimal level of international reserves. Rather, the level of reserves is here compared to the level of financing needs under various scenarios. To consider the optimal level of international reserves, a more comprehensive analysis of the costs and benefits of liquidity holdings would be required, including with greater attention to the probability of adverse shocks.

financing requirements at end 2001.<sup>4</sup> Foreign direct investment in Chile amounted to two-thirds of GDP helping explain that foreign-owned Chilean resident firms held more than half of Chile's total external debt. Sensitivity analysis using the net international investment position shows the dampening effects of direct investment holdings on the aggregate net liability.

- The sound policy framework, including credible inflation targeting, foreign exchange free float, and strong fiscal position, should provide enough flexibility to accommodate and support temporary shocks to external financing conditions.

3. **The results of aggregate analysis of vulnerability carry some caveats.** In principle, the aggregate approach could mask financial vulnerabilities in specific sectors or business groups that could have amplifying effects with systemic implications (a general problem, not particularly specific to Chile). On the other hand, analysis relying on traditional residency-based aggregates could also understate potential sources of strength, especially in the case of Chile. In particular, the presence of foreign-owned Chilean resident firms responsible for half of total external debt could be a source of external support, as demonstrated recently by the case of Enersis (see accompanying chapter). Chile's supportive investment environment with strong property right guarantees is a key determinant on the willingness of foreign parent companies with long investment strategies to support their Chilean resident subsidiary in periods of financial stress.

4. **The chapter is organized as follows.** Section B describes the features and characteristics of Chile's debt and international investment position. The next section presents the medium-term baseline scenario and uses standard sensitivity tests to assess sustainability. Section D considers gross external financing requirements and develops its sensitivity analysis based on standard shocks as well as a more detailed consideration of rollover rates in the short term. Finally, Section E focuses on the implications of the net external position.

## **B. Characteristics of the External Position**

5. **Chile's total external debt has experienced an steady increase in recent years.** From 1997 to 2002, external debt grew by 50 percent in U.S.dollar nominal terms, reaching US\$40 billion at end 2002 (see Figure 1).<sup>5</sup> The slowdown in economic activity and depreciation of the Chilean peso also contributed to the rapid increase in the debt to GDP

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<sup>4</sup> Using a narrow definition of liquid assets, which includes only short-term deposit and currency holdings, but excludes short-term credits, would indicate that private sector liquid holdings would cover more than two thirds of the private sector's short-term debt on a residual maturity basis.

<sup>5</sup> Total external debt excludes trade credit liabilities which are expected to be published in September 2003.

ratio, which doubled during the five-year period. At end 2002, total external debt represented 61 percent of GDP.

**6. Concern about the sharp rise in total external debt, however, should also take into account the following factors:**

- Most of this debt is long-term (see Figure 1a). Short-term debt on an original maturity basis, excluding trade credits, represented just 6 percent of total debt in 2002 while the duration of the medium-term debt averaged five years. On a residual maturity basis, short-term debt amounted to 21 percent of total debt in 2002.
- Most of the debt is owed to foreign banks (see Figure 2b). About half of long-term debt comes from foreign banks while market bond financing represents a quarter of total long-term debt. (In vulnerability analyses, banks are usually considered more likely to be “supportive” during times of stress than bondholders.)
- Most of the external debt corresponds to the private sector, in particular foreign-owned companies. The private sector external debt represented 82 percent of the total and foreign-owned firms accounted for 63 percent of that amount (or about 50 percent of total external debt).
- The increase in the external debt was associated with an increase in external asset accumulation by the private sector. Private sector direct investment abroad and portfolio investment rose fourfold from 1997 to 2002, reaching 40 percent of GDP in 2002. Given Chile’s supportive investment environment, some foreign multinational firms have used Chile as an investment hub to manage its investments in the region.
- On the other hand, the majority of long-term debt used a floating interest rate, making debt servicing more vulnerable to interest rate fluctuations.

**7. In contrast to the surge in gross external debt, the net external liability position was almost flat in nominal terms during the 1997–2002 period, at US\$27 billion.**

By 2002, it amounted to 39 percent of GDP with gross liabilities representing 126 percent of GDP. The stock of direct and equity investment in Chile stood at US\$56 billion (two-thirds of total liabilities), while direct and equity investment abroad amounted to US\$24 billion (see Table 1).

**8. Compared to other emerging market countries, Chile’s international investment position shows a higher degree of financial integration.** By end 2001, Chile’s total foreign liabilities was the highest level among the selected group of emerging countries (reference) At the same time, Chile had the largest holdings of foreign assets relative to GDP and had among the lowest leverage (ratio of liabilities to assets). Chile had also the lowest share of debt in total liabilities holdings while maintaining a strong external liquidity position. When compared to other Latin American countries, Chile has a high reserve-to-GDP ratio, but is roughly similar to the average of some Eastern European countries and below some East Asian economies (see Table 2).

### C. External Debt Sustainability Analysis

#### Baseline Projections

9. **The staff's baseline scenario assumes a pick up in economic activity over the medium term to close the output gap by 2008.** The output growth rate is expected to pick up to 5.5 percent in 2006 before falling back to the growth rate of potential output by 2008. The current account deficit would see a gradual widening from 1 percent of GDP in 2002 to 2.5 percent in 2008. Most of the current account deficit would be financed by debt; the baseline has only a modest recovery in net FDI flows reaching about three quarters of the previous decade average level. Nominal external interest rates would increase to 7.4 percent by 2006 and the real exchange rate is projected to be broadly constant over the period. The country risk premium is expected to remain low, at 100–120 basis points

10. **Under the baseline scenario, total external debt increases from US\$40 billion 2002 to US\$56 billion in 2008.** The moderate growth in external indebtedness reflects a gradual widening of the current account and some recovery of FDI. The debt-to-GDP ratio is expected to follow a downward path dropping to 54 percent by 2008. The drop in the debt-to-GDP ratio is largely driven by the expected pick up in economic activity.

#### Sensitivity Analysis

11. **Table 3 illustrates the sensitivity of the baseline external debt projection to changes in assumptions.** We consider shocks in 2003–04 to real output growth, the current account, the GDP deflator in U.S. dollar terms (a proxy for the real exchange rate), and the level of interest rates; the magnitude of each shock is set to be twice the historical standard deviation (calculated over the previous 10 years). Using ten-year historical average values would imply a lower debt-to-GDP path falling to 51 percent at the end of the period

12. **In all the cases considered, the debt-to-GDP ratio rises considerably during the shock years (2003–04) before dropping to levels generally higher than the 2002 level.** The most significant increase would occur in the extreme and unlikely scenario of a *combination* of two-standard deviation negative shocks to the nominal interest rate, real GDP growth and current account. Similarly, a 20 percent depreciation of the foreign exchange rate would bring external debt to 74 percent of GDP. However, the downside risk of a sharp exchange rate depreciation seems limited, in light of the decline already experienced by the Chilean peso in recent years.<sup>6</sup>

#### Other Sensitivity Tests

13. **Using information on the international investment position, we could also consider more specific shocks to income flows from investments abroad.** For instance, a

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<sup>6</sup> From end 1997 to end 2002, the Chilean peso dropped by 31 percent in real effective terms.



two-standard deviation drop of the implicit rate of return of direct and portfolio investments would lead to an increase in the current account deficit of about 0.7 percent of GDP, representing less than half of the current account shock considered above.

**14. We also consider the effect of copper price shocks on the current account given that copper represents more than one-third of total exports or 10 percent of GDP.**

Given the high volatility of copper prices, a two-standard deviation negative shock to copper prices would drive the average price to a hypothetical 52 cents per pound, or two-thirds of the price assumed under the baseline for 2003. Under this extreme scenario, the direct, static impact on the current account would be on the order of 2 percent of GDP.<sup>7</sup> The effect would have the same order of magnitude as the shock considered in the standard sensitivity test on the current account. The likelihood of such a large negative shock is reduced in light of the consensus that copper prices are already in the low end of the cycle, below their medium or long-run levels. Also, such a price would be considerably the cost floor of many of the world's copper mines, and below the real prices at which mines began to shut down during the late 1990s.<sup>8</sup>

#### **D. Gross External Financing Requirements**

**15. Total gross external financing requirements have risen in recent years to reach 12.6 percent of GDP in 2002.** This need is dominated by the need to amortize medium- and long-term debt coming due each year. Similarly, most of the recent increase is due to an increase in such scheduled amortizations (see Table 5). Interestingly, actual amortization exceeded scheduled amortization in 2001 and 2002, as firms chose to prepay external debt and shift toward domestic financing.

**16. Under the baseline, total annual gross external financing requirements are expected to decline from a high of 12.6 percent as a share of GDP in 2002 to 10 percent in 2006.** The drop is largely driven by the expected surplus in non-interest current account throughout the projection period and the pick up in economic growth. Also, medium-and-long term debt amortization payments are expected not to increase but to hover around the 2002 level as important payments coming due in 2003–04 have been recently rescheduled.<sup>9</sup> The baseline assumes that short-term debt remains constant in nominal terms.

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<sup>7</sup> The negative effect on the trade balance would be somewhat larger, but the effect on the current account would be partially offset by reduced profit outflows by foreign-owned mining companies.

<sup>8</sup> See Selected Issues volume from the 2002 Article IV consultation, "Forecasting Copper Prices in the Chilean Context."

<sup>9</sup> Enersis, recently agreed with foreign banks to reschedule its loan commitment worth \$2 billion coming due in 2003 and 2004 beyond 2008. (See accompanying note.)

We assume that about two-thirds of the external debt has floating interest rates, broadly consistent with past experience.

### **Sensitivity Analysis**

17. **The sensitivity tests underscore again the responsiveness of external requirements to changes in assumptions** (see Table 4 and Figure 4b). In particular, external requirement is most sensitive to a shock in the current account which would bring it to over 17 percent of GDP. All other shocks would keep the external financing needs below 15 percent of GDP. None of the shocks considered would bring the total financing requirements above official international reserves (now almost 25 percent of GDP). Moreover, private sector liquid foreign asset holdings (considering only currency and deposits) amounted in 2002 to 8 percent of GDP, representing more than two thirds of the private sector's short-term external debt on a residual maturity basis.

### **E. Net External Position**

18. **Chile's foreign asset position is a source of strength.** We consider three aspects of Chile's international investment position (IIP) that would dampen the effects of the shocks considered in the previous sections. First, we underscore the role of Chile's large FDI liabilities in providing external support in periods of stress. Second, we note the solid liquid asset position including the significant foreign liquid assets by the private sector. Third, we follow a balance sheet approach to show the counterbalancing effect of shocks on the aggregate net asset position of the country.

19. **The country's large FDI liabilities are a source of external support in periods of stress.** As shown in Table 2, the relative size of foreign direct investment in Chile stands out when compared other emerging economies. The necessary counterpart of these investments is the large share of direct investment income outflows in the external current account. This component has important implications on how the current account adjusts to shocks affecting domestic activity.

20. **Sensitivity analysis on the implicit rate of return on foreign investment** shows that a one-standard deviation negative shock would lead to a 2 percent of GDP improvement in the non-interest current account. Given the likely high correlation between changes in the output level and implicit rates of return, a sharp drop in output growth would bring a sharp adjustment in the current account driven by lower investment income outflows, everything else constant.

21. **Chile's liquid assets, of both the public and private sectors, appear to rule out reasonable liquidity risks.** At end 2002, total liquid external assets—even on a narrow definition—amounted to US\$21 billion (32 percent of GDP), accounted for more than half of total external gross debt and covered about 2.6 times gross external financing requirements. Liquid holdings by the private sector, considering a narrow definition that includes only foreign deposit and currency holdings, amounted to US\$5 billion at end 2002.

