Improving the banking system: the Chilean experience[1]

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Abstract

This paper presents some evidence on the current state of the banking system in Chile, with particular focus on the adjustments it must undergo to comply with the Basel II Capital Accord. We present some basic facts about the Chilean banking system and a brief international comparison. We consider separately local banks, the country's publicly owned bank and foreign banks, and present the evolution of some basic indicators of performance. The evidence shows some important efficiency gains over time. We also examine issues like the changing procyclicality of banks' lending and the changes in capital requirements which will result from the adoption of Basel II. The Chilean banking system is well prepared to implement Basel II, albeit in a gradual way.

I. Introduction

The development of the banking system over the past few decades has played a major role in Chile's macroeconomic performance. Similarly, the macro-financial stability that has characterized the economy during this period has enhanced the presence of banks as a source of financing, and has allowed an increasing diversification and flexibility in banks' loans, especially in the retail sector. On the other hand, exposure to credit, liquidity and market risks has remained limited, and more recently banking regulation has moved gradually towards a modern approach to risk assessment, in line with Basel II.

Until the mid-1980s, Chile was characterized by having a deep but poorly regulated financial system. It was not until the banking crisis of 1982-83 that some major financial reforms were introduced, building a sound financial regulatory framework that has remained at the core of the Chilean banking system up until now. Like other economies, during the 1990s Chile saw an important process of bank consolidation plus a steady incorporation of foreign banks. These two factors were crucial in improving operating efficiency and, with the sole exception of the Asian crisis aftermath, contributed to a process of increasing bancarization. During the last several years, competition among banks has increased, as the net interest margin has gradually narrowed and the higher willingness to lend has brought more financing alternatives to the retail market.

Prudential regulation has also improved. Since Basel I was implemented in Chile, banking regulation has progressively adopted a modern risk-management approach. According to the road map designed jointly by the Superintendence of Banks and Financial Institutions (SBIF) and the Central Bank, the gradual implementation of Basel II is expected to reduce capital requirements in the short term. Although these results are sensitive both to risk-weighted parameters and to operational risk, capital adequacy ratios are expected to remain high.

The purpose of this paper is to analyze some key features of the Chilean banking system during the past two decades. Section II describes the conditions under which the 1986 General Banking Law was established, starting from a brief description of the banking crisis of the early 1980s. Section III describes some characteristics and the evolution of the Chilean banking system during this period. It

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also addresses issues such as the presence of foreign banks, the role of the State and the more recent impact of monetary policy on the credit channel. Section IV deals explicitly with capital regulation and its implications for procyclicality. Section V concludes.

II. General background

In the late 1970s, Chile went through some major trade and financial reforms. The banking system was liberalized, leading to the elimination of controls on credit and interest rates and to bank privatization. However, this process lacked prudential regulation, which, in conjunction with the fixed exchange rate regime in place at the time, led to a rapid increase in bank credit to the private sector, especially to the non-tradable goods sector. Therefore, although there was no currency mismatch in the banking system's balance sheets, there was a mismatch in the sector banks were lending to (Cowan and De Gregorio, 2005), setting the stage for the country's worst financial crisis since the Great Depression.

During the late 1970s, domestic credit grew at an annual average rate of 40%, thus increasing banks' proportion of GDP from 8% in 1975 to 35% in 1980. The lack of supervision and regulation of banks during this period became evident when they began to take excessive risks, as credit to related parties reached 19% of total loans in 1982. There was also a presumption that the government would bail out the banking sector - a bank had been saved in the late 1970s and there had been public statements by the authority on the need to avoid bank failures - which contributed to banks' moral hazard problems and set the scene for the banking crisis that ensued. Actually, even though the deposit insurance system introduced in 1977 and 1981 was limited in scope, depositors behaved as if their deposits were fully guaranteed, searching for high returns without taking into account the risk involved. Therefore, banks increased their credit exposure and became extremely vulnerable to macroeconomic conditions. In fact, the external shock that hit in 1982, combined with the weaknesses of the Chilean banking system, along with the collapse of the fixed exchange rate regime, led to a deep currency and banking crisis. As a result, unemployment soared to almost 20% while GDP fell by 14% in 1982. Non-performing loans also went up to 9% of total lending in 1985 and banks' profits turned into losses of US$671 million. This led to a costly banking system intervention by the Central Bank, estimated at about 35% of GDP.[2]

As a consequence of this crisis, from 1983 to mid-1986, the authorities established a fully guaranteed demand and time deposit insurance scheme in order to prevent a bank run. Therefore, it was not until late 1986 that the general process of recovery actually began, leading to a new banking regulation framework. The General Banking Act (GBA), introduced at the end of 1986, set the basics for resolving the fundamental problems that had caused the crisis of 1982: improving supervision and prudential regulation by restricting lending to related parties and limiting the State guarantee on deposits.[3] The GBA's original basic framework is still in place, and is considered to be at the core of the current strength of the Chilean banking system. Additionally, the amended GBA of the 1990s upgraded the banking legal framework introducing capital adequacy requirements in line with Basel standards, and allowed banks to expand their activities and invest overseas, helping to consolidate and develop the banking system even further.

Besides the banking system reforms described above, the evolution of the banking sector during the past 20 years has benefited from the developments in the Chilean capital market that have taken place since the late 1980s. Furthermore, the whole financial system has taken advantage of the Pension Funds Reform of the early 1980s and of the sound fiscal policy that has characterized this

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[2] For details on the Chilean banking crisis, see Velasco (1991), De la Cuadra and Valdés-Prieto (1992), Valdés-Prieto (1994), Matus (1995), Held and Jiménez (1999), Sanhueza (1999), Barandiarán and Hernández (1999), and Hernández and Parro (2004).

[3] In the Chilean deposit insurance system, the Central Bank guarantees 100% of demand deposits in full, and 90% of household savings and time deposits up to UF 120 (approximately US$4,000). In this framework there is no permanent fund in place, therefore in order to limit the Central Bank's exposure, banks with demand deposits in excess of 2.5 times their core capital are required to maintain 100% reserves at the Central Bank in short-term central bank and government securities.

period. All this has increased the supply of long-term funding, helping to expand the banking system and other financial institutions, such as the domestic stock market, financial intermediaries and institutional investors (pension funds, mutual funds and insurance companies, among others).[4]

These developments have consolidated a solid financial system, making it comparable to those of other developing economies, as shown in table 1. In fact, as expressed by Moody's, the strength of the Chilean banking system is rated at the top among emerging markets and at a similar level to many industrial countries. The fifth column of table 1 shows a financial strength index for a variety of countries worldwide.[5] Chile is ranked at a similar level to some industrialized countries, like Italy, and above others, like Germany.

