

Basel III in Chile: Advantages, Disadvantages and Challenges for Implementing the New Bank Capital Standard

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Abstract

Even though a growing number of emerging countries are implementing the Basel III recommendations on bank capital, this is not yet the case in Chile, a financially sound economy that has not undergone a banking crisis since the 1980s. This paper analyzes the relevance, advantages and challenges that the Chilean financial system would face if the new international standard were implemented. One conclusion is that there are two substantial reasons to implement Basel III: (a) the need to avoid major regulatory discrepancies between domestic and foreign banks, considering that the parent companies of European banks operating in Chile are already implementing Basel III, and (b) the need for tools, such as the Basel III countercyclical capital buffer, to prevent credit booms. A second conclusion, based on simulation exercises, is that if Basel III were implemented, Chilean banks at an aggregate level would comply with the Basel III recommendations regarding total

capital ratios, but would have a moderate capital deficit to comply with the Tier I Capital Ratio (which includes only higher quality capital). This leads to the recommendation for a more detailed analysis at the level of individual banks. A third conclusion is the need for gradual implementation of the new standard, in the current context of a less favorable international environment affecting Chile and other emerging countries in the short and medium term. Finally, further analysis is recommended to determine which Basel III recommendations should be *adapted* (rather than adopted) to the Chilean context. One example is that it would not be appropriate to use the reference indicator suggested by Basel III (deviations of the credit/GDP ratio from its trend) in order to activate (or deactivate) the countercyclical capital buffer since it could lead to an increased pro-cyclicality of capital requirements – precisely the opposite of what Basel III intends.

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I. Introduction

One of the main lessons learned from the 2008 international financial crisis is the need to strengthen the regulatory framework governing the operation of banks and other financial institutions. Although the reasons behind the 2008 crisis are multiple and even debatable, there is agreement on the role of regulatory and supervisory shortcomings in generating the global crisis. Within this context, in December 2010, the Basel Committee on Banking Supervision (BCBS), a body in charge of designing and proposing international standards to increase the soundness of the banking system, made a series of recommendations which were compiled in the document entitled *Basel III: A Global Regulatory Framework for More Resilient Banks and Banking Systems*. The recommendations on bank capital are a central component of the new regulatory framework proposed in Basel III.¹ These recommendations make major changes to the capital standard established in Pillar I of Basel II (proposed by the BCBS in 2004 and enacted in many countries during the international financial crisis).²

The number of countries undergoing the process of incorporating Basel III recommendations is increasing. For example, in July 2013, United States' Federal Reserve approved a new regulation on capital requirements in line with Basel III. Furthermore, the new European Capital Requirements Directive (CRD IV) is already in force and includes even stricter regulatory requirements than Basel III. Finally, Brazil, Colombia, Mexico and Peru are some Latin American countries that are making progress in implementing the new regulatory capital standard.

Capital requirements in Chilean regulation currently follow Basel I recommendations (although the Central Bank of Chile has issued supplementary regulations which include some aspects of Basel II and III). Full implementation of Basel III would require amendments to the General Law of Banks. Within this context, the aim of this document is to analyze the relevance, advantages and challenges that the Chilean financial system would face upon implementing the Basel III recommendations on capital.

The rest of the document is organized as follows: Section II provides an overview of the analytical grounds supporting the new Basel III recommendations on capital. Section III examines whether the regulatory change involved in implementing Basel III is *relevant* in Chile, a country which, unlike many other Latin American countries and developed countries affected during the international financial crisis, has not undergone a banking crisis for over three decades. Section IV identifies the potential advantages and disadvantages adopting Basel III guidelines would pose to the strength and competitiveness of the Chilean financial system. Section V analyzes the challenges that Chilean banks and their supervisors would face if the new capital standard were implemented. It presents a numerical exercise which

¹In addition to the recommendations on regulatory capital, Basel III introduces a new standard on international liquidity.

²In contrast to the changes it makes to Pillar I, Basel III makes only minor changes to Pillar II (banking supervision processes) and Pillar III (improvements in the role of market discipline) of Basel II.

endeavors to answer the question: Is Chilean banking capable of complying relatively easily with the Basel III minimum capital requirements or would it have to increase its capital holdings significantly to comply with the new regulation? Section VI discusses the dilemma of *adopting* versus *adapting* Basel III through a quantitative analysis of one of Basel's specific recommendations: the countercyclical capital buffer. Section VII presents the conclusions.

II. Basel III: A Macroprudential Approach to Regulation

The analytical framework underpinning the Basel III recommendations is based on the acknowledgment that a *microprudential* approach to regulation (according to which banks must correctly evaluate the risks in their *individual* portfolios) is not sufficient to guarantee financial *system* stability. Under the *microprudential* approach, the regulatory framework evaluates indicators which reflect each bank's financial strength separately. Capitalization is a core indicator and, following the Basel I and II recommendations, it is measured by the *capital/risk-weighted assets ratio*. The contribution of the *macroprudential* approach is in trying to minimize the macroeconomic costs of severe problems in the financial system. In particular, it aims to prevent credit busts from emerging *on a systemic level* due to problems in the banking system, as this would in turn lead to contraction in economic growth.

As described in Borio (2009), the macroprudential approach has two dimensions: (a) a cross-sectional dimension across banks resulting from common risk exposures among banks (whether they are directly exposed to the same asset classes or to interconnectedness) and (b) a temporal dimension resulting from the evolution of risk during the business cycle. This second dimension is explained by the fact that during *good times*, when the economy has sound growth rates, risks tend to be perceived as low. This gives incentive for excessive credit expansion, which can debilitate the financial system when the business cycle reverses and economic activity slows down. During the slowdown period, the credit portfolio tends to deteriorate and banks tend to limit credit expansion, which in turn reinforces economic slowdown. This is why bank credit is said to be pro-cyclical.

How do Basel III recommendations on capital relate to the macroprudential approach? They do so in three ways as discussed below.³

First, *under the new regulatory standard, great emphasis is placed on capital quality, not just on capital quantity*. Basel III defines *better quality* capital (called Common Equity Tier I Capital) as consisting common shares and accumulated reserves as these are assets with the greatest capacity to absorb unexpected losses. In contrast to Basel II and its long list of assets qualifying as Tier I Capital (which proved ineffective in absorbing losses during recent financial crises in developed countries), Basel III is very strict in the definition of assets that qualify for this category. The emphasis on capital quality is entirely consistent with the macroprudential approach because, by recommending that most capital be maintained in high quality assets, it minimizes the likelihood of *systemic* banking crises (and the consequent

³For a similar discussion, applicable not only to capital requirements but also to countercyclical provisions, see Galindo and Rojas-Suarez (2011).

credit contraction at the aggregate level) and the fiscal cost of resolving them (when they cannot be avoided).

Second, in addition to the recommendations for improving capital quality and quantity, Basel III proposes reforms for counterparty risk hedging, including those related to exposure for operations with derivative instruments. For this purpose, Basel III recommends implementing a metric called *Expected Positive Exposure*, which enables improved measurement and manages counterparty credit risk better by using stressed parameters. These recommendations are in line with the cross-sectional dimension of the macroprudential approach.

Third, Basel III recommends adopting a capital component that evolves over the business cycle. This component, called *the countercyclical capital buffer*, is a capital surcharge added in recognition that during major financial disturbances, demand for bank shares drops dramatically. In other words, although improvements in defining which assets are considered high quality capital *reduce* the likelihood of severe credit contraction during *bad times*, these improvements may not be enough to *prevent* these credit contractions entirely. Thus, following a macroprudential approach, Basel III recommends accumulating additional capital during *good times* (beyond the minimum needed to maintain adequate banking operations in absence of adverse shocks) to absorb expected losses during *bad times*.

The following is a summary of Basel III capital requirements:

Table 1: Basel III Capital Requirements (in percentages)

	Common Equity Tier 1	Tier 1 Capital	Total Capital
Minimum	4.5	6.0	8.0
Conservation buffer	2.5		
Minimum plus conservation buffer	7.0	8.5	10.5
Countercyclical buffer range	0 - 2.5		

Source: BIS

In line with the above discussion, even if the minimum capital requirement is still 8%, Basel III introduces two major innovations to Basel II. The first is that two new buffers are added: the conservation buffer and the countercyclical buffer, which can be used during periods of financial stress. The second is that it recommends that most regulatory capital should be maintained as Common Equity Tier 1 Capital (7% out of 10.5% of total capital, excluding the countercyclical buffer). Both recommendations are fully aligned with the macroprudential approach to banking regulation.

III. Is It Relevant to Apply Basel III in Chile?

The Chilean banking sector is one of the most highly developed and deepest in Latin America. As shown in Table 2, its credit-to-GDP and deposits-to-GDP ratios are much

higher than the Latin American average, comparable only to Brazil. Moreover, after Costa Rica, it is the country in the region whose credit-to-GDP ratio has undergone the highest *continuous* growth (22 percentage points) since the 1990s.

