



Documento de Trabajo

ISSN (edición impresa) **0716-7334**

ISSN (edición electrónica) **0717-7593**

Myths and Facts about Financial Liberalization in Chile: 1974-1982.

**Sergio de la Cuadra
Salvador Valdés P.**

**PONTIFICIA UNIVERSIDAD CATOLICA DE CHILE
INSTITUTO DE ECONOMIA**

**Oficina de Publicaciones
Casilla 274 - V, Correo 21, Santiago**

**MYTHS AND FACTS ABOUT FINANCIAL
LIBERALIZATION IN CHILE:
1974 - 1982**

Sergio de la Cuadra^(*)
Salvador Valdés Prieto^(**)

Documento de Trabajo N° 128

October, 1990

^(*)Ex President of the Central Bank of Chile, ex Minister of Finance.

^(**)Professor at the Institute of Economics, Universidad Católica de Chile. Address:
Casilla 274-V, Correo 21, Santiago, CHILE.

INDEX

	Page
1. INTRODUCCIÓN	1
2. REAL INTEREST RATE DYNAMICS IN THE CHILEAN FINANCIAL LIBERALIZATION EXPERIENCE	5
2.1. The Financial Liberalization Step by Step	6
2.2. The Dynamics of Financial Liberalization	13
2.2.1. Asymmetric Portfolio Adjustment Costs	13
2.2.2. Market Development	18
2.3. Coordination Failures in Financial Liberalization: The Bankruptcy of the Savings and Loans	21
3. A FRAMEWORK FOR THE ANALYSIS OF PRUDENTIAL REGULATION	24
3.1. Structural Contingent Subsidies	26
3.2. Moral Hazard	29
3.3. Rollover of Unrealized Loan Losses	31
3.4. Self-lending by Business Groups	33

4.	PRUDENTIAL REGULATION IN CHILE: 1976-1982	36
4.1.	Moral Hazard: The Chilean Experience, 1976-1978	37
4.1.1.	Moral Hazard Before Banco Osorno	37
4.1.2.	Banking Policy after Banco Osorno's Failure	39
4.2.	Rollover of Unrealized Loan Losses: The Chilean Experience	49
4.2.1.	The facts, 1977-1981	50
4.2.2.	The Evidence for Unrealized Loan Losses, 1977-1980	54
4.2.3.	Checking a Ponzi Game by Rollover of Unrealized Loan Losses	56
4.3.	Structural Contingent Subsidies in Chile in 1981	60
4.3.1.	Risks Influenced by the Authorities in Chile	60
4.3.2.	Evidence on Structural Contingent Subsidies	65
4.3.3.	The Cost of Structural Contingent Subsidies	68
4.4.	Self-lending by Business Groups in Chile	71
4.4.1.	Origin of Chile's large Business Groups	72
4.4.2.	Self-loans versus Loans to Independent Parties	75
4.4.3.	Monitoring of Business Group Self-loans	76
4.4.4.	Abuse of the Informational Advantage	80
4.4.5.	The Outcome: Takeover by the Superintendency of Banks	84
5.	LESSONS FOR FINANCIAL LIBERALIZATION AND PRUDENTIAL SUPERVISION	87
5.1.	The Specifics of the Chilean Experience	87
5.2.	A Program for Research	88
	REFERENCES	90

1. Introduction

The Chilean experience of financial liberalization in 1974-1982 has claimed the attention of a host of analysts that have hoped to extract lessons from it. This paper contributes to this literature by providing detailed analyses and evidence of the main episodes and facts. In addition, we provide a link with the literature on prudential regulation of banks, an issue that turns out to be critical for the success of a financial liberalization.

After the 1982-1983 recession a number of analysts have singled out financial system regulatory failures as an important causal factor. However, most of these analysts take a macroeconomic approach and do not investigate within the financial sector what were the precise reasons for failure. This lack of attention to detail has led some of these analysts to wholesale doubts about the appropriateness of financial liberalization, as in the case of Arellano (1983)¹. We are interested in more precise conclusions, so that we may design successful financial liberalizations, where a fallback towards financial repression in despair is avoided.

The first important finding of our study is that the conceptual conflict within the Chilean authorities about whether free banking was feasible and/or desirable was at the root of the regulatory failure. The group that supported stronger state supervision of banks, as is practiced in the U.S., could articulate no better argument than a vague difference between the private and social costs of bankruptcy of banks in support of its position. The dominant authorities inferred that the best course was to attempt free banking, i.e. to exempt banks from most government regulations and declare that no bank creditor would be bailed out in case of failure. In fact, Chile went through a free banking period during 1976. However, policymakers refused to acknowledge that this policy option was not credible after 1977, year in which the government bailed out the depositors at five large intermediaries that failed. Meanwhile, the adoption of prudential regulation was delayed for three years, which proved fatal in the next recession.

Our conclusion is that a country that attempts financial liberalization should not wait until the academic debate around free banking is settled to adopt prudential regulation. The authorities should realize that free banking is inexistent in the modern market economies. Although bank regulation exhibits serious drawbacks in several countries, the search for the optimal banking strategy should be left for a second stage, after interest rate and credit liberalization are consolidated.

A second important conclusion is that some of the specific regulatory problems that have been proposed by more detailed studies as "the fundamental flaw" of the Chilean financial

¹ Arellano (1983) asserts that "Liberalization of credit controls.... generated a spiral of increases in asset prices and interest rates, and of intermediation, because business groups used bank credit to buy assets."

liberalization process are simply not there. Instead they were the result of the worsening macroeconomic situation.

For example, Harberger (1985) proposes that rollover of unrealized loan losses allowed insolvent banks to play a ponzi game over the 1977-1981 period. We find that there was no ponzi game in the Chilean financial system in 1978-1980, because the banks were able to dilute the old loan losses that were rolled over with abundant new loans, earning positive profits. We find that rollover of unrealized loan losses only turned into a ponzi game in 1981 and 1982, as a result of macroeconomic conditions. Rollover was indeed a critical factor behind the extremely high real interest rate experience of 1982, which fed back into macroeconomic performance and stopped only with the regulatory takeover of 1983.

The same happens with allegations that moral hazard was rife in the Chilean financial system in 1977-1980. This is simply inconsistent with the fact that over this period Chilean banks reinvested a large proportion of their high profits, even though they were still far above the minimum capital requirements. The simple fact is that it was not worthwhile for a bank to engage in moral hazard while it was earning large quasirents allowed by the slow entry into a new, fast-growing market. However, moral hazard surfaced in 1981 and 1982 because banks experienced losses, and the Superintendency was still unable to police effectively the loan classification machinery it had been introducing since mid 1980.

Therefore, a detailed analysis of the financial industry in Chile over 1976-1980 does not suggest the accumulation of problems that could explain the disaster observed later. Rather, the conclusion is that something in the macroeconomic management failed in early 1981. The financial system was found brittle, vulnerable both to rollover of unrealized loan losses and moral hazard. This brittleness was the result of clearly identified errors in banking policy, made in 1977 and sustained up to 1980. However, if macroeconomic management had been smoother, there might have been time for the new banking policy approach adopted in 1980 to bear fruit and avoid disaster.

We found that the most damaging bank regulatory problem occurred in a different area, ignored by other authors, which is contingent government subsidies. It was due to the structural limitations arising from the fact that the supervisory agency depends from the government. This failure could happen in any country where the government's macroeconomic policies introduce specific risks, which the supervisory agency cannot stop banks from taking without embarrassing its political masters.

In the case of Chile in 1981, contingent government subsidies took a particularly insidious form: banks were taking large risks by lending to debtors that were highly exposed to foreign exchange and interest rate risks but were classified as "able to pay" by banks. Our analysis identifies the channel for this guarantee as the Superintendency's lack of explicit penalization, in the loan classification criteria, of debtors with high indicators of credit risk due to exposure to

foreign exchange and interest rate risk. The Superintendency should not have relied on the banks' assessments of risk because they were interested parties.

This is not moral hazard, of course. The regulators simply refused to acknowledge the portion of the foreign exchange and interest rate risks that had been transformed into credit risk. In practice this allowed banks not to penalize, through a larger risk premium, loans to debtors that accepted a lot of foreign exchange risk. Therefore, banks lent at *subsidized* interest rates to debtors that accepted a lot of foreign exchange and interest rate risk, because those rates did not take those credit risks fully into account. The Superintendency of Banks could not force banks to classify loans as risky when the debtor was highly exposed to foreign exchange and interest rate risk, without embarrassing the Minister of Finance and other authorities, who proclaimed publicly that there would never be a devaluation and that interest rates would fall shortly. In addition, bank regulators believed the official story, and didn't attempt to observe market indicators of exchange and interest rate risk. This structural problem of bank regulation worsened the 1982 recession.

As explained in section 4.3, an important part of the bizarre reaction of the Chilean banking system to worsening economic conditions in 1981 was due to the absence of the beneficial effects that prudential regulation has on learning by the banks and the public. The lack of interest of the authorities on prudential regulation over 1977-1980, plus an environment of rapid growth where safety was not the paramount consideration, allowed the corporate sector to grow used to keep the ability to shift collateral out of the reach of banks. This ability encouraged a growing subset of debtors of all sizes to obtain bank loans up to high leverages. This defect in learning, which could be repeated in any financial liberalization with little emphasis on prudential regulation, proved critical when the recession hit.

An over-emphasized regulatory problem is the one of self-loans by business groups that controlled government-insured banks. It is true that in 1981 the Superintendency began a head-front attack on the self-lending practices of the large local business groups, which was blunted for a year because of the business groups informational advantage. Of course, the Superintendency could not have been realistically expected to prevent business groups from profiting from the 1981 contingent government subsidy to exchange rate and interest rate risks during the first year of implementation of their plan. We find that in 1981 the speculative business groups engaged in moral hazard only marginally. In 1981 they did not engage in massive moral hazard because the government was willing to offer contingent subsidies. Business groups did not need to take advantage of a willing guarantor.

During 1982, however, the speculative business groups attempted to continue drawing on the government's guarantee without its acceptance. Confronted with large scale moral hazard, the Superintendency tightened its controls over the business groups. In June 1982 it stopped preferential rollover of unrealized loan losses for firms affiliated with bank owners. Then, in January 1983, it took over the banks controlled by them. This was necessary to avoid the possibility that further self-loans would worsen the recession. This resolve was not present in the securities markets, however, where the business groups continued obtaining funds without giving truthful information to investors up to late 1982.

In conclusion, the linkages between macroeconomic performance and banking policy were much more complex and interesting than what many authors have suggested. The three-year delay in adopting prudential supervision was critical in allowing the Chilean financial system to grow up in a fragile way. If loan classification had been imposed in 1977, learning by doing would have been speeded up and more loan loss provisions would have been made. The corporate sector would have grown used to safer practices. It is reasonable to expect that in that case self-loans would have been controlled earlier.

The problem is that in a liberalized financial system there is no obvious need for an immediate emphasis on prudential regulation. The reason is that the transitory quasirents allowed by slow entry into banking make moral hazard unprofitable, even for banks with no accounting net worth. These quasirents apparently allow the authorities some delay, but the costs of failing to speed up learning of the prudential aspects of banking are huge and not explicit.

However, we feel that if in Chile learning had been rapid, and the huge contingent subsidy on exchange rate and interest rate risk had not existed, the world recession and the Latin American debt crisis would have still forced many Chilean banks into technical failure anyway in 1982 and 1983. The difference is that recovery would have been faster and a simple deferral of losses would have allowed most bank owners to keep their banks. Another difference is that the main Chilean business groups would never have grown so large as they did in the 1977-1981 period.

A third area where this paper contributes is in the analysis of the Chilean approach to finish with financial repression. As we show, abandoning financial repression is a multidimensional reform where coordination between the different aspects of it affect the result critically. The main reforms of this type in Chile concerned the elimination of quantitative and qualitative credit controls, interest rate liberalization in deposits and loans, the reduction of marginal and average reserve requirements, the authorization of indexation of bank assets and liabilities at different maturities, the opening of banking to entry, the creation of new instruments and markets for monetary control, and the uniformation of these reforms across the different types of financial intermediaries.

We present the Chilean experience in this area, which exhibits the costs of insufficient coordination in the liberalization of a repressed financial system. One of the most notable consequences was the unneeded bankruptcy of the savings and loans in 1975. The issue of learning by doing in the management of banks after many years in which the main activity was to comply with the Central Bank's credit guidelines turns out to be critical again. Finally, we show that the process of financial deepening should be expected to require relatively high real deposit interest rates for several years, in order to reach the steady state where the financial sector has attracted the long-run volume of deposits.

The rest of the paper is organized as follows. Section 2 reviews the real interest rate dynamics in the Chilean financial liberalization, excluding prudential regulation issues. Section 3 provides a conceptual framework for the analysis of prudential regulation issues. Section 4 covers the Chilean prudential regulation experience, 1976-1982. The subsections here include the Chilean experience with contingent government subsidies, with moral hazard, with rollover of unrealized loan losses, and with the problems raised by self-lending by business groups that control government-guaranteed banks. Finally, section 5 draws lessons both for financial liberalization and for prudential regulation.

2. Real Interest Rate Dynamics in the Chilean Financial Liberalization Experience.

In this section we intend to explain the high level exhibited by the real interest rate during Chile's financial liberalization in 1974-1980. The approach is basically microeconomic, in the sense that it emphasizes the behavior over time of the suppliers and the borrowers of funds, and the production costs of financial services. We start with a brief description of the liberalization process, stressing events in the banking industry. The timing and sequencing of deregulation of different controls are discussed with some detail since it is relevant to the two hypotheses that we propose on the dynamics of the real interest rate.

Our hypothesis are the following: the first posits a slow adjustment of investors' portfolio. A small speed of adjustment makes the interest rate to overshoot at the beginning of the liberalization. The second posits that after many years of financial repression, the banking industry loses its capacity to intermediate funds efficiently. Hence, when it is deregulated, it will behave like an infant industry where costs decline through time.

The high level of the interest rate in Chile in the first stage of the financial liberalization is also due to macroeconomic factors. The 1975-76 recession was perceived as a transitory real income shock, explaining a large fraction of the rise in the real interest rate in that stage of the Chilean financial liberalization.

The empirical evidence is consistent with our hypotheses for the 1974-1980 period. However, they are unable to explain fully the sharp rise of the real interest rate in 1981. This issue is discussed in section 3.

2.1. The Financial Liberalization Step by Step

Financial liberalization in Chile comprised two policy areas: deregulation of the banking industry, and development of a securities market. In the first, the main actions were those geared to phase out a battery of credit controls, such as: credit ceilings; maximum interest rates; reserve requirements; and ceilings on foreign borrowing by banks. It included also uniformation of operations and regulations among three types of banks²: commercial, development and financieras.

The basic principle followed in this process was to regulate specific operations without distinction among institutions; so, the difference between commercial and development banks disappeared. Financieras, however, were excluded from the checking account market and foreign trade financing (the idea was to induce them to become banks). In this sense, the Chilean bank deregulation policy included a shift towards multiproduct banking.

The second area includes all those policy measures intended to establish the basis for developing a securities market. These included the modernization of the legal framework and the creation of new financial institutions. Important changes were made to several laws that regulate corporations and public offerings of commercial paper and long term debt (bonds and debentures). New institutions were introduced to the market, like: Agencias de Valores (market makers for securities), Mutual Funds, and Private Pension Funds. Other traditional institutions were boosted by the financial liberalization; among these are: the stock exchange and the insurance industry.

Since this paper deals mainly with the banking industry, our description of the liberalization process will concentrate on this sector. We start by pointing out the types of restrictions present at the outset and the timing of their elimination.

- (a) Credit ceilings. This tool for monetary control is quite common in countries where the Central Bank is the main source of financing for public sector deficits; this was the case of Chile since its Central Bank was created, in 1925. During Allende's socialist government the public sector deficit increased to 14% of GDP, relying heavily on the money press for financing it. By the end of 1973, when the military government came into power, inflation was reaching a rate of 1000% (annualized monthly rate). A deep fiscal reform was done in 1975, eliminating the deficit by 1976; credit ceilings were applied until April 1976. In the two years previous to the credit liberalization, four stages can be distinguished; they are:

²Uniformation was also extended to some operations of credit and saving cooperatives.

- January 1974 to September 1974: global limits for the banking system were established, and sectoral sublimits for: agriculture, non-agriculture and capital goods credit. This simplified to manageable levels the previous tangle of credit controls.
- October 1974 to December 1974: ceilings were not applied during this quarter.
- January 1975 to July 1975: ceilings were reestablished, but banks were allowed to lend freely the increment in time deposits over the outstanding amount as of September 1974.
- August 1975 to March 1976: the ceiling is made equal to the outstanding loans as of July 1975. In April 1976 the authority decides to abandon this tool of monetary control.

This experience shows that the attempt to liberalize credit on October 1974, before the required fiscal adjustment, was rapidly aborted --it lasted only one quarter. The reason is that credit ceilings are equivalent to 100% marginal reserve requirements, which increase the base to levy the inflation tax. Credit ceilings were reestablished in January 1975, and in October they became more stringent to assure fiscal equilibrium. Once the fiscal reform produced its results a sustained liberalization was possible.

- (b) Interest rate controls. Maximum interest rates fixed substantially below the market clearing rate were defended by politicians, in the Chilean case, on two grounds: First, as a way of subsidizing specific groups of borrowers and, second, as a way to "fight inflation" -- similar to the argument given for fixing goods' prices.

The nominal rate was much below the on-going inflation, imposing a high tax on time deposits. Consequently, during the financial repression time deposits were not significant in relation to GDP (see Table 1).

Until June 1974, maximum interest rates were fixed both for time deposits and loans. The lending rate was 20 percentage points above the deposit rate. The liberalization started by liberalizing the deposit rate, while maintaining a ceiling on the rate for loans --this was 115%, annual rate, on 30-day loans-when inflation was over 400%. In May 1975 the lending rate was also liberalized, and immediately went up to impressive levels of 1300% nominal and 246% real. This experience was short-lived; in October of the same year interest rates for deposits and loans were fixed again. In January of 1976 interest rates were allowed again to be freely determined in the market. This policy was maintained until December 1982, when the Central Bank began to intervene the market "suggesting" a deposit rate to the banks.

TABLE 1
MONETARY AGGREGATES, RATIOS

	(percentages)		
	¡Error!	¡Error!	¡Error!
1940	12.0	1.9	15.8
1950	10.5	0.4	3.8
1960	9.0	1.9	21.1
1970	10.2	0.8	7.8
1973	22.2	0.1	0.5
1975	8.7	2.5	28.7
1980	7.3	12.0	164.4

Source: Central Bank, Indicadores Económicos y Sociales.

Another important event in this process was an Act of May 1974³, by which interest was defined as "the amount received by the creditor in excess to the capital adequately adjusted by inflation". This legislation can be singled out as the institutionalization of indexation in the Chilean financial system⁴. Indexation was allowed at the beginning only for operations contracted with one year term or more; in July 1976 this restriction was reduced to 90 days. In September 1977 commercial banks were allowed to contract using a unit of account indexed to the CPI⁵. Until then this unit was used only by mortgage and development banks.

In the same Act it was established that interest rates should be freely determined in the market, but commercial banks, the State Bank and Savings and Loans were exempted from this scheme. These institutions were subject to a different timing, described above.

(c) Reserve requirements and interest paid on them.

In the very high inflation context of the Chilean experience, legal reserves on banks' deposits were intensively used as a way of raising funds by the Central Bank to finance its own loans; the commercial banks' role was only one of an intermediary between depositors and the Central Bank.

³Decree Law N° 455, of May 1974.

⁴Monetary correction was incorporated to the tax system in 1975.

⁵On the 10th of each month the daily value of the unit is fixed for the next 30 or 31 days, according to the inflation rate measured by the CPI in the previous month.

The policy definition taken in April 1976 establishes a clear cut between financial repression and financial liberalization. In that month credit ceilings were abolished and a program for phasing out high reserve requirements (RR) was started.

There had been some previous attempts to cut down RR. In October 1974, RR on 30 - 89 days deposits (RRT1) were reduced from 40% to 8% and the same for RR on 90 days - 1 year deposits (RRT2). In July 1975, reserve requirements on demand deposits (RRD) were also reduced, fixing them at a uniform rate of 80% --previously there was a base rate of 100% and a marginal rate of 80%. However, in August 1975 there was a policy reversal, when 30 - 89 days time deposits were subject to a high technical reserve (95% in August, 90% in September and 80% onward)-- a mandatory investment in Treasury bills.

The reduction of RR took place in five stages, which are summarized in Table 2.

TABLE 2
RESERVE REQUIREMENTS

		Demand Deposits (%)	30-89 days Time Deposits (%)	90 day - 1 year Time Deposits (%)
First Stage:	May 76 - December 77			
	Initial Rates	85	55	55
	Final Rates	59	20	8
Second Stage:	January 78 - July 78			
	Initial Rates	59	20	8
	Final Rates	42	20	8
Third Stage:	August 78 - March 79	(No changes)		
Fourth Stage:	April 79 - December 79			
	Initial Rates	42	19	8
	Final Rates	42	8	8
Fifth Stage:	January 80 - December 80			
	Initial Rates	21	7	7
	Final Rates	10	4	4

Source: Central Bank, Boletín Mensual.

The general idea was to uniform the RR rates on time deposits and to proceed faster in the reduction of RR on longer term deposits. The initial targets were the minimum rates authorized by the law at that time; these were: 20% on demand deposits and 8% on time deposits; an amendment reduced these minimum rates to 10% and 4%, respectively.

When the liberalization program started in May 1976, the RR rates were calculated in such a way that the lending capacity of the banks in that month was equal to the credit ceiling that was being eliminated.

The gradual reduction of the rates through the period 1976-1980 was managed according to a credit program which established targets for credit expansion and for reducing Central Bank lending, i.e., substituting commercial bank credit for Central Bank credit. The minimum rates reached in December 1980 have been maintained since then (on average they are not binding in the sense that they are quite similar to voluntary reserves).

The RR reduction program was slow to avoid a steep rise in the money multiplier that would have jeopardized the parallel process of reducing the inflation rate. However, high RR meant a heavy tax on funds intermediated by banks and other financial institutions. To alleviate this situation the Central Bank decided to pay interest on RR on time deposits. The interest rate paid changed through time in the following way:

May 76 - October 76	:	was equal to the return on short term Treasury bills.
Nov. 76 - December 76	:	was equal to 70% of the rate paid on time deposits.
January 77 - April 77	:	was equal to 90% of the rate paid on time deposits.
May 77 - April 79	:	was equal to the rate paid on time deposits.
May 79 - August 79	:	was equal to 50% of the rate paid on time deposits.
September 79 and onward	:	interest was not paid anymore.

