

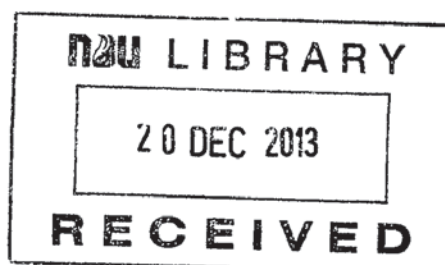
**Notre Dame University
Faculty of Business Administration & Economics
Graduate Division**

The Impact of Basel III on Lending Spreads of Banks (Group Alpha)
Operating in Lebanon?

**A Thesis Submitted in Partial Fulfillment
of the Requirements for the Degree
of the Master of Business Administration
(M.B.A.)**

Pierre Saliba

**NDU-Lebanon
2013**



Approval Certificate

The Impact of Basel III on Lending Spreads of Banks (Group Alpha)
Operating in Lebanon?

BY

Pierre Saliba

Approved

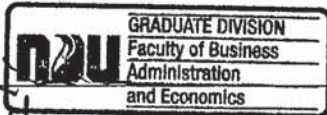


Signature: _____
First Reader

Signature:  _____

Second Reader 25/7/2013

Signature:  _____




Assistant Dean, FBAE

August 23, 2013
Date

DECLARATION

I hereby declare that this thesis is entirely my own work and that it has not been submitted as an exercise for a degree at any other University.

Copyright by Notre Dame University, Louaize, Lebanon

FULL NAME

Abstract

After the financial crisis of 2008, the Basel Committee on Banking Supervision announced the Basel III reforms that can increase the quantity, quality, consistency, and transparency of a bank's capital. Banks can adjust to the regulatory reforms in a number of ways. In this paper, we assume that Lebanese banks seek to pass on any additional costs of meeting regulations by raising the loan rates. The aim of this paper is to study empirically the relationship between capital and lending spreads of banks operating in Lebanon, group alpha. Following the release of Basel III requirements, Lebanese monetary authorities demanded that its banks acquire a Capital Adequacy Ratio (CAR) of at least 12% by the end of 2015, which is higher than the 8% rate demanded by Basel III. Adopting the model proposed by King (2010), we estimate the potential impact of capital regulations imposed by Basel III on the lending spreads of Lebanese banks. Every percentage point increase in capital is offset by an x basis/percentage point increase in lending spreads, assuming the return on equity (ROE) and the cost of debt are unchanged. According to King, the higher cost associated with a one percentage point increase in the capital ratio can be recovered by increasing lending spreads by 15 basis points for a representative bank. The estimation results of this study show that the required increase in lending spreads vary across the Lebanese bank population, ranging from 8 basis points to 36 basis points. Based on the results of this study, it is estimated that most of the Lebanese banks will be in compliance with Basel III requirements as of 2015, and some will certainly be in default by 2019.

Keywords: Basel III, lending spreads, capital, regulation, Lebanese banks, group alpha, capital adequacy ratio

LIST OF TABLES

Table 1: Byblos bank balance sheet as at December 31, 2011.....	62
Table 2: Byblos bank income statement as at December 31, 2011.....	63
Table 3: Weighted average α of Group Alpha banks in Lebanon.....	66

LIST OF FIGURES

Figure 1: The three pillars of Basel II.....	10
Figure 2: Breakdown of assets in Lebanese Banks at year-end 2011.....	31
Figure 3: Basel III and BDL capital requirements comparison.....	39
Figure 4: Stylized framework of the economic impact of regulatory framework.....	46
Figure 5: BCCL “QIS” as at December 31, 2011.....	68

ACKNOWLEDGMENTS

I would like to express my very great appreciation to Dr. Nicholas Bitar for his valuable and constructive suggestions and enthusiastic encouragement during the planning and development of this work. I would also like to thank Mr. Elias Moukayed for his advice and assistance in keeping my progress on schedule.

I owe my deepest gratitude to Dr. Roy Khoueiri without his help, support and unsurpassed knowledge this thesis would not have been possible.

My grateful thanks are also extended to Dr. Elie Menassa for his willingness to give his professional guidance in order to help to complete this work.

I would also like to extend my thanks to the professors and the staff of the NDU, especially Mrs. Norma Freiha for her patient guidance and friendship.

My sincere thanks also go to my family for their personal support and great patience at all times. To my lovely wife Khouloud, who provided constant encouragement during the entire process. To my children Mona and Michael who missed on a lot of Daddy time.

I wish to thank my parents for their support and encouragement throughout my life and my study.

CONTENTS

ABSTRACT.....	IV
LIST OF TABLES.....	V
LIST OF FIGURES.....	VI
AKNOWLEDGMENTS.....	VII
Chapter 1.....	1
INTRODUCTION.....	1
1.1 General Background about the Topic.....	1
1.2 Need for the Study.....	4
1.3 Purpose of the Study.....	4
1.4 Brief Overview of all Chapters.....	5
Chapter 2.....	6
REVIEW OF LITERATURE.....	6
2.1 Introduction.....	6
2.2 The Bank for International Settlements.....	6
2.3 The Basel Committee on Banking Supervision.....	7
2.4 Basel I.....	8
2.5 Basel II.....	9
2.5.1 Pillar I - Minimum Capital Requirements.....	10
2.5.2 Pillar II - The Supervisory Review Process.....	14
2.5.3 Pillar III - Market Discipline.....	15
2.6 Basel III.....	15
2.6.1 Micro Prudential Measures.....	16
2.6.2 Macro Prudential Measures.....	25
2.6.3 Quantitative Impact Study (QIS).....	27
2.7 Lebanese Banking Sector.....	28
2.7.1 General Overview.....	28
2.7.2 Governing Bodies.....	33
2.7.3 Basel in the Lebanese Banking Sector.....	35
2.8 The Interrelationship of Bank Capital and Loan Interest Rates.....	39
2.8.1 Modigliani-Miller Perspective and Related Studies.....	43
2.8.2 Other Related Studies.....	44
Chapter 3.....	54
METHODOLOGY.....	54
3.1 Introduction.....	54
3.2 Methodology Used.....	55

Chapter 4	61
EMPIRICAL RESULTS.....	61
4.1 Descriptive Statistics.....	61
4.2 Findings.....	64
4.3 Conclusion.....	71
Chapter 5	72
CONCLUSION.....	72
5.1 Introduction.....	72
5.2 Main Findings.....	72
5.3 Limitation of the Research.....	73
5.4 Implications.....	74
5.5 Recommendations.....	75
REFERENCES.....	76

CHAPTER 1

INTRODUCTION

1.1 General Background about the Topic

The year of 2007 went down in history as a black mark on the global economy. It was the year when the financial crisis began and took a sharp downward turn until the great recession of 2009. Policymakers and academics have deeply investigated the reasons behind this economic decline to come up with a recovery plan and to set a blueprint for the upcoming global economic strategies.

The Basel Committee on Banking Supervision (hereinafter referred to as BCBS) was established in 1974 by the central-bank governors of the Group of Ten countries to supervise and regulate banking practices (Basel Committee on Banking Supervision,2009).The BCBS considers that the severity of the crisis was amplified by several weaknesses in the banking sector, most notably the excessive leverage, inadequate and low-quality capital, and insufficient liquidity (Basel Committee on Banking Supervision, 2010). According to BCBS (2011), the main challenge of regulators is to issue new rules that raise the resilience of the banking sector to both internal and external shocks, which can help avoid future catastrophes. Consequently, on September 2010, BCBS announced a number of new reforms that increase the quantity, quality, consistency, and transparency of a bank's capital. The new requirements are collectively known as Basel III. This set of reform measures aims to bring more stability to the market, as well as to individual institutions.

Basel III consists of two parts: the micro-prudential and macro-prudential measures. On one hand, the micro-prudential part's intention is first to improve the quality of capital by focusing on common equity, since it has the highest loss-absorbing potential, and second to increase the quantity of capital by requiring a higher level of capital base. In addition, BCBS introduced global minimum liquidity standards to strengthen the resilience of banks in times of liquidity crisis. These firm reforms improve banks' transparency and disclosures, risk management and governance, and supervision. On the other hand, the macro-prudential

framework aims to strengthen the resilience of the entire banking system by building up buffers that can be drawn down in periods of financial and economic stress and by addressing issues related to provisioning and fair value measurement (BCBS, 2010). The implementation of Basel III starts on January 1, 2013. However, since there are areas subject to change, total compliance is not expected before January 2019. The stretched implementation process helps avoid sudden lending freezes while banks improve their balance sheets and gives the financial system enough time to exit from the depths of the financial crisis.

Like Basel II, the Basel III reform has been accompanied by a large debate on its potential impact on banks and the economy as a whole. The opinions expressed among academics, regulators, and market practitioners on the probable effects of the reform are diverse, and some even fall on two extremes. Few regulators considered that the new requirements are not adequately restrictive, given the sharp losses and liquidity shortages that many banks have experienced during the crisis. Other observers said that Basel III reform moves in the right direction but is yet to be considered as the ultimate corrective measure that responds to the threats of the most terrible financial crisis since 1929. The impact analysis carried out by the Basel Committee's comprehensive quantitative impact study (C-QIS) concludes that the transition to stronger capital and liquidity standards is expected to have a modest impact on economic growth, but the long-run economic benefits substantially exceed the costs of achieving these high standards.

