“Basel III: impact on Latin America”

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ARTICLE INFO	Maria Pilar Giráldez-Puig and Emma Berenguer (2013). Basel III: impact on Latin America. *Banks and Bank Systems*, *8*(3)
RELEASED ON	Wednesday, 16 October 2013
JOURNAL	"Banks and Bank Systems"
FOUNDER	LLC “Consulting Publishing Company “Business Perspectives”

NUMBER OF REFERENCES

0

NUMBER OF FIGURES

0

NUMBER OF TABLES

0

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BUSINESS PERSPECTIVES

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Basel III: impact on Latin America

Abstract

One of the impacts most widely expected and analyzed by international economists regarding the application of the Basel III requirements is the credit squeeze from the financial institutions towards the private sector of a given country, largely due to the increase in capital requirements. However, it seems unlikely that these negative effects will occur in countries that have a previous implementation of Basel III requirements.

The main goal of this paper is to analyze the degree of implementation and compliance with the Basel III regulations in Brazil, Mexico and Colombia. The study conducted shows that the analyzed countries have met the Basel III capital and leverage requirements since 2005 due to the reasonable and strict regulation previously implemented. It can therefore be stated that the implementation of the new capital requirements will not have a significant impact on the credit flow among the different financial agents that revitalize the international economies.

Nevertheless, to meet the liquidity requirements on time an effort should be made to enhance the capital markets and sovereign risk.

Keywords: Basel III, financial systems, Latin America, credit squeeze.
JEL Classification: G21, G28, G10.

Introduction

The recent global financial crisis has proven that the good state of a country's financial sector has far-reaching consequences for both its economy and foreign economies. It has also highlighted some inadequacies in the regulatory framework set by the Basel I and Basel II Accords (Rodríguez, 2011). For these reasons, the regulatory authorities established in collaboration with the G-20 an evaluation period for the existing financial regulations at the global level in order to determine the amendments needed for the strengthening of the financial systems of the different economies. As a result, Basel III was developed in December 2010. This new accord includes a series of recommendations in order to enhance the absorption of losses of the undersigned financial systems and ultimately achieve more financial stability worldwide (Schinasi, 2004).

Nonetheless, the greater demand to the banks in terms of capital and liquidity is expected to entail an increased cost of loans and commissions for families. The deposit interest rates will in turn be reduced. Companies will also be affected by these restrictions and will have to consider other bank options for financing. The work of Gual (2011) thoroughly analyzes the foreseeable impact of the accord on the economy and on the banking sector.

The Basel Committee was fully aware of the impact of its own recommendations and of the difficult international economic situation, which is why it has established a gradual implementation schedule so as to ensure the adoption of the measures for the financial institutions to strengthen capital and liquidity levels.

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Those countries which gradually implement said measures will largely lessen the expected negative effects.

The main goal of the present paper is to analyze the degree of implementation and compliance with the Basel III regulations in some Latin American countries. Our research question is to what extent is Basel III implemented in those countries?

A specific and empirical analysis was carried out as to the compliance with the new regulatory standard on the part of the Brazilian, Mexican and Colombian most important financial institutions in terms of volume of assets.

With this goal in mind, a series of measures has been taken to evaluate the implementation of capital, debt and liquidity requirements. For the assessment of capital requirements, the percentage of the Tier 1 ratio and the regulatory capital were used; for the leverage, the Tier 1 ratio was used – Risk-Weighted Assets (RWA) of said norm; and for the liquidity requirements, the liquidity coverage ratio was used as defined by the quotient between the fund for high-quality liquid assets and the total net cash outputs within the following thirty calendar days. The BankScope database was used as a source for data collection.

The study conducted shows that the analyzed countries have complied with the Basel III capital and leverage requirements since 2005 due to the reasonable and strict regulation previously implemented. Over the last few years, said countries have experienced an economic growth which has been caused by the smooth running of their financial systems. It can therefore be said that, in the case of our sample of Latin American countries, the implementation of the new capital requirements will not have a signifi-

cant impact on the credit flow among the different financial agents that revitalize the international economies. However, the liquidity requirements need bigger effort as none of the countries reach the standard imposed.

The present work is structured as follow. Section 1 is a review of the different Basel accords, section 2 concerns the empirical work, and the policy implications and conclusions have been drawn up in the final section.