In regard to RR on foreign currency liabilities a distinction was made among two types of liabilities: deposits and foreign borrowing done by banks, firms and individuals. Through all the period and until December 1979 the RR rates on foreign currency deposits were: 20% on demand deposits and 8% on time deposits. The rates were reduced to 10% and 4%, respectively, in January 1980.

Reserve requirements on foreign borrowing were established in April 1978, as part of a policy designed to restrict this kind of indebtedness. Loans with an average maturity of two years or less were forbidden; for longer terms the required reserves were:

Average maturity less than 36 months	:	25%
Average maturity from 36 to 47 months	:	15%
Average maturity from 48 to 65 months	:	10%
Average maturity of 66 or more months	:	0%

No interest was paid on these reserves, since the idea was to tax this source of finance in a way that promoted longer term borrowing. This objective was achieved quite successfully, since most borrowing was done in the longer terms, favoring a maturity structure of the foreign debt more manageable by the Central Bank.

- (d) Ceilings on foreign liabilities. Foreign borrowing by banks was limited in terms of their capital and reserves (CR). Until December 1977 this source of funding was authorized for financing loans related to foreign trade only. In January 1978 they were allowed to obtain these loans for

any other purpose, but they would have to be used to fund foreign currency loans (FCL) only⁶. The evolution of these limits over time is shown in Table 3.

TABLE 3
CEILING ON FOREIGN BORROWING BY BANKS

Date	Limit as % of Capital and Reserves	
	Global	Extra
January 74	200%	0
January 75	100%	0
June 76	150%	0
March 78	160%	0
April 78	160%	20%
December 78	180%	35%
April 79	180%	45%
June 79	free	free

Source: De la Cuadra and Hachette (1988).

Note: There was no limit on foreign indebtedness for non-bank corporations.

When the FCL were authorized they were limited to 25% of CR, and this sub-limit was included in the global limit listed above. Starting in April 1978, extra limits were assigned for FCL with average maturities over 36 months. These were additional to the 25% sublimit and to the global limit (see Table 3).

FCL were also limited in terms of flows. There was a maximum amount that each bank could lend in one month. These amounts were:

January 78; : 5% of CR.
 November 78; the larger of : 5% of CR or US\$ 2 mill.
 July 79; the larger of : 5% of CR or US\$ 1 mill.
 February 80; the larger of : 5% of CR or US\$ 2 mill.
 April 80; free (limited by the legal maximum debt/equity ratio of 20).

Central Bank policy with respect to foreign borrowing by domestic banks was to manage the growth of this foreign debt. The argument to support this policy was the instability introduced by volatile capital flows. The supply of foreign capital to the country had

⁶This means that commercial banks were not allowed to take foreign exchange risk directly.

proven in the past to be a unstable function. Hence, the Central Bank's authorities were trying to smooth the fluctuations of the capital account.

This policy suffered a strong attack from the business community, in general, and from some academic economists. The first group blamed it for delaying a decline in the interest rate and for discriminating among borrowers --those better connected had access to cheaper finance. The second group did not agree with the hypothesis of instability in supply, although they recognized a justification to tax foreign borrowing on the grounds of an upward sloping supply of foreign capital.

Finding no support for its stance, the Monetary Authority ended up opening the capital account without restrictions except for the prohibition of foreign loans with less than two years average maturity and the tax on foreign loans with maturities between 24 and 65 months. This action took place in April 1980, and was followed by large capital inflows during that year and 1981.

2.2. The Dynamics of Financial Liberalization⁷.

The Chilean experience points out towards interesting issues related to the microeconomic dynamics of a financial liberalization. They have not been dealt with in the literature, in spite of its importance for the successful implementation of this policy.

In the case of Chile's financial liberalization, there was: an interest rate overshooting; a costly market development process that took about five years; and a delayed reaction by the supervisory authority in the introduction of prudential regulations. We proceed to discuss the first two issues, and in section 3 we deal with the third one. We will not discuss here the macroeconomic effects on the interest rate of the deep recession of 1975-1976.

2.2.1. Asymmetric Portfolio Adjustment Costs

Interest rate control during financial repression meant fixing them at nominal levels quite below market equilibrium, and negative in real terms when inflation was rising; this was the case for more than thirty years, since 1940, but reached its most extreme form in the early 1970's with Allende's hyperinflation.

⁷For a more complete discussion see de la Cuadra and Valdés (1989).

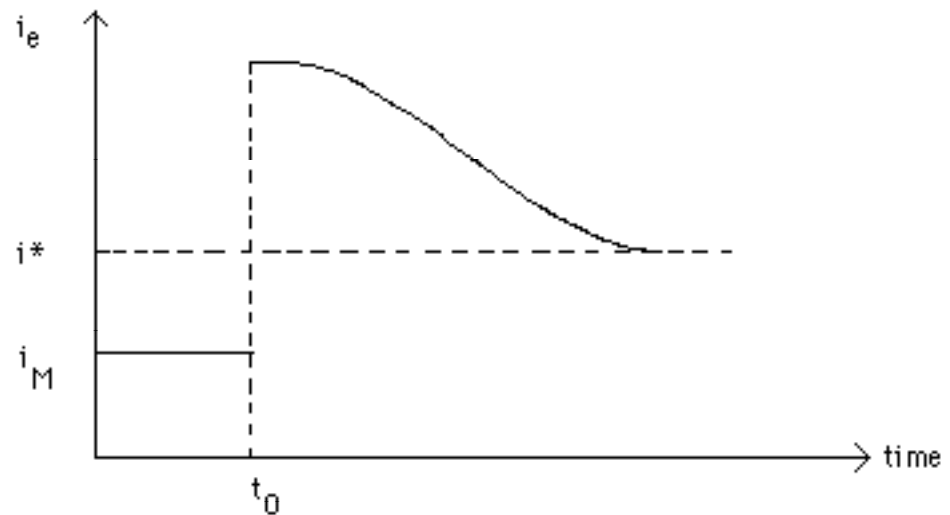
The asymmetry consists in a slow adjustment in the stock-supply of credit --steep flow-supply-- and a fast adjustment by borrowers-- relatively flatter flow-demand for credit. These conditions reflect, in our opinion, the most probable reaction of the economic agents when facing a liberalization.

The cause of this asymmetry is simple: For families that might save in the financial system, it should take some time to be able and become willing to invest in the new financial assets being offered by banks. Ability is limited because it is expensive and difficult to mortgage physical assets in order to generate funds to invest in deposits, especially when the flow loan-arranging capacity of banks is in its infancy. Willingness is also limited in an environment where inflation risk is very high and there is a fresh experience of government-imposed losses on depositors (SINAP failed in June 1975 in Chile).

On the other hand, there is a large number of firms and individuals which have had no access to the credit market during the repressed period. Their speed of adjustment must be very high, because it is easy for a firm to increase its leverage when it is initially zero. The capacity limit here was located in the lending side, that is the banks.

The implication is that any financial liberalization should expect that freeing interest rates - given that interest rate ceilings were the only distortion- should generate an overshooting of the real interest rate above its long run level as shown in figure (1). This helps to explain the Chilean experience of high but falling real interest rates.

FIGURE 1



i_M = maximum interest rate.

i^* = long-term equilibrium rate

i_e = short-term equilibrium rate

In Table 4 we show the interest rate on short term loans (30 - 89 days) in commercial banks, starting in 1974 and until 1983. The initial year was the last of the financial repression --the first liberalization attempts started in 1975--, and the final year corresponds to the deep recession of 1982-1983.

TABLE 4
REAL RATE OF INTEREST ON THIRTY-DAY DEPOSITS 1/
(Annualized)

	%	%		%	%
1974	-48.0		1979	19.6	
I		-74.3	I		40.9
II		-54.8	II		14.0
III		-21.5	III		6.2
IV		-19.6	IV		18.2
1975	0.0		1980	11.4	
I		-37.2	I		29.8
II		-69.0	II		8.7
III		246.1	III		12.7
IV		47.6	IV		-2.4
1976	49.4		1981	34.5	
I		54.6	I		21.0
II		36.1	II		28.3
III		37.7	III		47.6
IV		75.5	IV		42.6
1977	56.5		1982	31.4	
I		105.8	I		49.4
II		58.3	II		45.9
III		32.9	III		31.4
IV		36.1	IV		2.4
1978	45.9		1983	8.7	
I		88.0	I		29.8
II		23.9	II		1.2
III		25.3	III		1.2
IV		52.9	IV		4.9

1/ Commercial Banks lending rate, for 30-89 days loans, deflated by the CPI.

Source: Central Bank of Chile, Boletín Mensual.

During the first six quarters real interest rates were highly negative; at this time maximum nominal rates were fixed by the Central Bank and inflation was 376% in 1974 and 341% in 1975.

By the end of the second quarter of 1975 interest rate controls were eliminated and the real rate sky-rocketed, reaching 246% during the third quarter. This episode is quite in line with the hypothesis about the adjustment costs after liberalization, i.e., the demand for credit adjusting much faster than the supply. Such different adjustment pace was, in this case, magnified by the existence of credit ceilings at that time --which were maintained until March 1976. The unexpected overshooting of the rate scared the authorities, who returned to fix interest rates in October of the same year. The new maximum rates were much higher, allowing a real rate of 48% during the last quarter of 1975. This is almost the same as the market clearing rate that prevailed in 1976.

On January 2nd, 1976 interest rates were completely liberalized, never fixing them again until late 1982. The market-determined rate found an equilibrium at a very high level, which was maintained during the next three years; the real lending rates were: 49% in 1976; 57% in 1977 and 46% in 1978; fluctuating in a range of 105% to 24%. The stubbornly high real rates subsided only in the second quarter of 1979, when the rate fell to 14%; since then it continued declining until it reached a bottom of minus 2.4% in the fourth quarter of 1980.

This evidence suggest that portfolio adjustment by asset holders, when the financial market is liberalized after a long repression, may exhibit a lag of three years.

If we look at the outstanding amount of interest bearing deposits issued by commercial banks (see Table 5), we can observe that the increase between 1975 and 1978 was distributed as follows: 12% in 1976; 25% in 1977; and, 63% in 1978. This distribution is consistent with the idea of a slow adjustment during the initial year of a liberalization.

TABLE 5
TIME DEPOSITS 1/
(1983 pesos)

	Billions	Δ %
1974	19.3	1.6
1975	23.5	21.8
1976	38.9	65.5
1977	72.3	85.9
1978	152.6	111.1
1979	168.0	10.1
1980	197.0	17.3
1981	362.0	83.8
1982	383.3	5.8
1983	298.0	-22.2

1/ It includes also passbook accounts.

Source: Central Bank of Chile; Indicadores Económicos y Sociales 1960-1982.

The downward pressure on interest rates that is observed after the third year is explained in part by the opening to international capital flows that happened in 1978-80. This source of funds recovers in 1978 and keeps growing in the following years until 1981.

2.2.2. Market Development

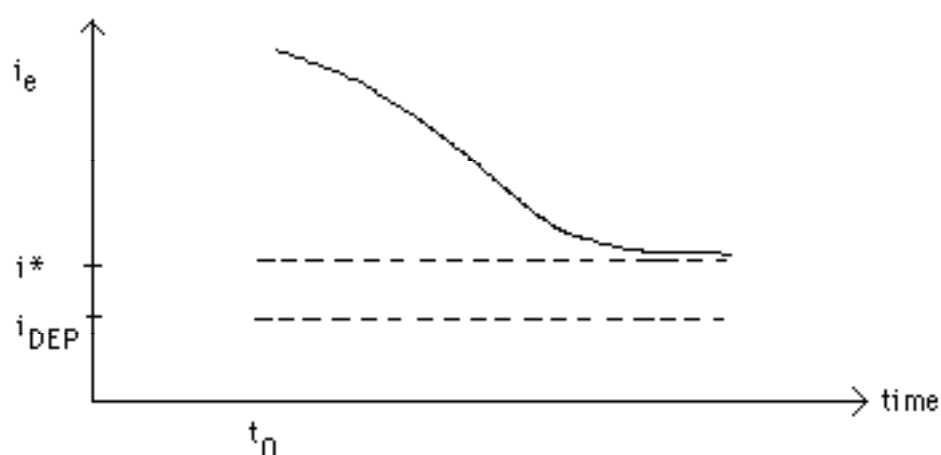
Our hypothesis is that at the moment when banks were liberalized, they did not have the capacity to supply intermediation services efficiently, due to a lack of expertise, qualified human resources and adequate technology. Such conditions on the banking system should imply high intermediation costs, represented by a large spread, i.e., the difference between interest rates charged and paid. On the same grounds, one should expect that bank portfolios should have turned more risky as a consequence of poor risk evaluation capacity and higher interest rates.

The same limitations faced by the banks were present in the supervisory agency (Superintendence of Banks). Before liberalization, the main functions of the bank regulators were to enforce the interest rate and credit controls dictated by the monetary authority; paying no attention at all to the quality of the banks' assets. So, there was a complete lack of capacity to control risks assumed by banks; and, prudential regulations were almost absent from the regulatory body of rules. Neither one could have expected that in the newly liberalized banking system the public would have been helpful in controlling bank risk, since they had never been exposed before to such risks. This topic is taken up in section 3 with more detail.

Bank liberalization after many years of financial repression is like starting a new business, behaving similarly to an infant industry --the costs can only be reduced through time by the learning process. In Chile, bank modernization was expensive. Banco de Chile for example, spent over US\$ 1,5 million in 1978 alone in consulting fees for a reorganization plan bought from Booz, Allen & Hamilton.

Summarizing, the hypothesis can be stated as: when banks are liberalized the industry will show high intermediation costs but declining through time. This in turn implies high initial real lending rates, for a given constant level of deposit interest rates, as shown in figure (2):

FIGURE 2



In addition, the slow reduction in reserve requirements -see 2.1- introduced another independent reason for a reduction of intermediation costs over time.

Held (1989) has documented how the different elements of intermediation costs fell over time, supporting the concept of an evolution over time as in Figure 2. These phenomena should be taken into account in any financial liberalization.

The intermediation costs are estimated by the differential between the lending and the borrowing interest rates. Since legal reserve requirements were fixed high above voluntary reserves, it is necessary to deduct the cost of holding such reserves; so the spread is measured net of reserve cost --net spread (NS).

In Table 6 we can appreciate how the NS evolved from 1976 to 1983. There is a declining trend from 1977 to 1980; from a very high level (17.4%) to a more "normal" one (5.2%). This evidence looks similar to the cost function of an infant industry, supporting the hypothesis that financial repression destroys the productive capacity of the banking

industry. This consideration acquires great importance for the design of a financial liberalization, because in the learning process the banks can take excess risk without any notice by an infant supervisory authority.

TABLE 6
ADMINISTRATION COSTS AND SPREADS IN THIRTY DAYS OPERATIONS
(Annualized)

	AC*	SPREADS			AC*	SPREADS	
	%	%	%		%	%	%
1976 6.9	8.1		1980	4.9 5.2			
I			1.2	I			3.8
II			6.7	II			6.8
III			14.3	III			5.7
IV			10.7	IV			4.4
1977 5.9	17.4		1981	4.3 6.3			
I			26.8	I			3.4
II			19.3	II			5.3
III			14.3	III			7.2
IV			9.8	IV			9.5
1978 5.7	10.7		1982	3.6 9.6			
I			15.9	I			10.0
II			11.2	II			11.0
III			8.1	III			9.3
IV			7.8	IV			8.0
1979 5.1	7.3		1983	2.8 11.0			
I			11.9	I			12.4
II			5.5	II			11.2
III			6.8	III			10.8
IV			5.3	IV			9.8

1/ The spread is defined as: $NS = iL - iB - C$; where iL = lending rate; iB = borrowing rate; C = interest cost of the legal reserves.

* Average cost, defined as Non Financial operating cost over total assets NS.

Source: For spread Central Bank of Chile, Boletín Mensual.

Administration costs elaborated by Held (1989), Table I-9.

We can observe that during the first year of free interest rates, the spread did not go up immediately. It took four quarters to reach a peak. The explanation for this graduality may be found in the inexperience of bank managers, not knowing how to price a new product.

In 1981 the NS starts to go up following the interest rate trend. One explanation could be that the higher interest rates incorporated a growing risk premium and, therefore, higher intermediation costs. The crisis that was starting to develop in this year is consistent with this view.

2.3. Coordination Failures in Financial Liberalization: The bankruptcy of the Savings and Loans

This subsection will show that financial liberalization is fraught with coordination failures. This imposes the need for the utmost care in the detailed design of financial liberalizations.

At the start of 1975 the financial intermediaries in Chile were the following: 1) the commercial banks, all of which continued under government control since Allende's nationalization; 2) the SINAP (Savings and Loans National System), regulated by the government, but most of whose members were controlled by the private sector; 3) the large commercial and development state bank (Banco del Estado); 4) the formal financieras, created during the second half of 1974, which were privately owned and free to set interest rates and mostly unregulated; 5) the informal financieras, which had been inadvertently allowed by a 1974 statute that gave to the Superintendency of Banks the task of policing the intermediation of credit by non-banks, while this body did not have enough resources for the job; and 6) a few growing and unregulated financial Cooperatives that operated like formal financieras.

The SINAP exhibited very fast growth during the second half of 1974, but suddenly it lost the confidence of depositors in January 1975. By June 1975 it had been taken over by the regulatory authorities because of insolvency. A description of this high-frequency boom-bust cycle is available in de la Cuadra and Valdés (1989).

There are two main points to explain, the first of which is the reason for the insolvency of SINAP. There is no doubt that it was due to excessive exposure to interest rate risk. Assets were long term mortgages earning a fixed CPI-adjusted interest rate, while liabilities were 60 day deposits earning a CPI-adjusted interest rate. While interest rates were regulated, the authorities made sure that an appropriate spread was maintained. Later, when the authorities planned an interest rate liberalization in 1974, they realized that SINAP would fail and announced operating subsidies to cover the shortfall. In this sense there was no coordination failure in this area of liberalization. However, the government was unable to keep promises of support for the system due to the fiscal crisis of 1975.

The second point to explain is the reason for the very fast growth SINAP exhibited during the second half of 1974, after liberalization and government support were announced. The best explanation for this is a coordination failure within the government.

The coordination failure happened as follows: the Savings and Loans were unable to do anything else but increase mortgage lending when the Central Bank decided to return SINAP's excess reserves in 1974. For one, there was no short term instrument that offered CPI indexing in the market, apart from the one issued by SINAP itself and the savings passbooks at Banco del Estado, because deregulation had merely started. Second, the only short term instruments yielding free nominal interest rates were the liabilities issued by the newly created financieras, which were much smaller than SINAP, and which exposed SINAP to inflation risk. Even more important, the SINAP was not allowed to invest in money market instruments nor savings passbooks at Banco del Estado, because only mortgages and loans to construction companies were permitted by its statute. Only too late, in March 26, 1975, SINAP was allowed to lend in the short term for non-housing purposes. Finally, individual Savings and Loans were unable to return to depositors the funds it could not use safely by, say, reducing deposit interest rates, because those rates were fixed by the board of regulators. In conclusion, SINAP had no way of lending those funds at short term in such a way as to protect itself from interest rate risk.

This episode is then a good example of what financial liberalization might mean when it is not designed properly: the failure of the long term mortgage intermediaries. At the start of a financial liberalization, the biggest peril is not moral hazard, but the strains of an incomplete and uncoordinated liberalization.

In the case of SINAP, the political economy of discoordination was founded in the conflict of objectives between the board of senior regulators of SINAP, which was heavily committed to increase the supply of housing, and the authorities that pushed liberalization. The latter did not realize that SINAP could have been saved if the Central Bank had issued a CPI-adjusted, fixed interest rate long term bond to mop up the excess reserves of SINAP.

The crisis developed as follows. In mid 1974, the SINAP started to draw on its excess reserves and to invest feverishly in new housing, first financing construction companies and then lending to the buyers, at long term. Housing starts by the private sector increased 50% during the second half of 1974, as compared with the three previous semesters. As its deposits were exempt of reserve requirements, the banking multiplier allowed a 100% growth in real terms in SINAP's size during 1974. Starting in August 1st, 1974, SINAP's regulators attempted to limit bankruptcy risk by decreeing a new requirement on deposits in order to be eligible to indexing, which was a minimum maturity of 180 days. This was three times the traditional sixty days. Even though financieras' liabilities became relatively more attractive, depositors continued increasing their deposits at SINAP. We assign this fact to the effect of the banking multiplier, operating in a semi repressed market, which increased hugely total investible financial wealth.

The end of the game occurred in January of 1975, when depositors began to withdraw. The detonator was an exogenous event, the steep fall in the world price of copper, Chile's main export and the government's main source of revenue, that started in October 1974⁸. The fall in the price of copper had two effects: First, a steep recession began, and many depositors withdrew funds to finance growing inventories. Second, the shock on the fiscal side put into doubt the government's resolve to honor its guarantee.

Moreover, the way SINAP's crisis was handled set precedents for the future. In June 1975, after many depositors have fled SINAP and only the ones that believed in official promises of guarantee remained, the government decided to freeze the 60-day deposit issued by SINAP. In the next months, those deposit holders were authorized to withdraw the equivalent of US\$ 100 per month per account, while the remainder could be exchanged for long term bonds whose price in the secondary market fluctuated between 80% and 60% of the face value. It is amazing that holders of other types of SINAP liabilities, even liquid ones, were not touched. Therefore, the basic rules of precedence in a bankruptcy were not respected, signalling that the authorities considered themselves entitled to redistribute wealth according to political priorities in financial intermediary insolvencies.

A side effect was that government guarantees on deposits lost all credibility. Note that a high government official had declared in a seminar at the Central Bank in April of 1974, that one of the most urgent policy measures was:

"....., foreseeing that the free real interest rate might be high, and that SINAP has a large volume of loans at low fixed real interest rates, the government will subsidize directly the SINAP to make up the difference, preventing its bankruptcy."⁹

What became clear for all depositors is that the military government was willing to force them to pay for losses. For the next 18 months, there would be no implicit guarantee of bank deposits in Chile, opening a free banking episode.