22. **The picture is only more favorable if one considers** short-term trade credits owed to Chilean firms. At end-2002 these amounted to 12.5 percent of GDPs. Empirical evidence shows that these type of credits have a low probability of default, thus providing further support to the strength of Chile's aggregate balance sheet.<sup>10</sup>

23. **The balance sheet effect of a foreign exchange depreciation shock has no negative effect on the net asset position as a share of GDP.** If we assume that FDI liabilities are denominated in local currency, then the reduction on FDI liabilities from the exchange rate depreciation would more than compensate for the drop in the U.S. dollar value of GDP. For example, a 20 percent depreciation of the peso would lower the ratio of net liabilities to GDP from 40 percent to 32 percent, and would reduce the ratio of liabilities to assets from 146 percent to 129 percent.

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<sup>10</sup> For recent studies see Nilsen (2002) and Chee, Kiholm and Smith (1999).

## References

Chee, K., J. Kiholm Smith, and R. Smith, 1999, "Evidence on the Determinants of Credit Terms Used in Interfirm Trade," *Journal of Finance*, 54(3), 1109–1130 (July).

International Monetary Fund, 2002, "Assessing Sustainability," Staff Memoranda 02/166, (Washington: International Monetary Fund).

International Monetary Fund, 2002, "Forecasting Copper Prices in the Chilean Context," *Chile—Selected Issues*, IMF Staff Country Report No. 02/163, (Washington: International Monetary Fund).

International Monetary Fund, 2000, "Assessing External Vulnerability: The Case of Chile," *Chile—Selected Issues*, IMF Staff Country Report No. 00/94, (Washington: International Monetary Fund).

Nilsen, J. 2002, "Trade Credit and The Bank Lending Channel," *Journal of Money, Credit and Banking*, 34(1), 226–28, (February).

**Table 1. Chile: International Investment Position**  
(Billions of US\$)

	1997	1998	1999	2000	2001	2002
<b>Net International Position</b>	<b>-27.9</b>	<b>-29.9</b>	<b>-25.8</b>	<b>-28.0</b>	<b>-27.7</b>	<b>-26.4</b>
<b>Assets</b>	<b>35.4</b>	<b>40.5</b>	<b>55.4</b>	<b>53.2</b>	<b>53.6</b>	<b>57.3</b>
Direct investment abroad	4.9	6.3	12.9	11.8	13.0	13.8
Portfolio investment	1.2	4.7	11.4	9.9	10.7	13.0
Equity securities	0.9	3.4	7.7	6.9	7.9	10.5
Debt securities	0.3	1.3	3.7	3.0	2.8	2.5
Other investment	11.1	13.2	16.2	16.4	15.6	15.1
Trade credits	6.3	6.4	7.4	8.5	8.3	8.3
Loans	0.2	0.3	0.5	1.0	1.1	0.7
Currency and deposits	4.6	6.5	8.3	6.9	6.1	6.1
o/w: non banking, priv. sector	3.7	5.3	5.8	5.4	4.9	5.0
Reserve assets	18.3	16.3	14.9	15.1	14.4	15.4
<b>Liabilities</b>	<b>63.3</b>	<b>70.5</b>	<b>81.3</b>	<b>81.2</b>	<b>81.3</b>	<b>83.7</b>
Direct investment	33.9	38.5	45.8	45.0	44.7	44.9
Portfolio investment	9.2	8.0	10.6	9.2	10.1	11.0
Equity securities	7.1	5.7	6.5	4.7	3.8	2.9
Debt securities (bonds & notes)	2.1	2.3	4.2	4.5	6.4	8.2
o/w: non banking, priv. sector	1.7	1.7	3.1	3.4	4.6	5.3
Other investment	20.2	24.0	24.8	27.1	26.5	27.8
Trade credits	0.3	0.3	0.4	0.3	0.2	0.4
Loans	19.6	23.5	24.4	26.5	26.2	27.3
o/w: non banking, priv. sector	15.4	19.4	21.0	23.6	22.9	22.7
Other liabilities	0.3	0.2	0.0	0.2	0.0	0.1

Sources: Central Bank of Chile, IMF

**Table 2. Countries: International Investment Position, 2001**  
(in percent of GDP)

	Latin America				Eastern Europe			Asia		
	Argentina	Brazil	Chile	Mexico	Czech Republic	Hungary	Poland	Korea	Malaysia	Thailand
Net International Position	-33	-52	-42	-37	-12	-56	-32	-15	-18	-43
Assets	49	21	81	17	75	48	26	44	70	47
Direct investment abroad	8	10	20	2	1	4	1	5	10	2
Portfolio investment	9	1	16	1	9	2	1	2	2	1
Other investment	28	3	23	7	38	20	10	13	23	16
Reserve assets	6	7	22	7	26	21	15	24	35	29
Liabilities	83	73	122	54	87	105	58	59	87	90
Direct investment	28	24	67	20	47	43	22	12	24	25
Portfolio investment	28	30	15	22	9	30	10	25	15	15
Other investment	26	19	40	12	30	30	25	22	49	48
Debt to Liabilities	65	57	40	63	38	53	57	52	59	62
Liabilities to Assets	168	344	152	319	116	217	223	135	125	191
Reverse to debt ratio	10	17	44	19	77	37	44	79	68	51

Sources: IMF

**Table 3 Chile: External Debt Sustainability Framework, 1998-2008**  
(In percent of GDP, unless otherwise indicated)

	Actual		Projections					
	2001	2002	2003	2004	2005	2006	2007	2008
<b>I. Baseline Medium-Term Projections</b>								
1 External debt	55.7	60.8	60.5	57.9	56.0	54.8	54.1	53.8
2 Change in external debt	7.0	5.1	-0.3	-2.7	-1.9	-1.2	-0.7	-0.3
3 Identified external debt-creating flows (4+8+11)	6.9	7.9	1.2	-3.7	-4.3	-3.5	-2.7	-2.1
4 Current account deficit, excluding interest payments	-1.0	-1.6	-0.9	-1.4	-2.5	-2.1	-1.7	-1.3
5 Deficit in balance of goods and services	-1.7	-2.3	-2.3	-2.3	-2.5	-2.0	-1.5	-1.2
6 Exports	33.1	33.6	35.1	36.1	36.2	35.8	35.3	34.8
7 Imports	31.4	31.2	32.8	33.8	33.7	33.8	33.8	33.6
8 Net non-debt creating capital inflows (negative)	0.5	5.6	3.1	0.5	-0.8	-0.8	-0.8	-0.7
9 Net foreign direct investment, equity	4.5	1.7	1.2	2.1	2.0	1.9	1.8	1.7
10 Net portfolio investment, equity	-5.0	-7.3	-4.3	-2.6	-1.2	-1.1	-1.0	-1.0
11 Automatic debt dynamics 1/	7.4	3.8	-1.0	-2.8	-1.0	-0.5	-0.2	-0.1
12 Contribution from nominal interest rate	2.5	2.3	1.7	2.5	3.8	3.8	3.8	3.7
13 Contribution from real GDP growth	-1.5	-1.2	-1.9	-2.5	-2.8	-2.8	-2.5	-2.4
14 Contribution from price and exchange rate changes 2/	6.4	2.8	-0.8	-2.9	-2.1	-1.5	-1.5	-1.4
14 Residual, incl. change in gross foreign assets (2-3)	0.1	-2.8	-1.5	1.0	2.4	2.3	2.1	1.9
External debt-to-exports ratio (in percent)	168.5	181.1	172.4	160.4	154.5	153.0	153.5	154.8
Gross external financing need (in billions of US dollars) 3/ in percent of GDP	8.0 11.7	8.4 12.6	8.0 11.5	6.6 8.6	8.4 10.0	9.1 10.1	8.9 9.1	9.6 9.1
<b>Key Macroeconomic and External Assumptions</b>								
Real GDP growth (in percent)	2.8	2.2	3.3	4.5	5.2	5.5	5.0	4.8
Exchange rate appreciation (US dollar value of local currency, change in percent)	5.0	-7.8	-2.9	1.3	0.0	0.0	0.0	0.0
GDP deflator in US dollars (change in percent)	-11.5	-4.7	1.4	5.0	3.7	2.8	2.7	2.7
Nominal external interest rate (in percent)	4.8	4.0	3.0	4.6	7.2	7.4	7.4	7.4
Growth of exports (US dollar terms, in percent)	-3.1	-1.2	9.6	12.6	9.6	7.2	6.2	6.1
Growth of imports (US dollar terms, in percent)	-1.8	-3.2	10.1	12.8	9.0	8.7	7.8	7.0
<b>II. Stress Tests for External Debt Ratio</b>								
1. Real GDP growth, nom. interest rate, US\$ deflator, non-interest CA and non- <del>net</del> inflows at historical avg. 5/2003-2006	60.8	60.8	60.8	60.8	60.8	52.9	51.9	50.8
2. Nom. interest rate is at historical avg plus two std dev in 2003 and 2004	60.8	60.8	63.6	63.0	61.0	59.7	59.0	58.8
3. Real GDP growth is at historical avg minus two std devs in 2003 and 2004	60.8	60.8	63.8	65.0	63.2	62.1	61.5	61.4
4. Change in US dollar GDP deflator is at historical avg minus two std devs in 2003 and 2004	60.8	60.8	67.1	73.9	72.2	71.2	70.8	70.8
5. Non-interest current account is at historical avg minus two std devs in 2003 and 2004	60.8	60.8	66.1	69.3	67.2	65.9	65.1	64.9
6. Combination of 2-5 using one std dev shocks	60.8	60.8	73.6	88.4	85.7	84.0	83.1	82.7
7. One time 20 percent nominal depreciation in 2003	60.8	60.8	73.7	70.8	69.0	68.0	67.5	67.4
<b>Historical Statistics for Key Variables (past 10 years)</b>								
	Historical Average	Standard Deviation	Average 2002-07					
Current account deficit, excluding interest payments	0.3	2.1	-1.6					
Net non-debt creating capital inflows	1.7	3.2	-0.1					
Nominal external interest rate (in percent)	5.9	1.2	6.2					
Real GDP growth (in percent)	5.6	3.8	4.7					
GDP deflator in US dollars (change in percent)	1.7	9.7	3.1					

1/ Derived as  $[r - g - \rho(1+g) + \epsilon\alpha(1+r)] / (1+g + \rho + g\rho)$  times previous period debt stock, with  $r$  = nominal effective interest rate on external debt;  $\rho$  = change in domestic GI  
 $g$  = real GDP growth rate,  $\epsilon$  = nominal appreciation (increase in dollar value of domestic currency), and  $\alpha$  = share of domestic-currency denominated debt in  
 2/  $\Delta$  External debt from price and exchange rate changes is defined as  $[-\rho(1+g) + \epsilon\alpha(1+r)] / (1+g + \rho + g\rho)$  times previous period debt stock.  $\rho$  increases with an appreciating  
 and rising inflation (based on GDP deflator).

3/ Defined as current account deficit, plus amortization on medium- and long-term debt, plus short-term debt at end of previous period.

**Table 4 . Chile: Gross External Financing Need, 1998-2008**  
(In US\$ billion, unless otherwise indicated)

	Actual			Projections			
	2000	2001	2002	2003	2004	2005	2006
<b>Gross external financing need in billions of U.S. dollars 1/ in percent of GDP</b>	5.8	8.0	8.4	8.0	6.6	8.4	9.1
	7.7	11.7	12.6	11.5	8.6	10.0	10.1
<b>Gross external financing need in billions of U.S. dollars 2/</b>							
1. Real GDP growth, nominal interest rate, dollar deflator, non-interest current account, and non-debt inflows are at historical				10.0	8.4	10.0	10.7
2. Nominal interest rate is at historical average plus two standard deviations in 2003 and 2004				10.4	8.7	9.3	10.1
3. Real GDP growth is at historical average minus two standard deviations in 2003 and 2004				8.0	6.7	8.6	9.5
4. Change in US dollar GDP deflator is at historical average minus two standard deviations in 2003 and 2004				8.0	6.8	8.9	9.8
5. Non-interest current account is at historical average minus two standard deviations in 2003 and 2004				12.3	12.3	10.4	11.4
6. Combination of 2-5 using one standard deviation shocks				12.4	11.4	10.2	11.2
7. One time 30 percent nominal depreciation in 2003				8.1	6.8	8.8	9.7
<b>Gross external financing need in percent of GDP 2/</b>							
1. Real GDP growth, nom. interest rate, US\$ deflator, non-interest CA and non-debt inflows at historical avg. in 2003-200				13.9	10.7	11.9	11.7
2. Nom. interest rate is at historical avg plus two std dev in 2003 and 2004				14.9	11.4	11.1	11.2
3. Real GDP growth is at historical avg minus two std devs in 2003 and 2004				12.1	9.8	11.6	11.7
4. Change in US dollar GDP deflator is at historical avg minus two std devs in 2003 and 2004				12.8	11.3	13.6	13.7
5. Non-interest current account is at historical avg minus two std devs in 2003 and 2004				17.7	16.1	12.5	12.6
6. Combination of 2-5 using one std dev shocks				19.8	19.3	15.9	16.0
7. One time 20 percent nominal depreciation in 2003				14.1	10.8	12.9	13.0

1/ Defined as non-interest current account deficit, plus interest and amortization on medium- and long-term debt, plus short-term debt at end of previous period.

