

# Causes of the Chilean Financial Crisis in the 1980's

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## Introduction

The Chilean financial crisis of the 1980's is in many ways worthy of a concise scientific inquiry. Not only that there was socialist economic planning from 1970 to 1973, it was also replaced by unprecedented market reforms introduced by the Pinochet regime. It therefore raises the question what causes led to the meltdown of the Chilean financial system. Did market reforms fail to bring about everlasting change and prosperity into Chile?

The coup d'état by parts of the Chilean military, with the installation of the Pinochet regime in September 1973, acts as a historical structural break and it is therefore an appropriate point in time to start this inquiry. To date the beginning and the end of the financial crisis proves to be more challenging. With different definitions of a financial crisis come different time windows. It seems gainful to keep the temporal terminus of this paper in the blurry mid-1980's. To construct more robust time series it will be necessary to refer as early as to 1962.

The downfall of the Chilean financial system has already been subject of many economic and historic publications. A well-balanced presentation of the state of

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research can be found in Peter Montiel's monograph *Ten Crises* (2014). Montiel emphasizes the impact of financial market liberalization, the opening up of the capital account, and an overvalued real exchange rate (Montiel, 2014, p. 42). This paper will not reject the current state of research. Rather, it will shift the focus of the discussion.

Methodically, this paper will use a cliometric and contra-factual model to explain the stifling level of foreign borrowing in the Chilean banking sector. A more theoretical examination of the effects which this foreign borrowing exercised will be made by using the Austrian business cycle theory.

Statistical modeling will be done based on the quarterly International Financial Statistics of the International Monetary Fund (IMF).<sup>1</sup> The World Bank's statistics on commerce will help to supplement the statistical structure by adding important price statistics.

## **The evolution of the Chilean financial system since 1973**

Privatization of the Chilean banking system initiated in 1974 with the gradual denationalization of commercial banks, the dismantling of restrictions concerning the operational sphere of banks, and the relaxation of entry barriers for foreign banks (Parkin, 1983; Edwards, 1985; Magendzo and Titelman, 2008). In spite of the fact that this procedure was embedded in the general privatization strategy of the Pinochet regime, commercial banks were one of the very first institutions that were sold to the private sector (Edwards and Edwards, 1991, p. 96).

The denationalization of the banking system ended in a considerable concentration of banks in the hands of a few grupos.<sup>2</sup> In the year 1979, approx. 80% of the Chilean banking capital was concentrated in the balance sheets of these few

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<sup>1</sup>Cliometric modeling on a monthly basis is not possible due to incomplete statistical records of the IMF.

<sup>2</sup>Grupos are internationalized conglomerates that operate in different sectors of the economy.

grupos (Edwards and Edwards, 1991, p. 99).

This process implied two fundamental problems: First, the amalgamation of creditors and debtors under the same grupo caused a fall in the diversification of debtors. Grupos financed their own businesses with loans granted by their own banks. Second, single banks assumed a vital role within the Chilean economy because of their dominant market share and their interlinkage with most businesses in Chile.

This process was not a significant problem for the recovery of the Chilean economy. Although being highly cartelized, the Chilean banking system was not able to establish a monopolistic price structure since there was enough (potential) international competition after opening the economy and relaxing the entry barriers for foreign banks (Edwards and Edwards, 1991, p. 100). Liberalizing the granting of loans, respectively the operative business of banks, was the second cornerstone of the market reforms inside the financial system. The act of liberalization was carried out by abolishing quantitative restrictions on the granting of loans, limiting the role of the central bank, freeing interest rates, progressively lowering the minimum reserve specification, and by abolishing the restrictions on the level of foreign borrowing (Magendzo and Titelman, 2008, p. 298).

The preceding clarifications concerning the structure of the Chilean banking system should have rendered evidently that the banking system was operating under a high degree of cartelization and a gradual liberalization of loan granting. This could have had significant implications for the vitality of the system itself. As long as these banks were operating within a framework of market competition and market prices, the personal liability for losses should have prevented the accumulation of toxic credits by giving incentives to proper risk assessment and debtor diversification. The freeing of interest rates on deposits and loans in the year 1976 introduced a financial system that was in principle based on free market

prices.