⁸ Authors such as Jeftanovic (1976) assign the demise of SINAP to the extension of the minimum maturity requirement for indexing that took place in August 1st, 1974. However, that hypothesis is contradicted by the huge increase in deposits at SINAP for 5 more months after that date.

⁹ Sergio Undurraga, in Estudios Monetarios III, Banco Central de Chile (1974). This promise was repeated publicly by the Finance Minister in March 1975.

3. A framework for the analysis of prudential regulation

This section dissects the issues in prudential regulation, to show the different types of problems that must be addressed. The failure to consider these distinctions permeates the banking literature, both applied and academic. In addition, this will be useful to analyze the Chilean experience and to set forth clearly the theoretical framework we are using.

We assume that free banking is not considered viable in this economy, in order to be able to study the problems posed by deposit insurance as is currently practiced around the world¹⁰. The government can regulate banks in several ways, but regulation is always conducted in an environment where the government guarantees most bank deposits, either explicitly or implicitly. Deposit guarantees mean that most depositors do not take into account the solvency risks of banks when allocating their funds. It is the guarantor, i.e. the government, who might want to control the use of its guarantee by the banks.

The regulatory problem can take many forms. Most analyses have been restricted to study the consequences of asymmetry in information or contingent government subsidies. We posit that some of the problems confronted by bank regulators are of a different form, especially after taking into account the effect of the main complicating factors. The following two-way table provides an overview.

¹⁰For current practices, see Mc Carthy (1980)

TABLE 7
A CLASSIFICATION OF PURE BANK REGULATORY PROBLEMS
(YES = the requirement is essential for the presence of that Regulatory Problem)

Result: Requirements	Structural Contingent Subsidies	Moral Hazard	Rollover of Unrealized Loan Losses
1. Exogenous Uncertainty	YES	YES	NO
2. Asymmetric Information	NO	YES	YES
3. Inability to assess risks related to govnm. policy	YES	NO	NO
4. Inability to denounce own regulatory errors	NO	NO	YES
<p style="text-align: center;"><u>Complicating Factors</u> A. Self-Lending by Business Groups B. Incompetence of Private Bankers C. Self-selection towards fraud-prone Bankers</p>			

Note: Simple incompetence of Bank Regulators was excluded because the solution for it, restructuring, is obvious, although difficult to put in practice.

This table shows that moral hazard is only one of the regulatory problems. Rollover of unrealized loan losses is very important in regulatory experience, and the same can be said of structural contingent subsidies. Moreover, the table singles out the causes of each regulatory problem. In practice, these problems usually appear in combination, for example, structural contingent subsidies plus rollover of unrealized loan losses. The result is that most real regulatory problems must be attacked simultaneously on several fronts. In addition, the practical importance of the complicating factors cannot be overemphasized. The Chilean experience shows this abundantly.

The ultimate causes of the main regulatory problems include facts of the technology or the economic environment (the first two), and facts that derive from the institutional setting in which bank regulation is conducted (the other two). In the following sections we will explain in detail each of these causes, and sketch the likely result of the existence of each regulatory problem.

3.1 Structural Contingent Subsidies

The issue in this section concerns the incentive effects of giving away a deposit guarantee, given that all agents have symmetric access to the same imperfect information about the future. Exogenous uncertainty is a requirement for the guarantee to be valuable in the market.

As is well understood from modern financial theory (Mayer (1965), Merton (1977), Marcus (1984)), if the government gives away a valuable guarantee, without charging a market price for it, then it is offering a contingent subsidy. As with most subsidies, economic agents have an incentive to ask more of it. For an individual bank that confronts given market prices, the profit earned is an arbitrage profit, in the sense that by expanding it can get an unlimited amount of subsidy.

This induces individual competitive banks that are risk-neutral to grow in excess of what is socially optimal, because they become a vehicle for arbitrage that exploits the difference between the market value and the lower government price of the guarantee. Of course, decreasing returns to scale in the aggregate eventually limit the expansion of competitive banks. Banks that earn other rents, monopolistic or otherwise, weigh the benefits of getting more of the free guaranty against the risk of losing the bank with its other rent.

A second aspect of this bank regulatory problem happens when the receiving banks can take actions that increase the per-unit value of such a guarantee, like increasing their debt/equity ratio¹¹ and lending to riskier projects. We assume here that these actions are perfectly observable by the authorities, so that we concentrate on the pure problem of contingent government subsidies.

The obvious solution to this problem is for the government to charge banks the market value of the guarantees it provides. Alternatively, the government could drive the value of that guarantee to zero by limiting the banks' risk of failure through regulation¹², while still giving away the guarantee.

The particular solution of charging the market price for this guarantee may not work in some cases, even if the government can perfectly observe risk. This happens when -above some risk level- the bank must reduce the expected return of lending in order to

¹¹ The debt/equity ratio is inversely related to the Net Worth/Assets ratio, through the formula

$$D/E = \{1 - NW/A\} / \{NW/A\}$$

¹² The best regulations of this type are risk-weighted capital requirements.

increase the variance of returns. As Herring and Vankudre (1985) showed, when the government attempts to limit risk-taking by raising the charge for the guarantee, the bank reacts optimally by taking even more risk of failure, even though the expected return of lending is reduced. Obviously, the government is unable to compensate for this last effect by raising the charge, so an optimal schedule of risk-rated guarantee charges simply does not exist over the whole range of bank choices. The government is forced to use some combination that includes maximum individual quotas of risk to manage this situation.

Real world governments follow the last route most of the time. This route, known as risk-rated capital requirements or risk-rated loan-loss provisioning requirements, is a conceptually sufficient solution if the market value of the guarantee is basically reduced to zero. Therefore, this regulatory problem appears to be solved.

However, if that were the case, we would not have included as an important regulatory problem the one of Structural Contingent Subsidies. The problem we want to highlight includes as a requirement that the regulators are unable to assess risks related to government policy. There are structural elements in the workings of the regulatory process that renders regulators unable to evaluate correctly a subset of risks that affect the solvency of banks. Therefore, the government continues to give contingent subsidies in this subset of risks.

The structural problem is that regulators may be unable to use risk-rated capital requirements with regards to some risks when other government policies would be affected by putting this suggestion in practice. A well documented example is the failure of the U.S. government to limit exposure of its international banks to country risk in the late 1970's (Meigs, 1984). In that case Treasury officials wanted to avoid interference with the recycling of petrodollars, and State Department officials wanted to avoid souring relations with debtor countries. We suggest below that the Chilean government suffered a similar problem in 1981, when the Finance Minister decided to bet on maintaining his previous decision of fixing the exchange rate, even though many expected that this policy would not be sustainable. It was unthinkable to expect Chilean bank regulators to force banks to provision more when debtors were more exposed to currency risk, because that would have undermined their boss's exchange rate policy. We would also argue that in the late 1980's Federal Reserve regulators have been unable to push capital requirements proportional to interest-rate risk for U.S. Savings and Loans because the Federal Reserve itself can affect the outcome of that risk decisively.

Therefore, we posit that one explanation for the continued existence of contingent government subsidies in banking is that government regulators are unable to assess risks whose outcome is driven by their superiors' actions or omissions. This problem becomes acute when the lending bank does not cooperate in the risk assessment process and the whole burden of assessment falls on regulators. This is a permanent regulatory problem that is inevitable while bank regulators continue to depend administratively from other

authorities that influence or determine the outcome of the risks that must be assessed. It is interesting to outline the likely consequences of this situation:

a) A free-entry competitive financial industry transfers the contingent government subsidy that distorts the system, to both depositors and debtors. In addition, banks can shift their lending to riskier borrowers, that promise a higher interest payment if they don't fail. This shift increases the value of each unit of the deposit guarantee, and to exhaust this larger subsidy the banking system must grow still more. This means increasing the deposit interest rate and reducing the lending interest rate relatively to the fair lending rate given the borrower's risk class. However, as this fair lending rate is also growing as banks shift to higher risk classes, the observed real lending rate may grow too.

b) Meanwhile, borrowers of lower risk classes are excluded from credit markets, unless they increase their debt/equity ratio enough to be able to offer the large contingent interest payment which the banks require. For most businesses, increasing their debt/equity ratio is the easiest way to adapt to bank predilection for risky borrowers that demand large amounts of credit¹³.

c) When a recession year is realized, the distorted system exhibits large losses and failure is unavoidable. The government must honor its deposit guarantee and pay for misregulation with taxpayers' funds¹⁴. If the system is competitive, most banks should fail under the impact of the recession. Many of the business debtors that had to gear up to avoid exclusion from credit markets in the previous phase must also go bankrupt.

d) If good years and bad years in the business cycle are serially correlated, and the realized cycle exhibits a run of good years that create large banking profits, the reaction of competitive banks is to reduce the larger capital/asset ratio through both larger growth in lending and higher distribution of earnings to shareholders.

From an empirical point of view, it is not obvious to establish the existence of structural contingent government subsidies. The first obvious element is that an explicit or implicit government guarantee on deposits must exist. However, implicit guarantees are hard to document, as one must interpret the previous record of government bailouts of failed intermediaries.

¹³ This theoretical consequence of a distorted, misregulated, financial system has been overlooked in the deposit insurance literature. It has the potential to multiply many times the welfare costs of misregulation.

¹⁴ Including the inflation tax revenue.

The second element is lack of enough prudential regulation of the guaranteed intermediaries. The main methodological problem to produce convincing evidence on this point is that, after some banks fail, it is easy to assert ex-post that regulation was reckless in the area which actually led to the failures. As this is too easy, there is a temptation to describe too many of the realized bank failures as the result of contingent government subsidies. There is a solution, however. It should be feasible to establish, directly from the institutional structure, that a structural limitation on regulators' ability to assess some risks was present.

3.2 Moral Hazard

The moral hazard issue is concerned with asymmetric information. In particular, it considers the situation where the government is unable to observe the actual risk choices of the guaranteed bank. The actual outcome of loans depend both of the bank's actions and of exogenous risk factors, which forbid the inference of the bank actions from the profit outcomes alone.

Clearly, in this case it is profitable for competitive banks to increase their failure risk after the guarantee is obtained, but before the state of nature is realized, changing the basis on which the charge was fairly estimated. Both moral hazard and contingent government subsidies require the debtor to come near the brink of bankruptcy by increasing leverage. The difference is that moral hazard implies drawing a contingent subsidy that the issuer did not want to issue, while contingent subsidies are willingly offered.

It has been proposed that in this case, governments should approach the problem by adopting a series of procedures to control lending risk which are usually referred to as prudential regulation. The idea is that, even though bank risk decisions are publicly unobservable, the government can privately observe those risks much more precisely if it forces the bank to adopt some administrative procedures, like classification by the bank of individual loans in a risk scale. Then the government can use its inside information - access to the bank's records - to prevent the bank from taking excessive risk.

It must be said that as modern banks are a hierarchy of executives and teams of employees, in which each layer must respond to the superior layer, the process of risk classification is a necessity for honest bank owners. Historically, many of the current methods of risk classification have been developed by private banks. Therefore, prudential regulation understood as the participation of bank regulators of the inside information of banks does not need to impose a big burden, as long as private banks themselves already use these methods in their own interest. In this sense, moral hazard is regulatory problem that should not present regulators with unsurmountable difficulties.

However, we will show below that there exist important complicating factors that can make moral hazard a difficult problem in practice. The first we will focus on here is the case labeled as incompetence of private bankers. The second is the one labeled as self-selection towards fraud-prone bankers.

It is not uncommon to find that a subset of private banks do not have an internal risk classification scheme in place. This may be due to mere incompetence or calculated fraud. In both cases the private information that the regulators need is fragmented among executives or employees. Moreover, fraud and incompetence may be linked, because the incompetence of the board or chief executive may allow fraud by one or more employees.

These complicating factors become massive when the banking system has been recently liberalized after decades of financial repression, where risk classification schemes were entirely superfluous. This was the situation in Chile in 1976, and in other developing countries in the last decade. Self-selection of fraud-prone bankers is a serious risk during financial liberalization because there is an unusual need to allow more people into banking, while the segment of potential candidates that is most interested in entering is the more fraud-prone one.

The likely consequences of moral hazard, given that some complicating factor makes inside information unavailable to regulators, are mostly the same as in the case of contingent government subsidies described before, because banks would not be reigned in by appropriately risk-adjusted capital requirements.

This is also true about the reaction of competitive banks to a run of good years when profitability is serially correlated. The run of good years raises net worth, and in the case of moral hazard this reduces the incentive to engage in further moral hazard, unless asset growth and distributions of earnings reduce the capital/asset ratio. If this ratio is simply kept constant, the positive correlation in the business cycle means that the incentive to engage in moral hazard has fallen.

From an empirical point of view, it is not obvious to establish the existence of moral hazard. As before, the existence of implicit government guarantee on deposits is hard to establish. The special feature of moral hazard is information asymmetry. For this reason, it is necessary to document the existence of a substantial information asymmetry in order to claim that this regulatory problem was empirically important. It is possible to document this point by checking whether information on risk-taking by banks was or was not available to the regulators, and by analyzing the reaction of regulators as information became available to them.

3.3 Rollover of Unrealized Loan Losses

Up to now, the problem of rollover of unrealized loan losses has not been acknowledged in the academic literature as an important feature of banking. In a nutshell, it consists of the continuation of independent operation of a bank after the realized state of the world is known, given that it led to insolvency¹⁵. The case where the economic net worth is positive, but below the required capital/asset ratio is simply a case failure of risk-rated capital requirements, which was taken up in 3.1. The negative economic net worth is what introduces the new elements we consider in this section¹⁶.

The point is that bank regulators are able to avoid or postpone bankruptcy proceedings, and the bank continues operating, even though it is insolvent. This problem is conceptually different from moral hazard because it does not concern abusing a guarantee by taking more risk than the one assessed when the guarantee was given. Indeed, the problem of rollover of unrealized losses may exist even if there is no risk in the economy after the bank's failure.

Of course, further opportunities for risk taking become available as time goes by, so in practice this situation may lead to additional risk taking by insolvent intermediaries. In this case rollover of unrealized loan losses may combine with moral hazard to produce an explosive mixture.

We have chosen to stress that no further risk taking is required after insolvency, in order to highlight the independent nature of this regulatory problem, and to simplify the exposition of its consequences. In addition, this allows us to present a solid foundation for the concept of a "false demand for credit", raised by several authors¹⁷ to explain Chilean events in the 70's.

The result of the rollover of unrealized losses under certainty is a simple Ponzi game. The insolvent bank has, by definition, more liabilities than assets, so it must have operating losses.

¹⁵ Therefore, rollover of unrealized loan losses is not a special regulatory problem when some economic net worth remains. This means that accounting net worth plus goodwill is positive. In that case, the only effect of rollover of unrealized loan losses under certainty is that profits are reduced.

¹⁶ Negative economic net worth is easily detected: The bank cannot be sold to honest bankers.

¹⁷ See Harberger (1984) and Held (1989). However, the mechanics were outlined first by Emilio Sanfuentes, cited in Hoy N° 32, January 4-10, 1978.

a) Assume first that the bank pays and charges market interest rates. Therefore the bank must incur in operating losses, whose present value is the unrealized loss. However, the insolvent bank has access to a government guarantee on deposits, which allows it to cover the negative net cash flow from operations with the issue of new deposits. Therefore, the size of the deposits at the insolvent bank grows geometrically. The same happens with the size of the effective liability of the government.

The government's liability is not contingent, but effective. The only problem is that the liability has not been acknowledged, and this allows the failed bank to continue operations. A direct implication is that the deposit interest rate must rise over time, in order to attract the required additional deposits.

A complementary strategy for the bank is to direct part of loan recoveries to finance part of the operating loss. This means that the volume of healthy loans outstanding falls over time, restricting credit. By healthy loans we mean the portion of the loan portfolio that is able to service the current lending interest rate. The rest of the loan portfolio are simply unrealized losses.

This means that there will be a rising lending rate and a falling volume of healthy loans, *ceteris paribus*. The volume of deposits will rise at the rate of interest minus the rate of reduction of healthy loans outstanding.

These dynamics may be more easily understood by considering the case where the government acknowledges the loss in the bank and bails it out by buying the bank's loan losses at face value, paying with a long term bond. The equivalence with rollover of unrealized loan losses is complete if the government fails to adjust its primary deficit and meets the interest payments on the long term bond by placing extra treasury bills among investors. Then it is clear that the government is playing a Ponzi game, because the stock of additional treasury bills must grow without bound, raising the market interest rate and crowding out the private sector.

b) If there is competition in banking, and there are enough banks free of the unrealized loss problem, the spread between the lending and deposit interest rates will narrow down to efficient operating costs. However, if most banks roll over unrealized losses, they will have a third source of funds to tap to absorb their operating loss: an increase in the spread. As long as most banks roll over unrealized losses, and the spread between the lending and borrowing rates can be sustained at a large enough size, then banks cease to be insolvent, deposits do not need to grow geometrically, and healthy loans do not need to be restricted.

The situation is unstable because given a large spread, marginal loans are very profitable. Then, if high marginal reserve requirements and quantitative credit controls are

eliminated, or foreign and new domestic banks are authorized to operate, as in a financial liberalization, competition will lead market interest rates to sustain a margin smaller than the one required to eliminate operating losses. The weakest banks, that is those with the larger share of unrecoverable loans under automatic rollover, will be the first to play the ponzi game described above.

c) The behavior of debtors is also interesting. A regular debtor is squeezed by high lending rates. Therefore, even with passive behavior, the estimate of its riskiness should be raised. This means that, by itself, high real lending rates increase the share of unrealized losses of banks, and accelerate the ponzi game. A further acceleration effect is obtained if debtors react to high lending rates increasing their leverage and their operating risk. This is indeed optimal for the subset of debtors that have negative economic net worth and are also rolling over unrealized losses. They are able to participate in the ponzi game, because the creditor bank insists in rolling over their debts, even if they are insolvent.

Summing up, the main empirical requirements for the rollover of unrealized losses hypothesis to be feasible are the following: government guarantee on bank deposits, large unrealized losses in the loan portfolio of the banking industry, and official reluctance to take over failed banks.

3.4 Self-lending by business groups

We will show that this is not a pure regulatory problem, but is instead a complicating factor. A diversified conglomerate of business firms that includes a government-guaranteed bank will be called a "business group"¹⁸.

a) The case of symmetric information.

If there existed a way to evaluate the risk of such a bank, and the government charged an appropriate fee for the guarantee, the fact that this bank is owned by a business group would be irrelevant as a first approximation. The situation would be as if the bank were independent and closely held. Likewise, if the independent bank is owned by many different shareholders, the situation would be similar to the one where the bank is part of a conglomerate that exhibits diluted ownership.

A widespread argument against self-lending is that it leads to insufficient diversification of loans, as too much is lent to an individual debtor (the business group). This argument is flawed if the debtor is a well capitalized diversified conglomerate that has invested in many sectors across the economy, as it is obvious that the risk is similar to the

¹⁸ In Chile, the term carries the additional requirement that the group is closely held.

market's portfolio. Of course, self-lending is very risky if either the regulator is not well informed about the actual risk of the conglomerate's debt, or if the conglomerate exhibits a high consolidated debt/equity ratio.

Some authors have argued that lending to the other firms in the group is subject to a less rigorous risk evaluation. Such investments are evaluated only once within the business group, namely in the unit that wants to use the funds, and then the loan is drawn from the group's bank without further evaluation. For example, the Chilean Superintendency of Banks argued in 1983 that "there was an unrestricted liason between banks and their owners, and an unending cycle of loan renewals with interest capitalization was observed"¹⁹.

However, such a procedure for risk evaluation does not imply that the quality of the evaluation is more relaxed than what an independent bank would require before making the loan. If that were true, the implication would indeed be far reaching: investments financed with equity would be subject to a systematic bias in risk evaluation, when compared to those financed through loans from independent creditors.

Investments financed with equity are not equivalent to investments financed with the depositing public's money. When a business group draws a loan from its bank, which in turn draws a deposit from the public, one should ask who is evaluating the risk of that deposit in representation of depositors. In a setting with deposit insurance and symmetric information, the Superintendency of Banks does the evaluation, and there is no special problem with business groups.

b) Taking Assymmetric Information into account

The practice of self-lending by business groups must be analyzed in terms of the ability of bank regulators to classify self-loans in a risk scale and detect rollover of self-loans. We want to compare the Superintendency's ability to monitor the risk of self-loans of a business group, as compared with monitoring the risk of loans to a regular debtor, given the degree of risk aversion of the bank owners.

As explained before, the usual practice of prudential regulation overcomes most of the informational asymmetries by adopting a series of procedures to control lending risk and the debt/equity ratio of banks. Even though bank risk decisions are publicly unobservable, the government can privately observe those risks much more precisely when it forces the bank to give it access to its internal risk evaluation procedures.

¹⁹ J. Acevedo and G. Ramírez, in *Información Financiera*, SBIF, March 1983.

This method largely fails when the bank is part of a business group and self-lending is allowed²⁰. The reason is that the business group is able to locate the risk-evaluation procedures for self-loans outside the bank, without losing control over employees. In addition, the business group has access to a much larger array of (legal) methods to avoid presenting the true risk of a self-loan to bank regulators. The resulting inability of regulators to access the private information of banks may be present **both** when the business group is closely held and when it is controlled by a remote management that responds to dilute shareholders.

Chilean experience shows that the business group can avoid the identification of a loan as a self-loan, by dividing it into smaller pieces, then lending each piece to an expressly created shell company, and finally having the shell companies to relend the funds to the unit in the business group that requested the funds. When classifying such a loan portfolio, the individual loans may fall below the size limit over which loans must be classified. An alternative method is to ask friends and employees to accept the loan and do the relending. This method may be defined as evasion from regulatory control through vertical disintegration.

In addition, the business group can drag its feet when classifying the self-loans. It is easy to see that if the bank is unabashedly optimistic when evaluating its self-loans, the Superintendency of Banks is forced to do its own evaluation. It is clear that the Superintendency might discover insolvency too late when this happens.

Moreover, when the Superintendency attempts its own risk evaluation of self-loans, it confronts severe informational asymmetries. This is because such an evaluation must obviously attempt to figure out the solvency and cash flow of the business group taken as a whole, i.e. consolidating all the shell companies. The problem is complicated further because non-controlling shareholders in some of the business group's firms must be taken into account. In addition, the network of holding companies is always changing, and can be made to change very fast, so the Superintendency cannot put much faith on information gathered by ordering the regulated bank to inquire some aspect of a debtor holding company's situation. Finally, these difficulties can be compounded by the incompetence of the business group's administration, if it does not keep records of its consolidated situation²¹.