2/ Gross external financing under the stress-test scenarios is derived by assuming the same ratio of short-term to total debt as in the baseline scenario and the same debt. Interest expenditures are derived by applying the respective interest rate to the previous period debt stock under each alternative scenario.



**Table 5. Chile: Gross External Financing Requirements**  
(in US\$ billion)

	1999	2000	2001	2002	2003 proj.	2004 proj.
<b>Gross external financing need</b>	<b>4.9</b>	<b>5.8</b>	<b>8.0</b>	<b>8.4</b>	<b>8.0</b>	<b>6.6</b>
Non-interest current account deficit	-1.8	-1.3	-0.7	-1.1	-0.6	-1.1
Debt and debt service falling due	6.69	7.07	8.65	9.47	8.57	7.65
Amortizations	3.4	3.8	4.2	5.8	5.0	3.4
of which: debt prepayment:	0.8	1.1	1.7	1.6	0.0	0.0
Debt Service	1.7	2.1	1.9	1.6	1.2	1.9
Short-term debt 1/	1.6	1.2	2.5	2.1	2.3	2.3

Sources: Banco Central de Chile, staff estimates

1/ Excludes trade credits estimated to be US\$2.9 billion at end 2002.

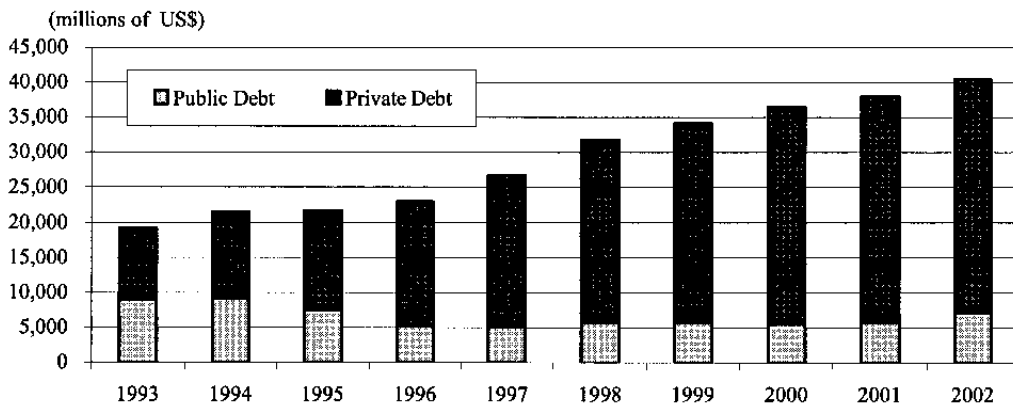
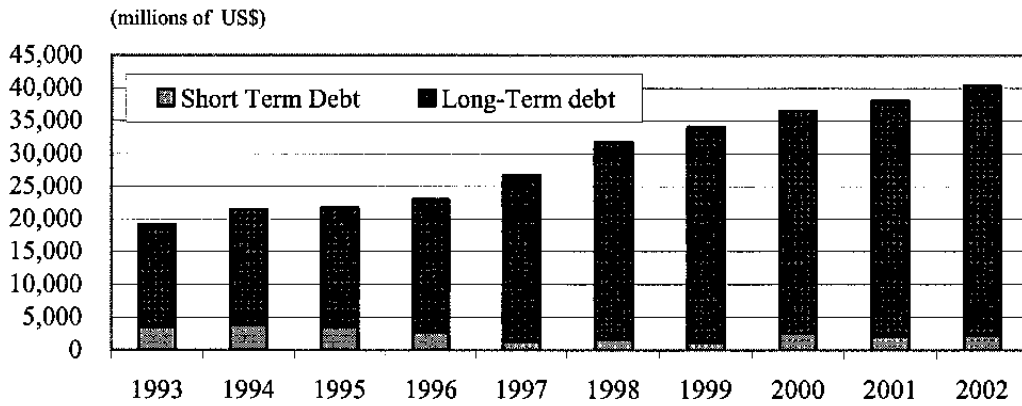
**Table 6. Chile: Balance Sheet Indicators**  
(in percent)

	1997	1998	1999	2000	2001	2002
<b>Leverage indicators</b>						
Liabilities to assets	179	174	147	153	152	146
Debt to assets	63	65	52	59	61	63
Net liabilities to GDP	34	38	35	37	41	40
Net debt to GDP	13	15	12	16	21	28
<b>Liquidity indicators 1/</b>						
Liquid assets to total assets	64	56	42	41	38	19
Liquid assets to non-FDI liabilities	78	71	66	61	56	28
Reserves to GDP	22	21	20	20	21	7
Private sector liquid assets to GDP	6	8	11	9	9	9

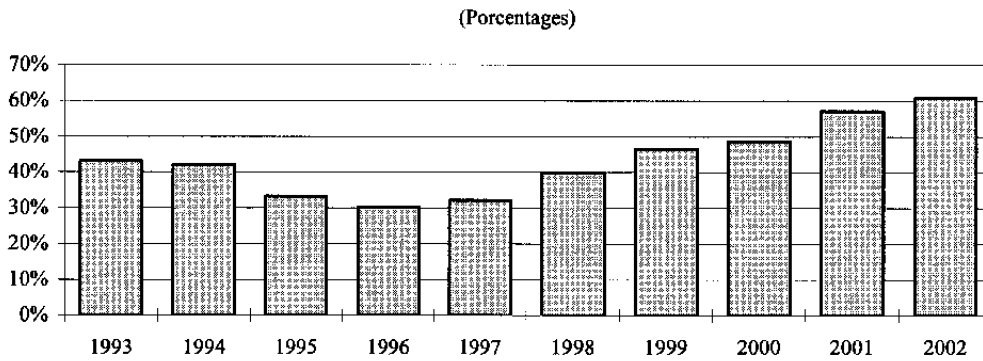
Sources: IMF

1/ Liquid assets include only international reserves and currency and deposits abroad.

Figure 1. Chile: Evolution of External Debt



Total External Debt as percentage of GDP

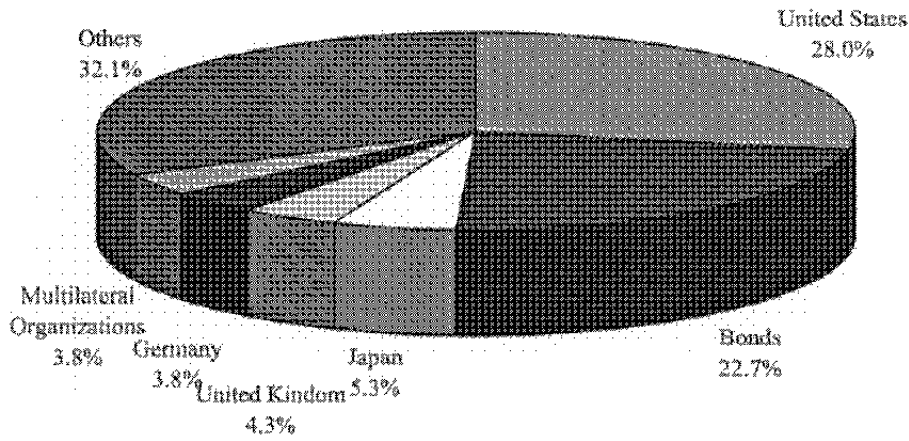


Source: Central Bank of Chile

Figure 2. Chile: Composition of External Debt

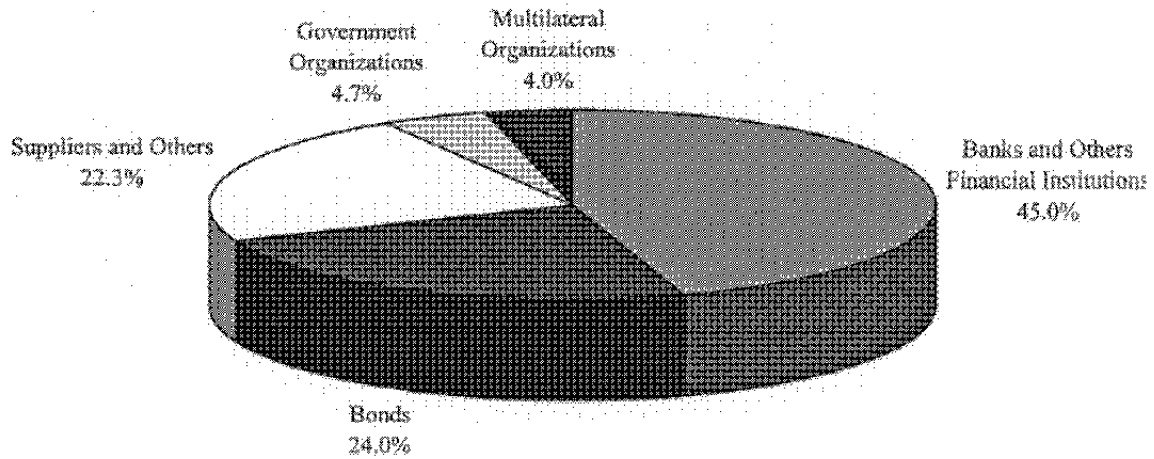
TOTAL EXTERNAL DEBT BY COUNTRY

(Percentages)



MEDIUM-AND LONG-TERM EXTERNAL DEBT BY TYPE OF CREDITOR

(Percentages)



\*Original maturity.