In Lebanon, the banking sector has always adopted international norms in order to enhance the sector's image and credibility worldwide. Dr. Joseph Torbey, head of the Association of Banks in Lebanon, said that Lebanon has applied all of the recommendations of Basel I and II and is eventually willing to comply with the requirements of Basel III under the guidance of the regulatory and monetary authorities (Torbey, 2010).

It is needless to say that the size of the Lebanese banking sector is quite large compared to the size of the GDP, representing around 364% of the latter by the end of 2011. This illustrates the power of the banking intermediary, and it confirms that the Lebanese financial system is basically a bank-based system where banks play a major role in financing corporations, individuals, and the public sector. The main source of funds for banks operating in Lebanon is

not the credit markets but rather the deposits; in fact, the total deposits represented 83.7% of the total balance sheet at the end of 2011, while the residual part of resources constituted primarily of capital accounts and all sorts of provisions (Association of Banks in Lebanon, 2011). These resources are placed according to the necessities of liquidity, solvency, risk management, and profitability, with a cautious policy in taking up risks. Banks operating in Lebanon certainly adhere to the strict rules imposed by Bank of Lebanon (hereinafter referred to as BDL), especially those stated in the prudential circulars related to the non-placement in high-risk financial derivatives and those related to real estate mortgages.

Despite the fact that the recent financial crisis has weakened banks in the region and the world, Lebanese banks have weathered the global crisis thanks to the money coming from Lebanese citizens living abroad, the limits imposed by BDL on bank investments in derivatives and structured products, the limits on bank loans for stock purchases and real estate and bond investments, the high solvency, the conservatism, the high collaterals, and the adoption of international regulations and standards like Basel II.

Lebanese banks are governed by the BDL, the central bank representing the regulatory framework for all banks and financial institutions in Lebanon. It sets the rules and regulations that banks should abide by. For practical purposes, the Banking Control Commission (BCC), the banks' supervisory authority, was launched in 1967. The BCC is responsible for supervising banking activities and monitoring the proper implementation of the BDL's instructions through circulars and memos (Banking Control Commission, [BCC] 2011).

Lebanon has started very early the preparation for implementing Basel III. In fact, the BCC provided guidance for banks in order to submit their capital adequacy ratios according to Basel III, and this guidance was provided through quantitative impact studies (QIS). In addition, the BDL and BCC issued many circulars and memos to guide the banks through this process. For instance, the intermediary circular n° 248, which was issued in 2011, eliminated tier 3 capitals from the eligible equity components. The Lebanese monetary authorities were more demanding than Basel III, requiring higher rates. On December 8, 2011, the BDL issued intermediary circular n° 282 in which it required a capital adequacy ratio that exceeds 12% by the end of 2015 (Banque du Liban, 2011).

The banking sector's efforts toward meeting the requirements of Basel III decrease profitability by increasing the funding cost in the short run. In addition, these efforts may hinder the financial intermediation function by raising lending rates and reducing lending volumes – issues that could ultimately slow the country's economic growth.

1.2 Need for the Study

By comparing the Lebanese ratio of 1 bank branch for every 5 thousand people to the ratio of 1 bank branch for every 20 thousand people in the Middle East and North Africa region (MENA) and 1 for every 11 thousand people in the emerging markets; and by re-highlighting the size of the Lebanese banking sector compared to the Lebanese GDP, which reached approximately 364% by the end of 2011, it becomes apparent that the Lebanese banking sector is certainly of utmost importance to the Lebanese economy. Subsequently, due to the high dependence of the Lebanese economy on the banking sector, the implementation of Basel III, especially regarding lending spreads, will also have its effects on the Lebanese companies' financials.

In light of the above, it is evident that studying the impact of Basel III on the Lebanese economy in general and the banking sector in particular is not a lateral study that can be missed, but rather an indispensable need that provides the Lebanese executive staffs and the banks' stakeholders with a thorough reference that covers the core building blocks of Basel III. In short, such a study offers an inevitable referral for the Lebanese business people.

1.3 Purpose of the Study

The main goal of this study is to calculate the potential impact of the increased capital requirements on the lending spreads charged by the banks operating in Lebanon. This impact assessment is based on the model used by King (2010) and uses the data of the relevant banks' financial positions and income statements. Banks can adjust to the regulatory reforms by adopting one or more of these methods: increasing the lending spreads, decreasing operating expenses, increasing non-interest profit sources, and shifting to a highly profitable business sector. In our study, we assume that the Lebanese banks' intention is to pass on any additional

costs by raising the cost of loans to end-customers. By measuring the change in net income and shareholder's equity associated with these regulatory changes, it will be possible to calculate the increase in lending spreads, which is a prerequisite to achieve a given Return on Equity (ROE).

1.4 Brief Overview of All Chapters

The rest of chapters in this paper proceed as follows: Chapter 2 begins with a brief history of the Bank International Settlements and the BCBS, followed by a description of the three Basel Accords (Basel I, Basel II, and Basel III). Thereafter, a short overview of the Lebanese banking sector is presented, illustrating the implementation of international standards such as Basel II and Basel III, before exploring the issues that arise during the preparation for the most recent Basel Accord (Basel III). Questions such as "What are the challenges behind the implementation of Basel III in Lebanon? What are the current capital adequacy ratios and interest rates? Who drives the implementation of the accords' recommendations?" are tackled. The last part of Chapter 2 discusses in great detail the main and most recent studies on the impact of the required higher capital under Basel III on lending spreads.

Chapter 3 presents the research question, its two hypotheses, and their corresponding variables. Afterward, we state our methodology to test both hypotheses in relevance to their variables by showing a list of equations interrelated to reach the final formula that calculates the lending spreads in terms of capital requirements.

Chapter 4 applies the methodology described in the previous chapter on the Lebanese banks in order to answer the research question. The findings are assessed on a micro- and macro-level, showing the impact of higher capital requirements on banks operating in Lebanon.

Finally, the study ends with a conclusion reviewing all of the discussed issues.

CHAPTER 2

REVIEW OF LITERATURE

2.1 Introduction

Since the early 1980s, the minimum capital requirements for banks played a central role in the financial regulation. In case a bank faces liquidity problems, authorities can usually supply the necessary temporary funds to settle the problem. The main source of funding that governments use in order to save a bank at risk of insolvency is taxpayers' money. Consequently, the population might become increasingly dissatisfied with the government if it continually followed this procedure to help banks, and the aftermath can become more devastating. To avoid such aggravating situations, regulators rely heavily on solvency ratios to come up with new policies.

2.2 The Bank for International Settlements

The Bank for International Settlements (hereinafter referred to as BIS), founded in 1930, is the world's oldest international financial organization. It was established in the context of the Young Plan, which dealt with the issue of the recompense payments imposed on Germany by the Treaty of Versailles following the First World War. In addition, the BIS was created to act as a trustee for the Dawes and Young Loans (international loans issued to finance reparations) and to promote the central bank cooperation in general. After the vanishing of the reparations issue, the BIS's activities were focused mainly on the cooperation among central banks and other agencies in pursuit of monetary and financial stability. Central banks' collaboration at the BIS intended to defend the Bretton Woods system in the 1960s and early 1970s and to manage capital flows following the two oil crises and the international debt crisis in the 1980s. Furthermore, the BIS issued the 1988 Basel Capital Accord and Basel II.

The BIS acts as an emergency financier whenever a crisis occurs in the world (e.g., Austria/Germany in 1933, Italy in 1964, and Brazil in 1999). The mission of BIS is to serve central banks in their pursuit of monetary and financial stability, to foster international cooperation in those areas and to act as a bank for central banks. The BIS pursues its mission by

promoting discussion and facilitating collaboration among central banks, supporting dialogue with other authorities that are responsible for promoting financial stability, conducting research on policy issues confronting central banks and financial supervisory authorities, acting as a prime counterparty for central banks in their financial transactions, and serving as an agent or trustee in connection with international financial operations (BIS, 2009). The controlling committee for the BIS is the Basel Committee on Banking Supervision.