Table 2: Financial Depth Indicators in Latin America

	Deposits/GDP 1/			Credits/GDP 1/		
	Average 1990-1999	Average 2000-07	Average 2010-13	Average 1990-1999	Average 2000-07	Average 2010-13
Brazil	56%	45%	55%	56%	32%	64%
Chile	49%	48%	45%	49%	64%	71%
Colombia	26%	16%	22%	26%	23%	36%
Costa Rica	14%	20%	23%	14%	33%	48%
Mexico	21%	21%	27%	21%	14%	20%
Peru	16%	24%	31%	16%	20%	27%
Uruguay	28%	44%	40%	28%	38%	24%

1/ Excludes the years 2008-2009; period that corresponds to the international financial crisis

Source: IFS, IMF

Moreover, in terms of the overall financial system, Chilean banking shows adequate solvency, liquidity and efficiency indicators. It is important to highlight that unlike the rest of Latin America, Chile has not experienced systemic banking crises since the 1980s.

So, why consider applying Basel III capital requirements? Are these recommendations relevant to a financial system that has been stable for over three decades? There are several fundamental reasons to consider applying this new international standard. Three of them are discussed below.

1. The fundamentals for implementing Basel III capital recommendations are present.

Changes in regulations affecting bank capital (as well as other financial system indicators and operating modes) can only be effective if the bank supervision system is able to monitor and ensure regulatory compliance and if the set of rules complement each other. In addition, other economic and institutional factors must support and strengthen regulatory goals. For example, in countries with weak judicial systems, regulations are less effective because there is no guarantee that judges' rulings are in line with regulatory goals. Likewise, in countries with serious macroeconomic imbalances there are no strong incentives to invest in local stock markets, including bank shares which, as mentioned above, are the most important component in the Basel III recommendations for regulatory capital.

Under these considerations, how well positioned is Chile to consider implementing Basel III? From the standpoint of supervisory capacity, the International Monetary Fund (IMF)

recently concluded that the Chilean supervisory system is sound.⁴ Although there are some major areas that need reinforcement (such as independence and legal protection of regulators, and consolidated supervision), Chile meets most of the *Basel Core Principles for Effective Banking Supervision*.⁵ In particular, its accounting, auditing and financial information reporting systems follow international standards; the rules on provisions for expected losses on bank loans are considered to be of very high standard and bank rating is based on a risk-based supervision framework. Furthermore, in 2013 the Superintendency of Banks and Financial Institutions (*Superintendencia de Bancos e Instituciones Financieras, SBIF*) introduced new rules to improve corporate governance practices at its supervised institutions.

It is important to highlight that Chilean authorities have begun analyzing/implementing Basel III recommendations on *liquidity* indicators. These recommendations are *complementary* to the recommendations on capital. As discussed in Section II, both sets of recommendations are based on a macroprudential approach to financial regulation and supervision, and are thus based on similar principles. However, it is also important to note that the current process of public consultation about proposed Chilean regulations regarding liquidity indicators could identify major challenges for certain banking segments. The challenges identified will need to be considered by the authorities before the regulations are finalized and will provide important lessons to take into account if it is decided to implement the Basel III recommendations on regulatory capital. This will be discussed in greater detail in Section V.

Regarding the macroeconomic position, even though Chile's growth projections have declined for 2014-15 compared to previous periods, partly due to the deterioration in the terms of trade as a result of the drop in copper prices, it is undeniable that Chile (along with Peru and Colombia) has one of the best economic fundamentals among Latin American countries. One way to reach this conclusion is by answering the question: In the event of a negative external shock (e.g. an increase in US interest rates), would Chilean authorities be able to implement countercyclical fiscal and monetary policies to minimize the impact of the shock *without generating economic and/or financial instability*? The answer is yes, due to (a) low levels of foreign debt (in relation to GDP); (b) large accumulation of international reserves combined with high exchange-rate flexibility capable of absorbing external shocks; (c) low inflation rates, consistent with the Central Bank's strong credibility in maintaining inflation targets; and (d) a fiscal position which remains strong.⁶ Indeed, recent reductions in the interest rate by the Central Bank show the implementation of a countercyclical monetary policy.⁷

⁴See International Monetary Fund (2011) for an evaluation of the strengths and challenges of the regulatory system and financial supervision in Chile; and more recently, the IMF report (2014).

⁵Basel Committee on Banking Supervision (2012).

⁶Although Chile's fiscal position has been deteriorating recently, this is true of all of Latin America in the current international context. Even so, Chile has the second-lowest fiscal deficit, following Peru.

⁷Note that this is not the case in other countries in the region. For example, even though Brazil is facing a much more severe slowdown in economic growth than Chile, the monetary policy of the Central Bank of Brazil has been focusing on controlling growing inflation by means of *increases* in the interest rate.

Chile is also very well positioned with regard to institutional quality, especially that which directly affects the financial system. A couple of examples will help support this statement. First, regarding judicial independence, the *World Economic Forum* indicators show not only that Chile is the most highly rated Latin American country but also that the characteristics of its judicial system place it at the same level as many developed countries. Second, the World Bank's *Doing Business* indicators show that Chile is in a position equal to or better than the average OECD country regarding its ability to protect investors' rights and guarantee contract compliance.⁸

2. Chile's international financial integration creates strong incentives for harmonizing the regulations governing the parent companies of foreign banks with the regulations governing domestic banks.

The participation of foreign banks in Chile is significantly important (more than half the banks are foreign-owned). These banks are primarily from European countries, particularly Spain. The Spanish banking system is already implementing Basel III recommendations for regulatory capital because they have been included in the new European Commission Directive, established in 2013, governing bank capital regulation in Europe (Capital Requirements Directive IV—CRD IV).⁹ This new regulation is expected to be applied strictly in Europe, not only due to the history of regulatory failures which gave rise to the European financial crisis, but also because of the creation of the *banking union*, through which the European Central Bank will play a central role in banking supervision. In addition to European banks, foreign banking in Chile includes countries such as Canada and Brazil, which are in the process of adopting Basel III.

In this context, the regulators of parent companies of foreign banks operating in Chile might require their overseas subsidiaries to comply with Basel III capital requirements.¹⁰ In the particular case of Chile, this would imply that foreign banks operating in Chile would have to comply not only with Chilean regulatory and supervisory requirements but also with the foreign requirements. This would lead to major differences between domestic and foreign banking, the effects of which would not be perceived during “good times” when the proportion of non-performing loans is very low, the value of shares in the banking sector are high (and rising) and it would therefore not be a problem to comply with capitalization ratios above those required by Chilean regulation. But during times of financial difficulty, such as those produced by an adverse external shock, the effects of the regulatory differences would emerge. On the one hand, since foreign banking in Chile would have to satisfy higher capital requirements (as required by the parent company, not the Chilean regulator) than domestic banks, foreign banks would find themselves at a disadvantage compared to domestic banks.

⁸On a scale of 0 to 10, where a higher value indicates greater strength, Chile scores 6.3 for its ability to protect investors' rights. The average score for OECD countries is 6.2. This data is from the latest *Doing Business* report (2014).

⁹The regulations and European solvency directive, which go beyond the Basel III principles, became effective in January 2014.

¹⁰Indeed, this is already happening in Chile in the case of Spanish banks.

On the other hand, precisely because of maintaining more capital, foreign banking would find itself in a stronger position than domestic banking in facing adverse shocks. In either case, the situation would create distortions in competitiveness between domestic and foreign banking. It is therefore relevant to consider harmonizing banking capital regulations in Chile and the home countries of these foreign banks. The Basel III recommendations are a starting point.

3. Credit cycles are marked in Chile

As discussed in Section II, the aim of Basel III countercyclical capital is to minimize the macroeconomic costs of financial disturbances, preventing credit bubbles in “good times” and credit busts which severely affect economic growth in “bad times.” Thus, to analyze whether or not to implement the regulation on countercyclical capital in Chile, it is important to determine the characteristics of the country’s credit cycle, and answer two questions: (a) Have there been any recent credit booms in Chile which led to strong contraction in growth of real credit when they ended? and (b) Are there similarities between the characteristics of credit cycles in Chile and those in other Latin American countries, some of which are already in the process of implementing Basel III recommendations?

This document uses the methodology developed by Mendoza and Terrones (2008) to identify periods of credit booms in Chile and other countries in Latin America,¹¹ which separates real credit behavior into its trend component and cyclical component. A *credit boom* is identified as an episode in which real credit exceeds its long-term trend by a value greater than a certain threshold.¹² When a credit boom is identified, its duration is defined as the time during which real credit exceeds its long-term trend. The trend and cyclical components are identified using the Hodrick-Prescott filter.

Graph 1 shows the dynamics of real credit in Chile. The measurement of real credit that we use is calculated as the stock of bank credit to the non-financial private sector¹³ deflated by consumer price index. The data were provided by the Central Bank of Chile and monthly series, from January 1991 to December 2013, were used. The red line indicates the cyclical component of credit, with values greater than zero indicating that real credit is higher than the trend. The dotted green line shows the threshold value established (see footnote 13).