Source:

Figure 3: Chile: International Investment Position, 1997 - 2002  
(in US\$ billions)

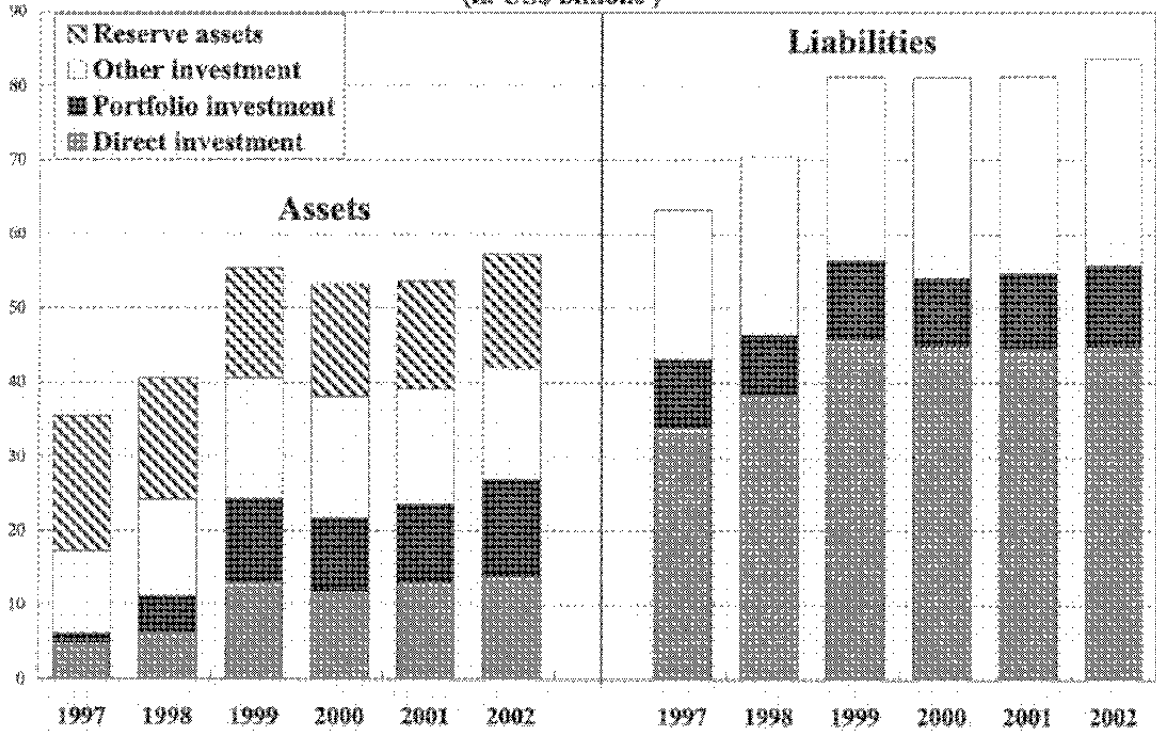
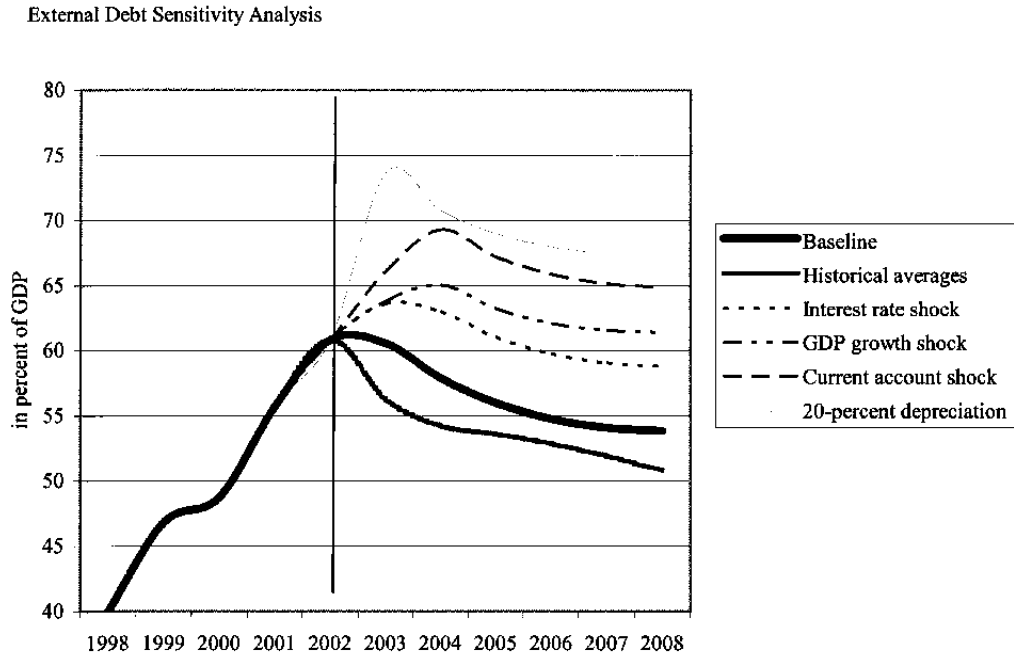
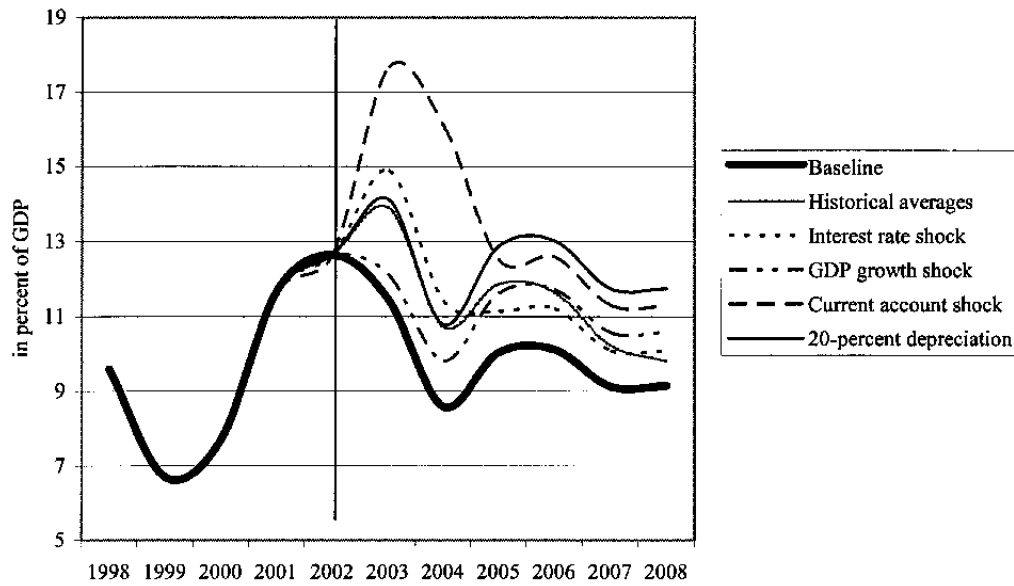


Figure 4. Chile: External Debt Sensitivity Analysis



Gross External Financing Requirement



Source: Central Bank of Chile, IMF estimates.

## X. DISTRESS AMONG CHILE'S FOREIGN-OWNED CORPORATES—THE CASES OF THE ELECTRIC COMPANIES *ENERSIS* AND *AES GENER*<sup>1</sup>

### Significance of Chile's Foreign-Owned Corporate Sector

1. **Foreign-owned companies account for much of Chile's external debt and short-term financing needs.** The private sector accounts for over 80 percent of the country's external debt, of which about two-thirds corresponds to non-financial companies that are mainly or wholly foreign-owned. Similarly, foreign-owned companies account for the majority of Chile's sizable short-term gross financing needs. Clearly, any analysis of Chile's external vulnerability needs to account for the financial condition of the foreign-owned corporate sector, and consider how these companies might interact with their foreign parents in times of distress.

2. **Prominent foreign parent companies in Chile today include the following** (with local Chilean subsidiary in parenthesis): Endesa Spain (Enersis); Telefónica Italia (Entel); Telefónica Spain (CTC); Santander Spain (Banco Santander); BBVA Spain (BBVA Chile); and AES of the U.S. (AES Gener).

3. **These Chilean subsidiaries have borrowed externally using international bonds or syndicated bank loans in some cases, in others they have borrowed from their parent.** These Chilean-resident companies are international not only in their sources of financing, as several hold significant investments in other countries as well.

### The Electric Utility Sector—A Tale of Two Companies

#### *The Experience of Enersis*

4. **Enersis and AES Gener are two Chilean-resident electric companies for which recent developments have provided interesting case studies.** Both experienced some difficulties mainly on account of either their own (Enersis) or their parents' (AES Gener) investments in other countries, including Argentina and Brazil.<sup>2</sup>

5. ***Enersis.*** Although official external debt statistics do not provide company-specific information, publicly-available information suggests that Enersis is the Chilean-resident company having the largest external debt—over US\$9 billion at end-2002, about 14 percent of GDP, and that sizeable obligations (around US\$2.3 billion) were coming due in 2003 and 2004.

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<sup>1</sup> Prepared by Manmohan Singh.

<sup>2</sup> These companies' operations in Chile have not been greatly impacted by the depreciation of the Chilean peso over the last few years because their regulated energy price are linked in part to Chile's exchange rate.

6. **Investments in neighboring countries have hurt Enersis recently.** In Argentina, there has been no increase in tariffs for distribution companies in the energy and gas sectors since the devaluation in December 2001. Cash flows from Argentina remain poor. On the back of a 30-year concession agreement, Enersis had made sizeable investments in Argentina, and thus has a vested interest to stay there. In Brazil, tariffs in the energy sector have adjusted in real terms to mitigate potentially large losses to Enersis.

7. **Enersis' troubles led to concerns about its liquidity,** centered around a debt-acceleration clause that would have been triggered in the event of a credit downgrade by Standard & Poor's to sub-investment grade. This concern was signaled by a sharp rise in the spread of its bond maturing in 2006—to over 1,100 basis points.

8. **The investors' concern led Endesa Spain to undertake a three-pronged financial restructuring** that included generating cash by selling some assets, rescheduling bank loans due in 2003 and 2004, and further capitalization.

- Enersis and affiliates have sold assets amounting to over US\$750 million. These include the sale of their highway and infrastructure affiliates to Spain's OHL for US\$273 million, the Río Maipo distribution lines for US\$203 million, the Canutillar hydro facility to Belgium's CNPC for US\$174 million, and transmission lines to Canada's HKI for US\$110 million.
- Enersis and its subsidiary (Endesa Chile) refinanced syndicated loans of US\$2.3 billion. The sizeable debt-service due in 2003 and 2004, (about US\$1.4 billion and US\$700 million respectively) is now deferred until 2008. The rollover was negotiated at LIBOR+350 bps for Enersis and LIBOR+300 bps for Endesa Chile. A key feature in the refinancing deal is the removal of the debt acceleration clause linked to S&P's rating.
- Enersis' parent, Endesa Spain, initiated a capital increase of US\$2 billion. The capital increase took the form of a debt-equity swap, pro-rated and approved by all major creditors. Since Endesa, Spain had 65 percent equity in its Chilean subsidiary, the Chilean regulations required approval by all major creditors (including local pension funds) before Endesa increased its ownership in Enersis. Minority shareholders subscribed US\$663 million and Endesa, Spain, US\$1.22 billion. Bond and equity holders will each have an opportunity to subscribe later in the year (up to the increase's ceiling of US\$2 billion).

9. **Investors' concerns abated as the financial restructuring advanced.** Bond spreads decreased significantly in the spring of 2003, and in July 2003, Endesa Chile was able to issue US\$600 million in new long-term external bonds, at spreads close to 450 basis points.

10. **The Enersis case illustrates that corporate vulnerability may be mitigated by the foreign parents of Chilean companies.** Chile has been Endesa Spain's gateway into the Latin American energy market, and strategic consideration of long-term potential may have tilted the decision in favor of sustaining Enersis.

### *The Experience of AES Gener*

11. **AES Gener.** The case of AES Gener, much smaller than that of Enersis, contrastingly illustrates a “weak parent” situation, with adverse shocks to the parent company having financial repercussions for its Chilean subsidiary. AES’s subsidiary in Chile, AES Gener, is rated investment grade locally by S&P-Feller Rate, in light of the subsidiary’s strong cash flows (US\$180 million annually) and good contracts. However, its foreign parent company AES is in difficulty due in part to considerable losses in Argentina and Brazil. Concern about sizeable payments due in a few years is reflected in the recent yields of about 16 percent on AES Gener’s bonds due in 2005 and 2006.<sup>3</sup>

12. **Unlike Enersis, AES Gener has not received financial support from its foreign parent (which is now rated B+ by S&P, with negative outlook).** On the contrary, the parent company’s financial pinch led it to borrow US\$400 million from AES Gener in 2001/2002. Subsequently, investors in AES Gener reportedly have been seeking covenants that would limit such flows to the parent company in the future.