2.3 The Basel Committee on Banking Supervision

The Basel Committee on Banking Supervision (BCBS) was established at the end of 1974. Under the patronage of the BIS, the central-bank Governors of the Group of Ten (G10) countries – which actually consist of members from thirteen countries–, formed the BCBS. These countries were: Canada, Belgium, Germany, France, Italy, Sweden, the Netherlands, the United Kingdom, Switzerland, Japan, the United States of America, Luxembourg, and Spain; the latter joined at a later stage. These countries are represented by their highest financial institutions, which is usually the central bank. The Committee does not have any authority over supervisory entities and its conclusions are not compulsory; it simply issues recommendations and supervisory guidelines. The BCBS' members come from Spain, Mexico, Singapore, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Korea, Hong Kong SAR, Luxembourg, Belgium, the Netherlands, Russia, Saudi Arabia, Argentina, South Africa, Sweden, Switzerland, Turkey, the United Kingdom, and the United States of America. The main purpose of the Committee's work has been to close gaps in the international supervisory coverage in pursuit of two basic principles: primarily that no foreign banking establishment should escape supervision; and secondly that its supervision should be adequate. To achieve this, the Committee has issued a long series of documents since 1975. In May 1983, the Committee completed a document *Principles for the Supervision of Banks' Foreign Establishments*, which set down the principles for sharing supervisory responsibility for banks' foreign branches, subsidiaries, and joint ventures between host and parent (or home) supervisory authorities. In October 1996, the Committee published a report that offered suggestions for overcoming the obstacles experienced by banking supervisors in performing effective consolidated supervision of the cross-border operations of international banks. The efforts of the Committee are distributed among four main sub-committees. The Standard Implementation

Group (SIG) was originally established to share information and promote consistency in the implementation of the Basel II Framework; however, in January 2009, its mandate was expanded to focus on the general implementation of the Committee's guidance and standards. The Policy Development Group (PDG) supports the Committee by identifying and reviewing emerging supervisory issues and proposing and developing policies that promote a sound banking system and high supervisory standards, where appropriate. The role of the Accounting Task Force (ATF) is to help ensure that international accounting and auditing standards and practices promote sound risk management at banks, support market discipline through transparency, and reinforce the safety and soundness of the banking system. The Basel Consultative Group (BCG) provides a forum for deepening the Committee's engagement with supervisors around the world on banking supervisory issues. It facilitates broad supervisory dialogue with non-member countries on new Committee initiatives early in the process by gathering senior representatives from various countries, as well as representatives from international institutions and regional groups of banking supervisors that are not members of the Committee (BIS, 2009). Minimum capital requirements for banks have gained a pivotal role in the BCBS' work. A capital measurement system, commonly referred to as the Basel Capital Accord (Basel I), was approved by the G10 Governors and correspondingly released to banks in July 1988. This system provided for the implementation of the framework with a minimum capital ratio of capital to risk-weighted assets of 8 percent by the end of 1992.

2.4 Basel I

In 1988, the BCBS decided to present a capital measurement system, the Basel Capital Accord (Basel I). The two major purposes of the proposal were to strengthen the soundness and stability of the international banking system and to diminish existing sources of competitive inequality among international banks. Basel I was not an obligatory text as it represented only recommendations, but members of the working group were morally charged to apply it in their relevant countries. It consists of three components: the eligibility criteria for regulatory capital, the risk weights attached to the exposures, and the minimum capital requirements that demand banks to comply with the solvency ratio of 8% (Cannata and Quagliariello, 2011). The first step in defining the capital requirement is to determine what could be considered as capital. Regulatory capital is divided into two tiers, depending on the quality of the different

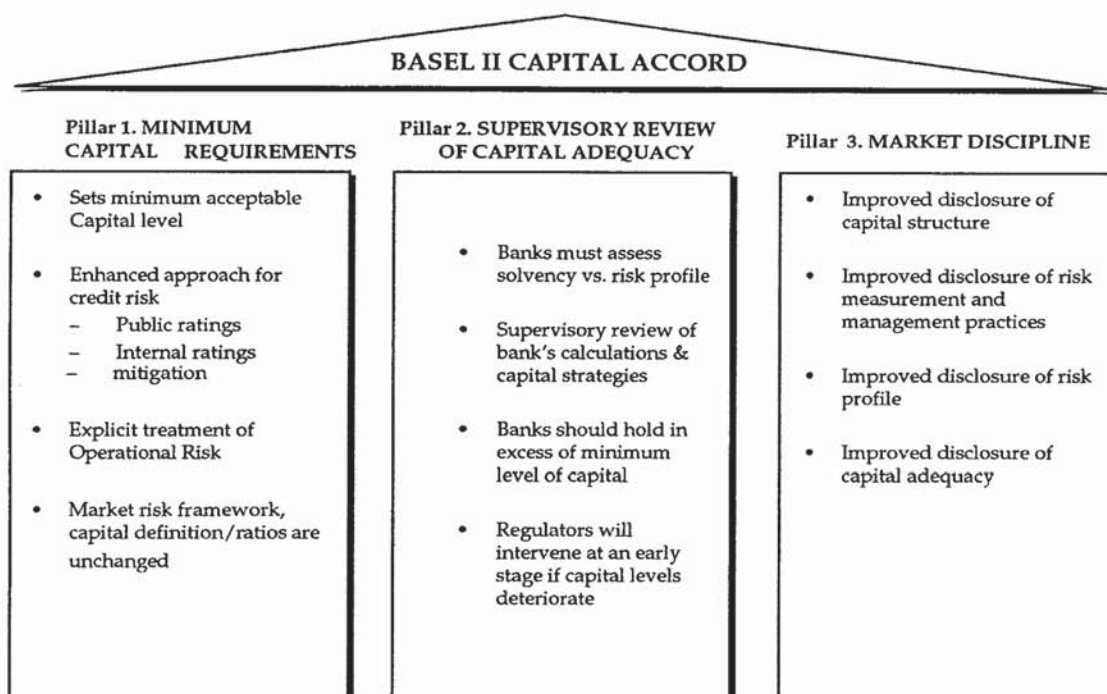
components. Tier 1 capital is made mainly of shareholders' equity, non-cumulative perpetual preferred stock, and published reserves from post-tax retained earnings. It is the highest quality of capital since it covers losses in a going-concern scenario. Tier 2 capital includes subordinated debts that bear losses primarily in liquidation, general loan loss reserves, and cumulative preferred stock. Tier 2 capital, which was considered of lower quality in comparison with Tier 1, could constitute at most 50% of a bank's capital. Items that do not contribute to the coverage of losses, such as good-will and investments in the capital of other banks and financial institutions, are to be deducted to avoid the double use of capital known as "double gearing" of capital. When the capital is being calculated, the Committee should identify a number of factors that would weigh the balance sheet amounts to reflect their assumed risk level (BCBS, 1988). For this, the weight for cash and claims on central governments and central banks was zero; while the weight for claims on banks incorporated in the OECD and loans guaranteed by OECD incorporated banks was 20%. A loan fully secured by mortgage on residential property that is or will be occupied by the borrower or that is rented, had a risk weight of 50%. Claims on the private sector and claims on banks incorporated outside the OECD with a residual maturity of over one year had a weight of 100% (Balthazar, 2006).

Although Basel I Accord was successful in many ways and created a worldwide benchmark for banking regulations, it had its shortcomings. One of Basel I's problems was the risk weights utilized to indicate a borrower's credit risk. The risk weights were based on the category to which the borrower belonged. For instance, a highly reputable firm could be allocated the same risk weight as a newly formed company, if both companies belonged to the same category. Another problem with Basel I is that the calculated capital requirements ignored the different levels of risk associated with different currencies and macroeconomic situations. In other words, it assumed a common market to all actors, which was far from reality. These listed criticisms led to the creation of a new Basel Capital Accord, known as Basel II, which added operational risk and defined new calculations of credit risk.

2.5 Basel II

Following the release of three proposals submitted on June 1999, January 2001, and April 2003 respectively, the Committee published the final version of the Basel II framework on June

2004. The new Accord's aim was to raise the quality and the stability of the international banking system, to create and maintain a leveled playing field for internationally active banks, and to promote the adoption of more stringent practices in the risk management field. While the first two goals were at the heart of Basel I, the third one, which is considered by the Committee itself to be the most important goal, is new. Basel II consists of three pillars: minimum capital requirements, supervisory review process, and market discipline (BCBS, 2006).



L974-PRP-033

Figure 1. The three pillars of Basel II.
(Source: The accord)

2.5.1 Pillar I - Minimum Capital Requirements

Pillar I, the minimum capital requirements, intends to assure that most bank risks are better measured in the new Accord than in the previous one. Similarly to the first Basel Accord, the minimum total capital threshold remains at 8% level. Nevertheless, as a response to the narrow scope of Basel I, the denominator of the target standard ratio is designed to incorporate

operational risk, in addition to market risk and credit risk. The target standard ratio of Basel II is explained by the following equation:

$$\frac{\textit{Tier 1 capital + tier 2 capital}}{\textit{Credit risk + market risk + operational risk}} \geq 8\%$$

The components of Tier 1 capital and Tier 2 capital and the respective deductions from capital are almost the same in Basel I and Basel II. In other words, the quality of the eligible capital is not enhanced in Basel II, knowing that financial institutions at the time were creating innovative capital instruments. In addition, Basel II continues to limit Tier 2 capital to an amount equal to Tier 1 capital. While the numerator of the capital ratio equation is primarily unchanged in Basel II, the denominator is subjected to substantial modifications. Pillar I deals with regulatory capital requirements, giving financial institutions the choice of various approaches to estimate the required capital amounts to be held against credit, operational, and market risks.

Capital Requirements for Credit Risk

In order to calculate capital requirements for credit risk based on Basel II, banks can choose between two methods: the standardized approach or the internal ratings-based approach (IRB) (Deloitte, 2006). An alternative approach to the IRB-method is the advanced internal ratings-based approach (A-IRB).