This methodology shows two credit boom episodes in Chile during the whole period, which are marked by the shaded areas on the graph. The first boom occurred in the second half of the 1990s, around the East Asian crisis, beginning in September 1996 and ending in May

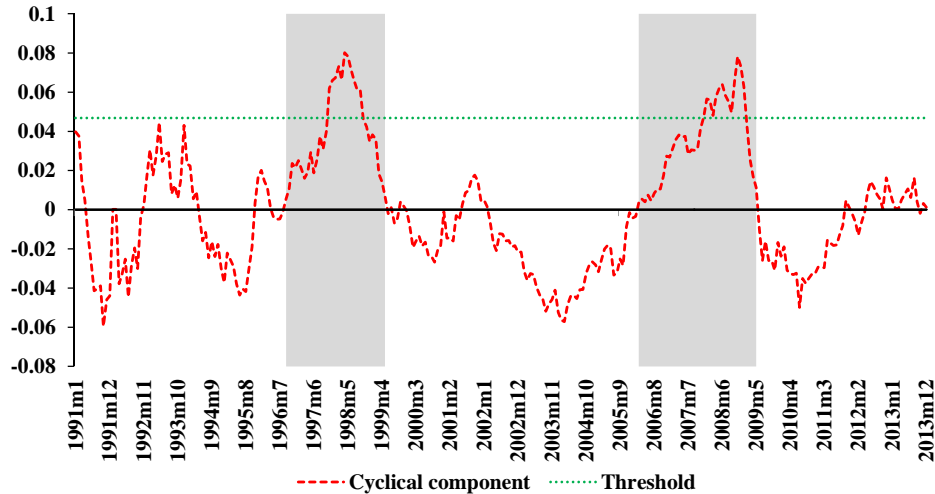
¹¹Argentina, Brazil, Colombia, Peru, Mexico and Venezuela.

¹²The threshold used by Mendoza and Terrones (2008) was set at 1.75 times the standard deviation of the cyclical component and that fixed value was used for all the countries in the world included in their sample. Here, a threshold of 1.5 times the standard deviation of the cyclical component is used in order to be consistent with a recent report by the International Monetary Fund (2011) focusing exclusively on Latin American countries.

¹³The definition of credit to the private sector is total credit, i.e. including credits in national currency and foreign currency.

1999. The second boom took place around the global financial crisis, beginning in March 2006 and ending in May 2009.

Graph 1: Credit Booms in Chile



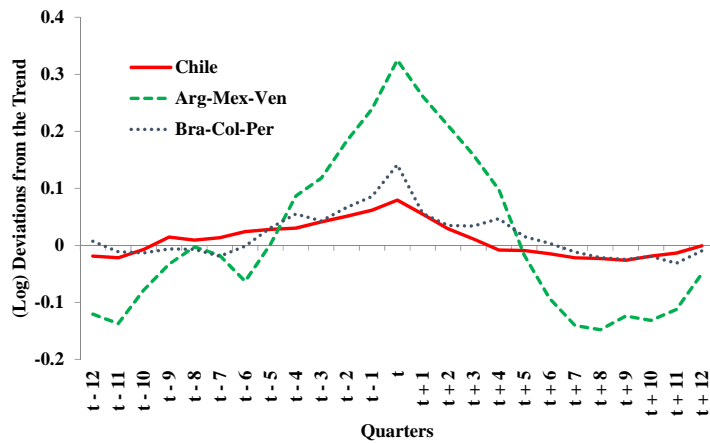
Source: Central Bank of Chile

Graph 2 compares credit booms in Chile with those identified for other Latin American countries. Two groups of countries are considered, grouped according to the similarity in the behavior of their credit booms. Group 1 comprises Brazil, Colombia and Peru, and Group 2 comprises Argentina, Mexico and Venezuela.¹⁴ Graph 2A shows the average real credit cyclical components centered on the peak of the credit booms for each group, covering 12 quarters before and after the boom peaks, for a total of six years. It can be seen that the credit booms in Chile are similar on average to those in Group 1 because at the boom peaks, the deviation in real credit above the trend was about 8% in Chile and about 14% in Group 1 countries. By contrast, the deviation above the trend for Group 2 was 33%.¹⁵ In Chile, the magnitude of the adjustment following the peak of the boom (i.e., the difference between deviations at the peak and the valley compared to the trend) was 11%, slightly lower than the difference for Group 1 (17%) and significantly lower than Group 2 (47%).

¹⁴In the period considered, one credit boom episode was identified in Argentina and Mexico and two episodes in the rest of the countries in the sample.

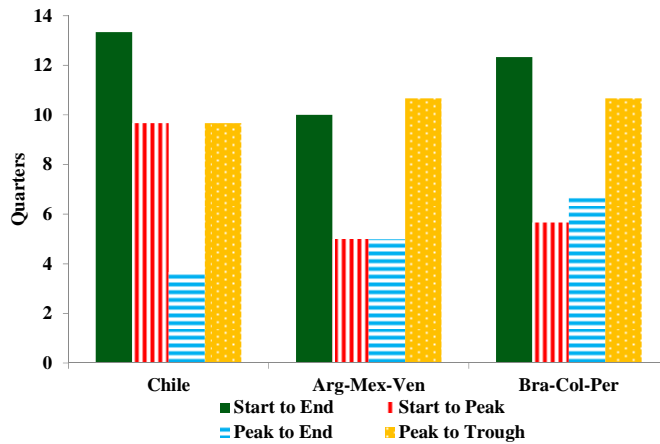
¹⁵This value reflects the excessively rapid growth of real credit that preceded the Tequila crisis in Mexico, the 2001 default in Argentina and the financial crisis of the 1990s in Venezuela.

Graph 2A: Characterization of credit booms in selected Latin American countries



Source: Central banks of selected countries, IFS

Graph 2B: Credit booms in selected Latin American countries



Source: Central banks of selected countries, IFS

Other similarities and differences between Chile and the two groups considered can be identified in terms of the *duration of the boom*. Graph 2B shows the average duration of the *expansion* and *contraction* phases. Chile differs from other countries in the sample because the expansion phase (from the start to the peak of the boom) was significantly longer (9.7 quarters or 29 months) than the contraction (from the peak to the end of the boom) (3.7 quarters or 11 months).

The information in the above paragraphs can be summarized in two statements. First, evidence shows the presence of credit booms in Chile in recent decades; and second, these booms were similar to those in some regional countries (Group 1, identified above). It is interesting to note that Peru and Colombia, two of the countries most like Chile in the dynamics of their credit booms, have already implemented countercyclical regulations. In

Peru, the countercyclical capital buffer *adapted* from the Basel III recommendations was activated in 2012, and in Colombia the dynamic (or countercyclical) provisions have been used as a regulatory tool since 2008. From this standpoint, it is thus relevant to consider implementing regulatory tools in Chile capable of preventing credit boom formation. The Basel III countercyclical capital component is one such tool.¹⁶

The discussion in Sections III.1 to III.3 shows that it is relevant for Chile to *consider* implementing Basel III international capital standards.

IV. Potential Advantages and Disadvantages of Applying Basel III in Chile

While the previous section concludes that it is *relevant* to consider the Basel III recommendations in Chile, this section discusses the potential advantages and disadvantages in proceeding with these recommendations. The criterion used in this discussion focuses on the effects of adopting the Basel III guidelines on the strength and competitiveness of the Chilean financial system.

1. Potential Advantages

The discussion in preceding sections largely points to a series of potential advantages for the Chilean financial system by implementing Basel III recommendations on capital. Given the high level of financial openness in Chile (reflected in limited cross-border capital controls) and high level of integration of the Chilean banking system to international financial markets, some of the most important advantages of implementing Basel III are directly related to (a) the ability of Chilean banking to maintain international competitiveness and (b) the strength of Chilean banks to face possible external and internal shocks. These two points are discussed below.

a. Improved Competitiveness for the Chilean Banking System

The extent to which the international standards proposed by the Basel Committee are met is becoming increasingly important to both international investors' evaluation of the strength of local financial systems and to the scores awarded by risk rating agencies to the instruments issued by financial institutions. In other words, compliance with Basel III recommendations is being recognized internationally as a *sign* of financial strength. In particular, compliance with recommendations on minimum regulatory capital has become a *sign of banking solvency*.

Aware of these developments, several Latin American countries have begun implementing the new capital standard. Particularly outstanding are Brazil and Mexico, the two largest

¹⁶The dynamic or countercyclical provisions are another regulatory instrument for controlling the formation of credit bubbles. This type of provision has been applied in several Latin American countries, including Bolivia, Colombia, Peru and Uruguay.

countries in the region, whose regulators have expressly stated the intention of improving the international competitiveness of their financial systems.¹⁷ They are both members of the Basel Committee and a recent Committee report declared them to be in full compliance with the standard.¹⁸ Colombia, which, as mentioned in the previous section, has credit cycles similar to those in Chile, has also formally begun implementing Basel III, and Peru has *adapted* (as we shall discuss below) the Basel III countercyclical capital recommendation to its national context.¹⁹ In the context in which these two Latin American countries, which are simultaneously partners and competitors of Chilean banks, are rapidly modifying their legislation to implement the new capital standard, it is considered advantageous that Chile does the same.

For a clearer idea of the progress made in this area by some regional countries, Table 3 compares the Basel III capital standard with (new) regulations in Brazil, Colombia and Mexico. It is not relevant to include Chile in the table because the Chilean Law of Banks does not explicitly separate regulatory capital in the capital categories established in Basel III (Common Equity Tier 1 Capital, Additional Tier 1 Capital and Tier 2 Capital). Section V presents an exercise simulating the capital adjustments that Chilean banks would have to make if Basel III recommendations were implemented.

¹⁷In 2012, Mexico was the first country in the region to *fully* incorporate the Basel III capital recommendations in its regulations.

¹⁸See Basel Committee on Banking Supervision (2014)

¹⁹Although Peru has not formally adopted Basel III in banking regulation, it has made major progress towards complying with the standard.