²⁰ In fact, this difference was so strong in Chile in the 1970's that some authors have concluded that the only important type of moral hazard is self-lending by business groups. See Tagle (1988), p. XIX.

²¹ In the Chilean case, we know that Group Vial did not develop consolidated information until mid 1981, when it found it was bankrupt. This is common in fast growing business groups.

The critical regulatory problem is that the regulatory powers of the Superintendency reach only to the bank, so it has no authority over the successive layers of holding companies that define the structure of the business group. For example, the powers of a bank to request information from a debtor are legally limited in most countries. Therefore, the Superintendency is subject to a loss of control through vertical disintegration that leaves it unable to monitor for moral hazard or for rollover of unrealized losses.

In conclusion, the problem with self-lending by business groups is not conceptually different from contingent subsidies, moral hazard and rollover of unrealized losses. However, implementing prudential regulation when it is present is several orders of magnitude more difficult than when dealing with independent banks, because the informational asymmetries are much deeper and the usual regulatory tools are more easily blunted by a non-cooperative business group. This is true regardless of the ownership structure of the business group.

4. Prudential Regulation in Chile: 1976-1982

Observers of the Chilean financial evolution have asserted that until 1982 Chile had a "worst of both worlds" bank regulatory system. The reason offered has been that the government was issuing a subsidized guarantee, but did not regulate adequately the risks taken by the guaranteed institutions. This section attempts to be more precise about this, in order to extract specific lessons about the experience. We find that, on the whole, the general diagnosis is correct. However, it is also true that the Superintendency of Banks adopted important steps towards improvement of bank regulation over this period.

Section 4.1 studies pure moral hazard in 1976-1979, with emphasis on the failure of Banco Osorno. We find that moral hazard was important in Chile in 1976. We show that there was a serious failure in banking policy in 1977-1980, mainly because important authorities insisted that free banking was feasible. However, we believe that moral hazard was not present in those years, because banking was very profitable and was expected to continue to be so. Nevertheless, this erroneous banking policy made Chilean banking very fragile.

Section 4.2 studies the hypothesis of a ponzi game in the shape of rollover of unrealized loan losses in 1977-1981. We find that there was no ponzi game up to 1980, because real interest rates were smaller than real growth of new loans, and banks enjoyed positive profits. This means that the load of unrealized loan losses carried from 1978 was diluted, and banks had positive economic net worth. This does not imply that their accounting net worth was positive in 1980. However, starting in 1981, there are clear signs of a ponzi game through the rollover of unrealized loan losses. This was triggered by the

1981 rise in real interest rates, showing that the Chilean banking system had been debilitated by not acknowledging loan losses.

We document in section 4.3 that structural contingent subsidies were very important in Chile in 1981. The Superintendency did not rate bank loans according to the debtors' exposure to foreign currency and interest rate risks, because the policy of the Minister of Finance was assure everybody that there was no risk of devaluation whatsoever, and that international interest rates would fall shortly. This allowed Chilean commercial banks to take a lot of risk by lending to debtors that assumed these forms of risk. Symmetrically, this allowed individual debtors to consider that dollar-denominated debt was cheaper than peso debt, which in fact was true only because banks did not charge an appropriate risk-premium. In turn, banks did not do so because it was profitable to take risk and the the Superintendency did not require a downgrading of debtors with high exposure to currency and interest rate risk. This explains the excessive foreign debt accumulation experienced in Chile in 1981.

Finally, section 4.4 studies the practice of self-lending by business groups. We find that they used their informational advantage in 1981 to avoid the new unwinding requirements imposed on self-loans in mid 1982, and to exploit -like other smaller debtors- the contingent subsidy on exchange rate and interest rate risk-taking. In addition, they used their informational advantage to facilitate rollover of losses over 1981 and the first half of 1982. They were unable to continue this practice after mid 1982 because of steeper regulations and control. Finally, they used their advantage to exploit small investors in the security markets in the second half of 1982. However, we find no evidence for pure moral hazard in 1981 and 1982.

4.1 Moral Hazard: the Chilean Experience, 1976-1978.

The moral hazard issue is concerned with asymmetric information, as explained in section 3. There are three items of evidence that must be met to establish the occurrence of moral hazard problems. One is the existence of a government guarantee on deposits. The second is the presence of a significant information asymmetry. The third item allows an assessment of the extensiveness of the moral hazard problem. It consists of checking the market-wide consequences of unregulated moral hazard. In this section, we will review the episode that has been singled out as critical in the literature, the failure of Banco Osorno y La Unión, and the next three years.

4.1.1 Moral Hazard before Banco Osorno

The privatization of the commercial banks, expropriated by Allende, occurred in the middle of the liberalization of interest rates, elimination of credit controls and the unification of regulation across intermediaries. Bids for the banks were asked just after

the freezing of SINAP's short term deposits, in July of 1975. The government offered its shares with at least 20% of down payment and the remainder over the next two years, with an interest rate of 8% plus CPI variation²². Most banks were bought by local business groups. They obtained actual control by February of 1976, so our analysis starts in 1976.

In January 6, 1977, less than a year after privatization, regulators took over one of the banks sold to business groups, Banco Osorno y La Unión. This was the first failure of a privately owned bank in Chile since 1926.

In early December of 1976, a spate of ten insolvencies of intermediaries took place. They started when the manager of financiera "Manuel Rodríguez" (informal) fled to Buenos Aires. The authorities declared that this was to be expected of informal (non-regulated) financieras.

But when "Finregio" (a formal financiera) failed a week later because it had concentrated its lending in only two companies, which were the main shareholders of the financiera, the public came to realize that supervision was practically inexistent even in formal institutions. For example, Finregio violated in a grand way article 5 of Resolution 26 of the Superintendency of Banks, that banned loans to owners of more than 10% of equity²³. In the following weeks failed La Familia, Colocadora Central de Valores, Financiera Gain, Financiera Farema, Financiera El Sendero, Eduardo Montes (informal), Inversiones Décima Región and Banco Osorno.

The government announced that Banco Osorno's deposits would be backed by the Central Bank. In addition, the next day the government announced the creation of an explicit guarantee for small deposits in banks, supervised financieras, and supervised Savings and Credit Cooperatives. The limit on the guarantee was a CPI-adjustable amount²⁴ near US\$ 2,750 per account. The government also guaranteed ex-post the small deposits at Finregio and La Familia, and none at the informal institutions.

We will follow our proposed procedure to check empirically if Banco Osorno's failure was due to moral hazard. The first element to be checked is the existence of a government guarantee on deposits.

²² This interest rate was substantially below ex-post market rates, so the government was able to inflate the prices received.

²³ See Ercilla N° 2161, Dec 29-Jan 4, 1977.

²⁴ It was set at 100 Unidades Tributarias Mensuales, which amounted to 175 Unidades de Fomento.

The only experience previous to Banco Osorno, apart from the spate beginning in December 1976, was the one of SINAP. In that case, the government had initially declared it would guarantee its liabilities. However, in the event the government did not meet its promise (see 2.3). As the evidence below shows, this implies that the depositing public did not believe in government guarantees of deposits, even though there existed a Superintendency of Banks. In this sense, the first requisite for moral hazard is not met for the case of Banco Osorno. This fact has been frequently overlooked when studying the case.

The second element is to check if there existed an asymmetry of information between the banks and regulators. However, given that there was no guarantee in place, it is also relevant to check whether depositors had some information about bank solvency. We show that these asymmetries existed and were substantial.

Therefore, as there is no empirical evidence for the first requisite, we conclude that the Banco Osorno failure was not the result of moral hazard against the government. We argue that between the privatization of commercial banks in February 1976 and the failure of Banco Osorno in January 1977, Chile lived a free-banking episode. This is because there were no guarantees on bank deposits, there was no prudential regulation worth telling, there was free entry, and the failure of intermediaries did result in losses to depositors. However, we will show that the spate of failures of intermediaries was the outcome of moral hazard against depositors.

Finally, it is interesting to pose the question if moral hazard was a market-wide phenomenon in 1976. With regards to this, the facts are that real interest rates were falling rather than rising in late 1976, and that the real volume of deposits was not rising, as moral hazard theory predicts. This is not surprising, because the dynamics of moral hazard against the government are quite different from those of moral hazard against depositors, who can run. The widespread distrust of banks by depositors and the negative vision of the financial system that can be gleaned from reading the press of the time, and the small growth of aggregate deposits in 1976, suggest that the public perceived it could become the subject of fraud.

4.1.2 Banking Policy after Banco Osorno's failure

An important aspect of Banco Osorno's failure is that it exposed the absence of prudential regulation in Chile in 1976. The Central Bank authorities became suspicious only after Banco Osorno asked for unusual amounts of emergency credit, in December

1976²⁵. Bank regulators began to worry somewhat when they found that Banco Osorno had experienced an operating loss in November 1976.

At the time, the Superintendency of Banks was supposed to employ up to 120 employees, but only 60 remained because of quits in response to low public sector wages. Of those 60, only ten were inspectors, and they had to supervise 14 banks and 26 formal financieras, which was obviously an impossible task.

It was also revealed that Finregio violated the maximum debt/equity ratio of 5.0 applicable to financieras, had lent at long term with short term funds, and had lent without evaluating the collateral of debtors.

After takeover, the regulators found that Banco Osorno's failure was associated with the failure, in the previous month, of the informal financiera called "Soc. de Inversiones Décima Región", controlled by the same business group (Merss. Fluxá and Yaconi). This business group had used the bank's borrowing capacity to buy several big firms that the government was privatizing in 1976, like Fundación Libertad, Agencias Graham, Enagás, and Santiago Centro office building. Banco Osorno had opened off-balance sheet credit lines to these firms, and issued guarantees to others without registering them.

Banco Osorno was not abusing any government guarantee. In our view, Banco Osorno abused the depositing public's confidence that banks were serious institutions. In fact, during December 1976, as the failures of intermediaries came one after the other, the depositing public came close to a panic and began to move funds towards the largest banks. This shows that the public did not believe in government guarantees of deposits. In this sense, Chilean 1975-1976 financial experience looks like a free banking episode of the 19th century, before governments regulated banks.

The analogy is confirmed by the fact that, after the failure of Finregio, and in the middle of rumours about the failure of other banks, the local press informed that Javier Vial, the president of the Bankers' Association, was trying to form a pool of banks to bail out Finregio and avoid the public's loss of confidence. This is exactly what the New York bank cartel did before the formation of the Federal Reserve (Gorton, 1985). A difference is that, in this case, the government did intervene in the end.

²⁵ See Qué Pasa N° 354, January 26 1978, which interviewed Mr. Francisco Fluxá. Banco Osorno asked for a US\$ 10 million bridging loan until a hypothetical new foreign partner invested in Banco Osorno shares.

Several authors have singled out the Banco Osorno episode as the one that set the stage for the massive bank failures of 1982 (see Harberger, 1984). The argument is that if depositors at Banco Osorno had suffered some losses, and/or regulators had supervised banks more strictly, then domestic banks would not have engaged in moral hazard practices and foreign banks would have been more careful in lending to Chile in 1981.

To check this point of view, we review the banking policy stances expressed in the local press at the time. A columnist that worked at the Central Bank asserted that:

"The financial market is special because bankruptcy produces public alarm.... There is consensus that the Superintendency must be refurbished to be able to exercise enough control.... We must rethink the objective of bank regulation. At present, the objective is to make sure the norms are complied with. But by itself, this doesn't assure the ability to analyze the loan portfolio and its guarantees."²⁶

We see that an important school of thought, which we will call the "State Supervision School", argued that the government had to guarantee bank liabilities, and that therefore the government should regulate the risk of failure. An implication was that the government was right in bailing out Banco Osorno depositors.

However, this view was not shared by important authorities at the Ministry of Finance and the Central bank, who were not convinced about special bankruptcy costs in banking. Note that the State Supervision School did not mention moral hazard or information asymmetry in their arguments. Confronted with this theoretical weakness, these authorities insisted in a free-banking view of the financial market. They were not convinced that bank failure was special, and refused to accept that government guarantees should be involved. The President of the Central Bank, when asked about future bank failures, answered that:

"The government will respond only up to the small-depositor guarantee, as it did in the cases of Finregio and La Familia."²⁷

This answer pretended that only small depositors would be insured in the future, although it had been obviously untrue for Banco Osorno. This school of thought preferred to explain the spate of insolvencies around Banco Osorno as the result of poor management and fraud. Poor management was not for the government to mind, while fraud could be dealt with by defining white collar crimes more precisely and enabling the affected parties

²⁶ Daniel Tapia, Ercilla N° 2164, January 19-25, 1977.

²⁷ Alvaro Bardón, interviewed in Ercilla N° 2164, January 19-25, 1977. The economists at ODEPLAN were the most consistent opponents of the State Supervision School.

to protect their interests in the courts. Small depositors would be guaranteed only because they would be unable to inform themselves properly or find it worthwhile to sue in court. Therefore, for this school the right decision with regard to Banco Osorno would have been to let it fail²⁸.

The only lesson from Banco Osorno that captured the attention of these authorities was that it was so hard to make Banco Osorno's executives and directors legally accountable for what they thought was simple fraudulent conduct.

There was a third school of thought, represented by old-timers at the Superintendency of Banks. This group asserted that risk-taking by banks could not be controlled, and that the government should bail depositors out. Therefore, the best policy was to repress the financial market, assuring a small size and low risks because of lending at negative real rates.

Summing up, the authorities were of a divided mind on financial policy. The outcome of bank regulation in Chile was heavily influenced by this underground clash. After the Banco Osorno episode, the Free banking school obtained legislation that defined new crimes, but continued to be distrustful of prudential regulation. However, it failed in withholding the government's guarantee. The State Supervision school obtained some new powers for the Superintendency and a government guarantee for deposits to keep the public's confidence, but was unable to implement tight prudential regulation. The Financial Repression group obtained the government's guarantee for depositors and delayed the implementation of tight prudential regulation, but could not return the financial market to repression. The social cost of this incoherent financial regulatory policy was substantial.

The argument set out by Harberger, i.e. that inflicting some losses on Banco Osorno's large depositors would have avoided the creation of an implicit government guarantee and the problems suffered in 1982, is not convincing unless we also accept that free banking is a good idea. In our view, free banking is a risky policy for a country undergoing financial liberalization. This happens because there are many doubts about the ability of free banking to manage some externalities without fostering collusion. There is significant evidence that "free" banking worked well only where it led to the formation of a bank cartel. In Chile, such a bank cartel would have been dominated by the business groups, who would have multiplied their lock-out power.

²⁸ It is unlikely that they realized that the result of this policy would have been a bank cartel, who would have regulated its members.

Harberger also suggests that an alternative feasible policy after the failure of Banco Osorno would have been to introduce tight prudential regulation. In our view this is correct.

In the years after Banco Osorno's failure, the Free Banking school introduced legislation that defined new crimes. Our sampler²⁹ of those legal reforms includes:

- i) It became a crime for a bank manager to omit the accounting of an operation.
- ii) It became a crime for a bank director, manager, employees, external auditors, and agents to "disfigure" balance sheets, books, mail, accounts and other documents.
- iii) Extended to financieras the crimes defined for bank managers and directors for the cases of approval or presentation of a false balance sheet.
- iv) Giving false or maliciously incomplete data for the purpose of obtaining a bank loan became a crime.
- v) External auditors would have to examine the accounts of all banks, and their report would have to be published.

Many authors have overlooked these reforms, and have argued that these crimes were committed up to 1982. This hypothesis is simply unreasonable for usual loans, if one takes into account that the penalties included jail. The cases of self-loans and fraud will be taken up later.

The State Supervision school obtained reforms like the following:

- i) The Superintendency of Banks would have a larger budget, and its employees would obtain salaries above the public sector pay scales. In the future, a council of ministers would define the wage scale and the number of employees, and meanwhile, the Central Bank sent 40 employees to help the Superintendency as inspectors.
- ii) The minimum capital for a formal financiera was raised to 75% of the one required for a bank, in an explicit attempt to reduce the number of financieras and the regulatory load.

²⁹ The best reference is Errázuriz (1982). The decree laws are N° 1638 (Dec 30, 1976) and N° 2099 (Jan 13, 1978).

- iii) Informal financieras were banned by a legal reform, while formal financieras were prohibited from acting as brokers for commercial paper issued by companies.
- iv) The volume of guarantees issued by a bank to each individual client began to be limited to the same levels applicable to loans. These limits were 5% of capital and reserves for loans each person and company without collateral and 10% if the collateral covered the extra 5%. For stock companies and state enterprises, the limit was 10% without collateral and 25% if the collateral covered the extra 15%.
- v) The acceptable collateral for a bank loan was restricted by the exclusion of bills of exchange and commercial paper.
- vi) The Superintendency of Banks was empowered to order the correction of the accounting value of any investment, when it established that the registered value was not realistic. However, this power did not cover loans.

An interesting reform was the one that imposed that the liquidator of a bank had to be designated by the Superintendent of Banks. This reform bears the influence of the State Supervision school, in that regular liquidators were excluded. However, the need for a special bankruptcy procedure for banks, which was the natural response to the State Supervision School preoccupation with "special" bankruptcy costs³⁰, was not attempted by either school. It turned out to be most unfortunate that the Chilean Banking Law, as other countries' laws, considered only two avenues for the management of a bank's failure: liquidation and takeover by the government³¹.

Finally, we will check which of the schools of thought was supported by the facts. In the first place, the Free Banking school lamented the ex-post guarantee on all deposits at Banco Osorno. But on the other hand, the government allowed the regular bankruptcy of several of the small financieras without intervention. The government also allowed losses to be inflicted on large depositors at Finregio and La Familia. Later in 1977, the government allowed large depositors to lose important amounts in the failures of saving and credit cooperatives Crediclán, SICOOP, Copecrédito, Servicoop, Magicoop, Credibioma, Ignacio

³⁰ This preoccupation is probably well founded. For a bank, liquidation usually means very large losses, because it ceases to be a going concern and debtors become laggard in payment because the capital value of their reputation as good payers disappears.

³¹ An alternative has been introduced in Chile by the 1986 and 1989 Banking Law reforms, ten years too late. The need for special bankruptcy procedures for banks has been proposed by new advances in banking theory, that have influenced the current Chilean banking law heavily.

Serrano and Credicon, showing the clout of the Free Banking school. For the Free Banking school, these episodes showed that there was no government guarantee in Chile.

However, previous authors have overlooked that Banco Osorno was not the only contradiction suffered by the Free Banking school. During 1977 the government also took over and refunded cooperatives IFICOOP, SODIMAC, Creditec and Credival, bailing out all creditors, regardless of size. These rescue operations were critical to establish the government's reputation in the public's mind. The common characteristic of these institutions and Banco Osorno was that they were larger than the others, so their failure would affect much more people. An implication was that their liquidation would freeze for a long time a substantial amount of the funds of many depositors, and that political support for the government would suffer. Therefore, in the public's mind, it became clear that medium-sized and larger banks were in fact guaranteed.

Given this record, it is amazing that the Free Banking school could still argue that there were no deposit guarantees in Chile. In order to be consistent, it should have acknowledged that free banking was impossible in Chile after 1977, and prudential regulation was a necessity. A free banking approach was simply not credible after 1977.

For the public, the State Supervision school was right. For example, a 1977 article, titled "The Morals of Banco Osorno" asserted that:

"Central Bank assistance to Banco Osorno shows that the authorities do not consider banks to be similar to other firms, so banks cannot fail. Therefore it is important to move towards professional supervision, where loans are evaluated in accordance to risk. This means that the Superintendency of Banks must have a larger budget, and salaries must be higher than in the rest of the public sector."³²

The episode that turned the tide in favour of the State Supervision school was the one of Banco Español in early 1980, three years later. Since late 1978, banks had to obtain external audits of their accounts. Price Waterhouse asserted that Banco Español accounts were representative in 1978, but changed opinion in their report concerning 1979, where they stated:

"The analysis showed that, regarding a loan portfolio of 37% of total loans, there was no information that could allow the evaluation of the debtors' capacity to pay. Many of these debtors had their loans renewed repeatedly, without paying interest nor CPI adjustment at the moment of renewal."

³² Ercilla N° 2167, February 9-15, page 21.

Although the loans were documented, as required by the 1978 laws, the bank still did not collect information to evaluate the risk. The press informed about the consequences of this report as follows:

"When it had become widely known that Banco Español was going towards takeover by the government, the owners (Puig business group) sold out to Sahli and Tassara's business group."³³

The point we want to make first is simply that, by 1980, everybody was convinced that depositors at a failing bank would be bailed out by the government. There was no alternative for a failed bank but being taken over.

The Free Banking school was never happy to acknowledge its practical defeat and was slow to press the Superintendency to improve the quality of its supervision. The same happened with the Financial Repression school, who was in actual command of the Superintendency, but was unable to block the financial liberalization. One empirical result was that the Superintendency did not move fast from 1977 to mid 1980. Another result was that when confronted with the failure of Banco Español, the free banking authorities refused to take over. Given the authorities' inaction, Mr. Puig sold the bank to Mrss. Sahli and Tassara, who were not required to inject fresh capital into the bank. The State Supervision school was shocked.

They reacted strongly to the Banco Español case, as the next sections will show, and by mid 1980 the State Supervision school had taken over bank regulatory policy in Chile. However, the doubts about the foundations for the new approach lingered among the free banking authorities, because the state supervision school continued to base all its action on unspecified differences between the private and social bankruptcy costs in banks³⁴.

The conclusion is that in 1977-1980 the authorities assumed that free banking was feasible and refused to acknowledge that that was impossible after the rescues of Banco Osorno, IFICOOP, SODIMAC, Creditec and Credival. Although they introduced prison sentences for undocumented loans and other frauds, which improved the workings of the system in comparison to 1976, they did not acknowledge that prudential regulation and risk evaluation were necessary, and placed their trust with external auditors. The blockade of prudential regulation was capped by the authorization of the sale of failed Banco Español to a business group without capital.

³³Ercilla N° 2333, April 16-22, p. 22.

³⁴ See Larraín (1979), who was the Intendent of Banks put by the State Supervision School since late 1979. He simply asserts that "if a bank fails, it must reduce depositor faith in other banks".