The Standardized Approach

The standardized approach allocates risk weights for exposure to various types of counterparties based on assessments by external rating agencies such as Standard & Poor's, Moody's, and Fitch. Given the credit rating, assets will receive a risk-weight of 0%, 20%, 50%, 100%, or 150%. Claims on a corporation with a credit rating from AAA to AA- for instance, is weighted at 20%. Conversely in Basel I, all corporate debt is risk weighted at 100%. Based on the standardized approach, risk-weights for sovereign claims are dependent on the assessed credit rating of each individual nation. For claims on other banks, the Committee gives the local

supervisory authority the discretion to choose among two different options to assess risk-weights. The first option simply dictates that each bank in a respective country will be given a risk weight that is one notch higher than the weight assigned to claims on the sovereign of that country. The second option uses external credit ratings to assess the risk-weight. A bank with credit rating ranging from AAA to AA- receives a risk weight of 20%.

Internal Ratings-Based Approaches

Using the second approach, the internal ratings based approach (IRB), banks classify their loans into risk categories using their internal data, given that this data is accurate in terms of historical default and recovery. Banks with probability of default (PD) data only would use the foundation IRB approach in conjunction with supervisory estimates of loss given default (LGD) to determine their capital charges. The third credit approach, the IRB-advanced approach, goes further and allows banks to estimate more of the risk components. In both IRB approaches, the capital requirements are based on a structure established by the regulators, which define the relationship between PD, LGD, and risk weights. In most cases, banks using the IRB approaches will have capital requirements equal to or less than banks using the standardized approach.

Capital requirements for market risk

Market risk refers to the risk of losses in on-balance and off-balance sheet positions resulting from changes in market prices, particularly changes in interest rates, foreign exchange rates, and equity and commodity prices. Market risk was first incorporated in the Basel framework amendments in 1996. Basel II divided market risks into two parts: risks coming from interest-rate-based assets and equity positions that are held by banks for their short-term trading activities, and foreign exchange rate risk and commodity risk regarding the banks' whole position. Two methodologies were proposed for measuring market risk: standardized approach and internal model approach. The capital charge under the standardized methodology is the total of the following five categories of risk measurement: interest rate risk, equity position risk, foreign exchange risk including gold and derivatives, commodities risk and treatment of options. The internal model is subject to approval by local supervisors. Both approaches are qualitative and quantitative standards that should be met by the banks. Although the Committee gives the

banks flexibility in terms of the risk models, they must at least calculate value-at-risk on a daily basis with a 99 percent confidence level. Under certain conditions, banks are allowed to use a combination of the two methodologies.

Capital requirements for operational risk

As financial markets become more globalized and deregulated and financial technology more expanded, the financial industry is subject to increased operational risk. It is the risk of loss resulting from ineffective internal processes, people, and systems or from external events. Capital requirements can be set utilizing three approaches that each has its own specific quantitative and qualitative requirements: the Basic Indicator Approach, the Standardized Approach, and the Advanced Measurement Approaches (BCBS, 2006).

Basic Indicator Approach

As defined by the Basel Committee, the Basic Indicator Approach declares that the capital requirement for operational risk should be equal to 15% of a bank's average annual gross income over a period of three years. Of the three approaches, the Basic Indicator Approach is the least complicated. The main advantage of the Basic Indicator Approach is that there are no prerequisites required to utilize it for settling the minimum capital desired.

The Standardized Approach

The Standardized Approach is a refined version of the Basic Indicator Approach. It separates banks' activities into eight business lines: corporate finance, trading and sales, retail banking, commercial banking, payment and settlement, agency services, asset management, and retail brokerage. For each business line, the average gross income over the past three years is calculated and multiplied with a factor called beta. The Committee has set beta to 12%, 15%, or 18%, depending on the business line. Less operationally risky business lines have lower reserve targets; for example, retail banking and asset management need 12% of profits as a reserve. On the other hand, risky business lines, such as corporate finance and sales and trading, have higher targets, in the order of 18%.

The Advanced Measurement Approach

The third means, the Advanced Measurement Approach (AMA), is a highly complex method that permits financial institutions to build up their own reserve calculations for operational risk. The AMA approach has a number of qualitative and quantitative criteria that must be met before the bank is permitted to use it in allocating capital for operational risk. Moreover, it is necessary to have an operational risk management system that is reliable and to have adequate resources to apply the framework in major business lines. This method, much like the IRB approaches shown in the previous section, is a trial to create market discipline and self-surveillance into the banking legislation.

2.5.2 Pillar II - The Supervisory Review Process

Pillar II, the supervisory review process, mainly tackles regulator-bank interaction by expanding the rights of the regulator in bank supervision and dissolution. It does not include any quantitative statutory requirements. The aim of the supervisory review process is to ensure that the bank has enough capital to cover its risks and to promote better risk management practices. The bank's management is required to develop an Internal Capital Adequacy Assessment Process (ICAAP) and to fix a target capital level that is a function of the bank's risk profile. If the supervisors are not satisfied with the capital level, they can require the bank to increase its capital level or mitigate some of its risks. Furthermore, supervisors must also ensure that banks using the Internal Rating-Based Approaches and Advanced Measurement Approaches meet their minimum qualitative and quantitative requirements.

The Supervisory Review Process is built upon four key principles:

- A. Banks should have a process for assessing their overall capital adequacy in relation to their risk profile and a strategy for maintaining their capital levels.
- B. Supervisors should review and evaluate banks' internal capital adequacy assessments and strategies, as well as their ability to monitor and ensure their

compliance with regulatory capital ratios. Supervisors should take appropriate action if they are not satisfied with the result of this process.

- C. Supervisors should expect that banks operate above the minimum regulatory capital ratios and should have the ability to require banks to hold capital in excess of the minimum.
- D. Supervisors should seek to intervene at an early stage to prevent capital from falling below the minimum level required to support the risk characteristics of a particular bank and should require rapid remedial action if capital is not maintained or restored.

2.5.3 Pillar III - Market Discipline

Pillar III assigns rules for the disclosure of information concerning banks' capital and risk management. These rules enable financial market participants, as well as supervisors, to subject this information to scrutiny, which will reinforce the effectiveness of pillars I and II. Market discipline improves reporting transparency by setting the standards that specify how the report should be formed and presented. In turn, transparency will motivate banks to improve their efforts in the adoption of risk assessment strategies, as well as in the calculation of capital. Investors, such as equity or debt holders, will then be able to react more efficiently when the banks' financial health deteriorates, forcing banks' management in turn to react to improve the situation.

2.6 Basel III

In response to the recent financial crisis, many standards were developed by the Basel Committee to supplement and, in certain aspects, replace the existing standards of Basel I and Basel II. In December 2010, the Basel Committee issued the finalized text for the core elements of the Basel III framework. While the principal building blocks of the current framework remained unchanged, there are many notable new elements, mostly regarding the minimum

acceptable capital ratios, the eligibility of regulatory capital, and liquidity and leverage requirements.

Basel III consists of two parts: micro-prudential and macro-prudential measures. The micro-prudential part's intention is 1) to improve the quality of capital by focusing on common equity constituting the highest form of loss absorbing and 2) to increase the quantity by requiring a higher level of capital base. In addition, the Committee introduced global minimum liquidity standards to strengthen the resilience of banks in times of liquidity crisis. These firm specific reforms are accompanied by improvements in larger transparency and disclosure, risk management and governance, and supervision.

On the other hand, the macro-prudential framework aims to strengthen the resilience of the entire banking system by building-up in good times buffers that can be drawn down in periods of financial and economic stress, and by addressing issues related to provisioning and fair value measurement.

2.6.1 Micro Prudential Measures

Stronger capital and liquidity are the basis of the Basel III reforms. However these reforms must occur parallel to enhancements in risk management and governance, supervision, transparency, and disclosure (BCBS, 2010).

Capital

The Basel committee considers that by strengthening the regulatory capital framework, the resilience of the banking industry will be higher. Building up on the three pillars of Basel II, the new accord increases the quality and the quantity of the capital base and improves its risk coverage.

Banks are much stronger and have better loss-absorbing capacity when their capitals are of a higher quality. The last financial crisis revealed that credit losses and write-downs came out directly of retained earnings, which are under the common equity bracket. In addition, it

demonstrated the lack of capital disclosure, which enables the market to assess and compare the capital's quality between companies. Therefore, the Basel Committee required that Tier 1 capital must be predominantly comprised of retained earnings, and common shares, and it will also include subordinated instruments that have noncumulative dividends or coupons. To increase the reliability of Tier 1, deductions from capital have been harmonized internationally and totally applied at the level of common equity, as opposed to only 50% with Basel. Tier 2 capital instruments will be harmonized, and Tier 3 capital instruments will be eliminated.

To assess the capital instruments' quality eligibility for prudential purposes (Common Equity Tier 1, Additional Tier 1, and Tier 2 Capital), three main criteria are specified: loss absorbency, flexibility of payments, and permanence.

Common Equity Tier 1 (CET 1)

CET1 is the most reliable and loss-absorbent type of capital; it is available at any time. Many criteria must be met by an instrument in order to be included in CET 1. Some criteria are the following:

- It must be the most subordinated claim in the liquidation case;
- It must be perpetual and directly available and, therefore, fully paid and directly issued;
- It has to be separately and clearly disclosed in the bank's financial position; and
- It must provide complete discretion to the bank regarding the amount and the timing of dividend distributions (Cannata and Quagliariello, 2011).