Table 3: Regulatory Capital: Basel III and regulatory frameworks for selected countries

	Basel III	Brazil	Colombia	Mexico
Has Basel III been adopted?	-	Yes	Yes, partially 1/	Yes
Capital component equivalencies	Total Capital Common Equity Tier 1 Capital Additional Tier 1 Capital Tier 1 Capital Tier 2 Capital	Total Capital Common Equity Tier 1 Capital Additional Tier 1 Capital Tier 1 Capital Tier 2 Capital	Technical equity Common Basic Equity Additional Basic Equity Basic Equity Additional Equity	Net Capital Basic Capital 1 Basic Capital 2 Basic Capital Complementary Capital
Quantity of minimum capital				
Common Equity Tier 1 Capital	4.5% 2/	4.5% 3/	4.50%	4.5% 4/
Tier 1 Capital	6% 2/	6% 3/	n.d.	6% 4/
Total Capital	8% 2/	8% 3/	9%	8% 4/
Conservation Buffer	2.5% 2/	2.5% - 5% 3/	n.d.	2.5% 4/
Countercyclical buffer	0% - 2.5% 2/	n.d.	n.d.	n.d.
Common Equity Tier 1 Capital	Bank's classifiable ordinary shares Share premiums Undistributed earnings Other items of the general income Minority shares Regulatory adjustments	Bank's classifiable ordinary shares Share premiums Undistributed earnings Other items of the general income Minority shares Regulatory adjustments	Capital subscribed and paid with conventional dividends Share dividends declared with conventional dividends Share placement premium Legal reserve for appropriation of income Irrevocable donations Adjustment for conversion of Financial statements Early payment of capital 5/ Guarantee capital agreed by Fogafin Subordinate bonds subscribed by Fogafin Instruments issued, endorsed or guaranteed by Fogafin Minority interest	Equity 6/ Contributions for future capital increases Capital reserves Income for previous periods Net income Income by appraisal of securities available for sale Income by appraisal of cash flow hedging instruments
Additional Tier 1 Capital	Classifiable instruments issued Share premiums Minority instruments issued Regulatory adjustments	Classifiable instruments issued Share premiums Minority instruments issued Regulatory adjustments	Capital subscribed and paid in shares with non-conventional dividend Dividends declared in shares with non-conventional dividend Minority interest	Equity Capital instruments
Tier 2 Capital	Classifiable instruments issued Share premiums Minority instruments issued Provisions or reserves for failures in the face of future losses 7/ Regulatory adjustments	Classifiable instruments issued Share premiums Minority instruments issued Regulatory adjustments	Percentage of earnings for the year 8/ Occasional reserves 9/ Minority interest 50% of Fiscal Reserve 50% of unrealized appraisals or earnings with high or medium marketability 10/ 30% of unrealized appraisals of low marketability and unlisted in the stock market Bonds mandatorily convertible to placed and paid shares Subordinate monetary debentures General provisions 7/	Equity Capital instruments General preventive reserves 7/
Common Equity Tier 1 Capital deductions	Goodwill and other intangibles Deferred tax assets Provision for cash flows Provision deficit for expected losses Earnings from securitization operations Profit and loss due to changes in reasonable value of liabilities as a result of accumulated variations in credit risk Defined benefit pension fund assets and liabilities Investment in own shares Reciprocal cross participation in banking, financial and insurance entities Investments in financial entity capital not included in regulatory perimeter, subject to thresholds Deductions according to thresholds	Goodwill and other intangibles 11/ Assets for deferred taxes Assets for deferred taxes Provision for cash flows Provision deficit for expected losses Earnings from securitization operations Profit and loss due to changes in reasonable value of liabilities as a result of accumulated variations in credit risk Defined benefit pension fund assets and liabilities Investment in own shares Reciprocal cross participation in banking, financial and insurance entities Investments in financial entity capital not included in regulatory perimeter, subject to thresholds Deductions according to thresholds	Losses from previous years and losses from current year Deferred income tax Activos intangibles 12/ Own repurchased shares Non amortized value of non actuarial calculation of pension liability Capital investment in bonds convertible to shares and subordinate debt instruments	Investments in debt instruments whose payment is made only after covering other liabilities Earnings on remnant of securitization operations Profit or increase in the value of assets Amount of any shares owned Investments subject to the conditions of the institution Preventive reserves pending constitution Contributions whose resources are used for purchasing shares Intangibles Deferred taxes Operations subject to credit risk

n.d.: Not defined

1/ Currently aligned with the concept of high quality capital but not necessarily with the value of the ratios.

2/ Ratios for January 1, 2019. Progressive application period as of January 1, 2013.

3/ Ratios for January 1, 2019. Progressive application period as of October 1, 2013.

4/ Ratios applied progressively from January 1 2012 to January 1 2019.

5/ For a maximum term of 4 months as of the date of entry of the resources to the balance.

6/ Includes premium in the sale of shares.

7/ Maximum 1.25% of Risk-Weighted Assets.

8/ Percentage committed by the Shareholders Meeting to constitute as capital or reserve at the end of the year.

9/ Up to 10% of the Technical Equity.

10/ Applies only to investments in classified securities as available for sale in debt securities and participatory securities.

11/ Goodwill and other intangibles are amortized over a 5-year period. On January 1, 2018 the intangibles will be fully deducted from Tier 1 Common Capital.

12/ Applies to those assets established as of August 10, 2012

Source: BIS, legislation of selected countries.

As shown in the chart, capital requirements in Brazil and Mexico (both in quantity and in quality) are very *similar, but not always identical* to Basel III recommendations. The differences reflect specific characteristics of domestic financial systems, but do not contradict Basel III

recommendations.²⁰ The differences are greater in Colombia, especially because it has not yet included the conservation buffer (although the subject is on the supervisory authorities' working plan). None of the three countries in the sample has incorporated the countercyclical buffer in its legislation.

The implementation schedule proposed by Basel III, and those established by Brazil, Mexico and Colombia are as follows:

Table 4: Implementation schedules for Basel III and selected countries

	Common Equity Tier 1 Capital Minimum (%)							Tier 1 Capital Minimum (%)						Total Capital Minimum (%)						Conservation Buffer (%)											
	'12	'13	'14	'15	'16	'17	'18	'19	'12	'13	'14	'15	'16	'17	'18	'19	'12	'13	'14	'15	'16	'17	'18	'19	'12	'13	'14	'15	'16	'17	'18
Basel III	3.5	4.0	4.5	4.5	4.5	4.5	4.5	4.5	5.5	6.0	6.0	6.0	6.0	6.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	0.625	1.25	1.875	2.5					
Brazil	4.5	1/ 4.5	4.5	4.5	4.5	4.5	4.5	5.5	5.5	6.0	6.0	6.0	6.0	6.0	11.0	11.0	11.0	9.875	9.25	8.625	8.0										
Colombia	4.5	2/ 4.5	4.5	4.5	4.5	4.5	4.5								9.0	2/ 9.0	9.0	9.0	9.0	9.0	9.0										
Mexico	4.5	4.5	4.5	4.5	4.5	4.5	4.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0										

1/ From October 1, 2013

2/ From August 1, 2013

Source: BIS, legislation of selected countries

It is interesting to note that Mexican and Brazilian authorities have hastened the implementation of Common Equity Tier 1 Capital compared to the Basel III schedule (which recommends reaching a 4.5% ratio only by 2015).^{21, 22} According to the degree of financial depth in Latin America, only Chile can compete with Brazil as a regional financial center. Although this subject is not on the short-term regulatory agenda in either country (especially in the current context of sub-regional integration of Pacific Alliance countries), this discussion cannot be ruled out for the future and constitutes an additional incentive for Chile to comply with international bank capital standards.

b. Greater soundness for the Chilean financial system

The core of a banking system's soundness includes the capacity of banks to manage risks created by their role as financial intermediaries. The *minimum* capital requirements recommended in Basel III are a management tool. However, the nature of these requirements is unconditional to the business and credit cycle, i.e., *minimum* capital does not vary over time according to changes in the *systemic* risks a financial institution may face. This is why, as explained in Section II, Basel III also includes countercyclical capital, which requires accumulation of Common Equity Tier 1 Capital (up to 2.5% as a percentage of the

²⁰The Brazilian case is interesting. During the debates prior to implementing Basel III there was great concern regarding the effects on bank capitalization of deducting deferred tax assets (DTA) from the regulatory capital (a Basel III recommendation). However, in coordination with the Basel Committee, it was agreed that it was not necessary (or prudent) to deduct the DTA component related to time differences caused by the provisions for loans with problems, because these assets (credits) do not depend on the bank's future profitability and can therefore be counted as assets capable of absorbing unexpected losses. This is an example of the room for discretion allowed by the regulators when implementing Basel III recommendations.

²¹Mexico's speed is particularly outstanding because there was no transition period.

²²The reduction in minimum total capital requirements in Brazil (from 11% in 2013 to 8% in 2019) is due to the fact that under the new standard, banks would have to implement a series of deductions to calculate regulatory capital. In other words, according to the Basel III criteria, the 2013 11% capital ratio was highly overvalued. Under that circumstance, the Central Bank of Brazil decided to set the minimum capital requirement at the level set by Basel III: 8%. This has already been approved by the Basel Committee.