There is still the question about the market-wide impact of moral hazard in the period 1977-1979, when both a government guarantee and ineffective prudential regulation coexisted. It turns out that during this three-year period the Chilean economy exhibited high GDP growth, so even if moral hazard was practiced, it would not have led to large scale insolvency of intermediaries. The states of nature turned out to be good.

For this situation, section 3 predicts rising real deposit interest rates and more slowly rising real lending interest rates if moral hazard is present. Regarding deposit rates, an extension of the theory to consider the falling marginal reserve requirements experienced over this period leads us to expect that real deposit rates should have risen even faster. The reason is that a reduction in marginal reserve requirements is like eliminating a tax on intermediation, leading to a reduction in loan rates and an increase in deposit rates.

Of course, the problem with checking if these predictions fit the Chilean data is that there was a simultaneous financial liberalization under way. It is not easy to discriminate between the safe liberalization hypothesis and the market-wide moral hazard one. Both imply rising deposit interest rates and a rising volume of loans.

One difference between the predictions of the two hypothesis lies in that a safe liberalization implies falling loan rates while moral hazard implies rising loan rates. However, the opening up to capital inflows prevents a check here. The international financial liberalization adopted by Chile during this period induced an increase of the net capital inflow to Chile to a plateau level of US\$ 1.1 Billion per semester since the second half of 1978. This would have induced a reduction in loan interest rates since mid-1978, hiding the moral hazard dynamics³⁵.

It turns out that the moral hazard hypothesis can be discarded. Recall that moral hazard of the pure type requires that the bank is willing to fail and lose some capital in the bad states of the world. The following table shows banking profits and net investment in the banking sector in Chile:

³⁵ See Edwards (1988) for the data.

Year	1976	1977	1978	1979	1980
Pre-tax Profit/N Worth	2.6% ^a	8.7% ^a	18.5%	23.0%	23.5%
Operating profit ^b /NW	-13.8% ^a	1.1% ^a	13.5%	17.6%	22.1%
Increase in Net Worth/NW ^c	5.7%	2.3%	23.8%	16.7%	14.3%
$\left(\frac{\text{Increase in NetWorth}_t^c}{\text{Pre Tax Profit}_{t-1}} \right)$	40.3%	86.5%	274.0%	90.1%	62.1%
capital/asset ratio	24.8%	22.2%	15.1%	13.2%	11.9%

a : This figure is net of tax paid.

b : Defined as Pre-tax Profit minus Other Expenses plus Non Operating Income.

c: figures adjusted for inflation.

Source: elaboration from Held (1989), Tables I-6, I-9 and A-3.

This shows that a substantial proportion of profits were reinvested in the banking sector in most years. Moreover, in 1978 there was net investment in banking capital that was almost three times the previous year's profit. Most important, all this happened while the capital/asset ratio was far above the minimum capital requirement, which at the time was 4.76%, associated to a maximum debt/equity ratio of 20.

This is simply inconsistent with the moral hazard story, because it requires that banks keep themselves at the lowest capital/asset ratio that is allowed. A bank attempting moral hazard will not reinvest profits or increase bank capital if it has not reached the minimum capital/asset ratio.

This means that moral hazard was not profitable in the 1977 - 1980 period. However, it would start to be profitable if banking prospects appeared bleak. Of course, these figures should be cleaned of the loan losses that may have been rolled over, topic which is taken up in section 4.2.

The intuition for this result is simple: a financial liberalization makes the banking sector very profitable even for a bank that operates safely. Transitory rents are large, and it is convenient to reinvest them in the industry because it offers supernormal profits. An important implication is that a financial liberalization, which always produces transitory profits, has a built-in insurance against moral hazard, which is the appearance of transitory

quasi rents. The problem is that after expansion stops, the weaker banks may be driven into moral hazard type strategies. Therefore, a liberalizing government has only a limited period to introduce prudential regulation and absorb learning costs.

In conclusion, it is most likely that the Chilean financial system was not engaging in moral hazard over 1977-1980, although bank regulation was inexistent and the government insured deposits, because banking was too profitable for it to be worthwhile. Of course, the Chilean financial system was a fragile one in early 1980, because under this regulatory combination moral hazard in a massive scale could be expected in response to low profit expectations. Chile had an opportunity, up to late 1980, to escape from this fragility.

4.2 Rollover of Unrealized Loan Losses: the Chilean Experience

We start by checking the requirements for this hypothesis to be feasible. The first requirement is that the government guarantees deposits. As documented above, the bailout of all depositors at Banco Osorno and cooperatives IFICOOP, SODIMAC, Creditec and Credival convinced bank creditors that they were defacto guaranteed by the government. This requirement was not met before 1977, because financial intermediaries were allowed to fail.

The second requirement is for the bank to be bankrupt. If this is not so, delay in acknowledging loan losses simply shows up as a profit rate below normal standards, and no ponzi game is played. In particular, this hypothesis requires large unrealized losses in the loan portfolio of the banking industry at the start of the process, in early 1977.

What is forgotten by most analysts is that a bank is bankrupt only if the present value of its economic profit is negative. Economic losses exist permanently if interest earned on true loans is below interest paid on deposits. If this is not so, the unrealized loan losses are absorbed over time and the bank is not bankrupt in an economic sense. It may be bankrupt in an accounting sense, but there is no ponzi game if profits are positive.

The third requirement is to show that the government was reluctant to take over failed banks. The structural reasons for this outcome are that a takeover is an acknowledgement of flawed regulation, and that most authorities that supervise regulators are unable to obtain independent information on bank solvency.

In Chile, the regulators that took over Banco Osorno and the other big intermediaries in 1977 justified them by the argument that "previous" regulation was unsound. This attitude had changed by 1980. The regulatory approach was strongly

questioned by the case of Banco Español. In desperation, the Free Banking school decided to allow the sale of the bank to Mrss. Sahli and Tassara, who injected no capital. A year and a half later, in November 1981, Banco Español was taken over because its losses had grown still more. Therefore, it is clearly documented that regulatory delay was present in Chile from 1978 to mid 1980, when the Free banking school was dominant.

Given that in 1978-1980 the first and the third requirements are met, the only remaining question is about the second. Did large unrealized loan losses exist, such that many banks were suffering economic losses and were economically insolvent? As no formal examination was practiced on bank portfolios until 1980, there is no quantitative evidence on this point.

We present other types of evidence now.

4.2.1 The facts, 1977-1981.

In early 1977 the Chilean economy was in shambles. After suffering the ravages of Allende's populism, the halving of the price of copper in 1975 forced a steep recession, where GDP fell 12,9%. A strong fiscal contraction, a sharp real devaluation and very high real interest rates reduced the strength of the recovery, and the economy grew 3,5% in 1976. Therefore, the solvency of most business firms that had survived Allende's drive towards central planning was clearly reduced in those years, and many of them became actually insolvent.

On the other hand, several large business firms that had been nationalized by Allende were privatized by auction over 1976 and 1977. Most of these firms had no working capital, so they pressed on the financial market in order to finance inventories. Many of them also had excess manpower, but firing required severance payment of one month's salary per year served. Rationalization implied even more loans from the banks.

Initially, the high real interest rates recorded in 1975 could be absorbed easily because the ratio of debt paying market interest rates to equity was very low for most business firms in late 1974. However, during 1976 the persistence of high interest rates began to affect the solvency of some business firms. Therefore, it is safe to assume that the local press reports that insisted on these problems were essentially correct. Consider this one, dated one year after Banco Osorno's failure i.e. in January 1978:

"In financial circles it was assured that, according to the Superintendency's revisions, the volume of loans not serviced in time is between 10% and 15% of the banking system's portfolio. There is little hope that those debtors will be able to pay."³⁶

In addition, an economist reported in his column that, after studying the balance sheet of many important companies, he had concluded that the country had entered into a vicious circle: high real interest rates forced firms to increase their demand for credit, which in turn kept interest rates high even if the supply of funds rose³⁷. These reports came after 1977's record growth rate of 9,9%, which completed the recovery from the 1975 recession.

However, 1978 turned out to be a good year too: real growth was 8,2%, and 1979 exhibited 8,3% real growth. Real interest rates began to fall, although slowly. In addition, the reforms to the banking law of early 1978 had required banks, for the first time in Chile, to publish their financial statements in newspapers of wide circulation. Those statements would have to be audited externally.

Starting in early 1979, the four main auditing firms in Chile (Langton Clarke, Price Waterhouse, Deloitte, Haskins & Sells, and Coopers & Lybrand) certified that loan provisions of the order of 1% of loan portfolios were adequate for most banks³⁸. At the time, the authorities of the free banking school argued that the presence of these auditors, who would defend their reputation, assured that any unrealized loss problem would be discovered and solved. An alternative view, which we subscribe, is that most of these auditors were either duped or bought off by the bankers who paid their fees. We posit that the banking policy debate was won by the State Supervision school, and the Superintendency switched towards direct supervision, in 1980 when it was realized that external auditors would be unable to enforce adequate banking practices.

The experience of Banco Español is illustrative. Recall that in April 1980, Price Waterhouse's report on Banco Español informed that its examination had found that the bank had no information that might help to evaluate the probability of recovery of loans adding up to 37% of the loan portfolio. Some interpreted this event as showing that the external auditing process was uncovering the rotten apples in the banking system, and their confidence increased. An alternative view is that external auditors had been fooled or

³⁶ Hoy N° 32, January 4-10, 1978, p. 27.

³⁷ Rolf Lüders, in a column in Hoy N° 35, January 25-31, 1978.

³⁸ For example, for the year ended in December 1979, the auditors required provisions of 0,70% of Banco de Chile's loans, 2,40% of Banco Español's loans, 0,68% of Banco Austral's loans, 0,43% of Banco de Concepción's loans, 0,15% of Banco de Santiago's loans, and 0,69% of BHC's loans.

bought off. The fact is that in the following April, after Banco Español was bought by Mr. Tassara, Price Waterhouse declared that all the problems had been solved, but seven months later, in November 1981, the Superintendency took over Banco Español to stop massive fraud.

We compare now the auditors' claims with the Superintendency of Banks' reports and behavior. The Superintendency had adopted several measures after Banco Osorno's failure. The first was to introduce new legislation, which was approved in early 1978 and described above. By late 1978 the Superintendency was concentrating on assuring the completion of the first year of auditing by external auditors. In March 1979, the Superintendency prohibited for the first time the accrual of interest on delinquent loans. In December 1979, it reduced the required general loan loss provision from 2% of loans, to a number independent of the actual delinquency rate, but linked to "the volume of outstanding loans and the historical experience of recovery, which may be different for each bank". Of course, this piece of regulatory behavior should be described as incompetent.

In February 1980 came the Superintendency's first attempt to classify loans. It established an experimental system where each bank would have to classify (in a risk scale from A to D) its 30 largest individual debtors. For each of them the Superintendency required the opening of a especial folder with the relevant information. Initially, provisions were not required in relation to the classification. It is impressive to read the Superintendency's comments on the result of this preliminary exercise :

"It could be appreciated that some institutions didn't have the information necessary to identify their debtors..... In several institutions, it was verified that the loans were disbursed without knowledge of the credit needs of the borrower and with absolute ignorance about the uses to which the funds would be put."³⁹

Note that if a bank can't identify a debtor it means that some loans were undocumented, which violated the legislation introduced in early 1978. This comment was published a couple of months after Price Waterhouse's revelations about Banco Español, and its purpose was to support Price Waterhouse's independent attitude.

These results pulled the Superintendency into action. In June 1980, the Superintendency requested that the classification be extended to the 80 largest debtors of each bank. In April 1981 it required the classification of the 300 largest debtors, and introduced classification procedures for the consumer loan and housing mortgage loan portfolios.

³⁹ Published as Circular N° 1686, June 19, 1980.

In August 1981 the Superintendency obtained the approval by the Military Junta of a set of draconian reforms to the Banking Law⁴⁰, which took the banks by surprise. However, the main purpose of the reform was not to force the realization of hidden losses. Rather, it redefined the concept of individual debtor, in response to the huge scale of detected self-lending of business groups. This topic will be taken up in section 4.3, but the point that is of interest here is that hidden losses -correctly or not- were not perceived by the Superintendency to be the main legislative problem.

In November 1981 the Superintendency took over eight banks and financieras⁴¹, starting with Banco Español. These financial institutions covered 6-7% of total loans. This was a result of the loan classification effort started in 1980. Its declared purpose was to put an end to the rollover of loan losses by these institutions. On the other hand, these takeovers are proof that the external auditors had been either duped or bought in the previous years, because they had assured that provisions were reasonable for all these financial institutions. Economic activity had begun to decline only recently, in mid 1981. Of course, takeover implied that the government assumed the losses and guaranteed all depositors and creditors.

The discredited Free Banking school was still alive within the government, because its reaction was to introduce a law⁴² that expanded the explicit government insurance of small deposits that had operated since 1977. It consisted of an optional guarantee that could be purchased by each depositor up to some US\$ 3,500 in addition to the original guarantee that was free. The optional guarantee covered only up to 75% of the loss suffered in that sum. This law was an aberration, because the takeover of eight institutions in the previous month reaffirmed the widespread view that the government insured all bank liabilities. Evidence of this is that very few depositors paid to take the optional guarantee. However, this confusion in the minds of some of the authorities has introduced some confusion into the later discussions between economists.

In December 1981, the Superintendency required a general loan loss provision at a rate of 0,75% of loans, this time independent of the historical experience of recovery⁴³. In February 1982, the Superintendency requested quarterly classification of the 400 largest debtors, which on average covered 75% of the banking system's loan portfolio.

⁴⁰ Law 18022, August 19, 1981.

⁴¹ They were Banco Español, de Talca, de Linares, de Fomento del Bío-Bío and Financieras Cash, De Capitales, Del Sur, and Compañía General Financiera.

⁴² Law 18080, December 16, 1981.

⁴³ Circular N° 1764, December 14, 1981.

It was only in March of 1982 when the Superintendency required provisions in relation to the classification of loans. However, it also gave banks a generous deadline, as the required provisions would be allowed to be built up linearly for the next 33 months. By this time, the Chilean economy had entered into the steep 1982 recession.

We finish our review of the evidence by noting that the Chilean banks grew very fast in 1977-1981, period in which the real size of loan portfolios increased 513%⁴⁴. In addition, the economy exhibited strong growth up to 1981, so new loans were profitable and had the potential to dilute the old bad loans.

4.2.2 The evidence for unrealized loan losses, 1977-1980.

The qualitative evidence presented above can be used to support either of two alternative hypothesis: One, that unrealized losses were diluted through vigorous growth, so they were not important by 1980. Two, that the Superintendency of Banks was irresponsible and incompetent, and those losses continued to be significant⁴⁵. We will propose a third interpretation: Rollover of unrealized losses was not important as a generalized phenomenon until late 1981. However, it was important in a few business groups, notably in the case of Banco Español.

There are two pieces of evidence that may help to discriminate between these hypothesis. The first is that when the overall result of the classification procedure came to be published, it turned out that by June 1982 only 6.03% of loans⁴⁶ were considered to be at risk. This means that 1% of B loans, plus 20% of B- loans, plus 40% of C loans plus 100% of D loans added up to 6.03% of all loans⁴⁷. To put this number into perspective, we should note that in May 1988, which was considered to be a good year, the volume of loans at risk in Chilean banks was 5.33% of the portfolio⁴⁸. The difference is that in late 1981 provisions were only 1.73% of loans, while in 1988 they were 6.08% of loans.

In addition, 1982 was a very bad year, in which GDP fell 14.1%. Banking indicators worsened very fast in that year, as shown for example, by the percentage of

⁴⁴ The real growth rates in loans from banks and financieras were: 1977: 76%; 1978: 53,6%; 1979: 31,9%; 1980: 45,9% and 1981: 17,8%. The ratio of loans to GDP rose from 16,6% in 1977 to 50,4% in 1981. See Held (1989).

⁴⁵ See for example Held (1989).

⁴⁶ Excluding loans from the institutions taken over in November 1981.

⁴⁷ Información Financiera, January 1983, in article by Julio Acevedo.

⁴⁸ Información Financiera, May 1988. There was a change in definitions, as C loans were provisioned in 60% in 1988.

delinquent loans. This indicator rose from 2.34% in December 1981 to 6.31% in May 1982. Therefore, we believe that the volume of loans at risk, as measured by the Superintendency, was below 6% in December 1981, after the takeover of Banco Español.

This level of net unrealized losses of the order of 4% (a bit less than 6.03%, minus 1.73%) of total loans must be compared with the level of capital and reserves of the banking system to assess the loss. As accounting capital and reserves were 10.4% of loans in December 1981, we find that Chilean banks had a real economic capital of some 6.4% of total loans. As Chilean banks had a loan/asset ratio of 0.774 in 1981, the overall capital/asset ratio was near 5% in 1981. This system-wide ratio is certainly positive, and was not small by contemporaneous international standards⁴⁹.

There is a second piece of discriminating evidence. It is a fact that the Superintendency became very militant and aggressive during 1981 and took over the banks it considered to be insolvent after completing the loan classification procedure. However, in December 1981 the Superintendency required a general loan loss provision at a rate of 0.75% of loans, smaller than the average 1.73% of total provisions that banks had in their books. This confirms that by late 1981, when the classification procedure was fully in place, the Superintendency did not believe unrealized losses were a substantial problem per-se. Note that the Superintendency could have requested a much higher provision without jeopardizing its position, because the mood was to mop up the troubles bred by the free banking approach. If it had believed unrealized loan losses was a critical problem, it would have required a much higher provision, to avoid the distribution of dividends.

Consider now the critiques to these two pieces of evidence. The first set of figures can be questioned on the grounds that the basic number, i.e. the loans at risk for June 1982, is biased downwards. It is a fact that at least in some important banks the Superintendency had not reviewed the loan classification of loans made by most banks, and self-loans simply had not been classified⁵⁰. The second piece of evidence can be reinterpreted by the fact that the authorities simply did not know in November 1981 if the banks not taken over were solvent. The interpretation that loan losses were huge in 1980 cannot be discarded yet. We turn now to additional evidence on entry, growth and real interest rates.

⁴⁹ The Book value of equity/ assets ratio of US banks was, in 1980, 3.69% for the 17 international banks, 4.12% for the domestic banks with more than US\$5 billion in assets, and 6.77% for the domestic banks with assets between US\$300 million and US\$ 1 billion. See Talley, S., of the Board of Governors, Staff Study N° 122, February 1983.

⁵⁰ Günther Held, for Banco de Concepción.

4.2.3 Checking a Ponzi Game by Rollover of Unrealized Loan Losses

This section reviews the Chilean experience in 1977-1980 regarding the most important consequence of a persistent rollover of unrealized losses: a ponzi game that creates a vicious circle. Recall that the theoretical implications of a Ponzi game are that real interest rates rise, healthy debtors suffer a credit squeeze, the real volume of deposits and debts to others grow geometrically, and banks suffer economic losses in most periods. Competition, free expansion and new entry into banking accelerate the ponzi game.

It is difficult to measure a Ponzi game in the period 1977-1980 through growth in deposits in excess of the real interest rate, because there is a good alternative explanation: Financial liberalization was producing its expected results. By the end of 1980 the Chilean Loan/GDP ratio had reached 37.6% (Held, 1989), which may be compared with other developing countries' M2/GDP ratios for 1980: South Korea: 33.7%; India: 38.2%; Argentina: 23.4%, Taiwan: 66.8%. Germany had in 1960 a M2/GDP ratio of 29.4%⁵¹.

Consider entry and expansion of new banks during the period. The Chilean government allowed the creation of new banks and the opening of branches and subsidiaries by foreign banks⁵² since 1974, fact which could have theoretically increased the likelihood of a ponzi game in 1977-1980. However, during the period, the main entry was due to domestic banks. The following table puts this discussion into perspective:

⁵¹ See McKinnon, 1988.

⁵² In November 1974, a decree exempted long term foreign investment in banks from the Andean Pact's limitations.

TABLE 8
SHARE AND GROWTH OF NEW AND OLD BANKS
(Real terms, end of year)

Year	1976	1977	1978	1979	1980	1981
Total Real Loans	100	176	270	357	520	613
New Banks' Share(%)		1,4%	5,5%	10,3%	19,4%	25,6%
Foreign		0,5%	0,6%	2,3%	3,1%	4,6%
Banco de Santiago		0,9%	4,9%	7,2%	8,4%	8,6%
Other Chilean		-	-	0,8%	7,9%	12,4%
Real Loans of older Banks	100	174	255	320	419	456
Growth rate of older banks		74,0%	46,6%	25,5%	30,9%	8,8%
Proportion of 1977-1981 growth occurring in each each year, for older banks		20,8%	22,8%	18,3%	27,8%	10,4%

Sources: Held (1989), Table I-5 ; and Arellano (1983), Table 8. The large growth of 1980 is due to a big inflow of international bank loans to Chilean banks.

The growth of new entrants was certainly not fast enough to dampen significantly the real growth of older banks. Therefore, these older banks had the chance, as a group, to grow out of their unrealized loan losses to some extent by diluting them with new loans, if the latter were sound. On this point, recall that the moral hazard hypothesis is not supported for this period, as seen in section 4.1, so we can safely assume that new loans were sound.

Moreover, the growth rate of total real loans fell throughout the period, with the exception of 1980, suggesting that the process was stable. The proportion of total growth occurring each year was falling, with the exception of 1980, the year of opening to international capital inflows. This is consistent with the view that bank growth was the result of financial liberalization, and inconsistent with a ponzi game.

In the next Table, we see that real interest rates fell over those years and reached normal levels by late 1980. This supports the interpretation that a series of high growth years ate away and diluted the original loan losses.

TABLE 9
DYNAMIC SIMULATION OF MAXIMUM LOAN LOSSES
(end of year, except interest rates)

Year	1976	1977	1978	1979	1980	1981
Total Real Loans	100	176	270	357	520	613
Average Loan interest rate (real)						
Held (1989)		46,1%	35,9%	15,8%	11,6%	33,2%
Arellano (1983)		39,4%	35,1%	16,6%	12,2%	38,8%
Maximum share ^a of bad loans in:						
older banks' portfolio		10%	9,3%	8,6%	7,3%	8,9%
banking system portfolio		10%	8,7%	7,7%	5,9%	6,6%

Sources: Elaboration from Table 8, Held (1989), Table I-8 and Arellano (1983) Table 11. Arellano uses Cortázar and Marshall's corrected CPI.