This caption includes:

- Common capital and additional paid-in-capital (premium on common shares);
- Cash contribution with no obligation of interest payment;
- All kinds of reserves allocated from net income; and
- Retained earnings.

Furthermore, many adjustments will have to be made to Common Equity Tier 1. First, all the intangible assets – not only the goodwill – should be deducted from CET 1. International Financial Reporting Standards (IFRS) must be used to define the intangible assets and decide which assets are subject to the deduction. Second, the entire unrealized profits and losses coming from changes in fair value of liabilities are not taken into consideration in the calculation of common equity. Third, items are completely deducted from Tier 1. In addition, large investments in commercial companies and some securitization and equity exposures will be weighted with a high risk (1250%). Finally, in the treatment of holdings in financial institutions, two major changes have been presented. Investments in common shares of unconsolidated financial entities, such as insurance companies and banks, are not deducted with a limit of 10 % of common equity. This treatment is also applied with deferred tax assets and mortgage servicing rights. The sum of these three items cannot exceed 15%, and they should be fully disclosed.

Additional Tier 1

In addition to CET 1, Tier 1 capital includes additional Tier 1 (other capital instruments). The main goal of these instruments is to reinforce prudential capital by giving the financial institutions a complementary means to increase capital. This caption has stringent eligibility criteria: the elimination of dated hybrid instruments (innovative instruments with incentives to redeem).

Basel III considered three situations with regard to the loss absorption mechanism:

1. If the bank goes into liquidation, the claim of the holder is at the reduced amount and not at par;
2. If the bank moves to a write-down of its liabilities, the written-down amount is the reimbursed amount; and
3. If the bank is to pay the debt instrument's interest, the coupons' amount to be paid must be decreased.

Additional Tier 1 instruments should be perpetual. Some countries have dated instruments. These instruments are no longer eligible according to Basel III requirements. All these criteria aim to strengthen and guarantee a solid capital base. This caption includes:

- Non-cumulative perpetual preferred shares and any similar equity instruments; and
- Cash contribution with the obligation of interest payment.

Tier 2 Capital

Tier 2 capital is to be used on a gone-concern basis, while Tier 1 capital in a going-concern basis. Tier 2 holders are subordinated only to senior creditors and to depositors. In the first five years, instrument cannot be reimbursed or repaid. These conditions guarantee that banks have a solid control on the money and can face any possible losses. The financial crisis showed that subscribers of Tier 2 capital did not absorb losses incurred by large banks. Therefore, six requirements were introduced for Tier 2 eligibility:

1. A provision is required for any Tier 2 capital instrument issued by an international active bank requesting either to be converted into common equity or to be written off.
2. As a result of a write-off, any reimbursement paid to the holders of Tier 2 instruments must be paid in the form of common share.
3. To issue the appropriate number of stocks, all prior authorization must be maintained by the issuing bank.
4. A decision to make a public injection of capital should not be taken unless the bank has become non-viable.
5. An issuance of new shares should occur before any public sector injection to avoid diluting the capital already issued.

6. If the bank pays a common stock to the holders of Tier 2 instruments, it must be from either the parent company or the issuing bank's common stock.

- To summarize, Tier 2 capital caption includes: Cumulative preferred shares
- Reevaluation surplus of fixed assets accepted by the central bank to be included in equity
- 50% of accumulated exchange differences
- 50% of gross unrealized profits from instruments classified at Fair Value Through Other Comprehensive Income (FVTOCI)
- Issued subordinated notes and/or subordinated loans

Risk coverage

A crucial factor that amplified the last financial crisis was that numerous risks were not covered in the risk-based regime. For instance, some banks held large quantity of illiquid, complex credit products in their books without a proportional amount of capital supporting the risk. Another important reason is the failure in capturing derivatives, on- and off-balance sheet risks. Basel III reacted by strengthening the minimum capital requirements for complex securitizations. Furthermore, the Basel committee required that more strict credit analysis of externally rated securitization exposures should be performed. Another important element for Basel III is to increase regulatory capital for the trading book; on average, the revised trading book framework requires banks to hold additional capital of around three to four times the old capital requirements. These requirements for trading, derivative, and securitization activities strengthen the stronger definition of capital (BCBS, 2011).

A major source of credit-related loss was the deterioration in the credit quality of counter parties. As a response, the Basel Committee has focused on improving risk management for counterparty credit risk and increasing regulatory capital requirements.

To compute the Risk Weighted Assets (RWA) with Basel III requirements, we should determine:

- A. Credit RWA
- B. Market RWA
- C. Operational RWA

A. Credit RWA:

We should be able to distribute the bank's assets on the different portfolios in order to assign a risk weight for each caption according to the level of riskiness. The off-balance sheet items should also be risk weighted according to their risk profile and added to the same portfolios as follows:

- **Sovereign Portfolio:** investments in governments' securities and investments with Central banks;
- **Banks Portfolio:** placements and other investment types with other banks;
- **Public Sector Entities Portfolio:** loans granted to public entities that are autonomous legal entities or are authorized by public law or their establishment law or any other special law to borrow from banks;
- **Corporate Portfolio:** loans granted to sole proprietorships or to corporations whose annual turnover exceeds the equivalent of USD 5 million, and loans granted to insurance companies, regardless of their turnover;

- **Retail Portfolio:** consumer loans (car loans, student loans, educational loans, etc.) and revolving credits (credit cards and current accounts);
- **Small and Medium Entities Portfolio:** loans granted to liberal professions, such as doctors, engineers, and lawyers, in order to finance their professional activities, and loans granted to sole proprietorships or to corporations whose annual turnover does not exceed the equivalent of USD 5 million;
- **Housing Portfolio:** loans granted to persons who acquire houses in order to live in them or in order to rent them;
- **Claims Secured by Commercial Real Estate** claims secured by commercial real estate such as lands or commercial buildings so that the main source for the loan settlement would be the cash inflows stemming from the income of this real estate surety;
- **Loan Loss portfolio:** all doubtful and loss loans provided for;
- **Other assets Portfolio:** the remaining assets such as cash, other debtors, the tangible fixed assets (PPE, fixtures, furniture, etc.).

Once the assets are allocated to each portfolio, risk weights would be applied according to each level of riskiness, taking into consideration any eligible guaranties in order to compute the credit risk weighted assets.

B. Market RWA:

We should be able to measure the following types of risks to determine market risk:

- Interest rate risk for the Fair Value Through Profit and Loss (FVTPL) securities portfolio;
- Risk of change in equities' prices;
- Exchange rate risk;

- Commodities risk;
- Options contracts risk;

C. Operational RWA:

The operational RWA is calculated by using the basic indicator approach. It is determined by first multiplying the average gross income for the last three consecutive years by a certain given alpha (15%) and then multiplying the answer by 12.5.

Raising the Level of Capital

Higher levels of capital were also introduced by Basel III accord. Common Equity Tier 1 capital, which includes common shares and retained earnings, must be at least equal to 4.5% of risk-weighted assets when fully phased in by 2015 – an increase from the current 2% minimum. As for the tier 1 capital, it must cover at least 6% of risk-weighted assets. Furthermore, there will be a “capital conservation buffer” made up of common equity and mounting to 2.5% of risk-weighted assets when fully phased in by 2019. Also, a “countercyclical capital buffer” may be required, which would be made up of common equity of up to an additional 2.5% of risk-weighted assets. This buffer is expected to be imposed at a national level only during times of excessive credit growth, while it will be permitted to be released during times of credit contraction (BIS, 2011, p.72).

Containing Leverage

The introduction of a non-risk-based leverage ratio is another important element of the new regulatory capital framework. With Basel II, banks could report high Tier 1 risk-based ratios, and at the same time, build high levels of on- and off-balance sheet leverage. Basel III introduces a minimum Tier 1 leverage ratio of 3% that capture derivatives and on- and off-balance sheet exposures.

Introducing Global Liquidity Standard

Having a strong liquidity base in the banking sector is equally important to having a strong capital. Therefore, the Basel committee issued international synchronized liquidity standards.

The last financial crisis revealed that in a stress period, banks face difficulties in getting funding as money supply decreases for a certain period. In response to this occurrence, Basel III introduced minimum liquidity standards to make banks more resilient to potential short-term problems when accessing funding and to liquidity coverage ratio (LCR). The new standards also aim to address long-term structural liquidity mismatches in the banks' financial positions: the net stable funding ratio (NSFR).

The LCR aimed to prepare banks for potential liquidity problems over a thirty-day horizon by a short-term stress scenario. This step ensures that banks have high quality, sufficient, and unencumbered liquid assets to offset the net cash outflows it could encounter. The stress scenario is built upon circumstances experienced in the global financial crisis that began in 2007, and it considers many assumptions such as a large downgrade in the public credit rating of the institution, a loss of unsecured wholesale funding, and a partial loss of deposits.

The net stable funding ratio (NSFR) complements LCR and has a longer-term structural ratio, over a one-year horizon. Its goal is to encourage banks to use stable sources of funding and to limit over dependence on short-term wholesale funding during times of good market liquidity.