RWA) during periods in which the supervising authority considers credit growth excessive and potentially leading to an accumulation of systemic risk.

To date, only Peru has included rules about a countercyclical capital buffer in the spirit of Basel III (though with major differences, see Section VI). In view of the analysis presented in Section III with regard to the characteristics of Chilean credit cycles, it is beneficial for Chile to implement the countercyclical capital buffer. As mentioned above, Chile's high level of integration with international financial markets makes it susceptible to sudden changes in the risk perception of international investors. For example, a rapid and steep increase in the US interest rates (beyond what is expected by markets) could create a major reversal of capital flows in emerging countries and Chile in particular, raising the costs of external financing and generating major pressure on economic growth and the quality of banks' credit portfolio. In that context, if the banking system had a countercyclical capital buffer, it could use that capital to counteract the reduction in the *minimum* capital ratio resulting from balance sheet deterioration. By helping to maintain the solvency of the system, it would also minimize the reduction in bank credit.

But Basel II/III recommendations on regulatory capital go beyond the discussion of ratios and include guidelines for financial institutions to foster better risk management and for supervisors to monitor these practices (Pillar 2 of Basel II and III). An interesting factor in Chile is that *in practice*, a series of Basel guidelines are complied with, but not *explicitly considered in the regulations*. Two examples illustrate this statement. One example is the stress tests conducted by the banks, both at their own initiative and by request of the SBIF, and the stress analyses conducted by the Central Bank of Chile. These analyses, which are highly recommended by Basel II and III, are not explicitly stated in the regulations. The second example is that several banks (including large, medium and small banks), use internal rating models (the recommendations for the Basel II approach known as "internal ratings-based approach" [IRB]) for calculating expected losses²³. In some cases, the models include elements recommended by the Basel Committee, as a response to SBIF regulations on classifying management and solvency, which encourage using risk management best practices.²⁴ However, explicit regulation is still pending for using and supervising the Basel II IRB approach for calculating capital.

The incorporation of Basel recommendations to Chilean regulations, some of which have already been (partially) implemented *de facto*, would enhance the transparency associated with Chilean banking's risk management, and thus bolster the soundness of the financial system. However, it is important to point out that these regulatory changes also involve challenges for supervisors, which will be discussed later in this paper.

²³ In the context of evaluating small loans bunched in a single portfolio, but not portfolios of large individuals or firms

²⁴ See Chapter 1-13 of Recopilación Actualizada de Normas de la SBIF: *Clasificación de Gestión y Solvencia*. (Updated compilation of SBIF Regulations: Classification of Management and Solvency).

2. What are the Potential Disadvantages of Applying Basel III in Chile?

Implementing the complex Basel II/III regulatory framework involves some major risks. The first is the potential cost faced by banking institutions that need to increase their capital levels to comply with the new regulation. This is the main concern expressed by banks in developed countries, which have argued that the costs of increasing regulatory capital may have adverse effects on bank loans and interest rates charged.²⁵—particularly on loans to small and medium enterprises whose risk levels are higher than those of large enterprises. When banking systems require significant increases in their capital holdings to comply with Basel III, there is understandably a need to conduct in-depth, detailed analyses on possible regulatory impact, and serious considerations on possible steps that should be implemented prior to adopting Basel III. The good news is that recent experience in Latin American countries that are applying Basel III (Mexico and Brazil) has found that this risk has not materialized. In fact, this potential disadvantage for a given country can only be assessed by analyzing concrete data from bank balance sheets that enable measurement of possible capital insufficiencies banks would face if Basel II was implemented. To this end, Section V provides a simple simulation exercise for the Chilean case.

A second potential problem is that implementing Basel III in Chile might increase already existing regulatory discrepancies between banks and non-financial institutions involved in credit activities. Banking regulations are currently not fully applied in terms of coverage and rigor to a series of entities, such as businesses, compensation funds and insurance companies that provide consumer and mortgage credit.²⁶ To the extent that Basel III implementation increases regulatory restrictions to banks, it may foster regulatory arbitrage, which would increase credit activities of other entities not subject to the same financial regulation. This would be an important risk to financial system stability.

In general, it is important to identify and control the possible emergence of new forms of destabilizing regulatory arbitrage that may result from greater and more complex regulations, of which Basel II and III are no exceptions. For example, internationally, the combination of (a) stricter banking regulations in developed countries after the global financial crisis²⁷ and (b) abundant international liquidity as a result of extremely low interest rates, has resulted in a re-composition of private sector external debt (financial and non-financial) in a series of emerging countries, including Brazil. While external financing through bank loans has declined, bond issuance in international capital markets has increased significantly, to the point that total private sector external financing in emerging countries was much higher for

²⁵See, for example, Institute for International Finance (2010)

²⁶In addition to these regulatory discrepancies, there are also major discrepancies between banks and other entities with regard to requirements for providing information. For example, while banks are obliged to provide relevant information on their clients to the SBIF credit center, businesses that provide credit through credit cards are not. These discrepancies weaken the proper assessment of risks for clients who are individuals, both by banks and by other credit agents. Nevertheless, the solution to this problem is not complicated, at least from a technical standpoint, because all it would need is the enactment of the already existing bill that establishes a common information center for banks and any other credit agent, managed by the SBIF.

²⁷In Europe, the new Directive on Capital Requirements (DCR IV) is already in force and includes even stricter regulatory requirements than Basel III. In July 2013 in the United States, the US Federal Reserve approved a new regulation on capital requirements in line with Basel III.

2011-2013 than during the period prior to the global crisis.²⁸ One potential problem is that international experience shows that private sector debts are a contingency of the public sector and tend to materialize in the presence of adverse shocks. The lesson for Chilean bank regulators is the need to ensure that regulatory changes associated with Basel III are compatible with other regulations and policies existing in Chile.

Considering a future in which reforms to the General Banking Law (GBL) are contemplated,²⁹ there is an additional potential problem related to possible effects of changes in regulatory capital on Chilean banks operating internationally. The international competitiveness of these banks may be affected to the extent that (a) countries in which they operate have more relaxed capital requirements, and (b) the SBIF is empowered to supervise the financial conglomerate and require the same treatment of regulatory capital by local banks and their overseas affiliates. The solution to this lies in close coordination between regulators and supervisors in Chile and in countries hosting Chilean affiliates.

V. Challenges for Applying Basel III in Chile

As discussed above, one of the central topics for evaluating potential regulatory changes in Chilean legislation is to analyze how complicated and expensive it might be for banks and supervisors to implement the regulation. Although many questions arise from this subject, whose answers require in-depth analysis, most of this section concentrates on just one of them: Is Chilean banking capable of complying relatively easily with Basel III minimum capital requirements? In other words, would Chilean banking have to increase its capital significantly if Basel III minimum capital requirement recommendations were implemented? To answer this question, this section compares actual regulatory capital holdings according to the current legislation in Chile to hypothetical estimates of the regulatory capital that would be needed to comply with Basel III.

The second part of this section briefly discusses other challenges that need to be considered upon implementing Basel III recommendations on capital.

1. Does the Chilean banking system have enough regulatory capital to meet the requirements proposed by Basel III?

As mentioned in Section II, Basel III capital requirements mean that banks always have to maintain a capital to Risk-Weighted Asset (RWA) ratio of 10.5%. But more importantly (and innovatively), the recommendations state that most of that ratio (8.5%) should be attained by means of Tier I Capital holdings.

The exercise in this section consists comparing current regulatory capital ratios in Chilean banking according to the current regulation to the ratios that would be obtained if regulatory

²⁸See Shin (2013)

²⁹See International Monetary Fund (2014)

capital were calculated according to Basel III.^{30, 31} An estimate of the potential reduction in capital ratios that banks would undergo due to the new calculation methodology for regulatory capital is thus presented. From these calculations it can be inferred if Chilean banking would comply with the Basel III requirements, even under the new methodology. The exercise also estimates the effects that Basel III would have on Tier I Capital and Tier II Capital. To calculate these estimates, data published by the SBIF on *Consolidated Capital Adequacy of the Chilean banking system* and data from consolidated financial statements of each bank was used.³² The data corresponds to June 2014.³³

For the purpose of this simulation, a series of assumptions were made, which are stated in the explanation of the exercise. Firstly, unlike other Latin American countries, current Chilean legislation does not use the concepts of *Tier 1 Capital* and *Tier 2 Capital*. In the exercise, assumptions are introduced to enable comparison of Chilean regulatory capital aggregates to those of Basel III.

As shown in Table 1, Basel III defines Tier 1 Capital as the sum of Common Equity Tier 1 Capital plus Additional Tier 1 Capital. Common Equity Tier 1 Capital is equal to the sum of common shares, accumulated reserves and undistributed earnings (the latter, as long as it is not mandatory to make distributions).

As mentioned above, current Chilean legislation does not explicitly define the concept of “Tier 1 Capital.” It does however define *basic capital* as “the net amount that must be shown on financial statements as ‘Equity attributable to equity holders’”.³⁴ This amount is equal to the sum of paid capital, reserves, valuation accounts and retained earnings (excluding provisions for minimum dividends, which in Chile is about 30%). In general terms, the concept of basic capital is equivalent to the Basel III concept of Common Equity Tier 1 Capital.³⁵

Based on available information, for the exercise presented in this paper, Chilean accounts are approximated to a concept of Tier 1 Capital by adding to basic capital the account *minority*

³⁰The exercise does not include a simulation for the 3% leverage ratio proposed by Basel III (Tier I Capital/Total Assets) because Chilean legislation already complies with it. Specifically, Chilean regulations state that the *basic capital* should not be less than 3% of the net total assets of required provisions. As will be discussed later, the *basic capital* in Chile fairly well approaches the Basel III concept of Common Equity Tier 1 Capital.