However, in the year 1974, the Chilean government realized that the savings and loans institute SINAP (modeled after the American Savings-and-Loans) would fail due to an unhedged interest risk. In April 1974, the government reacted by announcing a government guarantee for the institute. Due to to the recession in 1974 and 1975, that was brought about by a windfall drop in the price of copper in 1974/Q3, the Chilean government lacked the financial resources to effectively save SINAP (Cuadra, Sergio de la and Valdés-Prieto, 1991, p. 75-76). After the government failed to put in practice its announced guarantees all further prevailing guarantees lost their credibility and therefore Chile entered a short-lived episode of free banking (Vittas, 1992, p. 13).

The end of the free banking experiment in Chile was brought about by January 6th, 1977. By that time the depositors and foreign creditors at Banco Osorno y la Union and numerous other smaller banks were bailed out while the concerned banks were recapitalized by the Chilean government (Brock, 2000; Cuadra, Sergio de la and Valdés-Prieto, 1990).

After Chile abandoned its short-lived free banking era, adequate banking regulations would have been necessary since government guarantees overrode the regulative mechanisms of the market economy. After Banco Osorno went bankrupt, the regulative framework was altered only marginally. Besides a strengthening of the financial and personnel resources of the banking supervision and the right to correct the book value of investments in the balance sheets of the banks, there have only been tougher restrictions concerning the capital base of financieras (Cuadra, Sergio de la and Valdés-Prieto, 1990, p. 43-44).

Chile's financial system was under a severe moral hazard that implied significant effects on the volume of loans granted and eliminated incentives to assess the risk taken by the banks. The regulative framework in act was appropriate

for a banking system embedded in a market system that relied on self-regulation by personal liability while in reality the very basis for a system as such was nonexistent.

The prevailing moral hazard was further augmented by two policies: Shortly after saving Banco Osorno, the Chilean government relaxed regulations concerning the level of foreign indebtedness. This paved the legal way to excessive moral hazard lending by means of mediating foreign credit. The second policy, augmenting the prevailing moral hazard, was fixing the Peso to the dollar. The fixed exchange rate acted as a government guarantee when banks engaged in mediation of foreign credit (McKinnon, 1999, p. 25) .

## **International capital flows into Chile**

Chile quit its short-lived free banking era by rescuing the failing Banco Osorno and other financial institutes while at the same time it missed the opportunity to adjust its regulative framework to the new realities. As a consequence, banks began excessive credit mediation whereby the foreign indebtedness of Chilean commercial banks reached a stifling level.<sup>3</sup> A question that remains, however, is why foreign creditors were willing to lend to Chilean banks. Government guarantees are only capable of explaining why Chilean banks engaged in moral hazard lending but not why other banks provided liquidity. The unique historical setting in Chile coincided with a high degree of international liquidity in the aftermath of the first oil price shock (Zahler, 1983, p. 512).

In order to test this hypothesis empirically, the deflated foreign liabilities of Chilean commercial banks up until the bailout of Banco Osorno will be investigated. Based on quarterly data since 1962, an Autoregressive-Integrated-Moving-Average (ARIMA) model will estimate a forecast for the subsequent time frame.

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<sup>3</sup>See figure 1.

If the prevailing moral hazard and the opening up of the capital account did not exert any influence on the level of foreign liabilities, the forecast should not deviate noticeably away from the actual foreign liabilities which should also linger within the 95% confidence interval.

Since the data is evidently not stationary and contains an exponential trend, the data needs to be transformed by taking its logarithm and must be differentiated at least once.

Although the time series' first difference oscillates around a constant mean and shows constant variance, some outliers before and after the coup d'état<sup>4</sup>, as well as the outcomes of the ADF-Test and the KPSS-Test, are worrisome. The fact that both tests are insignificant indicates the presence of a non-stationary process according to the ADF-Test (-2.8558) and the presence of a stationary process according to the KPSS-Test (0.19377). With recourse to the Lex Parsimoniae, a stationary process is assumed in order to avoid over-differencing the time series.