Risk Management and Supervision

In an environment of constant financial innovation, higher capital and liquidity requirements must be supplemented with better risk management and supervision. Thus, in July 2009, the committee reviewed the Pillar 2 process and set its notes on the weaknesses faced during the crisis. Most of these areas were as follows:

- Detecting the off-balance sheet exposures' risk and securitization activities;

- Motivating banks to improve the risk management on the long-term run;
- Setting right compensation practices.

In addition to risk management enhancements, the Basel Committee reinforced the supervisory guidance in many areas: valuation practices, corporate governance, sound compensation practices, stress testing, supervisory colleges, and liquidity risk management.

Market Discipline

The crisis proved that a poor consistency exists in banks' risks exposures and regulatory capital base. The Basel Committee responded by revising Pillar 3 and requiring from banks to disclose all elements of the regulatory capital base and the deductions applied. For instance, a bank will need to publish on its website the full terms and conditions of all instruments included in regulatory capital.

In addition, the Basel Committee, in consultation with the Financial Stability Board (FSB), has introduced disclosure requirements for remuneration. This new proposal aimed to ensure that banks disclose comprehensive, timely, and clear information about their remuneration practices. The suggested requirements will permit meaningful evaluations by market participants of banks' remuneration practices.

2.6.2 Macro Prudential Measures

To have a long term financial stability, the banking system must be stronger on the micro and the macro level. Basel III introduced two measures in order to strengthen the entire banking system: addressing the procyclicality and decreasing the interconnectedness risk.

Addressing Procyclicality

The Basel Committee required that banks build-up capital buffers in good times, which can be used in stress periods. These buffers, called "capital conservation buffer," must be composed of common equity and risk-weighted assets (2.5%). Furthermore, the Committee

agreed on a countercyclical buffer within a range of 0 to 2.5% comprised of common equity or other fully loss-absorbing capital. Protecting the banking sector in periods of excess aggregate credit growth is the main goal of these buffers.

Provisioning is a set of high level guiding principles for dealing with issues connected to fair value measurement and provisioning. These principles addressed banks to avoid misstatement of both initial and subsequent gain and loss recognition, knowing that Basel II regulations had large valuation uncertainty. Moreover, provisions for loan loss should be solid and based on good methodologies that reflect expected credit losses in the banks' existing loan portfolio over the life of the portfolio.

Systemic Risk and Interconnectedness

Financial shocks and troubles are easily transmitted across the financial system and economy in case of excessive interconnectedness among systemically important banks. Thus, systemically important banks must have loss absorbing capacity beyond the minimum standards. Therefore, the FSB and the Basel Committee are promoting an approach for systematically important financial institutions, which includes a combination of capital surcharges, cross-border bank resolution, and contingent capital.

Cross border bank resolution constitute reports and recommendations for the Cross-Border Bank Resolution Group were issued by the Basel Committee in March 2010, which include practical steps to enhance cross-border crisis management and resolutions.

Contingent capital is a proposal published by the Committee requiring the contractual terms of capital instruments to contain a clause that will permit them to be converted to common stocks or written off if the bank is judged to be non-viable by the relevant authority or if it received a public sector capital injection.

2.6.3 Quantitative Impact Study (QIS)

In order to monitor the impact of Basel III, a semi-annual monitoring framework has been set up on the risk-based capital ratio, liquidity metrics, and the leverage ratio. The Committee refers to the data of 26 countries, including 209 banks, collected by national supervisors as per December 31, 2011. QIS focuses on the following points (BCBS, 2012, p.8):

- Changes to bank capital ratio under Basel III requirements and estimates of any capital deficiencies relative to fully phased-in period;
- Changes to the definition of capital resulting from the new capital standard, referred to as CET1, reallocation of deductions to CET 1, and eligibility criteria for Additional Tier 1 and Tier 2 capital;
- Rises in Risk Weighted Assets (RWA) resulting from the changes in definition of capital, trading book, securitization, and counterparty credit risk requirements;
- Basel III liquidity standards (LCR, NSFR); and
- Basel III leverage ratio.

It is worth to mention that the Basel Committee assumes a full implementation of Basel III requirements and doesn't take into account any transitional arrangements.

Key results

Capital Shortfalls

The average CET 1 ratio under Basel III requirements would fall from 10.4% to 8.2%. Tier 1 capital would decline from 11.3% to 8.6%. Finally, total capital ratio would decline from 14.2% to 10.1%.

Changes in RWA

Total risk weighted assets rise on average by 18.1%. The reason for this increase is the high charges against trading book exposures, securitization exposures, and counterparty credit risk (those risks weighted at 1250% under Basel III requirements).

Leverage Ratio

The Basel III average for banks is 3.8, while the average Basel III Tier 1 average is 3.6%.

Liquidity Standards

Both liquidity standards, LCR and NSFR, are subject to an observation period. The implementation date for LCR is the beginning of 2015; for NSFR, the beginning of 2018. QIS highlights several observations:

- The weighted average LCR is 94% as per Basel III requirements;
- The weighted average NSFR is 96% as per Basel III requirements (BCBS, 2012, p.12).

2.7 Lebanese Banking Sector

The Lebanese banking industry has been known for its good reputation and soundness. This is the direct result of the high competence of human resources at all levels, the significant number of operating banks, the outward openness, the various traditional and innovative services, the commitment and compliance with international rules and standards, and finally the continued financing satisfaction of the Lebanese economy (ABL, 2011, p.2).

2.7.1 General Overview

By the end of 2011, the Lebanese banking sector reached a significant volume that can be summarized by 69 banks distributed into 54 commercial banks and 15 investment banks. In other

words, there is a bank branch for every five thousand people in Lebanon, thus placing the Lebanese banking sector in a very favorite situation compared to other Arab countries.

The bank branches are highly concentrated in the Lebanese capital, Beirut, and its suburbs (53%). Other bank branches are distributed in Mount Lebanon district (19%), South Lebanon (11%), North Lebanon (10%), and the Bekaa district (7%). With the growth of the banking sector, a set of improvements at the system levels, payments mode, and clearings were implemented. According to a report published by the Association of Banks in Lebanon (ABL), most of the Lebanese banks increased the number of their ATMs all over the country totaling 1,326 machine and 21,471 POS machines by the end of year 2011. The ATMs' coverage map is described as follows: Beirut and Suburbs (615), Mount Lebanon (348), South Lebanon (137), North Lebanon (134), and Bekaa (92). Furthermore, banks invested largely in their hardware and software in order to promote the e-banking apparatus and, subsequently, facilitate payment processes within the country and abroad. Two main systems were implemented by the Lebanese banks: The first one was the Real Time Gross Settlement (RTGS), and the second one was the Automated Clearing House (ACH). These systems aim to settle payments between banks and develop an intra-banking payment system in Lebanon. Banks also launched new banking services that can be summarized by a number of new smart cards following modern requirements. The total number of cards issued by the end of 2011 reached 1,783,962 cards, 65% of which are debit cards, 24% are credit cards, and 11% are prepaid cards. Several banks have already launched their online banking systems in order to provide full banking operations over the internet. In addition, the eye recognition system was recently established in 2012 by one of the Lebanese banks (ABL, 2011).

The Lebanese banking sector attract highly skilled employees, constituting 71% of the total number of employees that reached 21,881 employees in 2011. As per the BDL's circular number 103, many qualifications are required from the Lebanese banks' employees in order to meet the proficiency and knowledge needed at the educational, technical, and ethical levels. At the international level, the Association of Banks in Lebanon (ABL) signed an agreement in 2011 with the Banking Training Center in France (CFPB) in order for employees in the Lebanese banking sector to undertake the AMF exams on the financial markets.

The Lebanese banking sector follows the international standards mainly implemented by the Bank for International Settlements (BIS), the International Monetary Fund (IMF), and many others. Its commitment to these international parties is providing more confidence, expertise, and capability in the banking sector. The international standards through these agreements focus on the accounting, disclosures, reporting, minimum capital requirements, corporate governance, risk management, control, and audit rules.

In addition to the above, the Lebanese banking sector is currently implementing several international regulations in several fields, such as anti-money laundering, terrorist financing, and tax evasion regulations. These engagements strengthen the legislative and legal framework of the Lebanese banks and protect the country through the suggestion, amendments, and issuance of new circulars.

Financial Position's Structure of Lebanese Banks

In view of the regional and security incidents that still the economies of connected countries and the activity of subsidiaries operating there and in view of the domestic situation, Lebanese banks adopted a conservative strategy intending to confront a potential spill over. The Lebanese banking industry was also able to safeguard its good financial standing in 2011, compared to peers and many other banking industries around the world.

By the end of year 2011, the consolidated total assets of all reporting banks and subsidiaries reached USD 167.2 billion, knowing that they constitute 364% of the GDP. This demonstrates the strength of the banking intermediary, and it confirms that the Lebanese financial system is a bank-based system. Assets are mainly distributed into securities (38%) and loans (29%). In the Lebanese banking sector, loans play a major role, contributing in its growth and providing jobs opportunities. Loans granted to the private sector represented about 99% of the GDP in the year 2011. At the end of 2011, Beirut and suburbs showed the highest concentration of loan distribution by value and beneficiary, where loans in these regions reached 79.98% of total loans in Lebanon. Also, loans by depositors in Beirut and Suburbs represented 56.07% of total loans. The high concentration of loans in Beirut and Suburbs is explained by the high concentration of economic activity, population, and income in these regions.