Note (a): The size of unrecoverable loans is taken to be an initial 10% of the loan portfolio, suggested by the press reports of January 1978 cited above, which grows at the loan interest rate (calculated by Held) in real terms.

This simple calculation⁵³ shows that the dynamics of loan losses favored dilution in a larger pool of loans, even though absolute loan losses were able to grow by 134% in 1978-1981. This means that there was no ponzi game by rollover of unrealized loan losses in Chile until 1980. We have shown already that banks were earning positive economic profits in this period, so the present value of those earnings was also positive. Moreover, in the optimistic mood of those years, both banks and bank shares were sold and bought at high positive prices.

This does not imply that the Chilean banking system was solvent in 1980 in an accounting sense, because historical accounting that acknowledged loan losses may have shown a negative accounting net worth. This net worth depends of the initial level of loan losses. An inverse calculation shows that if one wants to argue that unrealized loan losses were near 20% of the loan portfolio by the end of 1981, then one must support the notion that initial unrealized loan losses added up to 30% of the loan portfolio in early 1978.

There is no evidence on how large unrealized loan losses were in early 1978 or late 1981. Guesstimates published in the press in early 1978 asserted that 10% to 15% of loans were not being serviced on time. However, it is easy to see that unrecoverable loan losses is not equivalent to loans not serviced on time. Our impression is that the high GDP growth over 1978-1981 probably improved recoverability, but also other problems such as fraud reduced it.

The conclusion then is that no ponzi game was played in Chile in 1978-1980. We contradict Harberger (1985), Mc Kinnon (1988) and Held (1989), who have asserted unrealized loan losses were so large that most of the Chilean banking system was insolvent during all this period, and most of the growth was a ponzi game all along.

⁵³Held (1989) has proposed an alternative method of estimation of the volume of unrealized loan losses, which we think is flawed. He starts by taking the average elasticity of the real volume of bank loans to GDP for developing countries, which is 2.7. Then he multiplies this elasticity by two, and then assumes that the maximum volume of healthy loans in 1980 can be estimated by applying this elasticity to the 1978 size of bank loans. The excess is taken to be bad loans. This procedure is flawed because it ignores the fact that Chile underwent both a domestic financial liberalization and an opening to international capital inflows, which the average developing country didn't. In addition, the initial size of the Chilean banking sector was very small, so growth rates and elasticities are misleading. Also, the procedure ignores the importance of the initial portion of bad loans, and of the level of real interest rates.

However, our simulation shows that a ponzi game began to be played in 1981, because real interest rates were very high and new loans were much smaller. It must be acknowledged that a portion of this ponzi game was stopped by the November 1981 takeover of Banco Español and others, but they held a small share of the total unrealized loan losses. The ponzi game started in 1981 continued until late 1982. That year's recession imposed huge new losses on the economy, and turned sound loans into failures.

In any case, rollover of unrealized loan losses was not the cause of the steep rise in real domestic interest rates observed in 1981. It was one more consequence, that fed back into banks' demand for deposits and fueled the initial rise in interest rates. This shows that although a ponzi game was not played over 1978-80, the existence of unrealized loan losses increased the sensitivity of the Chilean banking system to exogenous rises in interest rates and other problems.

In this environment, the Superintendency reacted by introducing a loan classification scheme. In our opinion, this happened too late to reduce the fragility of the Chilean banking system. In order to have been effective, the loan classification scheme should have been in place in late 1977, because in that way the Superintendency could have forced banks to reinvest all the profits of the good years. This was not done because of the misguided policy of the free banking school, which only ceded responsibility to the State supervision school in mid 1980, when it was too late.

4.3 Structural Contingent Subsidies in Chile in 1981

This section presents the Chilean experience with structural contingent subsidies. This concept was explained in section 3, and basically refers to the fact that bank regulators may be unable to impose risk-rated provisioning requirements to banks on account of the set of risks that are heavily influenced by the regulators' superior officers. An understanding of the Chilean experience on this point requires a brief presentation of the risks under partial control of the Ministry of Finance.

4.3.1 Risks influenced by the authorities in Chile

We start with a brief macroeconomic overview. In 1981 Chile sought and obtained an extraordinary volume of foreign loans, while domestic real interest rates in peso loans rose towards the 40% annual rate level. Obviously, the increase in the supply of funds was overwhelmed by an increase in demand. During 1981 the domestic currency appreciated, and GDP grew by 5.5%. The foreign debt incurred in that year was borrowed by private domestic banks, and was then lent to the domestic private sector. The next year, 1982, exhibits the end to the excess level of foreign capital inflows, the continuation

of a very high real interest rate in peso loans, a large real devaluation, and a depression where GDP fell 14.1% and unemployment rose by 20 percentage points. The overall ratio of domestic bank loans to GDP, which was 37.6% in 1980, rose to 50.4% by the end of 1981, and to 71.2% by the end of 1982. By the end of 1982 most of the banking system was insolvent.

The international debt crisis arrived to Chile in a bizarre way, because it was a private sector crisis. Contrary to most Latin American governments, the Chilean one did not borrow abroad in the 1977-1981 period. However, in 1983 the government took over a large portion of the banking system, and guaranteed the external debt contracted by private domestic banks. By the end of 1983, the foreign debt crisis had ceased to be a private sector problem in Chile, because the government was forced by the international bank cartel to extend its guarantee to commercial banks' foreign debts. From then on, Chile's debt crisis became like most Latin American countries' crisis. During 1983 GDP fell a further 0.7%.

When analyzing structural contingent subsidies in Chile in 1981-82, we will concentrate on two risks: exchange rate risk, and interest rate fluctuation risk.

a) Interest Rate Fluctuation Risk

The first element to be considered is Chile's reaction to the extraordinary 1981 rise of international real interest rates. The analysis is complicated by the excessive willingness to lend to developing countries exhibited by the international banks in the late 1970's and early 1980's, before the onset of the debt crisis. A side product of research into the causes of overlending by international banks⁵⁴ is the separation of the factors that were peculiar to Chile in explaining this period's high rate of external debt accumulation, from the factors that were shared with other developing countries. The following table shows a decomposition.

⁵⁴ One of us has argued that the recycling of petrodollars cannot explain by itself the pattern of international lending experienced in the late 1970's (Valdés, 1989).

TABLE 10
 ACTUAL AND EXPECTED LEVELS OF THE TRADE BALANCE FOR CHILE IN
 1977-1982.
 (millions of US dollars of each year)

Year	1977	1978	1979	1980	1981	1982
Net external Debt	5078	5748	6297	7134	11876	14679
LIBOR- $\Delta\%$ U.S.WPI	0.5%	-0.6%	-2.4%	1.5%	10.7%	11.7%
Prudent Trade Balance	-178	-224	-296	-285	-71	308
Expected Trade Balance	-244	-259	-516	-728	-986	323
Actual Trade Balance	-170	-422	-281	-871	-3010	33
Accumulated excess of actual over Prudent T. Balance	-8	189	192	801	3852	4774
Accumulated excess of actual over Expected T.Balance	-74	84	-143	-17	2004	1985

Source: Valdés (1989). The last two lines were accumulated at the LIBO rate.

The "prudent" trade balance is the one required to keep the foreign debt from exploding in the face of changes in the international real interest rate. The "expected" trade balance is the one that Chile should have exhibited if it had behaved as the average middle income oil-importing developing country in those years. The expected trade balance takes into account the impact of overlending by international banks and the average policy errors of developing countries, including their slow reaction to the rise in international interest rates. The last line shows that in 1981 Chile deviated strongly from similar developing countries' pattern of behavior. The country incurred in a huge excess foreign debt in 1981, which must be explained by country-specific factors, domestic and external.

Chile's was not a normal⁵⁵ reaction to the 1981 rise in international real interest rates, from 1.5% to 10.7%. This rise, if permanent, is a brutal shock to a borrower with no

⁵⁵There is substantial evidence in favour of the concept that consumers and investors had excessively optimistic predictions about the future in 1979-1981. This hypothesis is supported by the extraordinary rise of the local stock market in 1975-1980, and the positive impact of the free-market structural reforms undertaken in 1975-1981 on investor

access to long-term fixed-interest rate funds, as was the case of most Chilean companies and investors. A real interest rate shock of the size of the international rise of 1981, even if it lasts for only two years, reduces the value of an asset with a constant cash flow by 15%. On the other hand, if the interest rate rise is short-lived, the shock is much smaller. As we will see, interest-rate speculation in Chile took the form of betting that the international interest rate would fall soon.

During 1981, domestic interest rates rose simultaneously with international rates. The domestic rise was much steeper, however. Real ex-post peso loan interest rates increased from 12% in the last quarter of 1980 to 35% in 1981. The Finance Minister's policy stance was the following: there would be a gold-standard type of adjustment to the excess expenditure observed in early 1981. This excess was due not only to the changed international interest rates, but also to optimistic expectations about the future and to the fall in the price of the main export, copper.

It is important then to establish the likelihood of a fast reduction in local interest rates, as seen from 1981. The Finance Minister's policy stance meant that the domestic money supply would be driven by the balance of payments. This meant a monetary contraction as soon as the balance of payments came into deficit, which would raise the local interest rate because of imperfect capital mobility. The implication was that local interest rates would stay higher than the international interest rate, even if the latter fell. Many Chilean debtors reacted to this situation by reshaping their debts so that they would benefit if international interest rates fell, which meant switching to U.S. dollar-denominated debts.

This documents that interest rate risk was substantial in Chile in 1981, at least for the highly indebted corporations and individuals. Although this risk was not under the control of the Chilean Finance Minister in its international component, he controlled the domestic component through monetary policy. In addition, the authorities controlled the access to dollar-denominated funds through the exchange control law. Clearly, the Minister of Finance influenced strongly both the outcome of the local interest rate fluctuation risk, and access to the foreign interest rate risk.

b) Exchange rate risk

psychology. This cannot explain, however, the increase in expenditure observed in 1981, when international interest rates rose strongly.

One of the legacies of Allende was a budget deficit of 25% of GDP, which was covered with Central Bank credit. The result was an inflation rate near the 500% (annual) level in 1973. From 1974 to 1978 the government was successful in eliminating the fiscal deficit and reducing the inflation rate. The inflation rate reached an annualized level of 29.2% in the fourth quarter of 1978.

The government confronted difficulties to reduce the inflation rate further, and was alarmed by the rise to 34.6% in the second quarter of 1979. The government recognized that this inflation was not caused by the budget, which was in surplus. The government's diagnosis was that the Central Bank caused the continuing inflation, because it devalued the exchange rate continuously on the basis of past inflation. This led the government to attempt the gold-standard stabilization mechanism, which meant fixing the nominal exchange rate⁵⁶. This policy seemed feasible because the 1974-78 reduction in tariffs had reduced substantially the scope for price rises in internationally tradeable goods. The nominal exchange rate was pegged to the U.S. dollar in June of 1979.

The convergence of the domestic inflation rate to the international one took a couple of years. The local inflation rate began to fall only in the first quarter of 1981, to 18.4% annual rate, and achieved the international inflation level the next quarter. Then it continued falling, to undo the accumulated real appreciation. Convergence was slow and costly in part because of some rigidities in the labour market, particularly the government-required full backward indexing of nominal wages to past inflation. The unpredictable behavior of inflation also helped to confuse investors with respect to the real interest rates they were contracting at.

There was talk about the need for a devaluation since mid-1980, as a review of the local press shows. The discussion centered on whether a devaluation of the local currency would correct the real appreciation that was eroding the tradeables' sector competitiveness, or would merely be diluted in higher domestic inflation. The rise in the domestic real interest rate observed in the first half of 1981 was considered by some to be a seasonal effect plus a simple reflection of higher international interest rates. Initially, others interpreted this rise as the effect of an inflation prediction error, with the implication that inflation was finally been eliminated and no devaluation would be necessary, after all.

However, high interest rates persisted. This couldn't be explained as a prediction error, and made suspect the government's claim of success in stabilization⁵⁷. Even if

⁵⁶ There has been an interesting debate on the appropriateness of this policy approach. See Corbo (1985), Dornbusch (1985) and Edwards (1988).

⁵⁷ After the failure of a large sugar refining company because of heavy speculation in sugar futures, in May 1981, many investors thought a devaluation was forthcoming.

stabilization was successful, the large volume of external debt contracted at a floating interest rate implied a crushing debt-service cost because of the persistently higher international interest rate. The 1981 fall in the price of the country's main export, copper, also fueled expectations of devaluation. Imports of durables climbed to record highs. Many thought that the way to adjust and reduce imports was to devalue. The authorities, however, insisted in the narrow view that stabilization had been finally achieved, so no devaluation was necessary. It hoped that a rapid fall in international interest rates would alleviate adjustment.

This review documents that exchange rate risk was substantial in Chile in 1981. This means that there was a lot of uncertainty about the time path that the nominal exchange rate and exchange controls would follow. The selection of time paths had a substantial effect on the fortunes of individual bank debtors, because the cost of adjustment to the high international interest rate is shifted and modified by changes in exchange controls and exchange rate policy. The Minister of Finance controlled directly the outcome of this risk, through Central Bank intervention in the foreign currency market and through its power to redefine exchange controls, both of which were eventually used.

4.3.2 Evidence on Structural Contingent Subsidies

In a nutshell, we will argue that the Superintendency could not include into its loan classification procedure a truly independent assessment of the exposure of bank debtors to foreign exchange risk and to the domestic and international interest rate risks, because it would have interfered with official macroeconomic policies. As these risks were high in Chile in 1981, the institutional constraints on bank supervision allowed part of the private sector to draw on the government's deposit guarantee at a subsidized price.

This argument takes as given that bank supervisors themselves had the primary responsibility for assessing these risks. Most banks' assessments could not be relied upon because, as those same supervisors were claiming and as explained in 4.4, many banks wanted to present a rosy view of their self-loans. Moreover, a bank could not classify its loans to independent debtors in proportion, for example, to exposure to exchange rate risk, without classifying its self-loans in the same way. The banks preferred to insist that most debtors, independent or not, "had capacity to pay" given the expected course of events, which was the one espoused by the authorities: no devaluation would be forthcoming and interest rates would fall rapidly.

Therefore, Chilean bank supervisors had an unusually heavy responsibility over their shoulders in 1981: they should have claimed that both the supervised banks and their own superiors were wrong, i.e. that exchange risk and interest rate risk were substantial. If bank supervisors had taken this responsibility, they should have supplemented the normal indication to evaluate the "capacity to pay" of debtors with an order to calculate explicit indicators of that capacity, like the exposures to exchange and interest rate risks.

The evidence suggests that the budding group of bank regulators, overburdened with the task of identifying self-loans, were willing to believe that those risks were small, as the official view proclaimed. Therefore, banks were free to draw on the deposit guarantee by incurring more credit risk, lending to debtors exposed to currency and interest rate risk if they wished.

Now we turn to the evidence on risk taking by the domestic private sector that drew on contingent government subsidies. First of all, it is clear from the theory that the subset of the private sector that would be willing to take this contingent subsidy had to belong to the set of corporations and individuals that had little true capital to lose if the bet was unsuccessful. Second, there is the requirement that a significant subset of banks also had little capital to lose if the bets were unsuccessful.

It is well known that by late 1980 there was an important set of individuals and corporations that was heavily indebted. We will define this group as the "optimists". They believed that the fast growth of the last three years could be sustained, so they were willing to invest with borrowed funds. This group covered small and large firms, and also many consumers. We define the opposite position as the "conservatives". It included many firms, of every size up to large business groups. They had been willing to sell their assets at prices they considered inflated, and some of them had moved funds out of the country.

The reaction of "conservatives" to the rise in international interest rates and the U.S. recession, given the large Chilean external debt was to prepare for a devaluation by reducing their dollar debt and increasing peso debt, while reducing expenditure as feasible. In 1981, Chile experienced capital flight for the first time since the Allende period. On the other extreme, the reaction of highly indebted "optimists" was to bet that the government would keep the exchange rate fixed, as promised. The "optimists" hoped that the high 19% dollar nominal interest rates would fall shortly⁵⁸. Therefore, "optimists" wished to change their peso debts into dollar debts in order to bet that foreign interest rates would fall shortly and that there would be no devaluation⁵⁹. This was the best alternative open to them, if creditors agreed, because accepting peso loans at high interest rates meant bankruptcy for sure.

⁵⁸ Some would add the hope that the value of the US dollar against the yen and deutchmark would stop rising. A dollar appreciation inflicted losses on Chile because most of its foreign debt was denominated in dollars, while only a third of its exports went to the U.S.

⁵⁹In addition, many investors remembered too well the 1960-1962 Chilean attempt to fix the exchange rate, that had to be abandoned in the middle of a balance of payments crisis in which the government bailed out most dollar debtors.

However, a healthy financial system would have met the optimists' requests for more credit with clear opposition. This is because their increase in debt is a bet financed by creditors whose beneficiary in expected value is the debtor. The only way a healthy financial system would be willing to lend more is at higher interest rates to compensate for the higher risk. When considering the darkening prospects for the next few years, the optimal policy was probably not to lend more. Note that the banks themselves were not exposed directly to exchange risk, because the Central Bank required all banks to match exactly foreign currency assets and liabilities.

The Chilean banks did not react in this way because of three reasons: first, there was a significant darkening of profit prospects for the future which reduced the economic value of many banks. This is supported by the fact that only 8.8% of 1980 pre-tax profits were added to bank capital during 1981. Second, the existence of a significant portion of unrealized loan losses that would grow at the interest rate during the coming recession implied that true capital would be further eroded. This was shown in 4.2. Third, many banks were owned by business groups that had the ability to shift true capital out of their bank and out of the reach of the Superintendency. This could happen because in 1981 the Superintendency was still unable to control self-loans effectively, and did happen because the business groups found it a profitable strategy. The result is that most banks were left with little true capital by mid 1981 and found it profitable to draw on the government's contingent subsidies. Most bankers rushed to offer cheaper dollar-denominated loans (financed through new external debt) to their customers, hoping that the contingent subsidy for currency risk would allow them to survive, and absorbing the associated credit risk.

We must recall that this contingent subsidy is valuable only for debtors with little capital. It is hard to believe that the Chilean private sector had little capital in late 1980, even considering that in 1977 many were near insolvency, because there had been three years of vigorous GDP growth. However, experience showed that many corporations and societies that were indebted with the banks and subject to limited liability had acquired in 1975-77 the less than honorable habit of shifting collateral out of the reach of their creditors. The banks did not defend the collateral of their loans over 1978-1980 and allowed this practice to evolve because of five documented facts:

First, they had limited capacity and there was a shortage of qualified personnel, i.e. many banks were still incompetent. Second, the Chilean court system was (and is) so slow that obtaining full redress is a very costly and lengthy process. Third, many banks were dominated by business groups that preferred to assign their limited management resources to shift the collateral of their own self-loans out of the reach of their bank. Fourth, in those years they experienced rapid growth, so the drive to place more loans tempered considerably their interest in the design of effective collateral contracts. Fifth, banks received no stimulus from the Superintendency to adopt loan classification schemes that provided for a careful evaluation of collateral, because the Free Banking school insisted that there were enough private incentives for banks to worry about collateral.

In this setting, most banks found that their effective capital plummeted further as soon as "optimistic" debtors became less willing to pay when the net worth of their corporations fell. This reinforced the previous perverse incentives to banks. Given this, banks became even more willing to take the new credit risks derived from exchange rate and interest rate risks, exploiting the government's guarantee on deposits.

We have shown that the overall situation was as if the government had extended a foreign exchange risk guarantee to the private sector. Our analysis has identified the channel for this guarantee. This was the Superintendency's lack of penalization, in the loan classification criteria, of credit risk due to the foreign exchange risk taken by the debtors. This is not moral hazard, of course. The government simply refused to acknowledge the portion of the foreign exchange and interest rate risks that had been transformed into credit risk. In practice this allowed banks not to penalize, through a larger risk premium, loans to debtors that accepted a lot of foreign exchange risk. Therefore, banks lent at *subsidized* interest rates to debtors that accepted a lot of foreign exchange and interest rate risk, because those rates did not take those credit risks fully into account.

The outcome of this structural contingent subsidy was that many small and medium-sized businesses got deeply into debt in 1981. Debts to banks increased during 1981 from 37.6% to 50.4% of GDP, in response to the rise in real interest rates. The counterpart was an increase in the foreign debt, because domestic deposits did not rise rapidly. This increase worsened the macroeconomic situation significantly.

In addition, debtor-speculators were offered the easy claim on the government that they had believed in official exchange rate policy, so they should be helped if a devaluation did happen. This increased further the value of the contingent subsidy to taking exchange risk offered by the government. This explains why in 1981 the demand for credit increased so much that it swamped the increase in supply obtained through the liberalization of international capital flows, and why this demand was for debt denominated in foreign exchange.

Finally, many debtors that were initially honest were caught by the huge rise in domestic interest rates of 1981 and lost most of their equity. Their response was to shift collateral out of the reach of the banks, arguing that they were merely defending themselves from the Finance Minister's policy of allowing domestic interest rates to rise to expropriatory levels. Redistributions of wealth of this size between debtors and creditors were considered by many to be simply illegitimate.

4.3.3 The Cost of Structural Contingent Subsidies

Starting in 1982, unemployment rises steeply, and consumers realize that they must stop spending. The recession deepens and deflation becomes a reality. The number of

employed people fell 22% between mid-1981 and December 1982. A substantial proportion (160,000 out of 690,000) left the labor force, and 230,000 were employed by the government in low-wage emergency employment programs.

This becomes relevant by mid-1982, when the fall in GDP is so steep that a depression is obvious. The government realized that the required real depreciation to undo the previous appreciation would take several years at current deflation rates. In June 1982 it finally decided to devalue. Initially, the devaluation was 14%, but in July the peso was left to float freely, and its price doubled in nominal terms in a few months. By the end of 1982, the losses that the devaluations inflicted on the holders of dollar-denominated debts had spread out insolvency across all firm sizes. Capital flight was rife, as the Central Bank scrambled to reestablish the foreign exchange controls it had been lifting in the last few years. Debtors attempted to shift their dollar debts to pesos, managing to reduce by 13.4% their aggregate dollar exposure in the domestic banking system during 1982.