Table 1

Financial Deepening

Percentages

	Private credit/GDP	Stock market capitalization/ GDP	Turnover ratio	Private bonds/ GDP	Financial strength index
Latin America					
Argentina	12	62	6	10	0
Brazil	33	36	32	10	24
Chile	75	86	10	19	58
Mexico	18	18	21	3	42
Colombia	23	15	3	0	24
USA	**174**	**118**	**121**	**113**	**77**
Europe					
Italy	83	37	121	44	63
France	88	67	85	42	73
Germany	117	37	129	43	47
Spain	111	71	157	24	77
Czech Rep	30	18	52	7	41
Poland	28	15	27	n/a	31
Asia					
Japan	105	60	87	44	21
Korea	120	48	235	50	18
Malaysia	132	141	34	53	35
Philippines	35	40	9	0	19

Sources: World Bank, Moody's.

When taking into account indicators of the financial sector's size,[6] like private credit as a percentage of GDP, Chile is ranked almost as high as some developed countries, such as France and Italy (75% vs.

[4] For further details, see Cifuentes et al. (2002).

[5] Based on Moody's index of financial system strength, computed in May 2004, converted to an index from 0 to 100 by the IMF according to a numerical scale assigned to Moody's average rating by country.

[6] The data shown in table 1 have been updated with comparable data from the World Bank as of 2003.

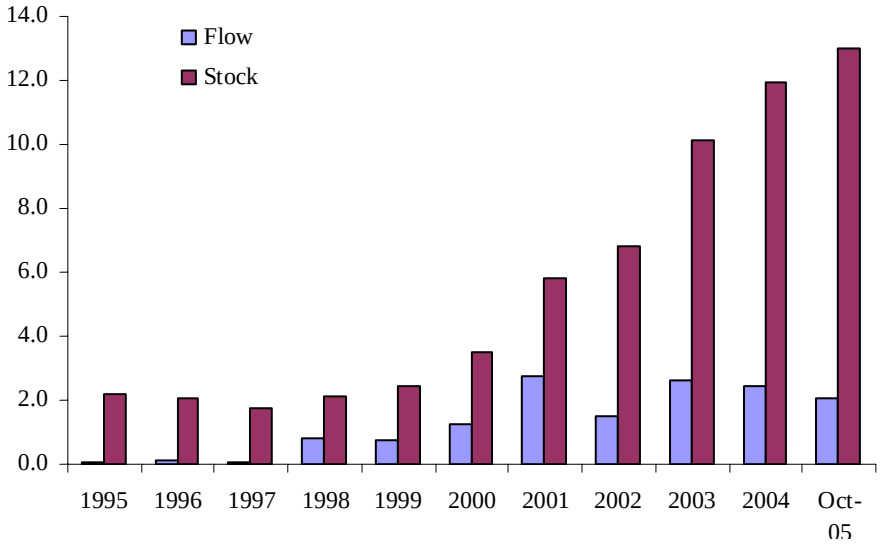
88% and 83%, respectively), and well above other Latin American economies. Stock market capitalization as a percentage of GDP is also high in Chile, above Spain, France, Germany, Japan, and all the other Latin American countries. However, turnover ratios are still relatively low, which indicates that the market is not as liquid as could be expected given the degree of capitalization.

The development of pension funds has also allowed Chilean firms to resort to domestic funding. Firms have been able to switch from foreign financing to internal and long-term loans. This has resulted in a healthier financial structure of Chilean corporations. As shown in figure 1, the Chilean corporate bond market grew from US$2.2 billion in 1995 to US$6.8 billion in 2002. Also, more recently, the low interest rates and low credit risk that have characterized financial markets around the world have forced institutional investors to reallocate their investment portfolios in search of higher yields. As a result, corporate bond stocks increased to US$10.1 billion in 2003, and to US$13.0 billion in October 2005.

Figure 1

Corporate Bonds

Billions of US dollars



Source: Superintendence of Securities and Insurance.

Therefore, as has been shown, the Chilean financial system has reached a high degree of development during the last two decades.

III. The Chilean banking sector: Where do we stand?

This section briefly addresses some of the important changes experienced by the Chilean banking system during the last two decades. We begin with a description of the current structure and the evolution of the banking sector and then examine the new risks faced by the financial system.

III.1 Structural changes and performance

The structure of the Chilean banking system has undergone deep changes in the past decades, characterized by significant entry of foreign banks and an increasing presence in retail credit. Currently, there are 26 banks established in Chile: 14 of them, one of which is state-owned, are

considered "domestic" and the other 12 are either branches of foreign banks or mainly controlled by foreigners.[7] Although the number of banks (both domestic and foreign) in Chile has decreased substantially since 1990, the market share of foreign banks has increased substantially in recent years (table 2), giving them a major role in the domestic and credit market. By the beginning of 2005, they accounted for almost 40% of total assets (equivalent to US$41 billion), compared with 16% in 1990, and 22% in the mid-1990s.

Table 2

Evolution of the Structure of the Chilean Financial System

	Number		% total loans		% total deposits	
	1990	2005	1990	2005	1990	2005
Foreign banks	22	12	15.2	39.0	16.3	39.4
Local private banks	17	13	66.5	47.7	64.1	44.2
State-owned bank	1	1	18.2	13.2	19.6	16.3

Source: SBIF.

The consolidation process that took place mainly between 1995 and 2002 heightened the degree of bank concentration. Presently, the three largest banks in Chile account for approximately 54% of total loans, and 55% of total deposits. This process of consolidation, however, has followed a similar pattern to that in other countries,[8] and has not prevented higher bank penetration and global integration.

Actually, the increasing role played by foreign banks in Chile has improved the efficiency and quality of financial risk management, laying the groundwork for enhanced competition through the introduction of technological innovations. Banks' funding structure has also diversified, contributing to financial stability.[9]

Tables 3 and 4 show some characteristics of the Chilean banking system for two different sample periods: 1990-99 and 2000-05. During this latter period, foreign banks became relatively more important in Chile. The two tables also classify each institution according to its ownership origin: private domestic, state-owned and foreign. As can be seen from table 3, interest rate margins have narrowed recently in all categories of banks, but profitability has remained high. The decrease in interest margins reflects not only higher competition, but also improved efficiency and lower credit risk. Efficiency has increased significantly while overhead costs as a percentage of net operational income has approached 50% in both private domestic and foreign banks.

The asset composition of the banking sector has moved towards retail credit. Loans to households have increased substantially over the last five years, mainly due to the strong growth in mortgage loans. Foreign banks have been particularly aggressive in this development, as almost 30% of their total loans are now aimed at the household sector, including personal loans, credit cards and mortgage loans.