<b>Dependent variable</b>			
Name		Deflated foreign liabilities of Chilean commercial banks in billion Pesos	
Transformation		log	
<b>Coefficients</b>		<b>Model evaluation</b>	
AR(1) (s.e.)	0.4562 (0.1150)	AICc	-6.73
Drift (s.e.)	0.0315 (0.0195)	$\sigma^2$	.04728

*Table 1: ARIMA model specifications*

The ARIMA model (table 1) with the order (1,1,0) was estimated in order to give a forecast. It gives some evidence for the presence of moral hazard credit

<sup>4</sup>See figure 2.

mediation. Shortly after the bailout of Banco Osorno and the liberalization of the capital account, there has been an exponential increase in deflated foreign liabilities of Chilean commercial banks. In the long run, the factual time series passes over the 95% confidence interval.<sup>5</sup>

The model's residual diagnostics show no significant lags. Unfortunately, the residuals are not normally distributed and they seem to contain a unit root in the last quarters.<sup>6</sup> The residual diagnostics of models with different orders (not reported) support the finding that a (1,1,0) order is still the best order to choose. Non-normal errors might have serious implications for the confidence interval. An ex-post evaluation of alternative models proves that a (1,1,0) model gives the best point estimate. The point estimates of higher order models point towards the wrong direction and the confidence intervals are much wider.<sup>7</sup> Also, the model suffers from the characteristic limitations of a univariate time series model. The model could easily be criticized by pointing out that only one intervention (e.g. the relaxation of rules concerning the level of foreign indebtedness shortly after introducing the moral hazard) influenced the growing level of foreign indebtedness. It is for this reason and the technical shortcomings that the model stands or falls with its theoretical premises.

## **Economic implications of the capital inflows**

Although, the capital inflows delivered considerable benefits, for without them a recovery of the economic catastrophe that was brought about by the Allende government would have never been possible, its excessive volume, triggered by a moral hazard paired with an inadequate regulatory framework, brought along fundamental economic distortions. These distortions can be studied by using the

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<sup>5</sup>See figure 3.

<sup>6</sup>See figure 4.

<sup>7</sup>See figure 5.

Austrian Business Cycle Theory, represented by their most dominant exponents Ludwig von Mises and Friedrich August von Hayek.

In a nutshell, the Austrian Business Cycle Theory argues that a business cycle commonly starts with an expansion of credit, whereby the gross market rate lags behind the ordinary interest rate plus the positive price premium. This lag leads to a heightened demand for loans that will be used to expand the production facilities of businesses. The drop in the market rate of interest induces lower costs in the calculation for future investments, raising the profit expectations for new investments. When credit expansion ends and market rates raise towards the equilibrium rate of interest, production plans that seemed profitable before will prove themselves as unremunerative (Mises, 2007; Hayek, Friedrich A. von, 2012). A subsequent crisis is the correction of production plans.

<b>Year</b>	<b>Lending interest rate (%) in Chile</b>
1977	163.15
1978	86.13
1979	62.11
1980	47.14
1981	52.01
1982	63.86

*Table 2: Interest rates on loans in Chile. Source: World Bank*

An examination of interest rates (table 2) in Chile shows a common trend with the volume of credit in Chile<sup>8</sup>:

Perceived wealth and expectations in the future profitability of the existing production structure increased with an ever advancing volume of credit. Con-

<sup>8</sup>Please note that a finite distributed lag model can not be fit because interest rates on loans in Chile are only available on a yearly basis.

sumption expenditure increased and foreign savings substituted domestic savings without raising investments in capital goods above its persistent low level (Edwards and Edwards, 1991, p. 60). The gainers of this consumption spending boom were the construction sector, the commercial sector, and the financial sector (Condon, Corbo, and Melo, 1985, p. 381). Increased capital inflows directly affected the commercial and financial sector since commercial banks mediated the increased foreign indebtedness of the Chilean economy while a relative augmentation of imports (financed by foreign liabilities rather than equalizing exports) increased the number of import traders. Booming constructions in Chile might be seen as a typical symptom for cheap money. Falling market rates on loans made financing real estate much easier.

### **Chile in Crisis**

Crisis appeared to be an inevitable corrective action the longer the expansion of credit endured. How did the sudden end of the boom come about?