1. Theoretical framework

1.1. From Basel I to Basel III. The Committee on Banking Supervision (CBS) was founded by the G-20[1] countries in 1974 in order to coordinate the supervision of the international banks. Since it was established, the Committee has served as a discussion forum to enhance the betterment and convergence of baking supervision practices and rules. It has also sought to improve the international control tools through different approaches and common standards.

The first Capital Accord was published in 1988 and was known as *Basel I*. It involved a series of recommendations to set the minimum capital a bank should hold according to the risks it would have to face. The minimum capital was set at 8% in terms of assets included in the ratio numerator on the risk-bearing items of the denominator. The main risk for the capital requirements was the credit risk or the risk for credit holders or loan issuers to not meet the undertaken obligations regarding the granting of a loan or the securities purchased by the bank (Afi, 2010). Over the course of the years, the Basel Committee passed an amendment for the inclusion of market risks in January 1996.

The resounding success of this regulation was largely due to its straightforward application and the great appeal of standardizing criteria within an international industry. However, its straightforwardness also meant that the true risks could not be fully identified. This is why the imbalance between the growing banking sector and the regulated capital for solvency compliance gradually increased. This situation and the new risk measurement and management models led to the enlargement of the accord. In June 1999, the Basel Committee opened a period for draft submissions followed by different consultation periods on the new accord, which would replace the 1988 accord and its 1996 amendment. The Basel II Accord was published by the Committee in 2004.

Given its length and complexity, Basel II was far from being a simple accord. It sought to keep promoting the security and strength of the financial system by offering a more comprehensive risk management method. The accord was based upon three pillars:

- Minimum capital requirements, which remained at 8% and were still based on the key elements of Basel I.
- Banking supervision. The authority in charge of banking supervision would be responsible for each bank to have reliable in-house risk measurement systems and procedures. Said authority would also be expected to set capital goals according to the risk profile and specific features of each bank – if applicable, the goals would be higher than established in Pillar I.

Effective use of market discipline, which was intended to be enhanced by increasing the amount and quality of the published financial information.

Managers, directors as well as internal and external auditors needed to be highly involved in order for the accord to be successful. However, the accord itself provided the so-called "regulatory capture" on the part of the bankers – the banks would exert pressure on the supervisor to reduce the solvency ratios in practice (Dewatripont et al., 2010; Hellwig, 2010). According to the OECD (2010), the last few years have been framed within a context of innovation, debt and risk where regulators have reoriented their own supervision systems to provide a greater degree of self-control for the banks and for the discipline arisen from the decisions of savers and investors. All of this has resulted in the incentives created within the banks in favor of excessive risk-taking, pro-cyclical[2] behaviors, huge debts and a level of assets following the Basel I and II recommendations that turned out to be inadequate (Repullo and Suárez, 2009; Papanikolaou and Wolff, 2010).

According to Stefan Walter, Secretary General of the Basel Committee on Banking Supervision, "there are different factors that led to the crisis. The excess of liquidity, which resulted in high levels of credit and weak standards for credit granting, tops the list. The weakness of the banking sector was largely due to the excess of leverage, the lack of quality capital and inappropriate liquidity barriers, which caused the system to become riskier." As a result, the Basel Committee published Basel III with the aim of dealing with the lessons learnt after the crisis and strengthening the risk regulation, supervision and management within the banking sector. This new accord is framed

[1] The committee is made up of the following members as of today: Belgium, France, Canada, Germany, Italy, Japan, the United Kingdom, the United States, the Netherlands, Switzerland, Luxembourg and Spain.

[2] Criteria for flexible loan grants in periods of economic prosperity and restrictive loan grants during recessions.

within a wider series of reforms led by the G-20 countries and affects the entire financial system and the economy in general.

1.2. Basel III. Basel III was drawn up in order to amend the main problems detected in Basel I and II as a consequence of the financial crisis: (a) lack of effective solvency of banks and flaws of liquidity control; (b) pro-cyclical behaviors; (c) systemic risk.