### **Was There “Contagion” from Enersis to Other Chilean Corporates?**

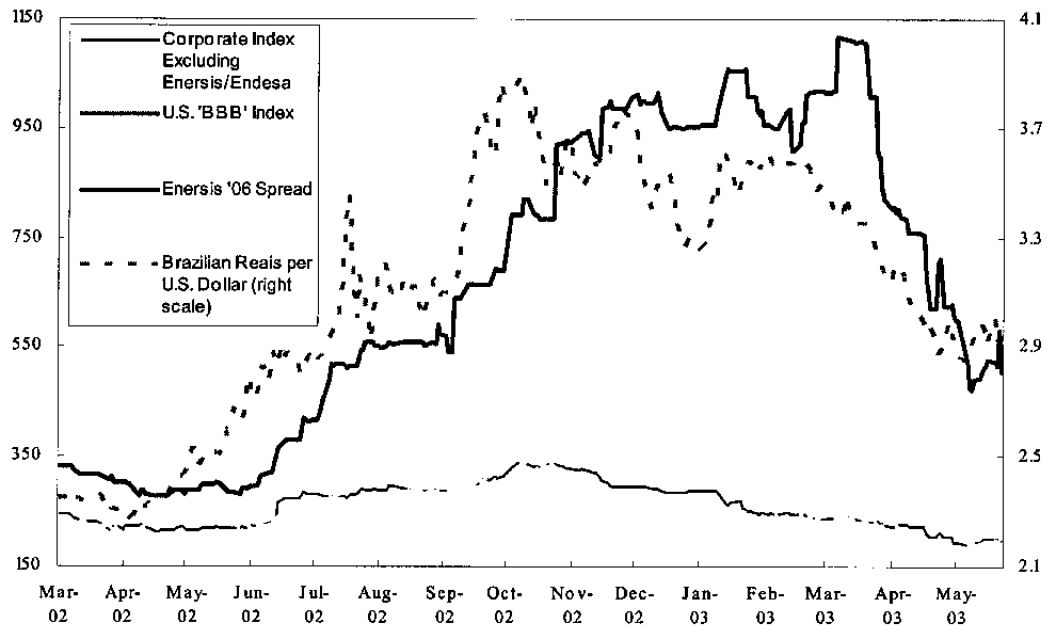
13. **Although Enersis could have been perceived as a flagship “Chilean” company, it appears that investors distinguished their perceptions of other Chilean companies as a whole from the well-known troubles of Enersis.** As Figure 1 illustrates, the level of typical spreads on Chilean corporates has tended to follow rather closely that of the bond index of BBB-rated U.S. companies. When Enersis’ spread began to diverge strongly from the U.S. BBB index, starting around mid-2002, spreads for other Chilean companies did not follow along, and in fact generally stayed within 50 basis points of the U.S. BBB spread.

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<sup>3</sup> As of May 2003, about 40 percent of AES Gener’s bonds were held by Chile’s pension funds. These holdings represented less than 1 percent of the pension funds’ portfolio.



**Figure 1. Corporate Bond Spreads and Brazilian Real, 2002 - 2003**



A basic regression analysis (below) also illustrates the explanatory power of the US BBB index in Chilean companies' international bond spreads. Some correlation with Enersis' spread also appears, though with a coefficient  $1/10^{\text{th}}$  as large as that on the US BBB index.

$$\text{CHLcorp} = 0.66 + 0.78 \text{USBBB} + 0.08 \text{Enersis} + 0.06 \text{BRZreal} + 0.66$$

(2.99)
(24.11)
(3.33)
(0.72)

(t-statistics in parenthesis)

CHLcorp: index of spreads on Chilean corporates (excluding Enersis and Endesa bonds), in logs.

US BBB: index of spreads on the U.S. BBB corporates, in logs.

Enersis: spread of the most relevant Enersis bond, due in 2006, in logs

BRZreal: value of the Brazilian currency, reals/US\$, in logs.

## **XI. PUBLIC SECTOR FINANCES: BALANCE SHEETS, FINANCING NEEDS, AND SUSTAINABILITY<sup>1</sup>**

### **A. Introduction**

- 1. This chapter examines the financial position of the Chilean public sector.**
- 2. The focus is on analysis of balance sheet information, taking account of financial assets as well as liabilities, and on the structure of balance sheets, especially in terms of foreign exchange position and liquidity.** The analysis is facilitated by recent enhancements of the available information, especially by the Public Debt Report issued for the first time in late 2002.
- 3. The analysis begins at the central government level and is then broadened to consider other parts of the public sector:** in turn the central bank and the public enterprises. Significantly, subnational governments in Chile are subject to strict budget constraints (see Chapter III) and indeed have no financial debt. Accordingly they are not analyzed here.
- 4. The central government has been in the past, and will likely will continue to be, the key to movements in Chile's total public debt.** Still, attention is due also to the central bank accounts, because the bank's total debt is significant (as are its assets), and because much of the central government's debt is owed to the central bank. For some purposes, it is useful to analyze the consolidated central government/central bank position.
- 5. The assessment of the public sector finances is favorable.** Since risky balance sheet *structures* have been avoided, exposure to currency and interest rate risks is limited. Taking account of the government's structural balance target, it is difficult to see debt sustainability problems emerging, as long as this target (or other restrained fiscal policy) is implemented. The central bank's balance sheet is also examined, noting its considerable strengths in terms of foreign exchange and liquidity positions, but also its tendency to imply a modest operating deficit. Though the bank's deficit has been fairly stable and has not interfered with its monetary policy objectives, its situation is not ideal, and some steps, including a capital injection from the government, that could be taken are noted. Less complex is the situation of the public enterprises: their aggregate position appears sound, in light of their overall profitability and limited indebtedness. On the whole, the public enterprise sector is an asset rather than a drain on government finances.

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<sup>1</sup> Prepared by Steve Phillips.

## **B. Central Government Finances**

6. **Significant aspects of the central government's balance sheet are the following:**
- Substantial financial assets, about 5 percent of GDP in 2002, mostly claims on the private sector. (In recent years, the drawdown of such assets has played an important role, financing about half of the government's deficit.)
  - Gross debt is relatively low, about 16 percent of GDP in 2002
  - Debt to the domestic private sector is zero.
  - Almost two-thirds of the government's gross debt is owed to the central bank (BCCCh). This old debt was issued in 1983 to compensate for the balance sheet effect of a financial sector bailout (Chapter III); it is mostly denominated in US dollars.
  - The remainder is external debt, mainly denominated in US dollars. More than half of this debt consists of medium- or long-term sovereign bonds, all of which were issued within the last several years. Most other external debt is owed to international institutions.
  - The average interest rate is quite low. For example, the ratio of interest payments/government debt was only about 2 percent in 2002 (and about 4 percent over the previous 10 years)

### **Financing needs**

7. **Gross financing needs can be expected to remain moderate:**
- The government does not face a steep amortization schedule, as the average maturity of its debt is evidently rather long. Thus from an existing debt stock of 16 percent of GDP at end-2002, amortization will be only 1 to 1 ½ percent of GDP annually during 2003-06 (and will rise only moderately thereafter).<sup>2</sup>
  - The fiscal deficit is modest, not more than 1 percent of GDP for 2003, and is expected to decline in the next few years.
  - A further consideration is that the government has the option of further reducing its financial assets.

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<sup>2</sup> Most of the amortization due relates to amortization of the government's old debt to the central bank. There is no possibility of rolling over this debt, or refinancing it with fresh funds from the central bank, since Chile's constitution (see Chapter III) prohibits the central bank from financing the government.

### **Exposure to currency depreciation**

8. **Currency depreciation does not pose a major risk to the public finances.** While most of the government's financial assets now are denominated in the domestic currency, nearly all of its debt is denominated in U.S. dollars. Considering only these two quantities, the government's net foreign exchange position would appear to have been about minus 14 percent of GDP at end-2002. Taking a broader view, however, the picture improves:

- Account needs also to be taken of the stream of foreign currency earnings the government receives, mainly from its ownership of the copper company CODELCO. Though this income varies with world copper prices, in most years, the government's primary balance on foreign-denominated flows is positive.
- Most of the government's dollar debt—and thus most of its dollar-denominated interest bill also—is owed to the central bank. In turn, the central bank has a substantial positive net foreign exchange position (as discussed in the next section, about +23 percent of GDP at end-2002).

### **Exposure to interest rate fluctuations**

9. **As a consequence of the structure of its debt, the government has little near-term exposure to interest rate shocks.** In fact, the government is nearly unaffected by domestic interest rate fluctuations. The avoidance of short-term external debt means there is also little near-term exposure to changes in the risk premium international investors apply to Chilean sovereign debt.

10. **The government's interest rate exposure is largely confined to fluctuations in world interest rates.** This is because interest on the government's old debt to the central bank is tied to LIBOR.

### **Sustainability of central government debt**

11. **Debt sustainability analysis for Chile must take into account the government's commitment to an ongoing target for its structural balance (see Chapter II).** As long as this practice is maintained, it is difficult to see problems of debt sustainability emerging, in light of two basic considerations:

- As long as the structural balance rule is followed, *debt dynamics are unaffected by a rise in interest rates on government debt*: since the target refers to the entire government balance, any increase in the interest bill would have to be offset by a policy reaction to tighten the government's primary balance.
- *Most important to debt sustainability is the level chosen for the targeted structural balance: a surplus of 1 percent of GDP.* It is true that this figure does not take account of the central bank's deficit (discussed below), and that if a broader view of the public sector were taken the effective level of the target would not be quite as

strong; however, it still would not represent a deficit. Thus the government debt/GDP ratio could well be expected to decline over time even if economic growth were zero.

12. **There is one significant complication to this picture: that the fiscal target refers to the government's *structural, not actual*, balance.** Whereas the target refers to a cyclically-adjusted balance, the evolution of government debt depends on the actual balance. Therefore, the structural balance rule does not exactly determine the path of public debt, and further analysis is needed.

13. **Under a rule holding the structural balance constant, the path of public debt depends not only on the chosen level of the fiscal target, but also on the estimated cyclical adjustments.** More precisely, given Chile's fiscal rule, projecting government debt requires projecting not only *actual* output and copper export prices, but also (the estimates of) *potential* GDP and the *reference* copper export price that will together determine how far the actual government balance deviates from the level of the structural balance target.

14. **Table 1 illustrates how the central government gross debt ratio would evolve under various combinations of actual and (estimated) potential output paths.** The starting point is the baseline scenario in which the output gap, currently estimated about 5 percent, would close gradually over the medium term. In that scenario, the debt/GDP ratio would decline from 16 to 8 percent of GDP by 2008. Several alternative scenarios demonstrate that some rather unlikely assumptions would be needed to generate a rising debt/GDP ratio:

- In the first scenario, actual growth follows the baseline scenario, but a burst of "optimism" about potential output takes the estimated output gap up to 8 percent. The actual deficit is therefore larger than in the baseline scenario, but the government debt ratio still declines somewhat.
- In the second scenario, the output gap is again 8 percent, but this time with actual growth held to just 2 percent and combined with a somewhat less optimistic estimate of potential output. Again, the debt ratio fails to increase.
- Finally, the third scenario combines a low actual growth rate with an assumption that estimated potential output is no less than in the baseline scenario. The estimated output gap rises to an implausible 14 percent, and this time the debt ratio does begin to rise, after a few years.

Again, these examples are not intended to represent plausible scenarios, only to illustrate the degree of sensitivity of debt dynamics under the structural balance rule.