On the other hand, deposits represented 83.7% of the total balance sheet in 2011, which indicates that Lebanese banks rely on deposits as a main source of funds. These percentages also reflect the loyalty of the Lebanese banks; clients, especially since more than 80% of deposits are saving accounts. The sector deposits amount reached USD 137.9.438 billion by the end of 2011. The geographic distribution of deposits by value can be summarized as follows: Beirut and Suburbs (69.04%), Mount Lebanon (13.2%), South Lebanon (6.57%), North Lebanon (6.1%) and Bekaa (5.09%).

The distribution of deposits by depositors shows a concentration in Beirut and Suburbs of 49.12%; the concentration in other districts reaches 50.88%. Moreover, the deposits of the resident private sector reached 80.2%; the nonresident private sector deposits attained 18.1%; the public sector, 1.7%.

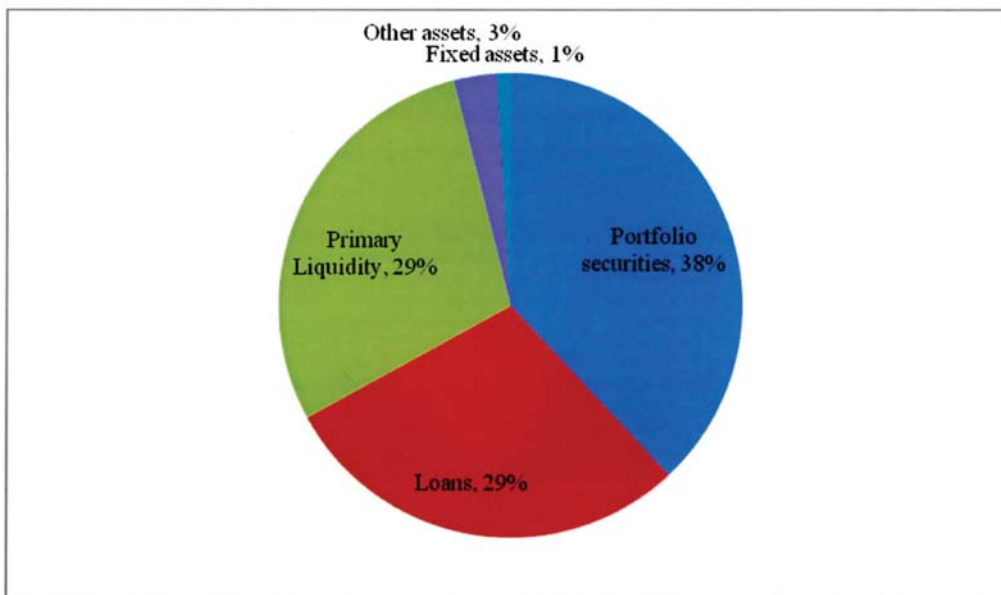


Figure 2: Breakdown of assets in Lebanese Banks at year-end 2011

(Source: Bilanbanques 2012)

Within a steadily big financing flexibility, banks operating in Lebanon maintain their high liquid status. The principal liquidity ratios stay solid, largely higher than the regional and international benchmark. The liquidity factor continues to be one of the most essential resilient features for Lebanese banks. The major liquidity measure – the ratio of net primary liquidity as a percentage of customer deposits – reached 35.6% at yearend 2011. Main liquidity continues to be placed either in the Central Bank (56.4%) or in foreign banks (43.6%) (Bilanbanques, 2012).

Whereas the domestic exposure to sovereign debt still weighs on Lebanese banks' activity, it has been on a relatively declining trend in recent years. The aggregate portfolio of foreign currency sovereign bonds held by banks showed 14% of foreign currency deposits in 2011.

Lebanese banks are well solvent and highly capitalized on the overall, with steadily good capital buffers covering the different forms of risks. Banks operating in Lebanon consolidated Basel II capital adequacy ratio showed 11.8% and Basel III 11.64%, highly above the regulatory required capital (8%). Risk Weighted Assets presented an increase in 2011, reaching a percentage of 61 driven by the rising share of Risk Weighted Assets in total assets. The capital accounts share registered in 2011 constitute 7.6% of the consolidated balance sheet and about 27.2% of the total loans to the private sector. These percentages seem to be satisfactory compared to the counterpart banking sectors. Lebanese banks aim to always improve their capital funds through preserving a share of their profits, which strengthen their solvency, liquidity, transparency, and governance.

In general, Lebanese banks that have succeeded in their business line diversification policies and that largely strengthened their support functions are susceptible to well profit from a trend reversal in their operating environment, where the upside for their activity prospects is undeniably enticing and lucrative.

Risk Management

Banks' risk management relies on policies, strategies, and procedures relevant to the types of risks and the appropriate level of control that should be implemented. Banks ensure the

management of their risks through their compliance with national and international rules and regulations, incorporated and established by the regulatory of the banking sector.

These risks could be defined by the interest rate risk, the exchange rate risk, the credit risk, the liquidity risk, the solvency risk, and the reputational risk. All these risks present facts that could enhance their occurrence and a set of controls that can decrease the level of their existence.

2.7.2 Governing Bodies

Lebanese banks are governed by the Central Bank of Lebanon (BDL), representing the regulatory framework for all banks and financial institutions. BDL is the gatekeeper of the banking industry. It sets the rules and regulations that banks should abide by (BDL, 2011). The BDL was established by the Code of Money and Credit on April 1, 1964 under the Decree no. 13513. BDL's main functions can be summarized as follows:

- Safeguarding the monetary, economic sector, as well as the soundness of the banking sector;
- Developing the money and financial markets;
- Developing and regulating the payment systems and instruments, as well as the money transfer operations, including electronic transfers and the clearing and settlement operations to different financial, payment instruments and bonds;
- Stabilizing the exchange rate and the intervention in the foreign exchange market by buying and selling foreign currencies;
- Controlling the bank's liquidity level by adjusting discount rates, intervening to open markets, and determining credit facilities to banks;
- Providing licenses for new banks;

- Cooperating with the Lebanese government in order to have a consistency in the established and fixed objectives of both parties.

The banking control commission (BCC) was launched in 1967 by law no. 28/67; it is the bank supervisory authority responsible for supervising banking activities and monitoring the proper implementation of BDL's instructions through circulars and memos (BCC, 2012). The BCCL replace the banking control department of the BDL. It is composed of five members appointed for five years. These members should be experts in banking and finance with a university academic background. The main function of the BCCL is to supervise banks, financial institutions, money dealers, brokerage firms, and leasing companies. One of the essential duties of the BCCL is to perform on-site and off-site examinations by its highly qualified staff. The BCCL has under its supervision 63 banks, 40 financial companies, 9 brokerage firms, 3 leasing companies, and 389 money exchangers.

The Association of Banks in Lebanon (ABL) was established in 1959 under the license no. 1643. Every bank listed and operating in Lebanon could be registered in the ABL as an active member. The ABL's main objectives are noted as follows:

- Strengthen the relation between the banks through highlighting the common higher interest of the sector;
- Represent the profession;
- Focus on the banks role in upholding the national economy;
- Find and develop regulations by working with the concerned authorities;
- Improving the competences of human resources working in the banking sector, which can improve the banking performance level;

- Achieving the objectives of the Association by consolidating the cooperation between banks in all countries (ABL, 2012).

2.7.3 Basel in the Lebanese Banking Sector

Even though the recent financial crisis has weakened banks worldwide, the Lebanese banks have weathered the global crisis, thanks to:

- the money coming from Lebanese citizens living abroad;
- the limits imposed by BDL on bank investments in derivatives and structured products;
- the limits on bank loans for stock purchases and real-estate and bond investments;
- high solvency;
- conservatism;
- high collaterals;
- the adoption of international regulation and standards, like Basel II.

The Lebanese banking sector has always adopted international norms to enhance the sector's image and credibility on the international scale. In addition, supervisory authorities guide Lebanese banks to implement international standards in order to preserve their competitive advantages. This supports the presence and expansion of Lebanese banks in the Middle East, North Africa, Europe, and, recently, Australia. Moreover, adopting the Basel Accord is a major factor for correspondent banks dealing with Lebanese banks, not to forget the role of the Basel Accord in strengthening the capital base to decrease banking risks and protect the depositors

from potential losses. By adapting its principles, Lebanese banks offer a significant confidence factor in the international market.