Basel III therefore, includes the following elements (Elorriaga, 2010):

- Increase in quality capital so as to safeguard the absorption of losses. Basel II included virtually the same definition of capital as established in the 1988 Accord.
- Improvement of risk capture. The calculations of risks for certain exposures are modified after it was demonstrated that they had been wrongly captured during the crisis. In particular, this affects trading book activities, securitizations, exposures to off-balance sheet vehicles and to risk of counterparty failure derived from exposures in derivatives. The remaining items are dealt with according to Basel II.
- Creation of buffers during periods of economic prosperity so they can be used during stressful periods. This seeks to develop a more stable banking system that will help mitigate future economic and financial crises instead of worsening them.
- Implementation of a leverage ratio as a complementary measure to the risk-based solvency ratio in order to contain the excessive leverage of the banking system.
- Higher level of capital requirements in order to enhance bank solvency and contribute to greater financial stability. The solvency ratio level had not been modified in Basel II.
- Improvement of the supervisory review process standards (Tier 2) and market discipline standards (Tier 3) as well as introduction of additional guidelines on liquidity risk management, best practice for financial tool assessment, stress exercises, corporate governance and remuneration.

Implementation of a liquidity standard that includes a short-term liquidity coverage ratio and a long-term structural liquidity ratio. The goal is to ensure that banks have enough liquidity buffers to face a possible market tension and a balance sheet structure which is not excessively reliant on short-term financing.

As shown in Table 1, the reform package will come into force January 1, 2013, but it will be gradually implemented. The capital measures will be implemented between 2013 and 2019. The leverage ratio will be implemented in 2018 and until then a trial period will start in order to analyze the leverage behavior and the suggested design and weighting. The final design and weighting for this ratio will be approved in 2017. The implementation of the short-term liquidity ratio will occur in 2015 and the structural liquidity ratio will be introduced in 2018 after the corresponding observation periods and the review of their designs.

Table 1. Basel III implementation schedule

	2011	2012	2013	2014	2015	2016	2017	2018	From January 1, 2019
Leverage ratio	Supervisory control		Parallel implementation January 1, 2013 - January 1, 2017 The dissemination will start January 1, 2015					Migration to pillar 1	
Common equity capital ratio			3.5%	4.0%	4.5%	4.5%	4.5%	4.5%	4.5%
Capital buffer						0.625%	1.25%	1.875%	2.50%
Common equity ratio + capital buffer			3.5%	4.0%	4.5%	5.125%	5.75%	6.375%	7.0%
Percentage of deductions applicable to common equity (including tax assets, holdings in financial institutions, rights to mortgage debt service)				20%	40%	60%	80%	100%	100%
Tier 1 ratio			4.5%	5.5%	6.0%	6.0%	6.0%	6.0%	6.0%
Total capital ratio			8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%
Total capital ratio + capital buffer			8.0%	8.0%	8.0%	8.625%	9.25%	9.875%	10.5%
Capital elements not suitable for Tier 1 and Tier 2			To be gradually withdrawn within 10 years starting 2013						

Table 1 (cont.). Basel III implementation schedule

	2011	2012	2013	2014	2015	2016	2017	2018	From January 1, 2019
Liquidity coverage ratio	Observation period starts				Minimum standard is implemented				
Net stable funding ratio		Observation period starts						Minimum standard is implemented	

Source: Based on information from the BCBS.

The Basel Committee was fully aware of the impact of its suggestions. Given the difficult economic situation worldwide, it decided to set this gradual implementation schedule in order to safeguard the right adoption of these measures that would lead the banks to increase both capital and liquidity levels.

The implementation of these new regulations in each country will be largely dependent on the current situation of the local regulations, the regulators' attitude towards the hardness and laxity in incorporating the decisions made, and the financial and economic context of each country.

1.3. Implications of Basel III for the banks. The increase in the number of a bank's reserves implies a new asset composition that will contribute to greater liquidity and risk sensibility, which directly affects not only the liability stability, but also how and when to finance.

The implementation process of the new regulations is expected to increase the interest level and therefore the credit and commission levels. It is also expected to have an effect on bank funding and to imply greater collection of deposits as well as a possible concentration process within the sector in order to take advantage of economies of scale and synergies which will mitigate the impact on the profitability of the costs of the new regulations.

It is expected that all of the above described elements will have an effect on the people, as their credit interests will raise and their deposit interests will be reduced.

2. Empirical study

The goal of the present paper is to analyze the implementation and compliance with the Basel III standards in Latin America (LATAM). Our hypothesis is that most of the financial institutions of these countries have already a high degree of implementation of these requirements.