Of course, the sorry state of most debtors meant that banks were having trouble to recover their loans. Delinquent loans rose from 2.34% of loans in December 1981 to 3.83% in February 1982, and 6.31% in May. Most delinquent loans turned out to be 100% losses, so they reduced the net worth of banks. Moreover, a correct estimation of net worth should subtract from capital the "Loans at Risk", estimated from the loan classification procedure. However, loan loss provisions should be added to net worth. The following table shows the impact of the recession and speculation with contingent subsidies on the solvency of the banking system.

TABLE 11
DELINQUENT LOANS AND BANK CAPITAL, 1982
(Billions of Chilean pesos)

Month	Delinquent Loans	Loans Sold to C. Bank	Capital & Reserves	Loan Loss Provision	Net Worth(1)
Dec 1981	16.831	-	76.685	5.206	65.060
Jan 1982	21.627	-	76.685	13.359	68.698
Feb	27.164	-	77.484	14.456	64.776
Mar	31.232	-	80.256	15.294	64.318
Apr	41.631	-	81.993	15.294	55.621
May	42.963	-	82.760	16.565	56.362
Jun	45.537	-	89.692	21.000	65.155
July	45.837	8.800	89.559	18.969	53.891
Aug	41.816	23.895	89.626	22.330	46.245
Sep	45.984	28.500	91.405	21.920	38.841
Oct	49.643	33.860	95.800	26.654	38.951
Nov	45.625	40.930	96.854	27.153	37.452
Dec 1982	41.118	41.607	105.035	34.737	57.047

Source: Información Financiera SBIF, several issues.

Note (1): Net Worth is calculated from the other columns as Capital plus Provisions minus Delinquent Loans minus Loans Sold to the Central Bank. This estimate of net worth is not precise because it should also subtract the loans at risk estimated by loan classification, and should add the recoverable portion of delinquent loans and the economic value of intangible assets. For June 1982, the Loans at Risk were estimated by the Superintendency to be 6.03% of loans (Acevedo, 1983), i.e. some B\$ 44.288, which puts effective net worth at B\$ 20.866 for that date.

This table documents the dramatic reduction in the solvency of the banking system in 1982. In July 12, 1982, the Central Bank decided to allow banks to defer their losses over several years, so it began to buy from them the delinquent loan portfolio and loans classified worst in the risk scale, at face value. The banks, however, had to promise to repurchase those loans at face value over time, so the scheme did not improve bank solvency by itself. Banks accepted to commit 100% of their profits to this purpose until the

portfolio was bought back. The scheme solved a liquidity problem, but also set the stage for making good the implicit contingent subsidy that the government had offered to speculators in 1981.

Naturally, in this environment the problem of rollover of unrealized loan losses presented itself again. The bank debtors that had speculated insisted on obtaining a rescheduling or at least a rollover. Contrary to the situation in 1975, however, now the Superintendency had the powers and the machinery in place to classify loans and question loan renewals. Nevertheless, the authorities confronted steep difficulties to stop indiscriminated rollover of unrealized losses. As insolvency was widespread, many thousands of debtors hoped that the government would announce a massive bailout package. In the meanwhile, they pressed for rollover, and the banks accepted willingly.

The reaction of the authorities to rollover was the "Process of Definition of Bank Debtor Solvency" of November 1982. Hordes of inspectors and many persons of the operating staff of the banks revised the banks' evaluations of recovery of their debtors, and many debtors had to prepare a presentation to their banks to show that they were still solvent or that they deserved a rescheduling. The explicit purpose of the exercise was to stop rollover of unrealized loan losses, which had become a public issue because it was squeezing out the healthy debtors and worsening the problem.

The publicly announced outcome of the evaluation process was the following: a volume of BCh.\$ 110,688 of debts were due by "non-viable" debtors, so their guarantees would be seized and the banks would have to request their bankruptcy⁶⁰. In addition, the volume of debt issued by debtors defined to be "In Problems" only was BCh.\$ 315,107, and they were chosen to get the sought-after rescheduling.

The banks, however, dragged their feet both on guarantee execution and rescheduling, forcing the authorities to think of alternative mechanisms. They will be reviewed in the next section.

4.4 Self-lending by Business Groups in Chile.

We defined the complicating factor posed by self-lending in section 3. The Chilean response to this problem has been, starting in August 1981, to limit drastically the volume of allowed self-lending by business groups. This strategy imposes some costs in

⁶⁰ In response, many debtors rushed to accelerate the shifting of collateral out of the debtor corporation.

terms of resource allocation under perfect information, namely puts a ceiling on business group indebtedness in the local banking system and forces banks to be independent entities. However, the approach avoids the large costs that moral hazard can impose in the presence of substantial asymmetric information. Until 1981, unbounded self-lending by business groups was a reality in Chile.

It is well known that business groups in some countries of the Far East, notably South Korea and Japan, are not subject to limits on self-loans. In compensation, however, the large business groups in South Korea are closely supervised by the government, not only from a prudential point of view, but also in their investment plans, labor policy and other operational aspects as well. Japanese business groups were closely monitored by the government in the 1950's and 1960's (Johnson, 1982). In the 1980's they have grown to be so solvent that moral hazard has been reduced to be a marginal regulatory concern. In this sense, the Far East countries have not followed the strategy of allowing free self-lending by business groups either.

4.4.1 Origin of Chile's large business groups.

As a more or less market-oriented economy, Chile has always exhibited a number of important diversified conglomerates, most of whom included a bank and fall into our definition of a business group. Most Chilean conglomerates included a bank because during the financial repression of 1940-1973, the ownership of a bank or savings & loan secured access to scarce loans at the interest rates below inflation fixed by the authorities.

However, there was an unprecedented growth in the size of business groups in Chile during the 1976-1981 period. At the time, critics argued that this was the inevitable result of the shift towards free-market policies, and insisted that industrial concentration was becoming too high and that the business groups would hijack the political process⁶¹.

Now it is clear that these prejudices were unfounded. The business groups grew unexpectedly fast in Chile in the 1976-1981 period because of three specific government policies, not because of a bias in free-market economies. These were, first, the decision to privatize banks before privatizing the industrial firms expropriated by Allende. This policy allowed relatively small business groups to acquire a bank⁶². The business groups were

⁶¹ See Hoy N° 145, May 1980, which denounces the "Cruzat-Larraín Empire", and Dahse (1979).

⁶² Bids were required to offer a 20% down payment, plus quarterly installments over the next two years at CPI variation plus 8% annual interest rate, below market rates. These financial conditions, however, merely allowed the government to claim that a higher price had been paid.

thus given access to the public's deposits, which were lent to the group itself and used to buy the industrial firms privatized by the government between 1976 and 1978. It is clear that the sequencing of privatization has a profound influence in the industrial structure.

Given the previous policy, the second specific government policy that eased the way for business groups was to privatize both banks and industrial firms through auctions to the highest bidder. Given the recession of 1975, the large real interest rates of available bank loans, and the complete absence of large foreign investors from post-Allende Chile, these auctions meant that the only competitive bidders were a few local business groups. The same was done when selling back to the private sector the industrial companies taken over by Allende. There was no government effort to dilute ownership across tens of thousands of investors in 1976-1980.

However, what really gave these business groups their clout were the large profits they made in the 1977-1980 period. A substantial part of these profits were made arbitraging between the high domestic interest rate and the low foreign interest rate. This type of arbitrage was possible, in part, because the government maintained in place until 1980 the old set of regulations on international private capital mobility. The other part is the natural advantage of any large firm that can access the wholesalers of funds directly, i.e. the possibility of paying lower interest rates for a larger volume of loans⁶³.

As the government decided not to use the government's or the state enterprises' external borrowing capacity to bring funds to Chile and earn arbitrage profits, competition was slight. Only a few big industrial companies and banks, dominated by new business groups, had access to private foreign lending, and this subject to individual quotas strictly enforced by the Central Bank. Given the high -but falling- local interest rate, the few business groups that had access to foreign loans could enjoy a large arbitrage rent in 1977-1980.

In addition, the business groups were able to grow with the economy. This growth was independent of government policy. A substantial chunk of the business groups' equity were capital gains in property and share values. These capital gains were impulsed in part by the reduction of real interest rates over time, but mostly by the expectations of permanent high growth that became believable as the economy improved over the period. On the other hand, asset prices were inflated by the new business groups' habit of continued acquisitions of new businesses at a rate higher than the rate of increase in aggregate real capital.

⁶³ See Ramos (1988).

In addition, two of these business groups were very successful in obtaining the goodwill of smaller investors. This allowed them to obtain control of several large loosely held corporations through the purchase of a relatively small share block. In this way, groups Vial and Cruzat-Larraín became partners of thousands of smaller local investors and rentiers in Banco de Chile, Cervecerías Unidas and COPEC, among other companies. This was not the result of government policy, but merely the reflection of these two groups' exceptional appeal among rentiers. The possible conflicts of interest between small and controlling shareholders began to be regulated somewhat late, in the 1981 reform to the Securities Law. Other business groups did not attempt to lure rentiers and smaller investors.

Most Chilean business groups enjoyed exceptional growth over the period because of two additional reasons. First, the strong performance of the economy in 1977-1980 generated substantial operating profits in most sectors of the economy. Second, several large business groups took advantage of the opportunities opened by the reduction of tariff rates enforced by the government in 1976-1979. They moved rapidly to invest in the newly profitable export sectors, and prepared to exploit fully the advantages of serving large foreign markets afforded by their size. It is clear that these possibilities were open to many Chilean and foreign investors, and not only to local business groups. In fact, many traditional business groups, medium-sized new groups and small investors also made large profits in this period because of these reasons⁶⁴.

What we know about the business group's solvency by the end of 1980 is not very precise. However, we do know that the consolidated indebtedness of the two largest business groups was high, with a most likely debt/equity ratio between two and three⁶⁵. A confirming point is that, at the time, the managers of the largest business groups used to argue that high indebtedness was necessary to sustain high growth in developing countries. For Cruzat-Larraín, the largest group, which controlled assets near US\$ 2 billion in 1981, it has been asserted independently that its controllers' equity was near US\$300 million. If non-controlling shareholders' equity was a similar sum, which seems likely, the solvency ratio of the group would have been in the range indicated above.

These were high levels of debt because the domestic component was short term (i.e. expected to be renewed at the interest rate that would prevail in the short term market)

⁶⁴ Gálvez and Tybout (1985) provide evidence showing that the business groups did better than similar independent companies, probably because they used better management techniques.

⁶⁵ This is equivalent to an Equity/Assets ratio between 0.33 and 0.25. The main holding companies of the two big groups had an Equity/Assets ratio near 0.50, and the largest subsidiaries had a similar ratio. In a straight two-level hierarchical structure the consolidated ratio is the product of both, i.e. near 0.25.

while the foreign portion was on a floating rate basis. This means that Chile's two largest business groups were very exposed to interest rate risk. A rise in interest rates would reduce the value of their fixed assets while keeping the value of their debt. The riskiness of this exposure was not well understood at the time even within the business groups. In group Vial, consolidated accounts began to be calculated for the first time in 1981. Incompetence of private bankers extended to the business groups themselves. This was the natural result of very fast growth and the rapidity of the shift towards free-market policies in 1975-1980, which made obsolete many of the old habits of local businessmen and created an acute shortage of qualified personnel. It was also the result of not taking advantage of the previous years to impose prudential regulation, whose principles would have forced the private sector to learn the techniques for risk evaluation.

4.4.2 Self-loans versus Loans to independent parties.

This section attempts to compare self-loans of banks with loans to independent borrowers in order to examine the hypothesis of preferential access of business groups to bank borrowing. It is well known that independent borrowers were able to obtain large loans during financial deepening. Arellano (1983) shows that the ratio of debt to the domestic banking system to sectoral GDP rose rapidly over 1977-1980 for most sectors. It is telling that growth was faster for the sectors known to be dominated by small and medium-sized businesses.

TABLE 12
LOCAL BANK DEBT/GDP AND DEBT/EQUITY RATIOS BY SECTOR

Sector	Debt/GDP ratio		
	1977	1980	Δ(% points)
1. Dominated by Small Firms			
Agriculture	20.1	65.6	45.5
Building	8.0	64.3	56.3
Transport	4.2	28.8	24.6
2. Dominated by Large Firms			
Industry	20.8	42.5	21.7
Mining	1.5	10.0	8.5
Commerce ^a	25.5	50.6	25.1

a: Commerce is a mixed sector, with many large and small firms.

Source: Arellano (1983), Table 9C.

In addition, the dollar-denominated debt to the local banking industry of the building sector, which is dominated by medium-sized firms, grew by 284% in 1981, and agriculture's grew 48% while the peso-denominated debt rose 13% and fell 9% respectively⁶⁶. There is ample evidence that even humble consumers speculated by buying imported consumer durables.

It is also important to compare the financial policy of the large business groups up to 1980 to the financial policy of smaller debtors and investors. It turns out that large business groups split on this point, just as smaller investors did. The two largest business groups, Vial and Cruzat-Larraín, were optimistic about the future and very indebted. Groups Matte and Angelini, on the other hand, chose a slower growth/lower risk strategy. In fact, many analysts have concluded that the two largest groups were the largest precisely because they were willing to incur high debt/equity ratios. For this reason, we will call these two groups the "speculative" business groups.

A study by Gálvez and Tybout (1985) focuses on this question by examining the balance sheets of a sample of 177 large non-financial firms, of which 45 were affiliated to conglomerates, which didn't necessarily include a bank. When analyzing indebtedness, these authors calculate a "corrected" gearing ratio, which excludes financial investments in affiliated companies from assets or equity, as the case may be. The reason is that these investments were in some part reciprocal, so a standard gearing ratio would be misleading. They find that among large firms, the corrected debt/equity ratio was similar among independent and conglomerate-affiliated firms in 1980, being 0.89 and 0.92 respectively.

Our conclusion is that until 1980 the two largest Chilean business groups were more indebted than the average of other businesses, but that this was also true for a substantial number of smaller investors and independent large firms. As most optimists were able to incur a high debt/equity ratio, independent of their size, we conclude that the informational advantage of business groups over the Superintendency of Banks was not an important factor up to 1980. This is not true for the cases of fraud, mentioned below when analyzing the November 1981 takeovers by the Superintendency.

4.4.3 Monitoring of Business Group Self-loans.

As shown in the theoretical section, self-lending by business groups may become a problem mostly because the risk of such loans is much harder to evaluate for the Superintendency of Banks than the one of ordinary loans. Therefore, in order to propose that self-lending by business groups was important in Chile in 1981 and 1982, we must first document the extra difficulties encountered by the Superintendency because of self-lending.

⁶⁶ See Arellano(1983), Tables 9A and 9B.

The evidence on the difficulties encountered by the Superintendency of Banks to evaluate the risk of self-loans begins to accumulate in 1980. Recall that in April of 1980 Price Waterhouse revealed the lack of information at Banco Español on 37% of the loan portfolio. The Superintendency was shocked, and supported Price Waterhouse in its June 1980 statement. It was known later that the Superintendency found that many of the loans for which information did not exist were self-loans to the banks' owners. During that year the Superintendency thought that the main problem with self-loans was that fraud became harder to detect. It was worried that some banks had been subject to fraud through self-loans, but this problem was thought to affect only a small portion of the banking system.

By early 1981, there was growing animosity against business groups within the military government. Their power and influence were feared by the military, and suspicion reached its climax when they found out that the largest business groups would dominate the newly created pension fund management industry. The political opposition had been in campaign against the power of business groups since mid-1980. In this setting, the Superintendency of Banks began to attempt the construction of a map of the holding companies of all important business groups in Chile. On the other hand, in March 1981 the Superintendency of Securities began to force public companies to reveal all their dealings with affiliated companies.

In August 19, 1981, the Superintendency of Banks surprised business groups as it obtained the approval of a reform to the Banking Law that changed the approach towards self-lending. The new law stated that:

"....it will be understood that a bank is managed in a defficient way if it has not diversified its loans away from persons and societies linked to the bank through ownership or management, directly or indirectly."

The new law gave new powers to the Superintendent with respect to banks "managed in a defficient way", like the power to ban the extension or renewal of specific loans, and the power to prevent the bank from lifting guarantees in the case of self-loans. The new law informed business groups that self-lending could be stopped by the Superintendency at any moment. It must be noted that these powers were excessive in the sense that bankers had no way to appeal to a court, illustrating the backlash that a disregard for prudential regulation can generate further on.

In addition, the reform introduced a diversification requirement on bank investments, by which a bank could not invest more than 30% of its capital in the securities

of each issuing society. Finally, the law forbade banks from owning shares in other companies, except as a result of underwriting, and shares ceased to be acceptable guarantees.

A month later, the Superintendency established specific guidelines to define self-loans⁶⁷, which also limited drastically the maximum volume of self-loans by business groups that would be allowed. If the scheduled limit was not met, the Superintendency would declare the bank in a state of "defficient management". The formal channel through which the Superintendency proceeded was to tighten the diversification requirement on loans, by redefining what an individual debtor was. This approach has confused some analysts, because the Superintendency seemed to be worried about diversification per se.

Before the new law, an individual debtor was a society or person. After the reform, an individual debtor included all the societies where the debtor had more than 50% of ownership or control, plus the prorated share of debts of societies where the debtor owned or controlled between 50% and 10%. Considering that a bank would be able to lend at most 25% of its capital to any one debtor, and that at the time self-loans were between 2 and 5 times capital for the largest business groups, this implied a drastic cut in the volume of allowed self-loans to business groups. For this reason, the package of reforms provided that the new limitation on self-lending would be required only from January first, 1982. In practice, only in February 8, 1982, banks were required to send to the Superintendency a list of debtors affiliated to the bank. There was no explicit timetable for adjustment at this time, so by default business groups were expected to disengage from self loans in few months only.

The reaction of the largest business groups to the new limitations was to evade them. They realized that under the new rules a participation of less than 10% in a society made it eligible for self-loans. Also, only direct ownership ties were considered in the official definition of self-loans. Therefore, the first reaction was to increase the density of the network of shell companies, in order to keep the direct participation of the group in shell companies at 9,9%.

In second place, the business groups adopted the tactic of continuous creation and dissolution of shell companies, which increased the difficulty of the Superintendency's task.

A third reaction of business groups was to link up and replace self loans for new loans to other business groups, in exchange for the same treatment by the other business

⁶⁷ Circular N° 1753, September 14, 1981.

group's bank⁶⁸. Although this was criticized at the time⁶⁹, it was inevitable given the excessive size of the self-loans. More deeply, this reaction at least allowed the Superintendency to rely partially on an independent risk evaluation: the one of the other business group. In effect, a sound business group would not want to engage in this linkage with an unsound business group.

A fourth reaction was to take advantage of the recent authorization to Chilean banks to lend abroad. The way to do it was for the Chilean bank to lend to a foreign person, such as a Cayman Islands society, which would bring the money back to Chile, and lend it to the other firms in the business group.

A fifth method of evasion was to use the authorization to establish bank subsidiaries abroad. Group Vial was the only one to use this route: Banco de Chile and Banco BHC, affiliated to Vial, established subsidiaries in Panama, Uruguay and New York. The panamanian subsidiary drew its funds from BHC's loans, and then lent directly to the other firms in Vial's business group. The uruguayan subsidiary got loans from Banco de Chile and then lent to the Vial firms in Chile. Of course, this subsidiary engaged in moral hazard against the uruguayan government too.

The evasion of regulation during 1981 allowed business groups to delay adjustment through the use of more debt. The study by Gálvez and Tybout (1985) finds that their corrected debt/equity ratio for large firms rose from 0.78 in 1980 to 0.89 in December 1981 for independent firms, while it rose from 0.92 in 1980 to 2.57 in December 1981 for firms affiliated to conglomerates⁷⁰.

In conclusion, the Chilean Superintendency achieved some reasonable loan classification ability during 1982, two years after it adopted the policies proposed by the State Supervision School. Tagle (1988) acknowledged that the difficulties in supervision ran deep even during 1982. For example, he states that even in 1983, one year after self-lending by the largest Chilean business groups had stopped, the Superintendency continued

⁶⁸ This practice was known as "back to back loans". The net effect is that the effective capital base of the banking system is smaller than what a case-by-case analysis would suggest. In the most favourable case, in which the loan to the other business group is secured by a lien on real assets that can be inspected by the Superintendency, the practice still allows business groups to sidestep the rule that bank capital must be supplied in cash or securities approved by the Superintendent.

⁶⁹ Some argued that this practice was due to collusion among the large Chilean business groups. However, this is incorrect, because evading regulation is privately profitable in an atomistic market as well.

⁷⁰ The last figure does not exclude outliers in their sample.

finding that loans that it thought had been given to independent parties were in fact self-loans. This led to a 10% real increase in the estimated volume of self-loans in 1983.

This documents how difficult it was for Chilean bank regulators to overcome the informational asymmetry in the case of self-loans by business groups.

4.4.4 Abuse of the informational advantage.

This section will review possible motives of the large business groups to engage in moral hazard or rollover of unrealized losses. The difficulties for supervision described above can be interpreted in two ways. The most popular is that the business groups attempted to evade prudential regulation to engage in moral hazard and rollover of unrealized losses. A theoretical alternative is that the business groups were forced to find a way to obtain the time required to reduce the stock of self-loans without having to pay excessive prices to the new creditors or to accept low prices when selling assets. The need for a timetable for disengagement from self-loans is clear from the fact that in June 1982 the Superintendency created a two-year timetable, which was extended in 1984 for six more years in acknowledgment of the fact that the 1982-1983 recession was much deeper than anticipated⁷¹.

It is critical to separate the analysis of 1981 from 1982, because in the latter year a steep recession - GDP fell 14.1% in 1982 - reduced the solvency of most Chilean firms, including business groups. For example, a finding that the debt/equity ratio of business groups was too large in December 1982 cannot be considered good evidence of moral hazard, because the recession may have wiped out the group's equity exogenously. One piece of evidence that would allow us to choose from these alternative hypothesis is a risk evaluation of self-loans versus ordinary loans, for 1981. However, the Superintendency has never published the information it had at the time, while business groups never published their consolidated balance sheet.

A complementary way to proceed is to check what happened to investment plans in 1981, in response to very high real interest rates. Gálvez and Tybout (1985) find that independent firms reduced the rate of addition to fixed capital from 7% in 1980 to -6% in 1981, while firms affiliated to conglomerates reduced it from 11% in 1980 to 8% in 1981. This means that firms affiliated to conglomerates adjusted their investment plans by too little in reaction to the rise in interest rates, and financed their continued expansion with additional debt. This suggests that business groups were not willing to submit to the requirements of disengagement of self-loans as soon as possible, because if that were true they should have reduced investment by much more.