³¹For a similar exercise for a group of countries in the Andean region (Bolivia, Colombia, Ecuador and Peru), see Galindo, Rojas-Suarez and del Valle (2011)

³²Data can be found at <http://www.sbif.cl/sbifweb/servlet/InfoFinanciera?indice=4.1&idCategoria=547&tipocont=0>.

³³Given the available information, the exercise can be replicated only at the end of each quarter because although the Consolidated Capital Adequacy has a monthly frequency, the SBIF report with the financial statements of financial institutions is published on the SBIF website at the end of each quarter.

³⁴SBIF, *Recopilación Actualizada de Normas, capítulo 12-1: Patrimonio para Efectos Legales y Reglamentos* (Updated Collection of Regulations, Chapter 12-1: Equity for Legal Effects and Regulations), <http://www.sbif.cl/sbifweb/servlet/LeyNorma?indice=3.1.2>

³⁵In general terms, basic capital in Chilean regulations meets the conditions of Basel III Tier 1 common capital for two reasons: (a) the provision for minimum dividends is deducted, and (b) the Shareholders Meetings only meet once a year to determine the amount of dividend distribution above the minimum—i.e., it is not mandatory to distribute dividends beyond the minimum set by law.

interest (with the restrictions set by Chilean legislation)³⁶ and applying the deductions to regulatory capital established by the Chilean legislation (these deductions include “Goodwill” plus minority investments).³⁷

Under these assumptions, the first line in Table 5 shows that Tier 1 Capital according to current Chilean legislation would be about 13,179 billion pesos as of June 2014. Following Chilean legislation, RWAs only include Risk-Weighted Assets for Credit Risk (RWAc).³⁸ This results in a Tier 1 Capital/RWAc ratio of 10%.

Table 5: Chile – Capital adjustments according to the Basel III Agreement

	June 2014 (billion pesos)		Capital/RWAc	
	Scenario 1	Scenario 2	Scenario 1	Scenario 2
1. Tier 1 Capital estimated according to current legislation 1/ - Deferred taxes	13 179 935	13 179 1 634	10.00%	10.00%
= Tier 1 Capital estimated according to Basel III	11 901	11 202	9.03%	8.50%
2. Tier 2 Capital estimated according to current legislation + Adjustment for limit to computable subordinate bonds 2/	4 573 230	4 573 230	3.47%	3.47%
= Tier 2 Capital estimated according to Basel III	4 804	4 804	3.64%	3.64%
Total Capital estimated according to current legislation Total Capital estimated according to Basel III	17 752 16 705	17 752 16 005	13.46% 12.67%	13.46% 12.14%
Total Capital adjustment	1 047	1 747	0.79%	1.32%

1/ Tier 1 Capital is composed of Basic Capital + Minority Interest + Asset Deductions (Goodwill + Minority Investments)

2/ Adjustments based on a review of banks' Financial Statements as of June 2014.

Source: SBIF

In order to calculate *what Tier 1 capital would be if Basel III recommendations were implemented*, deductions suggested by the Basel Committee were applied. In the case of Chile, it is necessary to consider a deferred tax deduction. However, it is not clear what the amount subject to deduction is as Basel III states that it is possible to compensate this type of tax credit with liabilities for deferred taxes, as long as both items refer to taxes charged by the same fiscal authority and that the fiscal authorities authorize the compensation. In the face of this uncertainty, two scenarios were calculated. Scenario 1 allows this compensation, so only *net* deferred taxes are deducted. In Scenario 2, gross deferred taxes are deducted. As shown in Table 5, Tier 1 capital estimated according to Basel III as a percentage of RWAc would be 9.03% under Scenario 1 and 8.5% under Scenario 2. In both scenarios, the value of the ratio is equal to or greater than the 8.5% value recommended by Basel III.^{39 40}

³⁶Chilean law establishes that the *minority interest* computable as part of the regulatory capital cannot be greater than 20% of the basic capital.

³⁷Basel III deducts Goodwill from the Tier 1 Capital and this deduction is accounted for by Chilean legislation.

³⁸Table 6 includes a simulation in which risk-weighted assets for market risk and for operational risk are added.

³⁹Except that Table 5 only includes risk-weighted assets for credit risk in the denominator of the ratio.

⁴⁰It is important to note that it is not known whether the minority interest included in Chilean regulatory capital accounting meets the conditions established by Basel III; so the value of Tier 1 capital might be overestimated. If so, the adjustment would be small because the minority capital allowed by Chilean law for calculating regulatory capital is less than 2.6% of Tier 1 Capital; i.e., if *all* the minority interest had to be deducted, the Tier 1 capital/RWAc ratio estimated according to Basel III would be 8.77% in Scenario 1 and 8.24% in Scenario 2.

In addition to basic capital, current Chilean legislation defines the concept of *Effective Capital*, which is total regulatory capital upon which the General Law of Banks applies the minimum 8% requirement (Effective Equity may not be lower than 8% of the RWAc).⁴¹ For the purpose of the exercise in this section, the Basel III *Tier 2 Capital* item is approximated as *Effective Capital* minus estimated *Tier 1 Capital*.⁴² Under this assumption, as of June 2014, estimated *Tier 2 Capital* following the guidelines of current regulations in Chile would be 4,573 billion pesos, equivalent to a Tier 2 Capital/RWAc ratio of 3.47%.

To calculate *what Tier 2 Capital would be if Basel III recommendations were followed*, we add the amount for subordinate bonds issued by banks that *exceeds* the limit allowed in Chilean regulations for calculating regulatory capital.⁴³ This is because Basel III allows the inclusion of *the entire* value of subordinate bonds which meet certain characteristics, and said characteristics match the requirements of Chilean legislation for the issuance of subordinate bonds. Specifically, Chilean regulations establish that banks can only issue subordinate bonds with “an average term not less than 5 years, without special guarantee” and “issuance conditions shall not include clauses which mean early payment of all or part of the bonds issued.”⁴⁴

Upon making the relevant adjustment, Tier 2 Capital, according to Basel III criteria, would be equivalent to 4,804 billion pesos, i.e., 3.64% of the RWAc.⁴⁵

As shown in Table 5, if Basel III criteria were followed, Total Capital (Tier 1 plus Tier 2 Capital) would result in a Capital/RWAc ratio of 12.67% in Scenario 1 and 12.14% in Scenario 2. From this exercise (which is preliminary and limited to its assumptions) it is concluded that the reduction in regulatory capital as a percentage of RWAc that the Chilean banking system would undergo if Basel III were implemented would be moderate (0.79% under Scenario 1 and 1.32% under Scenario 2).

As mentioned above, Table 5 was developed under the assumption that RWA for calculating regulatory capital follow current regulations in Chile, which only include risk-weighted assets for credit risk (RWAc). However, RWA in Basel II and III also includes risk-weighted assets for market risk (RWAm) and for operational risk (RWAo). Table 6 takes from Table 5 the values for capital estimated according to Basel III (the numerator of the Basel III capital ratio) and divides them between an estimate of total RWA (the denominator of the Basel III capital ratio) —where $RWA = RWAc + RWAm + RWAo$.

⁴¹See http://www.sbif.cl/sbifweb3/internet/archivos/ley_551.pdf

⁴²This is equivalent to the sum of subordinate bonds allowed in the calculation of the capital plus voluntary provisions.

⁴³Chilean regulations establish that subordinate bonds computable as part of Effective Equity should not surpass 50% of the basic capital.

⁴⁴See, SBIF, *Recopilación Actualizada de Normas, Capítulo 9-6: Bonos Subordinados* (Updated Collection of Regulations, Chapter 9-6: Subordinate Bonds), <http://www.sbif.cl/sbifweb/servlet/LeyNorma?indice=3.1.2>

⁴⁵No discount is needed with relation to (additional) voluntary provisions because the requirements of Chilean legislation for this component match those established by Basel III to be included as Tier 2 capital, including the requirement that they should not surpass 1.25% of the risk-weighted assets for credit risk.

The value for RWAm is taken directly from SBIF data published on a monthly basis.⁴⁶ Given that current Chilean regulation does not include this amount in the denominator of the capital requirement ratio, its calculation is simply referential. The value for RWAO is not published periodically either by the SBIF or by the Central Bank of Chile, so it was approximated based on data published in the Financial Stability Report of the Central Bank of Chile for the second half in 2010.⁴⁷

Pointing out once again that the calculations are merely approximations and subject to information availability, Table 6 provides an estimate of RWA and its different components. According to this approximation, the *total value of risk-weighted assets* would be 147,785 billion pesos in June 2014. This value was used as denominator for calculating the capital/RWA ratios under Scenarios 1 and 2 described above.