A sample of Latin American countries has been used as it was not possible to analyze each and every country. The selection was based upon the following criteria:

1. All countries must have signed the Basel III Accord[1] and must be committed to its compliance. Brazil, Mexico and Argentina are the only Latin American undersigned countries which show a high degree of compliance with the Basel III standards.
2. The financial sectors of the countries must have a significant systemic importance. On the basis of said criterion, the Financial Sector Assessment Program (FSAP), created jointly by the IMF and the World Bank, was used to assess the financial sectors of the countries – their weaknesses and strengths – so as to lower the crisis likelihood. The target financial sectors for this program are those which show greater vulnerability to entail a systemic risk through the SIFIs within the international financial system. According to the FSAP, Mexico and Brazil are two of the most internationally important countries in terms of financial interconnectedness.
3. Countries with a greater GDP. According to an economic criterion, the IMF database (2011) was used. The countries selected for the present study are Brazil, Mexico, Argentina and Colombia, in decreasing order based on their GDP.

In conclusion, according to the selection criteria used and described above, the countries selected for the present study are Brazil, Mexico, Argentina and Colombia.

In order to carry out this study, the Basel III key elements included in the account statements of the each country's largest banks in volume of assets will be analyzed.

The structure of the Argentinian, Brazilian, Colombian and Mexican financial systems has a common factor as the commercial banks are the main representatives of said structure. In these countries, the financial systems are concentrated and the allocation of financial assets is unbalanced, since only the five or six main financial institutions of each country, in decreasing order by volume of assets, hold over 50% of them. In addition, a very high number of foreign pri-

[1] See the last report published by the Basel Committee on Banking Supervision, which shows an update of the Basel III application and a monitoring of its implementation in each of the Committee member states (April 2012).

vate financial institutions are active in these countries, most of which come from North America and Europe.

It is also important to point out that the regulatory authorities of each country have made public their willingness to subscribe to the international standards involved in the Basel III Accord. Despite the country-based differences in the implementation schedule, the implementation framework set in Basel III has always been met. In fact, Mexico and Brazil are a step ahead in the implementation of the regulations, while Colombia and Argentina are starting to incorporate the new requirements into their national laws. In order to analyze the Basel III ratios in the financial sectors of Argentina, Brazil, Colombia and Mexico, a representative sample of the financial institutions active in each of the countries has been selected. These financial institutions have been selected according to their volume of assets in relation to the total assets within the financial sector concerned. With this criterion in mind, the financial institutions of each country that hold together over 50% of the total assets of the financial sector have been selected for the present study. The Central Bank of each country was ruled out.

Table 2 shows the selection of financial institutions for each of the four countries. There are five institutions per country.

Table 2. Selection of financial institutions for each country

Argentina			Mexico		
Financial institution	Assets (thousands of USD)	% held	Financial institution	Assets (thousands of USD)	% held
Banco de la Nación Argentina	36,885,318	22.76%	BBVA Bancomer S.A.	87.411	18.32%
Grupo Financiero Galicia S.A.	11,949,813	30.13%	Banco Nacional de México, BANAMEX	79.412	34.96%
Banco de Galicia y Buenos Aires S.A.	11,824,837	37.43%	Banco Santander (Mexico) S.A.	52.826	46.03%
Banco de la Provincia de Buenos Aires	11,006,793	44.22%	Banco Mercantil del Norte, BANORTE	45.567	66.57%
Banco Santander Rio S.A.	10,716,807	50.84%	HSBC México, S.A.	34.743	73.85%
Brazil			Colombia		
Financial institution	Assets (thousands of USD)	% held	Financial institution	Assets (thousands of USD)	% held
Banco do Brasil S.A.	523.295	23.60%	Bancolombia	43.992	22.40%
ItauUnibanco Holdings	454.019	44.07%	Banco de Bogotá	35.420	40.43%
Banco Bradesco S.A.	406.129	62.39%	Sociedades Bolívar S.A.	21.753	51.51%
Banco Santander (Brazil) S.A.	213.269	72.01%	Banco Davivienda	18.870	61.12%
HSBC Bank Brasil S.A. – Banco Multiplo	69.824	75.16%	BBVA Colombia S.A.	13.440	67.96%

Source: Based on information from BankScope.

In the case of Brazil, it is noticeable that the top five banks hold around 75% of the financial sector, which indicates that 12.5% of Brazilian banks hold 75% of the national bank assets – it is therefore a market which is highly concentrated on the main financial institutions. The Colombian banking sector is also highly concentrated as its top three institutions hold over 50% of the total assets of the sector.