⁷¹ See Tagle (1988) p. XV.

We review now if the speculative Chilean business groups had a good motive to engage in moral hazard, and in rollover of unrealized losses, in 1981. First, we check the feasibility of moral hazard. During 1981, overall local indebtedness increased substantially in the Chilean private sector, from 37.6% to 50.4% of GDP, as a counterpart of the accumulation of foreign debt. If we keep equity constant, this rate of growth of debt implies increases in debt/equity ratios from 2 to 2.7 or from 3 to 4. In 1981 there was also a steep rise in real interest rates that reduced equity substantially. The share price index in the Santiago Stock Exchange fell 27% in real terms during 1981. Assuming a conservative 15% reduction in asset values, we get that market-value debt/equity ratios rise from 2.7 to 6, and from 4 to 16. Clearly, after suffering these losses both moral hazard and exchange guarantee seeking may become a profitable mode of behavior, given the informational advantage enjoyed by business groups.

The evidence shows that the business groups took advantage of their informational advantage over bank regulators in order to be able to draw implicit government subsidies for speculating against a future devaluation, as other speculators did. Their informational advantage made the new guidelines on self-loans non-binding during 1981.

However, it is misleading to assert that self-lending was the main factor behind the excessive foreign debt accumulation experienced by Chile in 1981. Self-lending by the speculative business groups merely allowed them the extra bonus of continuing their investment programmes. The other effect of the informational advantage was to delay the effects of the new regulation. This delay allowed them, first, to avoid immediate unwinding of self-loans, and second, to draw on the government's contingent subsidy on foreign exchange and interest rate taking. The contingent foreign exchange and interest rate risk subsidy was being offered to other investors as well, and it was this what wrecked the macroeconomic balance.

We conclude that up to 1981, speculative business groups engaged in moral hazard only marginally. The business groups did not need to engage in moral hazard in 1981, because something better was available: to bet that there would be no devaluation and interest rates would fall shortly. Both moral hazard and contingent government subsidies require the debtor to come near the brink of bankruptcy by increasing leverage. The difference is that moral hazard implies drawing a contingent subsidy that the issuer did not want to issue, while contingent subsidies are willingly offered. Therefore, if the speculative business groups had used their waning informational advantage to avoid an hypothetical guideline that forced provisioning in account of foreign exchange risk and interest rate risk, then they probably would have chosen to engage in moral hazard. This was not the case in Chile in 1981, but as we will see, it was in 1982.

Now we check the feasibility of rollover of unrealized losses by abuse of the informational advantage implicit in self-loans. The question is the following: given that losses were large both for small entrepreneurs and for big business groups, did the latter

obtain special treatment by taking advantage of their informational advantage over the Superintendency ?

We believe that rollover of losses by business groups during 1981 and the first half of 1982 is a fact. However, it happened together with generalized rollover by all types of investors. Most analysts believe it was available to a greater extent to the groups' companies. However, this means that the share of self-loans in banks in early 1981 was smaller than the one documented below for June 1982.

The following table shows the level of self-loans and their evolution in the second half of 1982.

TABLE 13
SELF-LOANS AND ROLLOVER OF UNREALIZED LOSSES BY BUSINESS GROUPS

Business Group	Financial Institution	Self-Loans as % of Total Loans		
		June 1982	December 1982	February 1983
Cruzat-Larraín	B. de Santiago	44.1	42.3	45.8
	B. Colocadora	23.4	23.8	24.4
	BHIF	28.2	18.5	18.9
Vial-BHC	B. de Chile	16.1	18.6	19.7
	BHC	17.1	18.5	n.a.
	Morgan-Finansa	7.2	n.a.	6.8
Yarur	B. Crédito e Inv.	8.6	11.9	12.0
Errázuriz	B. Nacional	29.1	25.7	30.1
Edwards	B. de A. Edwards	15.9	14.9	15.4
Matte	BICE	4.0	4.0	5.5
Concepción	B. Concepción	17.0	12.2	12.0
Sudamericano	B. Sudamericano	13.0	14.8	16.2
Internacional	B. Internacional	20.1	16.9	25.9

Source: Información Financiera, December 1982, February 1983, July 1988.

This Table shows that self-loans were very high at the initial stage, but that they did not rise substantially in the second half of 1982. This means that the Superintendency succeeded in preventing business groups from using their informational advantage to roll over their unrealized losses in a preferential way in the second half of 1982. The reason is

that the Superintendency had, by this time, attained the ability to estimate the consolidated solvency of business groups.

We review now other regulatory problems related to the informational advantage of business groups, in other segments of the financial system. In 1982, the Cruzat-Larraín business group began to use its control of the mutual fund industry to channel the funds it obtained from thousands⁷² of small investors to lend to the groups' companies and holdings. The funds' shareholders were kept happy by the large increases in the prices of several securities held by the mutual funds. It was soon found out, however, that the group was manipulating the price of those securities, issued by the same group's firms. In addition, many of the mutual funds publicized their 1982 shift to fixed income securities, stressing the reduced risk, but shareholders failed to realize that these securities were mostly commercial paper issued by the group's largest companies, including some very indebted holding companies.

The larger firms of the group financed the rollover of unrealized losses through the sale of commercial paper to medium-sized⁷³ investors and to mutual funds. This raised real interest rates in commercial paper to very high levels by late 1982. The critical problem was that investors didn't have access to any estimate of the consolidated balance sheet of the main business groups, so they were unable to rely on a serious risk evaluation. Smaller investors and companies did not have access to this type of rollover of losses.

Unfortunately, the speculative business groups succeeded in fooling the public in the security markets, by drawing on the confidence the public had developed in well known company names. This happened even though the 1981 reforms to the Securities Law and the Joint-Stock Companies Law had restricted the scope for those practices. For example, the timely disclosure of relevant information was required of high company executives. Unfortunately, the Superintendency of Securities failed miserably in making sure that investors had access to the relevant information. As examples, it never required business groups to publish their consolidated balance sheet, and failed to generate enough information about the riskiness of the commercial paper sold by holding companies to mutual funds.

⁷² In December 1982 there were 131,017 shareholders at mutual funds.

⁷³ The minimum denomination for commercial paper had been set in 1977 in 350 UF.

4.4.5 The outcome: Takeover by the Superintendency of Banks.

We finish this section on self-lending by business groups by documenting the end of the two speculative business groups. In June 1982, using the new powers obtained in 1981, the Superintendency announced a new limit on self-loans to 5% of total loans, i.e. to 100% of capital and reserves. All banks were forced to present "Diversification Plans" within 45 days. The target would have to be met in five semesters, with the first 20% due by December 1982. Two weeks later, the target was changed to a complete ban of self-loans to shell companies, and the limit to self loans to productive⁷⁴ companies was reduced to 2,5% of total loans.

Apparently, the reason for this tightening was to strengthen the Superintendency in the negotiations it had opened with Vial's business group. The authorities wanted the payment of some of the debts owed to Banco de Chile with shares in the group's productive firms. However, Vial did not fulfill his commitments and refused to hand over control of Banco de Chile, opening a period of several months of hard bargaining. Nevertheless, Vial had lost effective control. The devaluation of the peso in this period made sure that his group was bankrupt.

Recall now that after the November 1982 Process of Solvency Definition, the authorities found that banks were unwilling to reschedule selectively on the basis of a case-by-case analysis of debtors, and preferred to roll over all loans. This put pressure on the authorities to stop rollover of losses.

In January 7, 1983, a large paper-pulp firm of the Cruzat-Larraín group announced it could not continue servicing its debts. The group had been unable to survive the recession on its own, and the only question left was if the authorities considered the group to be "non-viable" or "in problems". In the second case it would have deserved a rescheduling according to the November 1982 rules.

The authorities answer came in January 13, 1983, when the Superintendency took over the flagship banks of both speculative groups, and declared the forced liquidation of another three banks. The Finance Minister argued that the solvency of all banks had been reviewed with the risk classification procedure of the Superintendency, including the results of the Process of Solvency Definition of November 1982. They had found that banks clustered in three groups:

First, banks whose estimated losses were less than 100% of capital and provisions, so still had a positive net worth. Second, banks that had losses between 100% and 200% of

⁷⁴Means non-holding company.

capital and provisions. These banks were taken over because they had negative net worth, and included five banks: Banco de Chile (Vial), Banco de Santiago (Cruzat-Larriain), Banco Colocadora Nacional de Valores (Cruzat-Larriain), Banco de Concepción, and Banco Internacional (two other smaller business groups). Third, the institutions whose estimated losses were above 200% of capital and provisions were liquidated. These banks were Banco Hipotecario BHC (Vial), Banco Unido de Fomento (owned by a consortium of foreign banks) and financiera Ciga.

Of course, the estimate of solvency of these banks included an assessment of the solvency of the speculative groups. For example, Banco de Santiago's solvency depended of the estimated recovery of the amazing 45% of loans it had placed with its own business group.

At this point, a different element entered the analysis: the authorities had become convinced that the existence of business groups, where banks and productive firms were managed jointly, was one of the important sources of the excess debt burden in the Chilean private sector (see Lüders, 1985). This judgement was shared by other students of the situation (Díaz-Alejandro, 1985, p.13). The analysis of this paper has shown that this was not exactly the case, because a substantial part of the excess debt burden was caused by the implicit government subsidy to foreign exchange and interest rate risk taking during 1981. We agree however, with the diagnosis that the informational advantage of business groups could be countered in 1982, when the speculative ones clearly used it, only by takeover of the flagship banks and the main holding companies. They could roll over their losses to a larger degree than smaller debtors, which caused a part of the excess debt burden.

This was the analysis that led the authorities to complement the takeover of the speculative business groups' flagship banks (de Chile and de Santiago) with a planned acquisition of control of the large companies that had been controlled by these business groups. In practice, this control was achieved by a refusal to renew the thirty-day peso loans that these firms owed to their previously affiliated banks. This forced these industrial companies into bankruptcy proceedings, and the creditors' committees came to be dominated by the representatives of the flagship banks. In this way, the government took over the two speculative business groups, achieving an unexpected nationalization. The result for the banking system's balance sheet was the following:

TABLE 14
DELINQUENT LOANS AND BANK CAPITAL, 1983
(Billions of Chilean pesos)

Month	Delinquent Loans	Loans Sold to C.Bank	Capital &Reserves	Loan Loss Provision	Net Worth
Dec 1982	41.118	41.607	105.035	34.737	57.047
Jan 1983	47.704	37.535	102.941	35.753	53.455
Feb	86.650	37.514	103.105	47.201	26.452
Mar	103.667	37.548	103.105	48.934	10.824
Apr	110.592	38.524	103.115	50.480	4.479
May	116.889	38.480	103.254	53.549	1.434
Jun	126.867	36.915	104.277	55.367	-4.138
Jul	132.781	41.662	104.793	55.394	-14.256
Aug	109.144	71.343	105.869	52.512	-22.106
Sep	108.399	85.434	106.993	56.465	-30.375
Oct	90.024	112.095	107.462	55.465	-38.697
Nov	88.724	117.695	108.289	57.528	-40.602
Dec 1983	92.190	109.675	127.714	61.963	-12.188

Source: Información Financiera SBIF, several issues.

Some leaders of the two speculative business groups have argued that they should have been treated as smaller debtors "with problems" were, receiving a long term rescheduling financed with the concurrent subsidy. However, they forget that in order to claim subsidies from the political system one must not have committed abuses against other citizens.

In late 1982 and during 1983 the Chilean authorities had the information, the will and the power to stop rollover of unrealized losses and moral hazard. In the end, the speculative business groups proved to be no match for the Superintendency of Banks and the authorities. If the government had not offered willingly contingent subsidies for foreign exchange and interest rate risk-taking, the Chilean macroeconomic performance would have been much better in 1981-1983.

5. Lessons for Financial Liberalization and Prudential Supervision

The Chilean experience offers important lessons for both financial liberalization and bank regulation. We can divide them among two headings:

5.1 The specifics of the Chilean experience.

This paper contains the most detailed presentation of the Chilean experience allowing an assessment of banking policy over the different episodes and across different regulatory issues.

Dismantling the institutions of financial repression was not a simple task. The dynamics are complex, apparently leading to a high initial real interest rate, which falls over time. It is difficult to arrange the required degree of coordination in reform, as the failure of the Chilean Savings and Loans industry in 1975 shows.

A specific Chilean problem was the theoretical discussion about the appropriate framework for the banking system after liberalization. The group within the government that favoured free banking imposed its views in early 1976, and Chile experienced a full year of free banking because confidence in government deposit guarantees were shattered by the government's 1975 failure to honor promises to guarantee depositors in the Savings and Loans. An important lesson from Chile is that until significant evidence in support of free banking is accumulated, a realistic approach towards financial liberalization should assume that the goal is a banking system subject to prudential regulation by the government.

However, this group insisted on free banking after 1977, when it became incredible because of the government's support for depositors at five large financial institutions. Given this support, the only sensible route was to adopt prudential regulatory practices, but this was not done until 1980, after the Banco Español fiasco. Thus, three years of potential learning were lost, and the natural protection against moral hazard and rollover of unrealized loan losses offered to liberalizing financial systems by the quasirents earned during the expansion period were dilapidated.

Then, the failure to learn on time was paid for dearly in 1981-82. We find that the main culprits of the 1981-1983 bankruptcy of most of the Chilean financial system were the following:

First, the steepness and depth of the depression of 1982 and 1983, which by itself forced many debtors into insolvency, bringing down with them the banks. A GDP reduction of 14.1% in 1982, followed by another reduction of 0.7% in 1983 was obviously unexpected. Moreover, the rise in international real interest rates from 1.5% in 1980 to

10.7% in 1981, to remain high thereafter, were also critical to force into bankruptcy many Chilean firms. Other exogenous macroeconomic factors were influential too, like the fall in the terms of trade, and the overlending by international banks in 1979-81.

Second, the most important reason for the bizarre behavior of the macroeconomy in 1981 and 1982 was the willing offering by the government of guarantees on exchange rate and interest rate risk. The private sector took advantage of those guarantees, and this fed back into the macroeconomy, deepening the recession. These guarantees could have been withheld if bank regulators had had enough experience, and if private banks had been schooled in the discipline of risk evaluation and collateral control since 1977.

On the other hand, our detailed analysis shows that several purported regulatory problems in Chile 1974-1982 are mythical. The main one, a ponzi game through rollover of unrealized loan losses, was not present in 1978-1980, as many have asserted. However, it did become important in 1981 and 1982, though, because of the other problems listed above. In the same way, moral hazard by banks was simply not there in 1978-1980, but became increasingly important over 1981 and specially 1982.

The case of self-loans by business groups is more complex. This is certainly a pernicious practice, but for different reasons from the ones usually proposed. Up to 1980, the speculative business groups followed a financial policy similar to many smaller groups and individual investors', and went bust together with many of them. During 1981 the speculative business groups were able to use their informational advantage to delay the implementation of new rules that would destroy their access to self-loans, but engaged in little moral hazard and rollover of unrealized losses. To the extent that the two largest speculative business groups used their waning informational advantage over regulators to roll over their self-loans more freely than independent debtors, they worsened the real interest rate rise of 1981 and squeezed out more creditworthy independent debtors.

After mid 1982, the speculative business groups attempted moral hazard and rollover of unrealized losses in a big scale, but were promptly stopped by the bank regulatory authorities, who were able to take over them easily in early 1983. However, the speculative business groups used their informational advantage to dupe small investors in the security markets in the second half of 1982, forcing losses upon many of them.

5.2 A Program for Research

Among the most important points that require further exploration in the area of financial liberalization and prudential regulation are the following:

First, the dynamics of financial liberalizations are virtually unknown. We suggest the importance of asymmetric portfolio adjustment costs, and of the costs of market

development, in which we include learning by doing. The issue of coordination between the different reforms that conform a financial liberalization package is important also.

Second, experience shows that prudential regulatory issues are much more complex and varied than what the literature would suggest. We propose a framework for analysis that stresses the difference between structural contingent subsidies, moral hazard and rollover of unrealized losses. The dynamics of these types of behavior are virtually unexplored. They may yield interesting insights for banking policy.

Third, the complicating factors of incompetence of (some or many) private bankers and self-lending by business groups deserve special study, especially for applications to financial liberalizations. Learning by doing by regulators, banks and debtors may affect the dynamics fundamentally.

REFERENCES

- Acevedo, Julio (1983) "Evolución del Sistema Financiero en 1982", Información Financiera, SBIF, January.
- Arellano, José Pablo (1983) "De la Liberalización a la Intervención: El Mercado de Capitales en Chile: 1974-1983 " Colección Estudios CIEPLAN N° 11, December, pp. 5-50.
- Barandarián, Edgardo (1983) "La Crisis Financiera Chilena", Estudios Públicos, Santiago, October.
- Bosch, A.M., Emhart, A. and Giudice, M. (1986) "Concentración de Créditos en Deudores Vinculados a la Propiedad o Gestión de las Instituciones Financieras", Información Financiera, SBIF, August.
- Corbo, Vittorio (1985) "Reforms with Macroeconomic Adjustment in Chile during 1974-1984", World Development, August.
- Dahse, Fernando (1979) Mapa de la Extrema Riqueza, Editorial Aconcagua, Santiago.
- De la Cuadra, S. and Valdés, S. (1989) "Myths and Facts about Instability in Financial Liberalization in Chile: 1974-1983", First Draft, Instituto de Economía Universidad Católica de Chile.
- Díaz-Alejandro, C. (1985) "Good Bye Financial Repression, Hello Financial Crash", Journal of Development Economics 19, N° 1.
- Gálvez, J. and Tybout, J. (1985) "Microeconomic Adjustments in Chile during 1977-81: The Importance of Being a *Grupo* ", World Development, 13, N° 8, pp. 969-994.
- Harberger, Arnold,(1984) "La Crisis Cambiaria Chilena de 1982 " Cuadernos de Economía, Instituto de Economía UC, August 1984, pp 123-136.
- Harberger, Arnold (1985) "Lessons for Debtor Country Managers and Policy Makers", in International Debt and the Developing Countries, ed. by G.W.Smith and J.Cuddington, Washington D.C., The World Bank.
- Eyzaguirre, Nicolás (1988) "La Deuda Interna Chilena: 1975-1985 ", in C. Massad y R. Zahler, edit. Deuda Interna y Estabilidad Financiera Volumen II, Proyecto ECLAC/77/021, Grupo Editor Latinoamericano, Buenos Aires.

Edwards, Sebastian, (1985) "Stabilization with Liberalization: An evaluation of ten years of Chile's experiment with free market policies, 1973-1983" Economic Development and Cultural Change, N° 1, January .

Edwards, Sebastian (1988) "Monetarismo en Chile, 1973-1983: Algunos Dilemas Económicos", in Del Auge a la Crisis de 1982, edited by Morandé, F. and Schmidt-Hebbel, K., ILADES, Santiago.

Ffrench-Davis, Ricardo (1973) Políticas Económicas en Chile 1952-1970, Ediciones Nueva Universidad, Universidad Católica de Chile.

Gorton, Gary (1985) "Clearinghouses and the Origin of Central Banking in the United States", The Journal of Economic History XLV, N° 2, June.

Held, Günther (1989) "Regulación y Supervisión de la banca en la experiencia de Liberalización Financiera en Chile" (1974-1988) IC/R 758, May 3, ECLAC, Santiago, Chile.

Herring, R. and Vankudre, P. (1985) "The Moral Hazard Constraint on the Pricing of Deposit Insurance", Brookings Discussion Papers in International Economics N° 40, November.

Jeftanovic, Pedro (1976) "La evolución del SINAP durante 1974-76", in Comentarios sobre la Situación Económica, 2º Semestre, Taller de Coyuntura, Departamento de Economía, Universidad de Chile.

Johnson, Chalmers (1982) MITI and the Japanese Miracle: The Growth of Industrial Policy, 1925-1975, Stanford University Press, 1982.

Larraín, Mauricio (1979) " Regulación Financiera y Riesgo", Boletín Mensual Banco Central de Chile, Diciembre 1979, p. 5-32.

Lüders, Rolf (1985) "La razón de ser de la Intervención del 13 de Enero", in the magazine Economía y Sociedad, Segunda Epoca.

Marcus, Alan, (1984) "Deregulation and Bank Financial Policy", Journal of Banking and Finance, 8 , December, p. 557.

Mayer, Thomas, (1965) "A Graduated Deposit Insurance Plan", Review of Economics and Statistics, 47, February.

McCarthy, Ian, (1980) "Deposit Insurance: Theory and Practice", IMF Staff Papers, 27, September, p. 578.

McKinnon, Ronald (1988) "Financial Liberalization and Economic Development: A reassessment of Interest-Rate Policies in Asia and Latin America", Occasional Paper N° 6, International Center for Economic Growth, ICS Press, San Francisco.

Meigs, J. (1984) "Regulatory Aspects of the World Debt problem", Cato Journal, 4 (Spring/Summer), p. 105.

Merton, Robert (1977) "An Analytic Derivation of the Cost of Deposit Insurance and Loan Guarantees", Journal of Banking and Finance 1, June, p. 3.

Ramos, Joseph (1988) "Auge y Caída de los mercados de capitales en Chile: 1975-1983", in Del Auge a la Crisis de 1982, edited by Morandé, F. and Schmidt-Hebbel, K., ILADES, Santiago.

Tagle, Arturo (1988) "Control de Operaciones Bancarias con Conglomerados de Empresas Relacionadas", Información Financiera, SBIF, July.

Undurraga, Sergio (1974) "Política de Desarrollo de un Mercado de Capitales Moderno y Eficiente para Chile", in Estudios Monetarios III, Banco Central de Chile, July, pp. 41-63.

Schmidt-Hebbel, Klaus (1988) "Consumo e Inversión en Chile (1974-1982): Una Interpretación Real del Boom", in Del Auge a la Crisis de 1982, edited by Morandé, F. and Schmidt-Hebbel, K., ILADES, Santiago.

Valdés, Salvador (1989) "Orígenes de la Crisis de la Deuda: ¿Nos Sobreendudamos o nos Prestaron en Exceso?", Estudios Públicos N° 33, Verano, pp. 135-174.