In the search for higher returns, banks have eased lending conditions to the household sector. Higher flexibility in payment plans, longer loan maturities and the higher share of variable-interest-rate loans in the banks' portfolios have facilitated the process of bancarization in the retail market. It is important to note that financial stability has not been jeopardized by this process, since economic conditions and expectations have improved during the last few years, and interest rates have reached historical lows.

[7] All banks in Chile are subject to the same supervisory and regulatory norms.

[8] See Karasulu (2005).

[9] See Ahumada and Marshall (2001) for details on the Chilean banking industry's consolidation experience and IADB (2005) for several hypotheses about the role played by foreign banks in Latin America.

Table 3

Performance of Foreign and Domestic Banks in Chile

	Domestic				Foreign	
	Private		State-owned			
	1990-99	2000-05	1990-99	2000-05	1990-99	2000-05
Net interest margin (% of total assets)	5.0	3.9	4.6	3.3	4.1	3.7
Overhead cost (% of total assets)	3.2	2.6	3.2	2.9	3.0	2.6
Overhead cost (% of net operational income)	55.2	52.8	62.3	65.8	62.0	51.5
Loan-loss provisions (% of total assets)	0.9	1.1	1.0	0.6	0.7	0.9
ROA	1.8	1.3	0.6	0.5	0.9	1.6
ROE	25.5	17.6	10.2	9.4	7.6	16.7
Capital adequacy ratio		12.2		12.2		16.0
Asset structure						
% Loans to total assets	72.8	76.1	58.2	32.5	60.3	68.3
% Household credit to total loans	17.8	20.7	36.5	45.5	18.4	27.0
% Consumer to total loans	7.5	8.4	4.0	7.1	8.0	9.6
% Mortgage to total loans	9.8	12.4	32.5	38.5	10.5	17.4

Source: SBIF.

On the liabilities side, time deposits remain the most important source of financing (more than 40% of total assets), and their relative importance has even increased in the past few years, as more resources are now being channeled from institutional investors (particularly mutual funds) to the banking industry in the form of deposits. However, the banking system has also adjusted its funding structure over the past few years. In particular, the recent record-low levels of interest rates have allowed banks to adapt their financial structure in favor of issuance of long-term banking debt instruments (table 4).

Table 4

Foreign and Domestic Banks in Chile: Sources of Funds

Percentage of total assets

	Domestic				Foreign	
	Private		State-owned			
	1990-99	2000-05	1990-99	2000-05	1990-99	2000-05
Short-term treasury funding (*)	-5.9	-9.9	-32.7	-29.1	-14.4	-15.1
Time deposits	40.2	46	36.5	40.8	37.3	42.7
Demand deposits	9.1	10.9	17.6	16.4	8	9.8
Fixed-income securities	13.2	15.2	18.7	24.7	8.6	16.7
Others	15.4	14.9	11.1	8.4	19.1	15.9

(*) Includes net interbank funds, external lines less cash and securities.

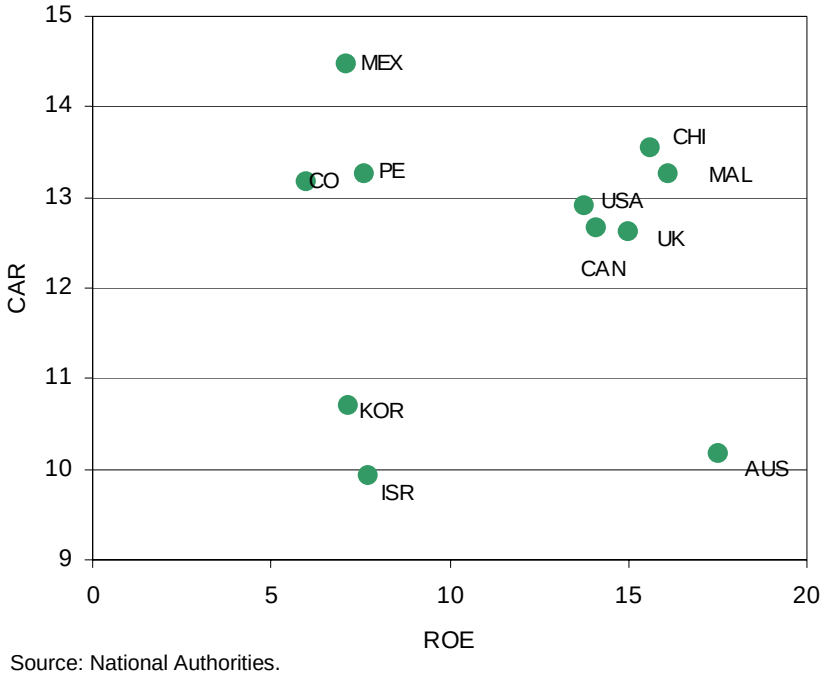
Source: Authors' calculations using SBIF data.

Above all, the Chilean banking industry has remained sound and profitable compared to other countries (figure 2). Its capital adequacy ratio (CAR) averaged 13.5% between 2000 and 2004, and all banks maintained a CAR higher than 10%, a figure well above the required minimum of 8%. Profitability has also remained high and stable, with the only exception being the aftermath of the Asian crisis. The average return on equity (ROE) in this period was 15.6%, in spite of the decrease in net interest margins. In fact, net interest margin, the main source of bank profitability, declined from 4.4% to 3.2% of total assets between 1996 and 2005 (figure 3). However, this decrease was partially offset by lower provisions and higher operational efficiency, allowing profitability to remain high.

Figure 2

Capital Adequacy and Return on Equity

Percentage, average 2000-04

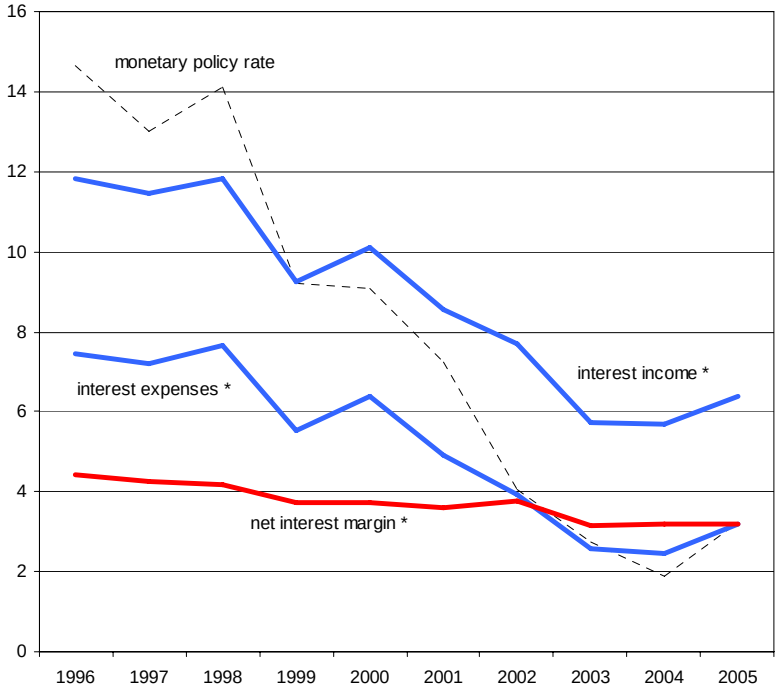


Source: National Authorities.