After the selection of the institutions, a series of Basel III ratios is calculated by using data from the annual accounts of each institution so they can be subsequently compared with the Basel III minimum requirements. This is how each country's degree of compliance with the international standards will be individually analyzed.

The empirical study deals with capital requirements, leverage ratio and liquidity ratio.

2.1. Capital requirements. According to the Basel Committee, the core capital or level 1 capital (Tier 1) is the key capital element which must serve as the basis for the remaining Basel III capital requirements. The core capital is made up of the common equity and the disclosed reserves. Tier 1 must also be the only common element to the banking systems of every country and must be clearly indicated in the published statements. In addition, it is the basis for most international markets to assess capital adequacy and influences greatly a bank's profit margins and competitiveness.

For these reasons, *Tier 1* and *total regulatory capital* have been selected for the empirical analysis among all capital ratios.

According to Basel III, the Tier 1 minimum requirements are 6% and 8% for the Total Regulatory Capital without a capital buffer. Tables 2, 3 and 4 below show the Tier 1 ratio for each institution of the countries included in the analysis. It can be noticed that Argentina has been excluded from the capital ratio analysis due to a total lack of information regarding its financial institutions.

Table 3. Tier 1 ratio for the Brazil sample (%)

Institution	2005	2006	2007	2008	2009	2010	2011
Banco do Brasil, S.A.	11.7	11.65	11.95	10.9	9.7	11.02	10.53
ItauUnibanco Holdings	13.9	15.8	14.2	12.5	13.7	11.8	12.59
Banco Bradesco S.A.	13.65	11.5	11.58	10.24	12.84	14.8	13.1
Banco Santander (Brazil) S.A.				Unavailable	Unavailable	Unavailable	Unavailable
HSBC Bank Brasil S.A. – Banco Multiplo						10.42	10.34

Source: BankScope (2012).

Table 3 above shows that the most important Brazilian financial institutions present a notably high degree of compliance with the Tier 1 requirement as set in Basel III Accord due to a more restrictive banking national act that requires a minimum of 11%.

Table 4. Capital ratio for the Brazil sample (%)

Institution	2005	2006	2007	2008	2009	2010	2011
Banco do Brasil, S.A.	17.11	17.29	15.6	15.15	13.7	14.08	13.98
ItauUnibanco Holdings	17	17.2	17.9	16.3	16.7	15.4	16.37
Banco Bradesco S.A.	16.08	15.23	16.48	16.55	16.09	17.8	14.7
Banco Santander (Brazil) S.A.				14.7	25.6	22.1	19.9
HSBC Bank Brasil S.A. – Banco Multiplo						13.05	13.69

Source: BankScope (2012).

The total regulatory capital in the Brazilian institutions depicted in Table 4 also stands at over 8% for the reason explained under Table 3.

Table 5. Tier 1 ratio for the Colombia sample (%)

Institution	2005	2006	2007	2008	2009	2010	2011
Bancolombia	9.25	8.27	10.14	8.95	10.4	10.32	8.99
Banco de Bogotá							
Banco Davivienda			8.3	8.3	8.4	9.6	12.44
BBVA Colombia	8.46	9.31		8.26	9.96	9.02	9.51
Banco de Occidente					9.58	10.18	8.84

Source: BankScope (2012).

Tables 5 and 6 show that the banks of the Colombia sample also comply with the Basel III minimum requirements.

Table 6. Total regulatory capital for the Colombia sample (%)

Institution	2005	2006	2007	2008	2009	2010	2011
Bancolombia	10.93	11.12	12.67	11.24	13.23	14.67	12.46
Banco de Bogotá							
Banco Davivienda			11.6	12.8	12.1	13.1	15.7
BBVA Colombia	10.55	14.04		10.95	12.4	10.5	12.33
Banco de Occidente							

Source: BankScope (2012).

Mexico also goes in the same line as the capital ratios analyzed for the selected institutions also meet the Basel III requirements as shown in Tables 7 and 8.