After fixing the Peso to the Dollar in 1979, Chile imported the monetary policy of the United States. The real appreciation of the Dollar to the currencies of Chile's major trading partners worsened the competitiveness of Chilean businesses on the world market (Valdés-Prieto, 1994; Magendzo and Titelman, 2008). The real appreciation of the Dollar was also accompanied by a consumption of American savings due to the loose fiscal policy of the Reagan-administration. Increased capital demand in the United States raised interest rates on the American capital market which led to a reversal in capital flows. Capital inflows into the United States increased while at the same time capital outflows dried up (Aldcroft and Oliver, 1983; Eichengreen, 2000). The following increase of interest rates in Chile revealed the misallocation of resources within the Chilean economy. Businesses that formally appeared to be profitable were not able to finance themselves

on the credit market and went into bankruptcy. 1982 by itself registered more than 800 bankruptcies in the private sector (Collier and Sater, 2004, p. 370). A second wave of bankruptcies happened in November 1981, when eight financial institutions were rescued by the government (Montiel, 2014, p. 32). The peak of the financial crisis was in January 1983, when the Chilean government bailed out several major banks and thereafter owned more than 50% of the banking system (Brock, 2000, p. 76).

The events of the Chilean financial crisis are very much in line with what the Austrian Business Cycle Theory says. Interest rates were depressed by excessive credit mediation and when credit mediation ceased it also ended the damping of the interest rate. Rising interest rates ended the Chilean credit boom and production plans had to be rearranged.

How could the Chilean banking sector become so vulnerable? The concentration process, that accompanied the process of denationalization, led to a close conjunction between private sector businesses and credit mediators. Loans were mainly granted to companies owned by the parent grupo (Harberger, 1985, p. 543). Little diversification of risk and practically non-existing risk assessment linked the survival of financial institutions directly to the survival of a small group of businesses. As soon as the huge number of toxic credits was uncovered, risk premiums surged and therefore no new inflows of capital could be lured into Chile.

## **Conclusion**

It has been shown that the roots of the Chilean financial crisis lay much deeper than in exogenous shocks. The foundation for the downfall of the Chilean financial system was laid much earlier. Government guarantees combined with a simultaneous liberalization of the financial system proved to be a toxic mixture.

It led to a massive expansion of credit by means of foreign indebtedness. Enterprises seemed lucrative due to the artificially low market rate of interest, that was below the equilibrium rate of interest, and were kept alive by toxic loans granted by banks belonging to the same parent grupo. The economic crisis was an inevitable correction towards market prices.

The question of whether market reforms failed to bring about everlasting change and prosperity into Chile has to be negated. Facts prove quite the contrary. The Chilean financial crisis was an adjustment of wrong price signals that were introduced by government intervention.

There is still historical research to be done. Studies concerning the corporate history of large Chilean banks could prove themselves as highly prolific. Such studies could expand our knowledge on the decision-making horizon of Chilean bankers and thereby help us to properly analyze the implications of the moral hazard. Also, more data is needed to construct sophisticated models. Multivariate models might be able to overcome the problems of this paper's ARIMA model.

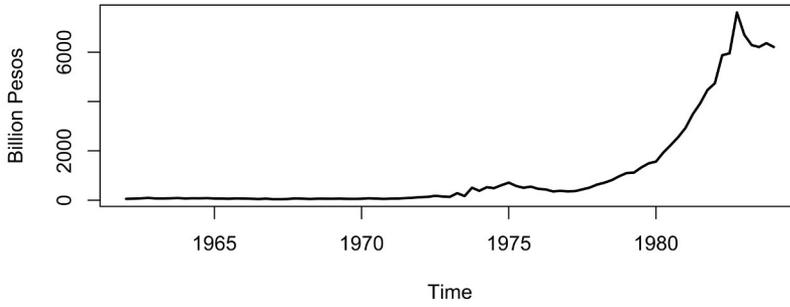
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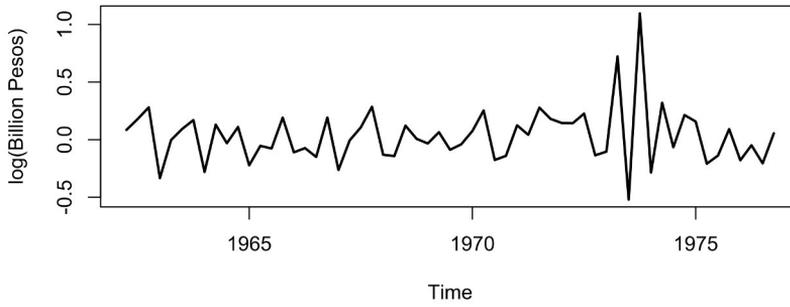
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### Appendix