Figure 3

Monetary Policy Rate and Banks' Interest Margin[1]

Percentages, 12-month average at the end of each year



[1] Before August 2001, nominal equivalent monetary policy rate is estimated (see footnote 10).

(*) Percentage of total assets.

Sources: SBIF and Central Bank of Chile.

The nominal equivalent monetary policy rate has fallen steadily since 1996,[10] allowing the bank-lending rate to drop significantly during this period. In fact, the average interest rate earned by banks' assets decreased from almost 12% in 1996 to less than 6% in 2004. Although pass-through from the monetary policy rate and the banks' market rates has not been full, the Chilean banking system exhibits high flexibility in its bank-lending rate compared to other countries (see Berstein and Fuentes, 2003).

More recently, interest rates have started to increase as the Central Bank of Chile has begun to reduce the degree of its monetary policy expansion. However, the average interest rate has remained at a historical low, allowing bank loans to continue growing.

III.2 New forms of risk

As described above, the changes faced by banks, as well as the macroeconomic environment in which they have operated, have resulted in exposure to new and more complex forms of risk. Increased market volatility, contagion among financial markets, and increased competition among financial intermediaries are some of the factors that have contributed to these changes. This section briefly highlights some of the new forms of risk faced by banks and the financial regulation and infrastructure initiatives undertaken by the authorities in order to limit their incidence.

Contagion through the payment system

The payment system is an essential component of the economic and financial infrastructure, because it allows secure and prompt completion of transactions, a key condition for good economic performance. However, the payment system can also bring risks to its participants, and it can be transformed into a channel that spreads financial problems from one agent to the market at large. This possibility of transforming individual risk into systemic risk is related to the appropriate functioning of the payment system and constitutes a fundamental concern for central banks. Given that the volume of interbank operations in Chile has grown during the past several years, interbank payment risk exposure has also increased, adding new risks to the banking system. As a consequence, a series of initiatives to modernize the payment system have been adopted with a view to augmenting its efficiency and security. One of these initiatives was the implementation of real-time gross settlement and the Domestic Currency Large-Value Payments Clearing House (see Working Group on Payment Systems, 2003).

Increased use of derivatives

Derivatives allow banks to improve their management of market, credit, liquidity and operational risk. These instruments include a variety of financial contracts, such as forwards, futures, swaps, and options.[11] Although the use of derivative instruments is not new to the banking industry, their volume, complexity, and diversity have grown significantly in the past few years, adding new challenges to adequate risk management.[12] In this regard, banking supervisors have tightened control of bank operations with derivatives, and promote healthy practices such as: appropriate supervision, an integral process of risk management (sensible limitations, continuous measurement and information procedures), and internal controls, as well as an adequate measure of the capital base.[13] For that reason, in Chile, in order to ensure proper administration and control of market risk associated with the use of derivatives, sensitivity and volatility parameters used by banks must be authorized by the SBIF.

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[10] Before August 2001, the Chilean monetary policy rate was indexed to a price index (UF); we therefore added the inflation rate in order to compute its nominal equivalent and make it comparable to the monetary policy rate effective since then.

[11] Other negotiable instruments, such as implicit options, also contain characteristics of derivatives.

[12] In Chile, banks were authorized to sell options on currencies and interest rates in June of 2005, contributing to the development and enhancement of the Chilean capital market, and expanding the supply of currency and interest rate risk hedges.

[13] The amendment to the Capital Accord of 1988 (Basel I) incorporates requirements for capital associated to market risks and sets out a methodology to measure the risk related to positions in options.

Risk transfers

Recently, banking institutions have developed a growing number of mechanisms to transfer risk. Among others, the development of securitization and credit derivatives has favored the transfer of banks' operational and credit risks to other agents. Also, the increasing use of variable interest rates in mortgage contracts has shifted interest rate risk to households, transforming it into a bank credit risk, as households' payment ability decreases when interest rates increase. Consequently, banking supervisors have to be aware of the risks involved in each type of operation.

In this regard, a new regulatory framework was approved in January 2005. The new regulations gave banks better means of identification, measurement, and control of interest rate and currency risks. This new framework incorporated international standards and recommendations, such as the 1996 amendment to Basel I, and the 2004 recommendations on the administration and supervision of interest rate risks incorporated in Pillar II of the New Capital Accord (Basel II). It also allows the quantification of risks associated with maintaining open positions on options, and limits the exposure of available capital once the charges associated with credit risks are deducted.

Managing liquidity risk

In Chile, banks have faced additional challenges regarding their liquidity risk management due to the differences in their asset composition, and the growing presence of institutional investors in their funding structure (see Jara and Winkler, 2005). As a result, new norms on liquidity risk management were introduced in 2004 to promote better management, measurement, and control of liquidity risk. According to this new regulation, and in line with international standards, financial institutions now have to adopt and implement a "liquidity management policy" aimed at ensuring proper payment of obligations, not only in normal conditions but also in exceptional circumstances.