Table 1. Chile: Sensitivity of Government Debt Projections Under the Structural Balance Rule

	2002	2003	2004	2005	2006	2007	2008
Structural balance (percent of GDP)		0.8	1.0	1.0	1.0	1.0	1.0
<b>Baseline scenario</b>							
GDP growth, actual (percent)		3.3	4.5	5.2	5.5	5.0	4.8
GDP growth, potential (percent)		3.7	3.7	3.8	4.0	4.2	4.5
Output gap (deviation from potential, percent)		-4.8	-4.0	-2.7	-1.2	-0.4	-0.1
Actual balance (percent of GDP)		-0.8	-0.1	0.4	0.7	0.8	0.9
<b>Government gross debt (percent of GDP)</b>	<b>15.9</b>	<b>15.6</b>	<b>14.5</b>	<b>13.0</b>	<b>11.3</b>	<b>9.6</b>	<b>8.0</b>
<b>Alternative scenarios</b>							
<b>1. Baseline, <i>except</i>: higher estimate of potential output</b>							
GDP growth, actual (percent)		3.3	4.5	5.2	5.5	5.0	4.8
GDP growth, potential (percent)		3.7	6.4	7.0	5.5	5.0	4.8
Output gap (deviation from potential, percent)		-4.8	-6.5	-8.0	-8.0	-8.0	-8.0
Actual balance (percent of GDP)		-0.6	-0.6	-0.7	-0.7	-0.7	-0.6
<b>Government gross debt (percent of GDP)</b>	<b>15.9</b>	<b>15.4</b>	<b>14.8</b>	<b>14.3</b>	<b>13.9</b>	<b>13.5</b>	<b>13.2</b>
<b>2. Baseline, <i>except</i>: low actual growth, with some downward revision to estimate of potential growth</b>							
GDP growth, actual (percent)		3.3	2.0	2.0	2.0	2.0	2.0
GDP growth, potential (percent)		3.7	3.7	3.8	2.2	2.0	2.0
Output gap (deviation from potential, percent)		-4.8	-6.3	-7.9	-8.0	-8.0	-8.0
Actual balance (percent of GDP)		-0.6	-0.6	-0.7	-0.7	-0.7	-0.7
<b>Government gross debt (percent of GDP)</b>	<b>15.9</b>	<b>15.4</b>	<b>15.1</b>	<b>15.0</b>	<b>15.0</b>	<b>15.0</b>	<b>14.9</b>
<b>3. Baseline, <i>except</i>: low actual growth, with no downward revision to potential output estimate</b>							
GDP growth, actual (percent)		3.3	2.0	2.0	2.0	2.0	2.0
GDP growth, potential (percent)		3.7	3.7	3.8	4.0	4.2	4.5
Output gap (deviation from potential, percent)		-4.8	-6.3	-7.9	-9.6	-11.5	-13.5
Actual balance (percent of GDP)		-0.6	-0.6	-0.7	-1.0	-1.4	-1.7
<b>Government gross debt (percent of GDP)</b>	<b>15.9</b>	<b>15.4</b>	<b>15.1</b>	<b>15.0</b>	<b>15.3</b>	<b>15.9</b>	<b>17.0</b>

Source: Fund staff estimates and projections.

15. **More practically, under this fiscal rule, the estimate of the output gap is updated regularly.** This updating is done with the help of an expert panel, providing the opportunity to lower the estimate of potential output in the event that actual growth turns out less than expected. Moreover, this estimation is performed within a methodological framework (the Hodrick-Prescott filter) that penalizes large gaps between actual and potential output estimates. In this light, the above examples are seen to be artificial, as it is unlikely that an output gap estimate as high as 8 percent would be sustained year after year.

16. Thus while uncertainty about the size and duration of (estimated) cyclical adjustments used in the structural balance rule is relevant for debt projections, plausible degrees of error (or “optimism”) on potential output along the way would not lead to unstable debt dynamics.<sup>3 4</sup>

### C. Central Bank Finances

17. **The balance sheet of the central bank of Chile (BCCh) has these essential features:**

- Large size. Assets and liabilities together total about 70 percent of GDP. Assets are dominated by international reserves, along with some (old) central government debt. Liabilities are dominated by domestic debt issues.<sup>5</sup>
- Strong liquidity position. While assets are dominated by liquid foreign assets, liabilities are mostly medium-term paper. Importantly, the bank has avoided any issuance of short-term debt indexed to the exchange rate; it also has avoided interest rate indexation.
- A significant currency mismatch, the bank being long in dollars. Assets that are exchange rate-linked far exceed exchange rate-linked liabilities. At end-2002, the net foreign exchange position was +23 percent of GDP.

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<sup>3</sup> A key factor limiting the sensitivity of debt projections in this context is the relatively small adjustment allowed under the structural balance rule for a given output gap (see Chapter II).

<sup>4</sup> For an analysis of sustainability issues in light of uncertainty over copper export prices, also with generally favorable conclusions, see Chapter III of Chile: Selected Issues, prepared for the 2002 Article IV consultation.

<sup>5</sup> Credit to banks, and monetary liabilities, are relatively small components of the balance sheet.

Assets		Liabilities	
<b>Foreign-denominated</b>		<b>Foreign-denominated (or indexed)</b>	
International reserves	23.9	Foreign liabilities	0.0
Government debt	9.1	Government deposits	0.7
		US\$-indexed paper	9.3
<b>Peso-denominated</b>		<b>Peso-denominated</b>	
Government debt	0.7	Government deposits	0.3
		Peso paper:	21.5
		o/w: inflation-indexed	9.3

### Assessment of risks

18. **The structure of the bank's balance sheet is not problematic.** As noted, the bank's balance sheet is strong in terms of liquidity. As for exchange rate exposure, strictly speaking, the bank's currency mismatch is a source of risk: e.g., a 10 percent appreciation (depreciation) of the peso rate produces a valuation loss (gain) in excess of 2 percent of GDP. However, this exposure is in the right direction to be considered a form of insurance.<sup>6</sup> Thus if "bad times" for the Chilean economy cause the currency to depreciate, there will be associated gains for the central bank, lowering net debt of the public sector as a whole and so helping to support confidence. On the other hand, losses from currency appreciation would tend to be associated with favorable circumstances (e.g., terms of trade improvement), times in which confidence would be improving.

19. **The central bank's currency mismatch has declined in recent years, and it may be reduced further.** Since 1997, the significant issuance of dollar-indexed debt has reduced the exposure of the central bank, and the public sector more broadly, to appreciation of the domestic currency. Looking forward, the denomination of the government debt owed to the central bank could be switched from dollars to pesos.<sup>7</sup> This would distribute exposure to peso appreciation more evenly within the public sector.

<sup>6</sup> Whether this degree of "insurance" is optimal to Chile's circumstances is a technically challenging question beyond the scope of this note.

<sup>7</sup> Such a move has already been approved by the congress; what remains is for the government and central bank to agree on technical details.



### **The central bank deficit: implications and outlook**

20. **The central bank's balance on operations has tended to be negative.** Rather than from current central bank policies, these losses arise from (i) the government exercising its option to capitalize interest on its old debt to the central bank, and (ii) the inherited structure of the balance sheet, related to the support to banks in the 1980s and to sterilized exchange market intervention during part of the 1990s.<sup>8</sup> In recent years, the IMF staff's measure of the central bank deficit has been close to 1 percent of GDP on a cash basis, and about 0.5 percent of GDP on an accrual basis.<sup>9</sup>

21. **Though the central bank's deficit is moderate in size and seems to be stable, it is not to be ignored.** The Chilean government explicitly recognized the significance of the central bank's deficit when it chose to set the target for the central government balance at a small surplus. A further consideration is the potential link between a central bank's financial strength and its effectiveness.<sup>10</sup> There has been no sign that the Chilean central bank's deficit has interfered with its effective independence, but it is possible that public perceptions of the bank's independence could be diminished by the existence of a deficit (especially if the deficit were to begin to grow, though this is not expected). At the least, the bank's deficit complicates understanding of the public sector's financial position.

22. **Steps could be taken to clarify the financial relationship between the government and central bank.** One step would be for the government to pay full accrued interest on its debt to the central bank (i.e., declining to utilize its option to capitalize some of this interest). Going further, the government could consider a more comprehensive solution, ending the bank's deficit entirely by an appropriately sized recapitalization. Such a move could for example take the form of a transfer of government bonds to the bank; alternatively, it might be possible to transfer responsibility for a part of the domestic debt now on the bank's balance sheet to the government.

23. **The Chilean authorities are currently engaged in technical work to better understand the central bank deficit.** Despite its apparent stability in recent years, the bank's balance is subject to change from a number of factors, though these sometimes offset

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<sup>8</sup> See Appendix III of the staff report for the 2002 Article IV consultation for a fuller discussion of the bank's flow losses and their origin.

<sup>9</sup> This measure does not include capital gains/losses arising from currency fluctuations. In recent years, the bank has experienced large capital gains as a consequence of the peso's depreciation against the US dollar.

<sup>10</sup> See for example IMF WP/02/137, "Central Bank Financial Strength, Transparency, and Policy Credibility."

one another. The Chilean authorities aim to estimate the bank's *underlying* deficit—a difficult exercise, taking into account, inter alia, cycles in interest rates (including variations in term structure) and exchange rates. Although this chapter cannot anticipate the results of that exercise, two qualitative points on the outlook for the bank's deficit can be noted. One is that *the bank's net flows are likely to improve in the period ahead*, especially as debt issued some years ago at much higher interest rates comes due and is replaced with cheaper debt. Another is simply to observe, in light of the bank's sizable currency mismatch, that projections of the central bank balance will be sensitive to exchange rate assumptions.

#### **D. Finances of the Public Enterprise Sector**

**24. Significant aspects of the public enterprise sector's balance sheet are the following:**

- Net debt of about 6 percent of GDP: gross debt being about 6½ percent of GDP, and *financial* assets about ½ percent of GDP, at end-2002
- Gross debt is mainly—about three-fourths—external. Domestic debt remains small, still less than 2 percent of GDP, though in recent years a few enterprises, including CODELCO and the Metro, have issued bonds locally.
- The average interest rate is low: e.g., the ratio of interest payments to gross debt was only 3.5 percent in 2002. (For CODELCO, the company that accounts for the largest share of public enterprise debt, interest payments were only 2 percent of current income in 2002, a year not only of low interest rates but also relatively weak copper prices).
- Maturity of debt: about three-quarters of the public enterprise sector's debt to the private sector is long-term.<sup>11</sup>

**25. In terms of flows, the public enterprise sector has been performing favorably in recent years.** In particular, its balance on current account—after sending taxes and profits to the central government—has been fairly steady, at around 1 percent of GDP. Its overall balance has been in modest deficit, reflecting capital expenditure usually between 1 and 2 percent of GDP. (The majority of such capital expenditure has been by CODELCO, which is now well into a multi-year plan to expand its capacity.)

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<sup>11</sup> An annual amortization schedule for public enterprise sector debt is not available. However, the Public Debt Report does give a breakdown between short-term and all other debt, as noted here.

## **Interpretation**

**26. Under current circumstances, the public enterprise sector is not critical to the analysis of possible debt sustainability problems of the Chilean public sector.** Partly this is because this sector represents a minor share (less than 15 percent) of total public debt. More fundamentally, the public enterprise sector seems to be run mainly on commercial principles and in any case is on the whole profitable. At the same time, it is advisable to continue to monitor the condition of the public enterprise sector, as it is large enough to be of macroeconomic significance, and to be alert to any change in its financial position.

**27. Transparency and analysis of the public enterprise sector is set to take a step forward.** The authorities are now developing a new set of statistics to follow the new GFS 2001 standard, with its accrual basis and emphasis on capturing changes in net worth. In particular, the new set of statistics will include information on the value of the fixed assets of this sector, and on capital consumption flows (depreciation).

## XII. AN UPDATE ON THE CHILEAN BANKING SYSTEM<sup>1</sup>

1. *This note provides a brief update of the Chilean banking system by reporting recent developments and regulatory changes, standard prudential indicators, and the view of rating agencies. The recent Inverlink affair is also discussed, with the focus on the preemptive liquidity measures taken by the authorities after this incident of fraud came to light.*

### A. Structure and Activities of the Banking System

2. **As of December 2002, the Chilean banking system held about US\$63.2 billion in assets or about 100 percent of GDP—including about US\$44.5 billion in loans and US\$12.3 billion in negotiable financial instruments.**

3. **The structure of the banking system continues to evolve.** Currently the system consists of twenty-six banks, including seven branches of foreign banks and the government-owned bank (Banco del Estado). During 2002, two new banks (Banco Ripley and Banco HNS) entered the system. Early in 2003, the only remaining finance company or consumer credit agency (Financiera Conosur, with 53 branches throughout the country) became a full-fledged commercial bank (Banco Conosur).