Table 7. Tier 1 ratio for the Mexico sample (%)

Institution	2005	2006	2007	2008	2009	2010	2011
Bancomer (BBVA)	13.29	14.07	12.25	10.55	11.93	12.14	11.34
Banamex (Citigroup)	11.50	15.75	16.95	17.39	18.30	19.41	15.10
Banco Santander	11.63	13.40	14.21	11.31	11.82	15.31	14.53
Banorte	11.85	12.31	10.31	9.36	11.95	12.06	10.76
HSBC	12.06	12.29	12.81	10.22	13.86	11.24	11.84

Source: BankScope (2012).

Table 8. Total regulatory capital for the Mexico sample (%)

Institution	2005	2006	2007	2008	2009	2010	2011
Bancomer (BBVA)	14.62	15.19	14.32	14.14	14.92	15.10	15.84
Banamex (Citigroup)	11.97	16.09	17.23	17.65	18.83	19.80	15.28
Banco Santander	11.80	13.70	14.45	11.51	12.01	15.56	14.83
Banorte	15.01	17.47	13.93	15.01	16.77	16.12	12.90
HSBC	14.32	13.79	14.23	12.95	17.82	14.55	15.36

Source: BankScope (2012).

According to the analyses of capital ratios for the three countries above, it can be concluded that the main financial institutions of the countries perfectly meet the Basel III requirements.

2.2. Leverage ratio. The Basel III Accord introduces the leverage ratio as a means to strengthen the banking system. This ratio is complementary to the risk-based solvency ratio. It is a simple measure that aims at limiting excessive leverage and relates a bank's capital and exposure.

The Basel Committee agreed on its own design in 2010. Given that it would be a brand new measure, a trial period was set until 2017. *The leverage rate must not exceed 3%.*

The leverage ratio for the present empirical analysis is based on different balance sheet items of the financial institutions – it is a calculation known and used worldwide. If the assets of an institution are greater than its core capital by over 3%, it is considered a highly-leveraged balance sheet.

The formula to be used is the following:

$$Leverage\ ratio = \frac{Tier\ 1\ Capital}{Risk - Weighted\ Assets}. \quad (1)$$

Tables 8, 9 and 10 show the result of this ratio for each institution throughout the years included in the study. Argentina has also been excluded from the analysis due to a lack of information.

The three countries analyzed meet the Basel III minimum requirement. In the case of Colombia, there is information concerning only two out of the five financial institutions.

Table 9. Leverage ratio for the financial institutions in Brazil (%)

Institution	2005	2006	2007	2008	2009	2010	2011
Banco do Brasil, S.A.	67.46	66.76	68.09	68.08	63.04	72.74	68.95
ItauUnibanco Holdings	84.3	91.39	70.83	80.26	80.71	75.61	75.89
Banco Bradesco S.A.	74.09	69.73	71.77	80.91	81.36	87.45	79.58
Banco Santander (Brazil) S.A.					52.17	63.55	71.61
HSBC Bank Brasil S.A. – Banco Multiplo						77.65	71.8

Source: BankScope (2012).

Table 10. Leverage ratio for the financial institutions in Colombia (%)

Institution	2005	2006	2007	2008	2009	2010	2011
Bancolombia	6.89	7.17	7.33	6.52	7.98	8.3	7.43
Banco de Bogotá							
Banco Davivienda			1.66	4.43	4.83	8.43	10.26
BBVA Colombia							
Banco de Occidente							

Source: BankScope (2012).

Table 11. Leverage ratio for the financial institutions in Mexico (%)

Institution	2005	2006	2007	2008	2009	2010	2011
Bancomer (BBVA)	11.14	12.64	13.17	7.40	9.92	11.36	10.57
Banamex (Citigroup)	9.85	15.33	18.83	10.21	10.50	10.09	8.64
Banco Santander	10.84	12.21	17.67	9.53	11.84	11.03	10.18
Banorte	8.72	8.79	8.34	4.29	6.28	6.67	5.61
HSBC	7.21	8.19	9.02	5.73	9.65	7.54	6.94

Source: BankScope (2012).

In the light of these results, it can be concluded that the main banks of Brazil and Mexico have met the leverage requirements since 2005.

2.3. Liquidity requirements. Basel III introduces new measures in order to assess the liquidity of financial institutions: the liquidity coverage ratio, a new short-term measure that requires a stock of liquid assets, and the structural liquidity ratio, which is a long-term indicator. According to the Basel III Accord both ratios should be *greater than 100%.* The liquidity coverage ratio (LCR) is calculated as follows:

$$LCR = \frac{Fund\ for\ high-quality\ liquid\ assets}{Total\ net\ cash\ output\ within\ the\ following\ 30\ calendar\ days} \quad (2)$$

Given the complexity of the calculation and the ultimate goal of the present work, an approximation of the liquidity ratio was used as provided by the BankScope database. Table 12 (below) shows the result for the selected financial institutions in Brazil.