IV. Capital regulation: present and future

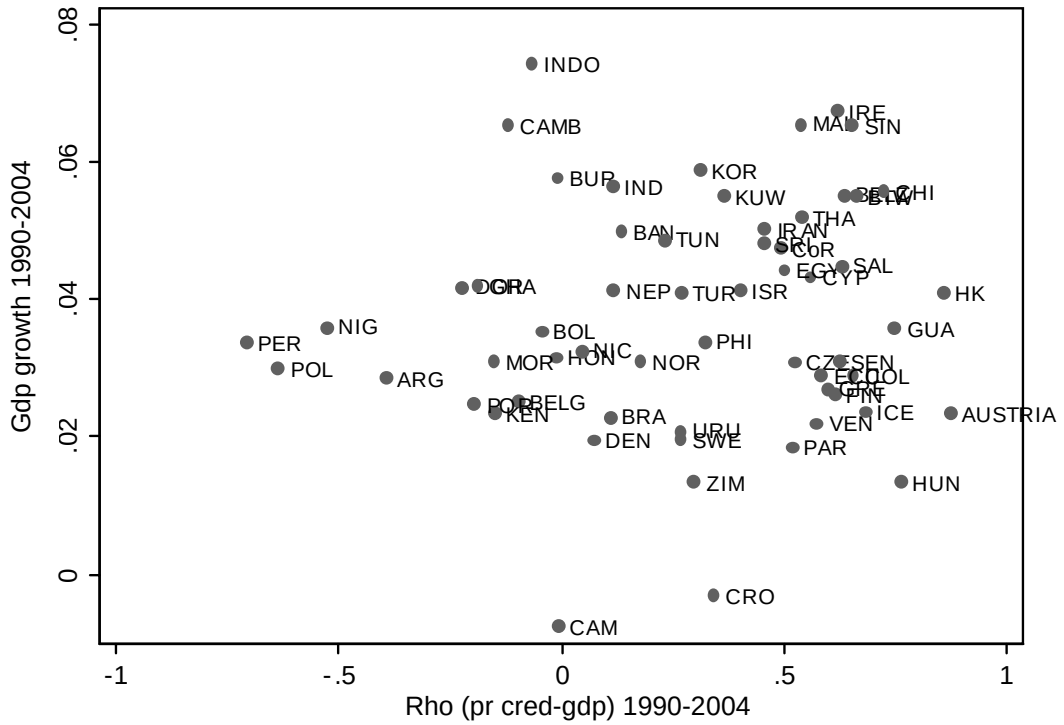
In the context of the new Basel II framework, two key issues are (i) whether implementing this new capital arrangement will result in less or more stringent capital requirements and (ii) the behavior of capital requirements across the business cycle. The first issue is relevant to evaluating the ability of the banking system to intermediate. The second is important because procyclicality of banking activities could make banks cut back on lending during recessions, amplifying the cycle. These and other issues related to the implementation of Basel II are examined in this section.

Before proceeding, it is useful to look at the facts. The literature has emphasized the concern that financial systems are extremely procyclical. Since risk is defined in many countries by accruals rather than by forward-looking criteria, banks tend to behave procyclically, i.e. reducing lending during recessions, which makes credit markets very volatile. In fact, if loans are perceived as risky only when the loss is already realized, banks will only start to build up capital to buffer such loss when it is too late. Therefore, given that losses are exacerbated during recessions, it is more costly to buffer them than during booms, so bank lending contractions have the potential to worsen the cycle.

Therefore, we should expect to find high procyclicality in the data. We measure procyclicality as the correlation coefficient between private credit and GDP (rho). As shown in figure 4, which includes developed and developing countries, most countries are concentrated in rho values from -0.5 to 1. However, most countries show a positive correlation. In fact, Latin American countries' correlations vary from -0.4 (Argentina) to 0.5 – 0.6 (Paraguay and Venezuela) and 0.8 (Chile). Figure 4 plots the correlation coefficient against GDP growth, from 1990 to 2004, using annual data. As shown in the figure, there is no relationship between the procyclicality of the banking system and GDP growth. As we argue below, because the banking system is more vulnerable during recessions, credit may, for prudential reasons, contract, while from a stability standpoint an expansion of credit would be desirable. This tradeoff is what could explain the lack of clear relationships between procyclicality and growth. Further explorations of the possible patterns followed by procyclicality are depicted in figures 5 to 7.

Figure 4

Procyclicality and Growth



Source: Authors' calculations using IMF data.

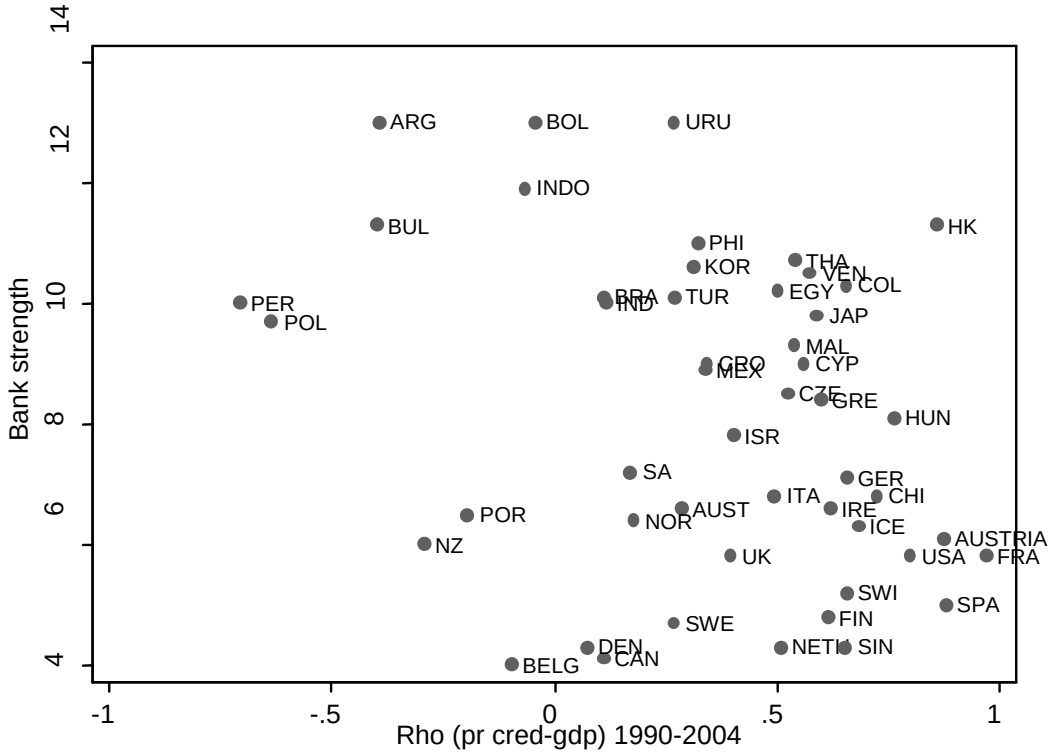
Figure 5 plots bank strength and the correlation coefficient, rho, showing that there is no correlation between these variables. Stronger banking systems are neither more nor less procyclical than weak banking systems. We explored other evidence as well, which is not documented here, and obtained the same results with regard to lack of correlation between procyclicality of lending and variables like inflation, GDP volatility and others.

Figure 6, in contrast, plots the relationship between procyclicality and credit market depth[14] for the same period (1990–2004), using annual data. It shows a positive correlation, i.e., procyclicality increases with deepness. Indeed, the banking systems in the most advanced countries, such as Hong Kong, Japan, the UK and Switzerland, are deeper, but also more procyclical. Interesting results are obtained for Latin American countries, which have less developed financial systems. According to the data in the graph, these countries should be less procyclical and, in fact, some of them even show negative indicators for procyclicality, like Argentina and Peru. However, other LA countries are highly procyclical, even if their banking systems are less developed. Examples of the latter are Colombia, Mexico, Paraguay and Guatemala. In these cases the banking system is neither a significant contributor to financing, nor to financial stability. Chile, in turn, is comparable to the US, showing high procyclicality (as do Switzerland and Hong Kong), though not as deep.