4. **During 2002, the total bank loan portfolio continued to grow in tandem with economic activity.** Consumer loans<sup>2</sup> have shown the strongest performance with a 12 percent (year-on-year) growth rate in real terms. Mortgage lending grew at 6 percent (year-on-year) in real terms while commercial lending stayed flat—due in part to alternative financing sources available to large firms.

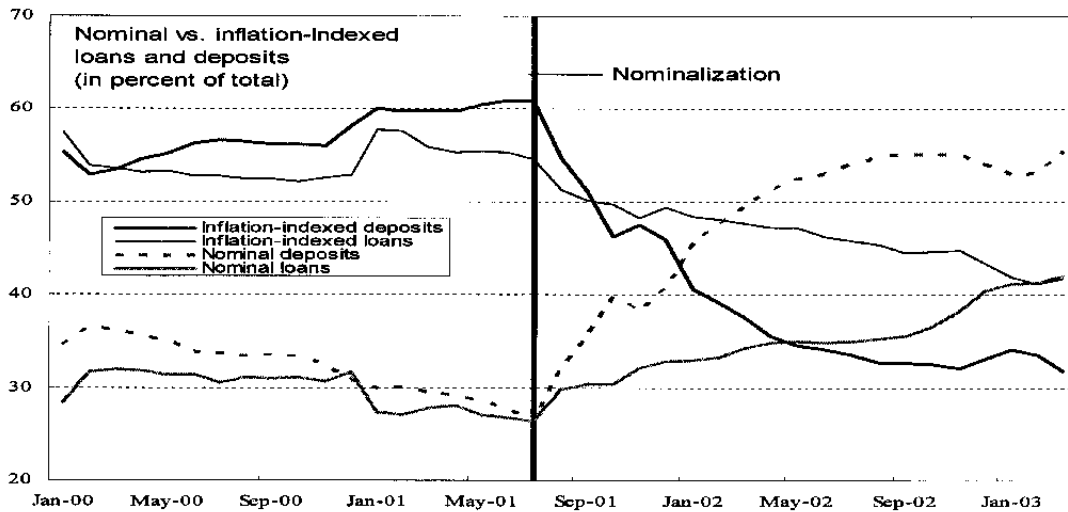
5. **There has been a shift in the composition of banks' assets, as well as in their deposits and loans.** Since the announcement in 2001 of the BCCh's "nominalization" of its monetary policy operations there has been a shift in the composition of banks' assets, deposits and loans from inflation-indexed (UF-denominated) to non-indexed instruments. The UF is a unit of account that indexes the principal of financial contracts and transactions to the previous month's inflation rate.

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<sup>1</sup> Prepared by Marco A. Espinosa-Vega.

<sup>2</sup> The system's technology to evaluate consumers creditworthiness is fairly strong. The local credit Bureau (DICOM) is owned by Equifax.

Figure 1. The Impact of Nominalization on the Banking System's Loans & Deposits

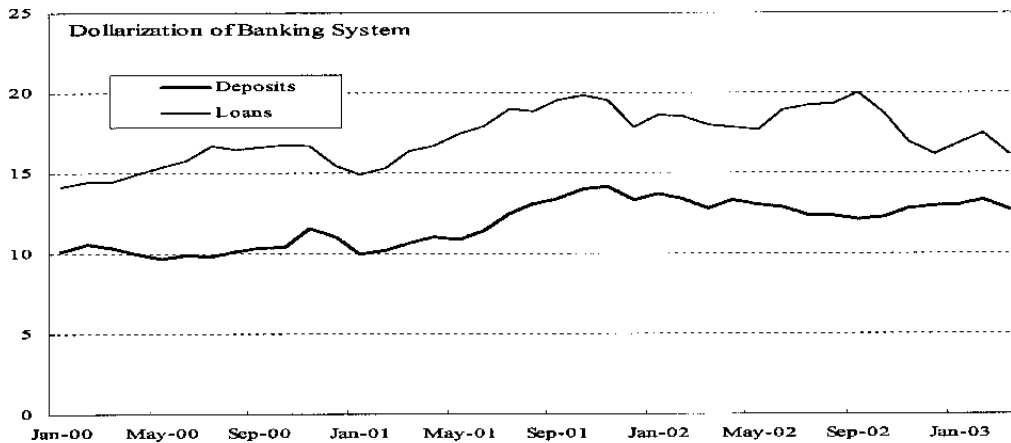


6. **Banks have not been heavily involved in underwriting and securitization**, even though the 1997 amendment to the 1986 banking law permits such activities. Banks' involvement in the derivatives market is dominated by currency hedging. Banks participate actively in forex forwards and swaps.

7. **A long-standing characteristic of the Chilean banking system, its relatively low levels of dollarization, continues to hold (Figure 2).** Since early 2002, dollarization ratios have been essentially flat (for deposits) or have tended to decline slightly (for loans).<sup>3</sup>

<sup>3</sup> Earlier, the 4 to 5 point rise in dollarization ratios seen from January to October of 2001 was associated partly with a 23 percent depreciation of the Chilean peso against the U.S. dollar, rather than a significant flow increase.

Figure 2. Chile: Composition of Banking System Loans and Deposits, 2000–2003



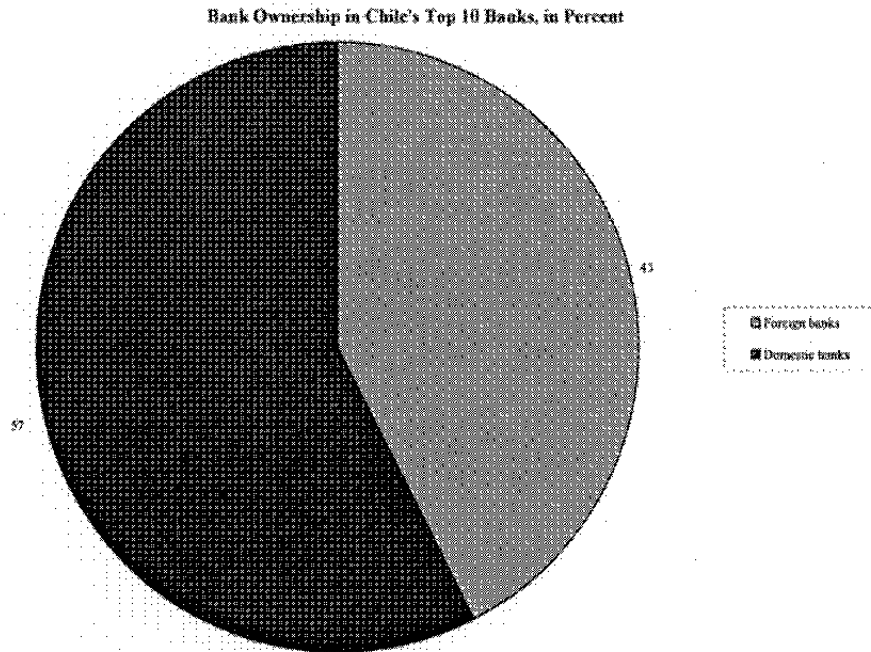
8. **The banking system appears fairly concentrated.** The ten largest banks account for some eighty-five percent of deposits and loans, and the two largest banks represent almost half of the system’s deposits. Such concentration might raise concerns of possible anti-competitive practices and increased systemic risk. However, recent studies find that Chile does not stand out as having a particularly concentrated banking system, that this concentration so far has not adversely affected the degree of competition and that larger banks are not associated with riskier practices in Chile.<sup>4</sup>

9. **The system also continues to have significant foreign participation.** Foreign-owned or controlled banks’ assets account for close to 46 percent of the top 10 banks’ assets. Recent cross-country research associates the presence of foreign banks with the import of sound risk management systems developed by head offices with advanced financial and banking markets, and with increased efficiency of domestic banks.<sup>5</sup> In some countries, there has been concern that entry of foreign banks could eliminate the small local banks which normally cater to low-income consumers; however, there is no empirical evidence to support

<sup>4</sup> See “Bank Concentration: Chile and International Comparisons,” BCCh’s WP62 by R. Levine (2000) and “Risk, Size, and Concentration in the Chilean Banking System,” BCCh’s WP by R. Chumacero & P. Langoni (2000).

<sup>5</sup> See, “Foreign Investment in Colombia’s Financial Sector,” in S. and M. Jansen, by A. Barajas, R. in *The Internationalization of Financial Services*, Steiner & N. Salaza (eds.) [2000]. See also “How Does Foreign Bank Entry Affect the Domestic Banking Market?” by S. Claessens, A. Demirguc-Kunt & H. Huizinga in *World Bank Policy Research WP 1918* (1998).

this claim.<sup>6</sup> In addition, in Chile, Banco del Estado ensures the provision of banking services to all regions of the country through its widespread branch network, maintains a large volume of passbook savings accounts, and makes a substantial amount of consumer and mortgage loans including to low-income households.<sup>7</sup>



### B. Recent Changes in Banking Regulation and Supervision

10. **Mortgage refinancing activity has been spurred** by the November 2002 approval by congress of the elimination of the "stamp" tax paid on refinancing of home mortgages and by low interest rates.

11. **The central bank is engaged in modernizing the country's payments system.** Open market operations already are conducted electronically. By 2004, the central bank will require the electronic custody and trading of all large-denomination assets. Also in 2004, all large-denomination asset transactions will be settled on a real time gross settlement (RTGS) basis.

<sup>6</sup> See for instance "Bank Lending to Small Business in Latin America: Does Bank Origin Matter? By G. Clarke, R. Cull and M. Martinez World Bank Policy Research WP 2760 (2001).

<sup>7</sup> Some of this activity reflects savings deposits and the servicing of subsidized mortgages provided in conjunction with government low income housing programs.

**12. In Chile, the central bank and the superintendency of banks (SBIF) have regulatory powers over the banking system.** Since the 2002 Article IV consultation:

- the central bank authorized banks to issue interest-bearing deposit accounts. However, the move has not induced a large switch from non-interest bearing to interest-bearing accounts—in part due to the low opportunity cost that a low inflationary environment represents for depositors.
- the SBIF issued a new regulation requiring banks to include all loan charges in a single interest rate figure, and to publish interest rates charged on consumer loans periodically. The goal of this increase in transparency was to promote more competition among banks, in particular to induce a higher degree of interest rate pass-through to consumer lending rates.
- the SBIF regulations were introduced that would require banks: (i) to restrict how much of the net worth of their affiliates could be included in the consolidated balance sheets; (ii) to obtain previous authorization of the SBIF before selling or charging-off reposed assets; (iii) to apply their own portfolio risk models for loan provisioning; and (iv) to meet guidelines for internal auditing committees to bring them up to international best practices by 2004.

**13. Perhaps the most significant of these regulatory changes has been allowing banks to design their own portfolio risk models.** The regulation anticipates the new direction of the Basel II committee's recommendations of moving to greater reliance on banks' internal risk management systems. The SBIF reports that it is training its staff to better understand and evaluate the banks' internal risk models. The SBIF also reports that its risk unit has met with all the risk departments of the different banks to look into the assumptions of the banks' risk models and to ensure consistency between the asset classification and their provisioning.

### **C. Risk Management Policies, Prudential Indicators and Stress Tests**

**14. The Chilean banking system continues to enjoy a reputation for soundness and for weathering regional storms.** The recent collapse of the Argentine banking system and political uncertainties in Brazil had a limited impact on the Chilean banking system.

**15. Overall prudential indicators continue to point to a healthy banking system (Table 1).** The system continued to be well capitalized during 2002, but there was a slight deterioration in the quality of banking system's portfolio, and a small decline in the banking system's profits. As shown in Table 1, during 2002 the banking system as a whole:



- registered a slight increase in overdue loans<sup>8</sup>
- showed a slight decrease in loan loss reserve coverage
- maintained a healthy coverage ratio of 129.5 percent as of December 2002
- continues to be well capitalized displaying a small increase in its capital adequacy ratio to 14.01 percent in December 2002.
- experienced a small decline over the year in net income after taxes, both as a rate of return on assets and as a rate of return on equity. The most significant factor in this was the higher costs associated with the mergers of several banks (greater administrative costs and increases in loan-loss provision reserves).<sup>9</sup> Nevertheless, the overall profitability of the banking system remains strong and stable.