Table 12. Liquidity coverage ratio for the financial institutions in Brazil (%)

Institution	2005	2006	2007	2008	2009	2010	2011
Banco do Brasil, S.A.	29.67	45.99	37.49	45.45	47.08	40	44.22
ItauUnibanco Holdings	55.57	70.78	61.78	58.64	62.65	52.21	50.43
Banco Bradesco S.A.	65.77	81.04	63.56	65.99	71.19	56.61	68.79
Banco Santander (Brazil) S.A.				37.41	48.42	55.75	29.72
HSBC Bank Brasil S.A. – Banco Multiplo						55.27	52.58

Source: BankScope (2012).

Unlike the ratios previously analyzed, the liquidity coverage ratio is far from the Basel III minimum requirement (set at 100%). It can therefore, be stated that the financial institutions selected for the sample do not meet the Basel III liquidity coverage ratio as of today. In order to solve this, the Brazilian banks should work on improving their high-quality liquid assets or liquidable assets, or on reducing their exposure as borrower or debtor towards third parties in cases of the great tension. Table 13 shows the liquidity ratio results for the Colombian institutions selected for the study.

Table 13. Liquidity coverage ratio for the financial institutions in Colombia (%)

Institution	2005	2006	2007	2008	2009	2010	2011
Bancolombia	33.29	17.32	17.33	16.37	21.9	16.52	18.49
Banco de Bogotá						23.88	19.57
Banco Davivienda	35.92	25.3	23.07	22.04	23.57	19.22	24.67
BBVA Colombia	25.78	18.96	20.98	18.69	19.37	17.32	17.67
Banco de Occidente				24.12	29.44	18	16.16

Source: BankScope (2012).

In the case of Colombia, the liquidity coverage ratio is always lower than 100%. It can, therefore, be concluded that, as in the case of Brazil, the financial institutions selected do not meet the Basel III liquidity coverage ratio.

Table 14 shows the liquidity coverage ratio evolution for each Mexican financial institution selected for the present study. In this case, none of the banks meets the Basel III requirements in terms of liquidity as all of them are below 100%.

Table 14. Liquidity coverage ratio for the financial institutions in Mexico (%)

Institution	2005	2006	2007	2008	2009	2010	2011
Bancomer (BBVA)	36.17	35.04	30.64	71.05	63.35	36.09	39.94
Banamex (Citigroup)	45.51	56.24	56.40	72.67	54.99	61.54	52.20
Banco Santander	39.28	46.37	45.94	89.55	77.57	88.70	75.94
Banorte	33.45	33.38	23.22	21.61	17.14	24.84	22.98
HSBC	28.62	29.36	34.02	36.12	42.21	28.64	29.50

Source: BankScope (2012).

Overall, none of three countries of the present analysis meets the Basel III liquidity requirements. This seems reasonable since these new measures have been implemented for the first time and the countries will need to gradually deal with them as the corresponding regulatory authorities incorporate them into their national laws. After analyzing all the data, it can be noticed that the three countries meet

two out of the three main factors studied – capital requirements and leverage requirements – but they do not meet the liquidity requirement.

In the case of *Brazil*, only the capital requirements have been incorporated into the national law. The results show that the country's banks comply with the capital regulations and will therefore have no trouble meeting the leverage ratio, which is expected to be implemented in the short term. However, Brazil is still far from meeting the liquidity requirements.

The *Colombian* financial sector seems to be in a very good condition. The banks will easily meet the capital requirement and the leverage ratio as the regulatory authorities implement the Basel III requirements. The main noticeable problem concerns liquidity, which appears to be the weakness of the Colombian banking sector.

In the case of *Mexico*, the financial authorities have been very actively involved in the drafting of the Basel III recommendations, as Mexico was present in all of the G-20 meetings. The country signed hereby the Basel III Accord.