[14] Deepening is defined as private credit as a percentage of GDP.

Figure 5

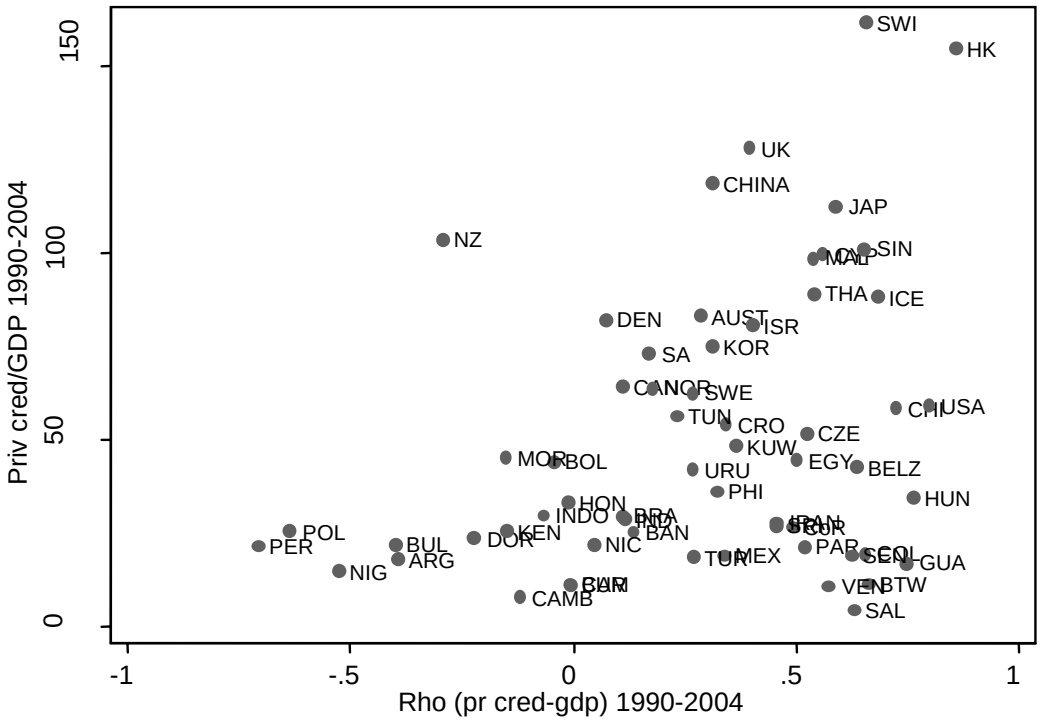
Procyclicality and Bank Strength



Sources: Authors' calculations using IMF data; Moody's (Dec 2004).

Figure 6

Procyclicality and Deepness of the Banking System

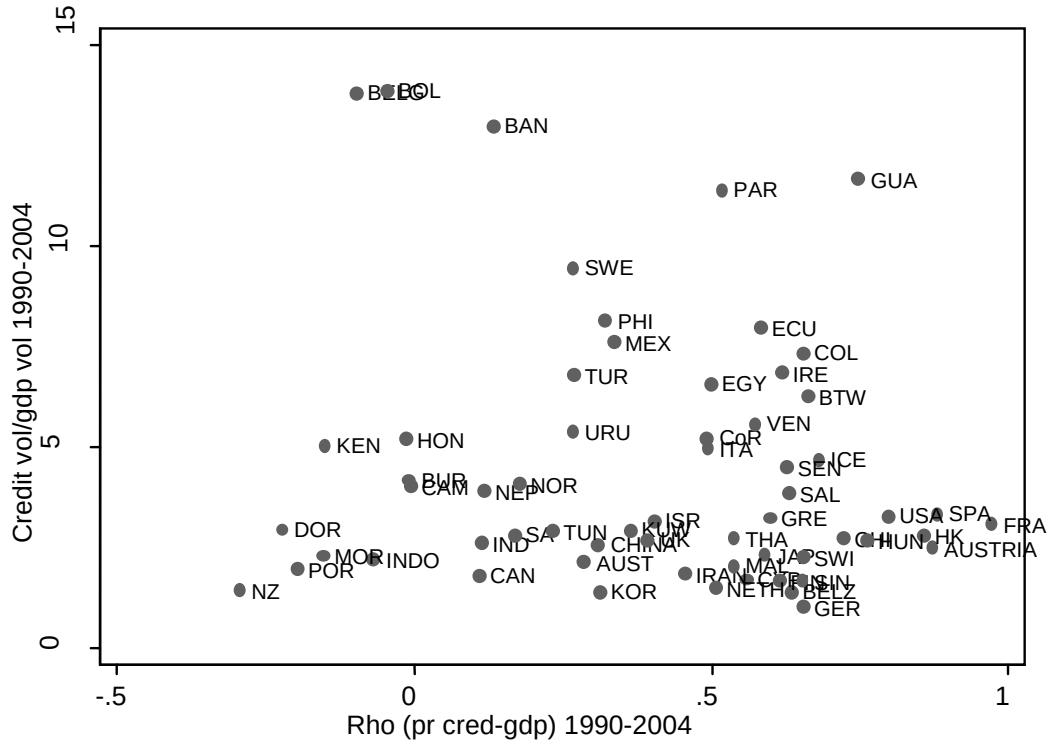


Source: Authors' calculations using IMF data.

Figure 7 plots the volatility[15] of lending relative to that of GDP against the correlation coefficient between lending and GDP. As shown in the figure, correlation between both variables is slightly positive and mainly driven by countries such as Guatemala and Paraguay. In principle, one could think that it is precisely procyclicality which adds volatility to output, although this is not strongly supported by the simple evidence shown here. Moreover, a more comprehensive analysis should consider the procyclicality of all available forms of financing.

Figure 7

Volatility and Procyclicality in the Credit Market



Source: Authors' calculations using IMF data.

Although the correlations presented here suggest, in particular, that procyclicality is unrelated to economic growth and that it would tend to be higher in countries with deep banking systems, a more definite assessment would require a more detailed econometric analysis. The following sub-sections show the impact of Basel II on procyclicality and point out some interesting issues to consider when implementing the new framework in Latin American countries.

IV.1 Expected impact of Basel II

The Basel II framework promises key advances in risk management and banking supervision around the world. It represents a substantial improvement on the existing Accord, but it is much more than just a new formula for calculating regulatory capital. It provides a comprehensive structure for dealing with risk management and banking supervision, and seeks to attain best standards and practices.

In the coming years, Basel II will become a global standard. It will be adopted by a great majority of countries: 88 out of 107 non G-10 countries have already expressed their intention to implement the framework. This high level of acceptance is common to all regions of the world.

[15] Volatility is measured as the standard deviation of the growth rate of the variable and the period in question.