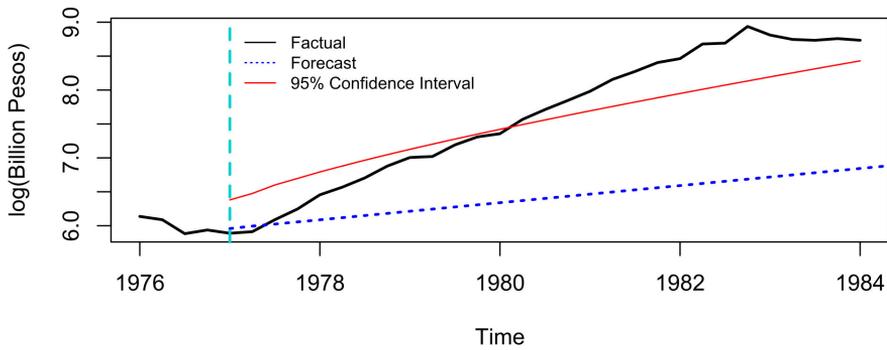
**Foreign liabilities of Chilean commercial banks in prices of 2008**



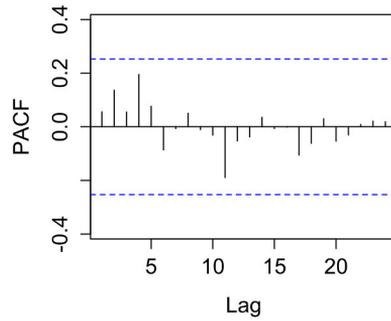
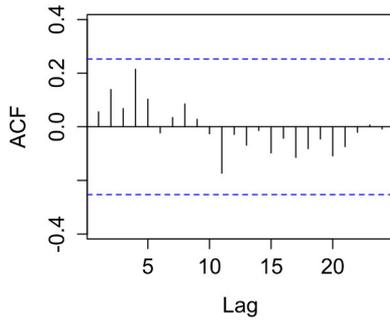
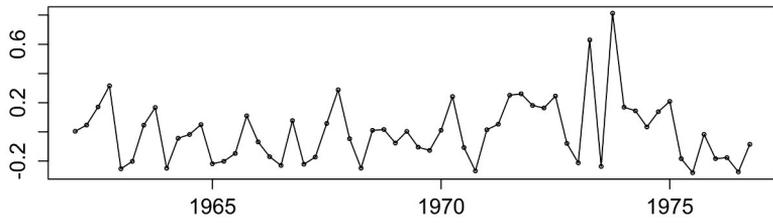
**1st difference of deflated foreign liabilities**



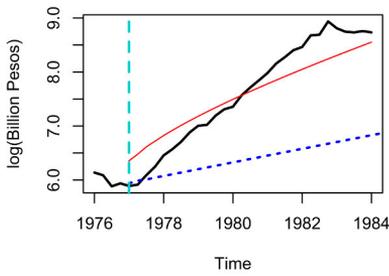
**ARIMA(1,1,0)**



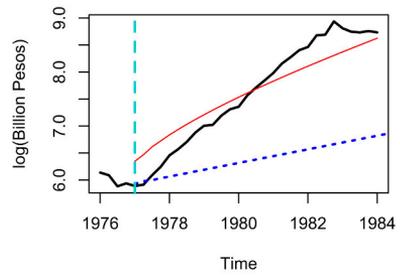
### Residual diagnostics



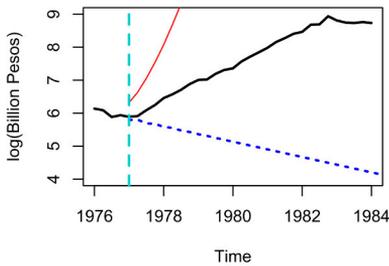
**ARIMA(1,1,1)**



**ARIMA(2,1,0)**



**ARIMA(1,2,0)**



**ARIMA(2,2,0)**