In addition, the Mexican authorities have made great progress in issues such as bank capitalization and financial system regulations over the last few years at the national level – for instance, a strict definition of capital similar to that of Basel III was introduced. After such great efforts, the Mexican financial system recovered at a very early stage from the global financial crisis and reached the current financial stability before the crisis as well as an outstanding level of capitalization of its own financial system. Nevertheless, some other fundamental reforms must still be implemented (i.e. in terms of liquidity) in order to fully comply with the Basel III international regulations.

In conclusion, none of the analyzed countries reach the liquidity requirement. In order to meet with the proposed schedule, financial institutions should invest in high quality liquidity assets. The existence of developed capital markets and appropriate credit instruments greatly facilitate this goal. This is an opportunity for these countries to develop the debt market and improve sovereign risk.

Conclusions

The present paper analyzes the degree of implementation of the Basel III Accord in a sample of financial institutions of three different Latin American countries: Brazil, Colombia and Mexico. Our hypothesis is that most of the financial institutions of these countries have already a high degree of implementation of these requirements.

For this purpose, a series of measures was taken in order to analyze the implementation of capital, debt and liquidity requirements. For the capital requirements, the Tier 1 ratio percentage and the regulatory capital were used; for the leverage, the Basel III Tier 1/Risk-Weighted Assets relationship was used; and for the liquidity requirements, the liquidity coverage ratio was used as defined through the quotient between the fund for high-quality liquid assets and the total net cash output within the following thirty calendar days. All data have been collected from the BankScope database.

First of all, regarding capital requirements, the main conclusion that can be drawn concerns the fact that all countries analyzed comfortably comply with the regulation in spite of a certain degree of dispersion between the countries and the different financial institutions included in the analysis. The range of values for Tier 1 lies between 8.3% and 19.41% so the dispersion range is higher than 10% in absolute terms. As far as the Regulatory Capital is concerned, the same conclusion can be drawn as the range of values ranges between 10.95% in 2009 in Colombia and 25.6% for the same year in Brazil.

In addition, there is a notable generalized weakness of the capital strength during the 2008-2009 critical period when the bankruptcy of Lehman Brothers – which occurred again in the first quarter of 2009 – affected the markets with a particular impact on the financial sector.

The recent crisis has made evident the fact that the capital levels in the banking system were inadequate, since the capital quality of the banks had been deteriorated and the banking system was highly leveraged in many countries.

The leverage ratio in Basel III was set at 3% and will come into effect in 2017 given the obvious excessive indebtedness of the financial system in many countries.

As for the financial institutions of the analyzed countries, it can be said that the minimum requirement is comfortably met – Brazil is the country that meets the Basel requirements to a greater extent. However, in the case of Colombia, three out of the five financial institutions have not been analyzed due to a lack of data.

The liquidity coverage ratio is a novel short-term measure that has not been implemented in most countries yet and requires a stock of liquid assets higher than 100% of the net cash output within the thirty following calendar days. It seeks to ensure that the banks have enough liquidity buffers to face stressful situations in the markets as well as the control of short-term financing.

None of the three analyzed countries meets the set standard even though it will not be a requirement until 2015 according to the schedule presented by

the Committee. However, Brazil is again closer to meeting the regulation requirements, as its range of values for 2011 ranges between 30% and 69% approximately. Mexico would follow with very inconsistent values, ranging from 23% of Banorte to nearly 76% of Banco Santander for the latest year included in the analysis. The LCRs of Colombia are considerably lower as they do not reach 20%.

The authors consider that the existence of developed capital markets and appropriate credit instruments would greatly facilitate this goal. This is also an opportunity for these countries to develop the debt market and improve sovereign risk. This would prevent banks from buying sovereign debt in other countries and would develop the country itself.

In conclusion, it can be stated that the implementation of Basel III in these three countries is experiencing a good development. It can therefore be expected that the countries will comply with the regulations within the schedule established by the Committee.The study conducted shows that the analyzed countries have met the Basel III capital and leverage requirements since 2005. It can therefore be stated that the implementation of the new capital requirements will not have a significant impact on the credit flowamong the different financial agents that revitalize the international economies.

Nevertheless, to meet the liquidity requirements on time an effort should be made to enhance the capital markets and sovereign risk.

The authors consider that there are several limitations in our study, being the lack of data the most important. It would have been desirable to have included more countries and more years. Also, further research involving credit squeeze related to the requirements of Basel III would be interesting.

Acknowledgement

This article has been financed by the Ministry of Education, Science and employment of the Board of Andalusia, through the project SEJ141 – Business and Market Finance.

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