The new framework requires fulfillment of certain prerequisites concerning the existing quality of regulation, supervision, and risk management. Prior to implementation, it will be necessary to establish an accurate diagnosis of the main issues already mentioned. In any case, a number of aspects must be examined, such as: the legal and regulatory framework; the supervisory system (risk-based vs. rules-based supervision); financial infrastructure (accounting and auditing rules); corporate governance in the banking industry; financial disclosure and market discipline.

The New Accord seems to have positive effects for financial stability, thus buffering the cycle and diminishing the procyclicality shown in the section above. We estimate the potential effects that a Basel II type of approach would have on the Chilean banking system, and compare it with the current requirements of Basel I. We focus on two corrections of Basel II with respect to Basel I. First, we correct by the new weights of mortgages and, second, we weight corporate debt by risk classification. Specifically, we estimate the capital adequacy index under Basel II, and compare it with the index under Basel I for the 1996-2005 period.

We use disaggregated information on rating agencies' rankings (as a proxy for the banks' internal ratings that will be used for the IRB approach[16]) to convert them into a probability of default (PD), using a fixed correspondence following Kashyap and Stein (2004).[17,18] The PDs are mapped into capital charges using the Basel Committee's formula. Then we use the same companies' level of debt with the banking system. Under this exercise, a corporate borrower may have a lower capital requirement than the current minimum of 8% if rated above BBB. If the corporate loan is not rated it will continue to maintain the minimum 8% charge.

Figure 8 shows that capital adequacy ratios would be higher under Basel II, thus reducing capital requirements. In addition, the correlation between capital adequacy ratios and GDP declines from -0.51 under Basel I to -0.60 under Basel II, supporting the thesis that improving risk management and bank supervision should diminish procyclicality of lending. In any case, as argued by Held et al. (2004), although Basel II could reduce minimum capital requirements, these results depend on the assumptions and weights used. However, when using assumptions and weights closer to the Chilean market experience, capital gaps tend to narrow. In addition, we do not incorporate operational risk into our calculations,[19] which would reduce the procyclicality of capital requirements as operational risk declines in periods of low economic activity. In any case, since Chilean banks hold high levels of capital,[20] the impact of Basel II is not significant.

One important issue arises regarding the risk classification of corporations: there is a clear disincentive for a corporate borrower to be rated if the rating is likely to be a poor one. This potential bias toward good ratings is more significant in Latin America, because the rating business is less developed, so it is not currently available for every firm. Ratings are usually associated to firms that issue public debt, typically corporations that are stronger financially. This bias, plus the fact that the majority of banks' portfolios are currently unrated, implies that this approach does little to link bank capital to risk.

The standardized approach also includes (not considered in the exercise above, except for mortgages) a set of specific changes in the Capital Accord that affects, in particular, the capital requirements on mortgages, retail exposure, lending to the sovereign in local and foreign currency, and lending to other financial institutions. Since it introduces lower charges on the first three (mortgages, retail exposure and sovereign), we would observe a larger reduction in capital requirements than the one presented here.

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[16] Although the most relevant options for developing countries are the standardized approach and the simplified standardized approach, we use the IRB, which is supposed to show higher reductions in capital requirements, so we are overestimating the effect of Basel II on capital.

[17] The mapping is as follows: AAA corresponds to a PD of 0.01%; AA to 0.03%; A to 0.07%; BBB to 0.23%; BB to 1.07% and B to 4.82%.

[18] We use standard mapping because of lack of data. Nevertheless, probabilities of default should be underestimated with this exercise.

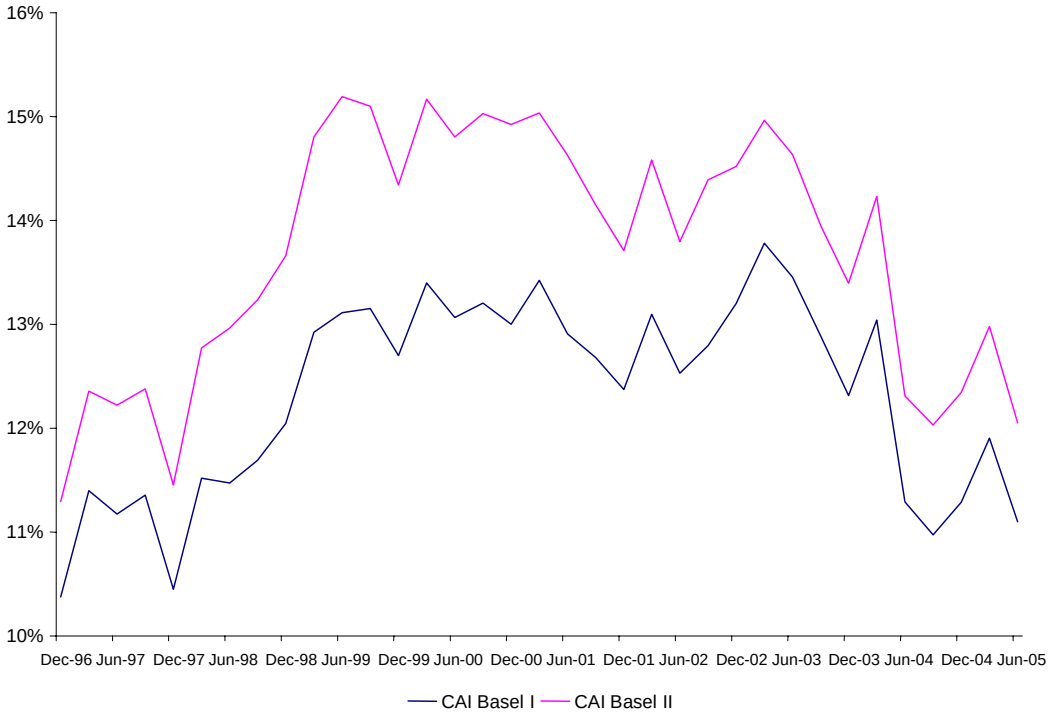
[19] The introduction of a specific capital charge for operational risk is made under Basel II. This will be an add-on to capital required for credit risk.

[20] Only one bank reduces the capital adequacy index marginally below 10% when extreme conditions are assumed.

Under Basel II, the risk weight for mortgage loans is reduced. Lending to the banks' own sovereign in domestic currency is free of charge, but lending in foreign currency requires weighting the loan according to the sovereign rating. Lending to other banks may increase capital requirements significantly, which allows a 20% risk weight charge if the loan term is shorter than six months.

Figure 8

Capital Adequacy Indexes



Source: Authors' calculations using SBIF data.