16. **Even with the favorable prudential indicators just listed, the Chilean banking system could still be exposed to a number of potential shocks.** In order to assess the vulnerability of the banking system to some of these shocks, in late 2001 staff conducted stress tests.<sup>10</sup> The tests consisted of applying: (i) a hypothetical 25 percent depreciation of the peso to the net foreign exchange rate exposure of each bank; (ii) a shock to the Central Bank bonds yield curve and using a repricing gap model of interest rate risk to analyse the sensitivity to interest rate shocks of the difference between the flow of interest earned by each bank's assets and flow of interest paid on its liabilities; and (iii) a credit risk shock by assuming that the share of overdue loans as a percentage of total loans doubled with 100 percent provisioning of the simulated increase. Most banks would have been able to comfortably met the minimum risk-based capital adequacy requirements after each shock.

17. **The SBIF is considering making this kind of stress analysis part of its routine vulnerability assessment.** The SBIF is currently engaged in an updated, similar stress-testing exercises, and expects to release its findings.

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<sup>8</sup> Chile differs from GAAP accounting practices regarding overdue loans. Only the portion of loan overdue for more than 90 days is classified as overdue, unless legal proceedings are initiated for recovery.

<sup>9</sup> Banco de Chile and Banco Edwards merged in January, and the Santander and Santiago banks merged in August.

<sup>10</sup> For details, see Chile—Country Report No. 02/163; 8/5/02.

#### **D. Preemptive Liquidity Measures: The Aftermath of the Inverlink Affair**

18. **A case of fraud of some significance, involving a financial holding company, emerged in March 2003.** Although this case originated outside the banking system, its repercussions soon extended to the banking system.

19. **In early March, a bribed official at CORFO** (a second-tier development bank, under the supervision of the Ministry of Economy) **was discovered to have handed over more than US\$100 million in government-owned securities to Inverlink**, a private financial holding company, which had then recently sold them in the secondary market. Only a few weeks earlier, Inverlink—whose interests included a mutual fund, an insurance company and a pension fund—had been caught bribing a central bank employee to deliver confidential information.

20. **When the theft and subsequent sale of Corfo's financial instruments was discovered** on March 7, **the Treasury asked the courts to declare an embargo on the payment of the stolen instruments.** After finding enough merit on the request, the courts complied and declared an embargo. Trading in all time deposits soon stopped as the market worked to sort out the holders of the stolen instruments. The holdup on trading of time deposits generated some market uncertainty. A number of mutual funds (most of them bank affiliates) also experienced very significant withdrawals.<sup>11</sup> As a consequence, the liquidity needs of the banking system increased markedly. In response, from March 10–14:

- the central bank provided liquidity through its overnight REPO window, and swap operations in U.S. dollars with resale agreements. The liquidity provided by the Central Bank between the 10th and the 14th represented an abrupt increase of about 50 percent in the level of liquidity in the system which, judging by the lack of gap between interbank market interest rates and the bank's unchanged monetary policy rate, appeared adequate;
- regulators put some Inverlink companies under government administration and their assets in trust;
- the Central Bank relaxed its redeeming of maturing regulations on deposits in order to provide additional liquidity to the market;
- the SBIF made a public statement about the health of the banking system.

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<sup>11</sup> A reported US\$800 million was withdrawn from the mutual funds, out of a total of US\$6.2 billion after the scandal broke.

- the government struck an agreement with the banking community and it reversed the stop payment order on the stolen securities pending a decision by the courts on their lawful ownership.

21. **The Central Bank allowed the liquidity to remain in the system until March 24.** In hindsight, the extended liquidity period was more than adequate, judging by the fact that, on average, for this period the interbank rate was 20 bp below the monetary policy rate. The authorities indicated that the reason for this liquidity excess was to signal the central bank's intent to meet any liquidity needs during the exceptional circumstances. The liquidity excess was gradually removed until its total recall on April 8.

22. **Looking back, major systemic effects were avoided because the banking system as a whole is on a sound footing;** because it is vastly larger than the amount of stolen securities (0.15 percent of GDP);<sup>12</sup> and because of the swift intervention of the central bank and the SBIF. In the end, the episode did not induce rating agencies to change any of their bank ratings.<sup>13</sup>

23. **Although the CORFO-Inverlink affair has not had a negative lasting effects for the banking system,** it did bring out to light a number of current and potential problems with the financial system and its supervision:

- The need to institute better public sector financial controls. A recent congressional investigative commission concluded that CORFO lacked basic financial controls, and its financial desk was not implementing existing procedures. The commission also noted that the Controller General had identified problems relevant to the case as far back as 1998, but that these had not been addressed. (It can be noted also that the securities thefts had gone on for some time, yet had gone undetected by several government review procedures; CORFO became aware of the problem only after a private bank suspected irregularities and notified it.);
- The desirability of having electronic custody and trading of assets. The theft of assets from CORFO was facilitated by their being in physical (paper) form. Subsequently, the difficulty of sorting out who was currently holding the paper assets created unnecessary havoc;
- The need to establish better mechanisms for the three supervisory agencies<sup>14</sup> to share information. The Superintendency of securities and insurance (SVS) oversees all mutual funds but did not have to share information with the SBIF regarding the

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<sup>12</sup> Total assets of the banking system are close to 100 percent of GDP.

<sup>13</sup> See for instance "Banking System Outlook: Chile," Moody's Investor Service, June 2003.

<sup>14</sup> SBIF, SVS and SAFP.

activities of Inverlink's mutual fund because it did not have a banking interest directly associated to it.

24. **In response, the authorities appended a number of proposals to the capital market reform package that had been already in preparation.** Capital Market Reform II is an ambitious set of 60 proposals, recently sent to congress, to either modify old or create new laws. The proposals include:

- regulation, coordination and modernization changes in the financial system by for example: allowing the SBIF more discretion in denying bank licenses;
- allowing more SBIF control over banks' subsidiaries;
- establishing mechanisms to share information among the three supervisory agencies;
- and immaterialization and electronic trading of assets.

#### **E. Grading by Rating Agencies**

25. **Ratings agencies continue to see the Chilean banking system as one of the strongest and best regulated in Latin America.** For example, in a February 2003 report, Fitch observed that in a second year of regional volatility, Chile continued to differentiate itself from the rest of Latin America. Moody's June 2003 report on the Chilean banking system also provides a positive outlook. This report sees the Chilean banking system as one with sound financial fundamentals.<sup>15</sup> Nevertheless, both reports stress the need for close monitoring in the face of regional and global uncertainties and a slower economy.

26. Tables 2–3 report the long-term foreign and local currency classifications of individual banks, as of July 2003. These tables present a picture of a stable banking system with the four largest banks displaying some of the best ratings and with most banks assigned a positive outlook.

#### **F. Concluding Remarks**

27. **The Chilean banking system continues to command a reputation for stability and strength.** The system has been tested in the last two years by regional uncertainties, slow recovery, and more recently, by a home-grown shock, in the form of the Inverlink case. The system has weathered these shocks well. However, the first type of shocks highlights the importance, as suggested in the Moody's and Fitch reports, for close monitoring. The adoption and improvements of vulnerability assessments techniques of the type discussed in Section V, are likely to help analysts in their endeavor.

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<sup>15</sup> See "Banking System Outlook: Chile," Moody's Investor Service, June 2003 and "Chilean Banks-End-2002 Results," Fitch February 2003.

28. **The shock originating from the Inverlink case highlighted the need for modernization of certain practices and regulations involving transactions and custody of securities in secondary markets.** The authorities took swift action and seized the opportunity to add proposals for some of these needed changes to the Capital Markets Reform II program that had been under preparation and is now in congress. Furthermore, the SBIF has started to anticipate the new winds of the Basel II Accord. However, as the globalization process continues, as new financial products become part of the banking landscape and as the line between banking and other financial sectors continues to blur, regulation and safety net designs will have to adopt flexibly and expeditiously in Chile as elsewhere.

**Table 1. Chile: Financial System Indicators**  
(in percent)

	December							April
	1996	1997	1998	1999	2000	2001	2002	2003
<b>Solvency</b>								
Effective capital/risk weighted assets 1/	...	...	12.48	13.53	13.34	12.73	14.01	14.40
Basic capital/total assets 2/	...	...	7.49	7.75	7.51	7.24	7.20	7.38
<b>Credit Risks</b>								
Loan loss provisions/total loans	1.34	1.42	1.91	2.55	2.52	2.37	2.36	2.30
Overdue loans/total loans	0.95	0.96	1.45	1.67	1.73	1.62	1.82	1.94
Loan loss provisions/overdue loans	141.1	147.9	131.7	152.7	145.7	146.3	129.5	118.9
<b>Results</b>								
After income/adjusted assets (ROA) 3/	1.14	1.01	0.90	0.73	1.00	1.28	1.04	1.10
After tax income/capital and reserves (ROE)	15.50	13.67	11.54	9.36	12.70	17.70	14.39	14.90
<b>Efficiency</b>								
Operating costs/gross operational margin	66.50	66.45	61.44	60.19	60.76	56.15	55.21	53.92
Operating costs/adjusted assets	3.33	3.19	3.13	2.94	2.84	2.78	2.55	2.58
<b>Foreign Exchange Risk</b>								
Net open forex position (% of capital) 3/ (sum of on- and off- balance sheet exposure)	...	...	...	11.67	4.33	3.58	4.27	4.30

Source: Banking Superintendency (SBIF).

1/ Effective capital corresponds to: basic capital less equity plus the sum of voluntary provisions and subordinated bonds.

2/ Basic capital is equivalent to capital and reserves.

3/ Figure for 2003 is through March.

**Table 2. Chile: Long-term Foreign Currency Credit Ratings  
and Most Recent Ratings Change or Affirmation**

	Fitch	Moody's	S & P
Banco BICE	n/a	Baa1 6/3/2003	n/a
Banco de Chile	A- 10/18/2002	Baa1 6/9/2003	A- 11/20/2002
Banco de Crédito e Inversiones	n/a	Baa1 6/3/2003	n/a
Banco del Estado	n/a	Baa1 6/3/2003	A- 9/11/2002 Positive
Banco Santander – Santiago	A- 12/2/2002	Baa1 6/3/2003	A- 12/13/2002 Positive
BBVA	n/a	Baa1 6/3/2003	n/a
Corpbanca	BBB 12/12/2002 Positive	Baa3 6/3/2003	n/a
Scotiabank Sud Americano	n/a	Baa1 6/3/2003	BBB+ 3/19/2003

Sources: Fitch; Moody's; and S & P.

**Table 3. Chile: Long-Term Local Currency Credit Ratings**  
(As of June 2003)

	Feller	Fitch
ABN AMRO Bank (Chile)	AA+	AA
Banco BICE	AA	AA
Banco Conosur	BBB+	BBB+
Banco de Chile	AA+	AA+
Banco de Crédito e Inversiones	AA	AA
Banco de la Nación Argentina	BB	BB+
Banco del Desarrollo	A-	A
Banco del Estado de Chile	AA+	AA+
Banco do Brasil S.A.	BBB	BBB
Banco Falabella	A+	A+
Banco Internacional	BBB+	A-
Banco Ripley	A-	A-
Banco Santander - Santiago	AA+	AA+
Banco Security	AA-	AA-
Banco Sudameris	A+	AA-
Bank Boston N.A.	AA	AA-
BBVA	AA-	AA
Citibank N.A.	AA+	AA+
Corpbanca	AA-	AA-
Deutsche Bank Chile	AA+	AA+
Dresdner Bank Lateinamerika	AA	AA
HNS Banco	A-	A-
HSBC Bank Chile	AA+	AA-
JP Morgan Chase Bank	AA+	AA+
Scotiabank Sud Americano	A+	AA-
The Bank of Tokyo-Mitsubishi	AA-	AA-

Sources: Feller Rate and Fitch-Chile.