Table 6: Total impact of Basel III on the Capital/Risk-Weighted Assets Ratio

	June 2014	
	Billions of Pesos	
Risk-Weighted Assets for risk according to current legislation (RWAc) 1/	131 845	
+ Risk-weighted assets for market risk (RWAm) 2/	11 964	
+ Risk-weighted assets for operational risk (RWAo) 3/	3 985	
RWA = RWAc+RWAm+RWAo	147 794	
	Scenario 1	Scenario 2
Tier 1 Capital estimated according to Basel III / (RWAc+RWAm+RWAo)	8.05%	7.58%
Total Capital estimated according to Basel III / (RWAc+RWAm+RWAo)	11.30%	10.83%
Total Capital Adjustment	2.16%	2.63%

1/ *Current legislation only considers Risk-Weighted Assets for credit risk*

2/ *The SBIF publishes a monthly estimate of Risk-Weighted Assets for market risk*

3/ *Estimated from the Financial Stability Report of the Central Bank of Chile, second semester 2010*

Source: SBIF, Central Bank of Chile

The estimates in Table 6 show that if Basel III recommendations on capital were fully applied and without gradualness, i.e., not only by making the deductions on the capital calculation (the numerator in the ratio) but also by including the market and operational risks in the RWA calculation, the Chilean banking system, at aggregate level, would face a relatively moderate capital deficit to comply with the Tier 1 capital requirements. Under both scenarios, the Tier 1 capital ratio according to Basel III is lower than 8.5% – 8.05% under Scenario 1 and 7.58% under Scenario 2.

⁴⁶See: <http://www.sbif.cl/sbifweb/servlet/InfoFinanciera?indice=4.1&idCategoria=547&tipocont=548>. The SBIF states that estimated RWAm follows the Basel criteria, i.e., RWAm=12.5*Market Risk.

⁴⁷The reference data were taken from page 49 of [Reporte de Estabilidad Financiera del Banco Central de Chile, segundo semestre del 2010](#) (Report on Financial Stability of the Central Bank of Chile, second semester 2010). That page shows the estimate of a capital requirement ratio which included not only the RWAc as set forth in current legislation but also the RWAm and RWAo. We used this ratio, SBIF data for RWAc and RWAm for June 2014 and basic algebra to estimate the figure for RWAo for June 2014 shown in Table 6.

However, under both scenarios, Chilean banking at an aggregate level would comply with Basel III total capital recommendations: under both scenarios, the capital ratios would be greater than 10.5%. This conclusion is consistent with a similar analysis by the SBIF reported by the International Monetary Fund (2013). Nevertheless, it is important to note that the analysis in this section was done for the banking system *as a whole*, and may therefore hide important differences between banks. Identifying these differences between banks is essential for designing an effective transition to Basel III.

2. Additional challenges to the implementation of Basel III in Chile

Chilean regulators and supervisors will face certain challenges associated with changes in regulatory capital. This subsection discusses two of them.

As discussed in Section IV, most banks are already using internal risk-rating models in their calculation of provisions for group portfolios, and some banks are using them for their internal estimates of economic capital. The SBIF is already continuously evaluating the quality of these models, which is an advantage for the implementation of some Basel III recommendations on capital. However, the SBIF may also face challenges because Chilean supervision would have to be fully capable of evaluating not only the quality of models applicable to group portfolios, but also the methodologies used by banks to evaluate the credit risk of their positions with regard to each borrower or counterpart. Given the increasing sophistication of the Chilean financial system, in the context of the high foreign bank participation it is recommendable to study the steps needed to bridge any gap existing between the competencies and capacities of Chilean supervision and those in developed countries.

A second challenge for authorities is establishing the schedule for implementing the new capital regulations. In 2012 and 2013, respectively, the schedules established in Mexico and Brazil hastened the implementation of minimum capital requirements (in relation to those proposed by Basel III). Nevertheless, Chile would not need to speed up the implementation process, especially because the current international financial and economic context is not conducive for economic growth in emerging countries, which could affect financial strength and solvency indicators in these countries, including Chile.

Moreover, the Chilean experience in the process for implementing the Basel recommendations regarding liquidity ratios provides lessons for the potential implementation of new capital requirements. For example, it is appropriate that Chilean regulators are proposing gradualness and a sufficiently long timeframe for implementing new liquidity regulations. It is also appropriate that collecting information on liquidity requirements be allowed for supervisory monitoring, but no public disclosure of this information during a period of proposal evaluation and calibration. These precautionary measures are essential to ensuring that the regulations are implemented effectively.

VI. Additional Considerations: Adapt, Rather Than Adopt, Some Basel III Recommendations on Capital?

The Basel Committee recognizes that some recommendations would have the desired effect if they were *adapted* to each country's specific context: this is reflected in the relatively high level of discretion that Basel III allows domestic supervisors for implementing the capital recommendations. The drafting of a bill in Chile aimed at Basel II/III and the regulations that will be developed based on it provide an opportunity to consider whether some recommendations of the international standard need adapting.

Although there are many areas which could be considered candidates for a process of *adaptation* of Basel III standards, particularly those related to credit risk-weighting used for calculating regulatory capital under the Basel II standardized approach,⁴⁸ the elements relevant to Chile can be identified comprehensively during the consultation process for the bill. For purely illustrative purposes, this section presents an example of possible *adaptation* of the Basel III recommendations regarding the countercyclical capital buffer.

Basel III recommends that authorities should monitor bank credit growth and other indicators to evaluate whether excessive risks are created in the financial system. According to this evaluation, the authorities will decide when to *activate* the countercyclical capital buffer with the aim of limiting excessive credit expansion, thus minimizing the probability of severe banking problems. Basel III recommends that the *increases* in countercyclical buffer capital (which varies from 0 to 2.5% of RWA) should be announced up to 12 months earlier to make it easier for banks to comply with the requirement, whereas the decision to *reduce* buffer levels should be made effective immediately. One major challenge for Chilean authorities is the development of soundness analysis to enable appropriate design of the countercyclical buffer.⁴⁹

In the document *Guidance for National Authorities Operating the Countercyclical Buffer* (2010), the Basel Committee suggests using the *deviations of the credit/GDP ratio with regard to its trend* (credit/GDP ratio gap) as the reference indicator for making decisions regarding when to activate and deactivate the countercyclical buffer. The choice of this indicator is based on

⁴⁸They highlight the criticism to using risk-rating agencies to rate banking assets according to risk levels in the Basel II standardized approach (despite the modifications added in Basel III). To situate the issue in the case of Chile, consider risk-weighting of government securities. In current legislation, the weighting given to government securities and credits guaranteed by the Chilean government is equal to 10%, because it is recognized that the risk of treasury debt in emerging countries is higher than in countries whose government securities remain liquid even in situations of high financial turbulence, e.g. US Treasury bonds). *This distinction of risks between advanced and emerging countries is not considered in Basel II or III.* If the standardized Basel II approach was *adopted* in Chile, said weighting would drop to zero because the rating by risk rating agencies would justify it. The relevant question for Chilean authorities and the banking industry is whether it is appropriate to follow this Basel II-III recommendation or if the progress already made in current legislation with regard to recognizing the risk of treasury obligations in an emerging country should be maintained.

⁴⁹The design of the countercyclical buffer requires the determination of *thresholds* for activating and deactivating the capital accumulation that forms that buffer. In order to prevent too much capital from accumulating unnecessarily, or there not being enough capital when it is needed, it is essential to conduct simulation exercises of scenarios to confirm the soundness of the thresholds selected.

wide-ranging literature that concludes that it is the variable proven most effective for providing early alert signals of financial disturbances.

However, as pointed out by Repullo and Saurina (2011), even if this indicator has the characteristics of a leading indicator for banking problems, *the credit/GDP ratio gap may not be the best reference indicator for activating the countercyclical capital buffer*. In particular, *it is not an adequate indicator if the correlation between the indicator and economic growth is negative*. In that case, capital requirements tend to increase when GDP growth is low and to decrease when GDP growth is high,⁵⁰ i.e., the capital buffer behaves in a *pro-cyclical* manner regarding economic activity, which is *precisely the opposite of what Basel III intends*.

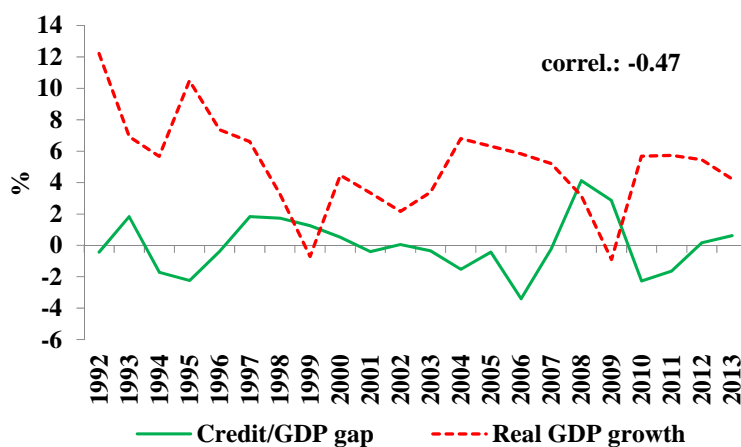
Why might there be a negative correlation between the credit/GDP ratio gap and economic growth? Repullo and Saurina (2011) argue that the main reason is from the possible (and frequently found) lag in credit behavior relative to the business cycle. In particular, during times of low economic growth, the credit/GDP ratio frequently remains at high levels as a result of higher demand from companies for credit lines to fund inventories.