Some critics have argued that a cut in capital requirements may end up increasing vulnerability, hindering the recovery of defaulted credit. This criticism may have some relevance in the case of Chile. According to the World Bank (2004) Chile is weak in the recovery rate on business closures, with only 19 cents recovered for each dollar lost. The top 30 countries in the World Bank's ranking all have recovery rates above 50 cents on the dollar. This illustrates Chile's ineffective bankruptcy procedures. Moreover, the legal formalities related to doing business are relatively slow. Retail credit is highly concentrated and, therefore, there is a potential systemic risk that is not considered for capital requirements. The key for estimating the impact of Basel II has to do with the empirical effects of these potential risks. If we consider that the capital charge due to operational risk will reduce adequacy ratios, for most banks this should offset the effects of raising capital requirements due to the kinds of credit risk just illustrated: low recovery rates on business closures and concentration. In addition, as we argued above, it is unlikely that Basel II will affect capital requirements materially.

The latter issue is reinforced by international evidence for Latin America, such as Powell et al. (2004) and IADB (2005), which has shown a limited impact of Basel II implementation in the region. In Chile, for example, the QIS 3 exercise performed by the SBIF and documented in Held et al. (2004) yields that banks will reduce their capital requirement by approximately 3 percentage points (see table 5). These computations include operational risk. Only foreign banks will increase their capital requirement due to the higher impact of operational risk. In other Latin American countries (e.g., Brazil), the capital requirement will also decrease (0.9%). Only in Peru and Colombia will the capital requirement increase, although by a small percentage.

Table 5

Impact of the New Capital Accord

	RLM	Credit risk impact (%)	Operational risk impact (%)	Global impact (%)
Established banks in Chile	7	-13.4	10.2	-3.2
Foreign banks' branches	-	-11.6	12.6	1.0
Total banking system	7	-13.3	10.3	-2.9

Source: Held et al. (2004).

Therefore, going from Basel I to Basel II will require no big increase in capital, and the rise in the cost of capital due to a higher capital requirement will be limited. As shown in Powell et al. (2004), the spread may only experience a significant increase in Ecuador and Venezuela.

IV.2 Difficulties in implementing Basel II

Some problems that developing countries will encounter when implementing Basel II include: credit risk underestimation, overvaluation of credit risk mitigants (guarantees and collateral), under-provisioning, absence of capital charges for market risks, underestimation of capital requirements, accounting rules not aligned with international standards and lack of consolidated supervision. As suggested by White (2006), a heightened degree of cooperation between all agencies of government - and even private ones - would help to build a common culture, which would facilitate the solution of the problems mentioned above.

Asset risk varies over the business cycle. Risk assessment, whether based on credit rating agencies' rankings or internal ratios, reflects this procyclicality, possibly more so in the case of internal ratings, which typically do not attempt to assess risk "through the cycle". This procyclicality in ratings will create a similar procyclicality in capital charges, with the implication that banks hold less capital at the peak of the cycle - exactly when the danger of systemic crises is largest[21] - while they will hold too much capital or under-lend during the downturn when macroeconomic stabilization calls for an expansion of credit. Consequently, regulation not only renders bank crises more likely to occur but could also destabilize the whole economy by exaggerating fluctuations. This is why countercyclical macroeconomic policies are needed.

However, Latin America's capital markets remain underdeveloped, imposing an important restriction on the full implementation of Basel II: greater penetration of rating agencies and provision of adequate information are needed to strengthen regulation, which is also needed to allow the full implementation of the New Accord.

There is not only a shortage of rating agencies in Latin America, covering a small percentage of banks' total loans (table 6), but also a lack of regulation. Furthermore, the quality of rating agencies' credit risk estimates is uncertain.

[21] Because of the credit expansion during booms.

Table 6

Rating Agencies

Country	Number of agencies	Percentage of total loans granted to rated firms
Argentina	4	24.4
Bolivia	2	Non-significant
Brazil	5	18.0
Chile	4	18.0
Paraguay	0	-
Peru	4	Non-significant
Uruguay	3	Non-significant

Source: Central Bank of Chile.

In any case, the costs of implementing Basel II may be low, due to the active presence of foreign banking in a relatively concentrated system.

V. Concluding remarks

The Chilean economy has gone through a process of financial development with a sound banking system during the past two decades. By most international as well as historical comparisons, the banking sector's performance has been good. In the context of banking consolidation, as has occurred in many other countries, interest rate margins have declined and efficiency has improved. This has happened for all local and foreign banks and for the country's state-owned bank. Only foreign banks have increased returns in recent years, although the evidence shows that this is due to a reduction in costs.

Overall, the greater participation of foreign banks has brought efficiency gains. However, we should also mention the contribution of the one state-owned bank, whose performance is comparable to that of the rest of the banking system, but which has also acted as a promoter of competition. This has been particularly important in the household sector and with small and medium-sized enterprises. Perhaps the only important concern banks are facing today has to do with the greater exposure coming from the household sector. The banking system has also shown a response to monetary policy in line with the behavior observed in industrialized countries.

We have shown that when computing simple correlations between bank lending and output, the figure obtained for Chile appears to be relatively large. This would indicate high procyclicality. Although volatility is moderate, the evidence on procyclicality could indicate that the banking system could extend the amplitude of the business cycle. However, there are two caveats to this conclusion: first, these are simple correlations and more statistical analysis would be required to check the robustness of this finding; second, and more important, bank lending is not the only source of funding for the corporate sector. As we have shown, there has been an important development in the bond market in Chile, which could offset - or explain - the relative contraction in credit during the downturn. More research needs to be done to evaluate the implications of the behavior of the financial system for the business cycle.

One of the main criticisms of Basel II is that its application could exacerbate procyclicality, which in turn might deepen volatility of output, in particular in developing economies. However, we have shown

that the implementation of the New Accord should diminish capital requirements and procyclicality should be reduced. Additionally, operational risks should stabilize capital requirements via their countercyclical effect. Measuring operational risk is always complex, especially in developing countries, thus giving another reason for careful analysis. In the case of Chile, we presented evidence that the banking system has tended to hold more capital than required, which should reduce the impact of the changes in the index of capital adequacy over the cycle. We have argued that the Chilean banking system is on solid ground to follow a gradual implementation of Basel II.

From a stability point of view, one might prefer banks to expand lending during recessions. But this could be achieved only at the cost of increasing financial vulnerability. Indeed, regulation should be forward-looking, but downturns generally bring bad news about the future; hence, it is reasonable to expect more cautious behavior and tighter regulation during downturns. At a deeper level, it is not the banking system that is in charge of stabilizing the economy. Indeed, what is required is a set of sound fiscal and monetary policies. In Chile, the fiscal rule based on a stable cyclically adjusted fiscal balance, together with an independent central bank with the goal of maintaining price stability, which it implements through an inflation target and a flexible exchange rate, have proved to be a good cushion for the business cycle.

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