Based on the above discussion, it is relevant and appropriate to estimate the correlation between the credit/GDP ratio gap and economic growth in Chile. This exercise may serve to guide the decisions of Chilean authorities regarding the implementation and design of the countercyclical capital buffer. Graph 3 shows that the correlation between these two variables is negative.⁵¹ Although Chilean authorities will need to make a more precise estimate, the preliminary conclusion is that it would not be appropriate for Chile to use the credit/GDP ratio gap as the reference indicator for activating (or deactivating) the countercyclical capital buffer.

⁵⁰In this case the countercyclical capital buffer will be activated when the credit/GDP ratio gap is significantly high, which would imply larger capital requirements in order to reduce the growth of credit. But if the correlation between the credit/GDP ratio gap and the growth of the economy is negative, the reduction in credit growth will occur when the economy is slowing down, and this exacerbates economic slowdown.

⁵¹The variable *credit/GDP gap* was constructed using the same data and methodology as in Section III, i.e., the measure of credit used is the stock of bank credit to the non-financial private sector and the trend of credit is calculated using the Hodrick-Prescott filter. The difference with the exercise in Section III is that whereas here we use nominal credit (as a ratio of the GDP), Section III examines the evolution of real credit (nominal credit deflated by the consumer price index).

Graph 3: Chile – Credit/GDP gap and real GDP growth



Source: Central Bank of Chile, IFS

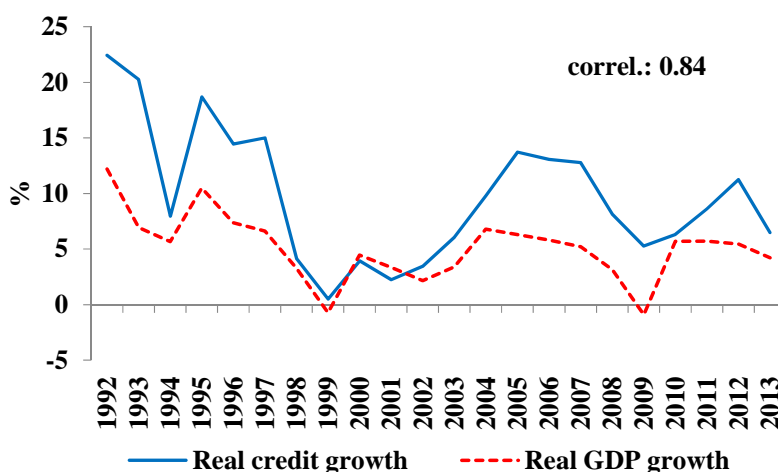
Similar results have been found for Peru and Colombia,⁵² but not for Brazil, confirming the need to consider options that satisfy the Basel III aims and also take national contexts into account.

What might alternatives to the countercyclical capital reference indicator be? Supervisory authorities in Peru are using *the real GDP growth rate* as a reference indicator for the countercyclical capital buffer.⁵³ Theoretically, Repullo and Saurina (2011) propose using the *deviations of the real credit growth rate with regard to its trend*, arguing that the probabilities of finding a positive correlation between real credit growth and economic growth are high, because the lag problem that appears in the credit/GDP ratio is eliminated. Graph 4 shows that this correlation is indeed highly positive in Chile.

⁵²Repullo and Saurina (2011) also found a negative correlation for a group of European countries.

⁵³See <https://intranet1.sbs.gob.pe/IDXALL/FINANCIERO/DOC/RESOLUCION/PDF/8425-2011.R.PDF>. The rules for activating and de-activating countercyclical capital in Peru are the same as the rule for cyclical provisions. The countercyclical capital buffer in Peru is activated when any of the following conditions is met: (a) average growth of real annualized GDP over the past 30 months goes from less than 5% to a level equal to or higher than 5%; (b) the growth of real annualized GDP over the past 30 months is already above 5% and average annualized growth for the past 12 months is 2% higher than the value recorded during the previous year, or (c) average growth of real annualized GDP over the past 30 months is already higher than 5% and the countercyclical rule has been de-activated in the past 18 months, at least.

Graph 4: Chile—Real Credit Growth and Real GDP Growth



Source: Central Bank of Chile, IFS

Thus, this exercise’s preliminary conclusion is that it would be appropriate for Chilean authorities to consider alternative methods for implementing the countercyclical capital buffer. One alternative is using real credit growth as a reference indicator, and another is the Peruvian methodology.⁵⁴ More broadly, the exercise also suggests the need to evaluate other areas where Basel III capital recommendations are *adapted* to the particular features of the Chilean financial system.

VII. Conclusions

The analysis performed in this paper allows a series of conclusions to be drawn on the potential implementation of the Basel III recommendations on capital in Chile. The first conclusion is that it is highly *relevant* to consider applying the Basel III guidelines in Chile, which has one of the soundest financial systems in Latin America and has not undergone a banking crisis in over three decades. However, there are at least three reasons that warrant giving serious consideration to making changes to adjust bank capital regulations to the new standard: (a) the regulators of parent companies of foreign banks that operate in Chile are already implementing Basel III, which could create discrepancies in the regulatory

⁵⁴The argument of Peruvian authorities for choosing real GDP growth as a reference indicator is that Peru has a very low rate of bank penetration and that major growth in credit growth rate might not warrant activating a countercyclical buffer, because such a policy might slow healthy expansion of credit. Although Peru does indeed have one of the lowest credit/GDP ratios in the region (27% average for 2010-13), the argument has some weaknesses because according to empirical literature, what matters for financial problems is a very rapid expansion of credit *and not the level from which said expansion begins*. In any event, Chile is the country in the region with greatest financial depth and thus the argument for using the Peruvian rule, though worth considering, is not very strong.

The argument for using financial variables such as real credit growth is based on the observation worldwide that fluctuations in output are more frequent than fluctuations in financial cycles and can lead to serious financial problems. In that case, using the output growth rate could lead to unnecessary accumulation of countercyclical buffer. The validity of this argument for the case of Chile requires empirical analysis.

requirements between Chilean domestic banking and foreign banking; (b) credit cycles in Chile are pronounced and evidence shows that there have been credit booms in recent decades, which have created strong subsequent credit contractions—the Basel III countercyclical capital component is a tool for preventing these booms; and (c) the macroeconomic, institutional and supervisory quality fundamentals in Chile ensure that the financial system could undergo regulatory changes without affecting stability.

A second conclusion is that implementing Basel III capital standard in Chile has the potential advantage of improving Chilean banking's international competitiveness because compliance with this standard is becoming internationally recognized as a sign of financial strength and good risk management. Given that the Latin American countries which are simultaneously partners and competitors of Chilean banking are rapidly implementing Basel III guidelines, it would be advantageous to Chile "not to be left behind." Specifically, the other three Pacific Alliance member countries (Colombia, Mexico and Peru) have already made significant progress in implementing Basel III. Moreover, Brazil, the only country in Latin America that, due to its level of financial sophistication, could potentially compete with Chile as a regional financial center, has already fully adopted the new capital standard.

To assess the potential problems and challenges that could result from implementing Basel III in Chile, a concrete analysis of bank balances, to measure possible capital insufficiencies that banks might face upon implementation, is needed. A simple preliminary simulation exercise performed in this paper allows these possible insufficiencies to be evaluated *for the banking system as a whole*. The conclusion of this exercise is that under alternative scenarios, Chilean banking as a whole would meet Basel III recommendations regarding total capital ratios (in relation to risk-weighted assets). In the two the scenarios considered, the capital ratios are greater than 10.5%. However, the banking system *as a whole* would have a capital deficit to comply with the Tier 1 capital ratio. Because this exercise was carried out for the banking system as a whole, the results may hide important differences between banks, thus, a more detailed analysis at the individual bank level is highly recommended.

An additional conclusion refers to the adequate design of the implementation schedule for the new capital standard. Although Mexico and Brazil hastened the implementation of minimum capital requirements relative to the schedule proposed by Basel III, it may not be recommendable for Chile to do the same in view of the fact that the current international economic and financial situation is becoming less favorable for emerging countries. This might affect financial strength and solvency indicators in these countries, including Chile. In addition, the Chilean experience in the process of implementing Basel recommendations regarding liquidity ratios may provide lessons for the possible implementation of the new capital standard. For example, it is appropriate that Chilean regulators are proposing gradualness and a sufficiently long timeframe for implementing new liquidity regulations. These precautionary measures may also be essential to ensure the effectiveness of regulatory changes for capital requirements.

Finally, it is suggested that a more detailed analysis is needed to determine which Basel III recommendations on capital should be *adapted* to the Chilean context. To illustrate, a quantitative exercise in this paper suggests that it would not be appropriate for Chile to use the reference indicator suggested by Basel III (the deviations of the credit/GDP ratio with regard to its trend) for activating (or deactivating) the countercyclical capital buffer. The *preliminary* result is that for Chile (and other countries in the region), using this indicator would contribute to the capital buffer behaving in a pro-cyclical manner relative to economic activity, which is *precisely the opposite of what Basel III intends*. To conclude, it would be appropriate for Chilean authorities to consider alternative methodologies for implementing countercyclical capital.

It is hoped that this paper will help support the consultation process among supervisors and banks for the potential implementation of the new Basel III recommendations on capital. As mentioned in the paper, a more detailed analysis at the individual bank level is needed in order to continue making progress towards more refined conclusions.

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