The Central Bank and the Banking Control Commission are the main entities following up on the implementation process of Basel II capital adequacy framework. The Lebanese Banks are mandated to report regularly their activities and compliance with Basel II requirements, especially on Capital Adequacy Ratio. BDL's basic circular n° 104 dated 01/04/2006 required full implementation of Basel II accord by Lebanese banks. The implementation date was fixed starting 2008. During this period (2006-2008), the Banking Control Commission of Lebanon asked banks to submit two Capital Adequacy Ratios, the first one based on the calculation of the risk-weighted assets according to Basel I and the second one according to Basel II; this was known as the parallel run period. Since the computation of RWA according to Basel II is more risk sensitive and thus more complex than its computation in Basel I, the BCCL provided guidance for banks in order to submit their Capital Adequacy Ratios. This guidance was provided through Quantitative Impact Studies (QISs) that assisted the banks in calculating their credit, market, and operational risk weighted assets. These risk weighted assets served as the denominator of the Capital Adequacy Ratios according to simplified approaches as per Pillar 1 of Basel II accord. As for the numerator of the Capital Adequacy Ratios, Basel II accord divided banks' equity into three different Tiers. While noting that the latest financial crisis revealed the need for more stringent equity instruments, Basel III came up with a new definition of capital, enhancing the quality of instruments eligible to be classified as equity. In addition, Basel III defined three measures for Capital Adequacy Ratios in order to reach a more resilient banking sector

The solvency ratio of the Lebanese banking sector, calculated on the basis of Basel II framework, reached around 11.8% in 2011 (ABL, 2011, p.11). BDL recommended a conservative approach when distributing dividends (between 25% and 33%); the remaining part of the profit, which constitutes the largest part, shall be used to consolidate the bank's capital. Furthermore, a Quantitative Impact Study (QIS) performed by BCCL at year-end 2011 showed a capital adequacy ratio of 11.64% based on Basel III requirements. For core capital requirements, the Lebanese monetary authorities are more demanding than Basle III (as it was

the case with Basle I), imposing a 12% rate instead of the required 8% starting 2015, since the 12% ratio would create a greater confidence and would strengthen banks' resilience in these unstable region (BDL, 2011).

Basel III Implementation and Timeline in Lebanon

As previously mentioned, the governing parties of the Lebanese banking sector include the Central Bank of Lebanon (BDL), the Association of Banks in Lebanon (ABL), and the Banking Control and Commission in Lebanon (BCCL). These governing parties took it on themselves to follow up the implementation of Basel III in Lebanon. As a result, these parties established many circulars and memos, such as memos n°4/2010, n°8/2010, n°2/2011, n°13/2011, n°6/2012, identifying the detailed amendments that banks should apply in order to meet Basel III requirements and the modified percentages of these standards (BCCL, 2012).

In the aim of removing the Tier 3 from the capital, the Central Bank of Lebanon (BDL) established many intermediary circulars in 15/04/2011. The most important are the following:

- 248 (based on the Basic Circular 44);
- 249 (based on the Basic Circular 43); and
- 250 (based on the Basic Circular 35).

For the implementation of the new capital structure and removing the sub-limits of Tier 1 and Tier 2 and the Lebanese phase-in arrangements, BDL Intermediary Circulars were published as of 07/12/2011 under the number 282 (based on the Basic Circular 44) and the number 283 (based on the Basic Circular 43).

Basel III will be implemented in Lebanon with more strict and much harder requirements that the international standard issued by the Basel committee, in order to give more confidence to customers and prevent the banks and the market from future crisis. A comparison between Basel III and BDL requirements is described in detail as follows:

- Common Equity Tier 1 (CET1): The ratio required by Basel III is 4.5%, while that required by BDL is 5.5%;
- Additional Tier 1: Basel III required a ratio of 1.5%, while BDL asked for an addition 0.5%, totaling 2%
- Tier 2: The same ratio is required by Basel III and BDL (2%)
- Capital Conservation Buffer: Basel III required a ratio of 2.5% as of 2019, while the BDL requires this buffer to be applied starting 2015

The total capital adequacy ratio required by Basel III is 8% and 10.5% on 2015 and 2019 respectively, while the ratio required by BDL is 12%. Moreover, the Lebanese governing parties, especially BDL, require the banking sector to add more buffers, such as the Countercyclical Capital Buffer (CCB) ranging between zero to 2.5% and the Systemically Important Financial Institutions Buffer (SIFI's) ranging between zero and 2.5%. Figure 3 presents a comparison between BDL and Basel III capital requirements in detail.

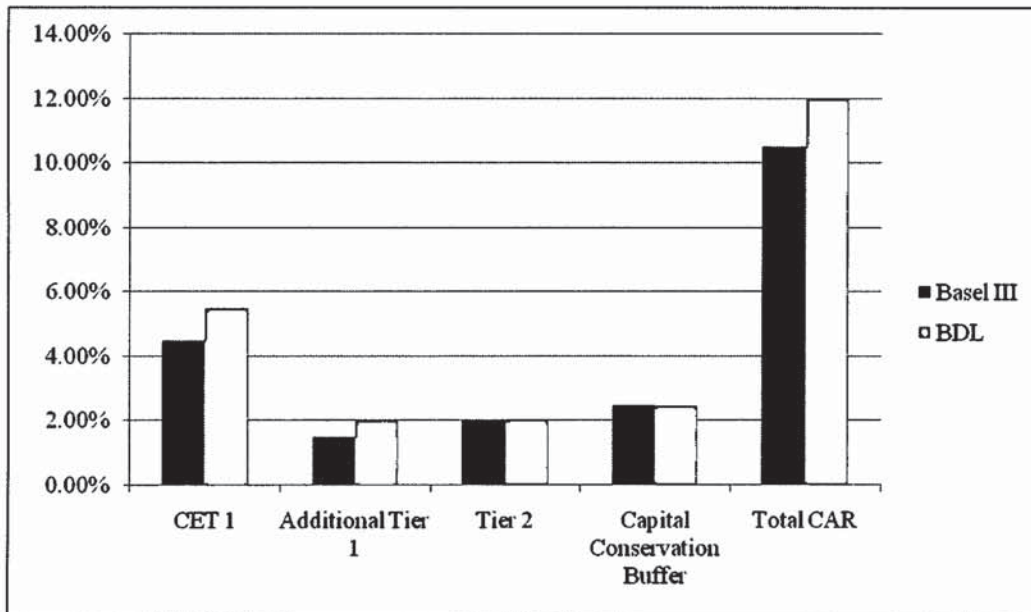


Figure 3: Basel III and BDL capital requirements comparison
(Source: BCCL).

To summarize, the Lebanese banking sector is well prepared for the implementation of Basel III and work in this direction is ongoing. A report published by the International Monetary Fund (IMF) on February 2012 noted: “Thanks to prudent management and conservative regulation, banks report capital above the regulatory minimum, high liquidity buffers, low levels of nonperforming loans, and stable profits” (IMF, 2012, p.24).

2.8 The Interrelationship of Bank Capital and Loan Interest Rates

The main purpose of my research is to estimate the relationship between capital and lending spreads of banks operating in Lebanon, group alpha. While this is largely an empirical work, it is important to give some theoretical and conceptual background. First, it is necessary to clarify some terminology and concepts:

What Is Meant by Bank Capital?

Capital represents the part of the value of a bank's assets that it is not legally needed to be repaid to anyone. It can include some portions that have to be repaid but only after a long time in the future. The main role played by capital is the protection of certain parties from losses including bank customers, depositors, and bank counterparties. In general, regulators are not concerned about losses falling on the shareholders of the bank; their main concern is the bank's depositors (Elliott, 2010). In order to protect other parties by absorbing losses, capital should have the following characteristics:

- Capital does not have to be repaid since any requirement for repayment decreases the ability of losses absorbency
- Capital has no requirements for periodic interest or dividend payments
- In bankruptcy or any other insolvency cases, capital holders have the lowest priority for any repayment

Different financial instruments can represent capital. The main components are:

- **Common stock** is the purest form of capital because it has the lowest priority in bankruptcy cases and has no legal requirements to repay it or to pay dividends.
- **Preferred share** is similar to a bond or a loan because there is an agreed dividend rate that is expected to be paid. It is considered capital since it doesn't have the right to force the company into bankruptcy.
- **Subordinated debt** is the weakest form of capital since it must be repaid and has the right to receive interest payments. However, it has a lower rank than a regular debt in case of bankruptcy.

What Is the Difference between Regulatory and Economic capital?

Regulatory capital is the minimum capital required by regulators. It is considered to limit the losses incurred by investors in case of bankruptcy by a financial institution. These are the most obligatory capital requirements for banks because they are legally required, and many actions can be taken in case of non-compliance, including the seizure of the bank (Osborne and Fuertes, 2011).

The economic capital is the sum of all coverage capital components, and its role is to guarantee the survival of the financial institution in case of a crash. Its name indicates that economic factors rather than external regulators determine this capital. In addition, economic capital can be considered as an instrument implemented and developed by individual entities for internal risk management (Elliott, 2010).

Why Do Banks Reserve from Holding a Large Amount of Extra Capital?

Capital is the most expensive source of funding because it carries more risks than securities, deposits, or debt. Banks would hold high levels of capital and provide complete protections only if capital were cheap. Unfortunately, capital's suppliers require high returns because their role is to bear the risk from investments, operations, and bank's loan book (Elliott, 2010).

How Might Banks Respond to Cost Increase with Higher Capital Requirements?

There are eight options available for banks to respond to cost increases:

1. Absorbing the costs by reducing return on equity. In the long-run, bank investors should accept lower returns in exchange for reduced risks;
2. Lowering funding costs by reducing deposits' or other source of funds interest rate;

3. Decreasing operating expenses. When financial institutions come under external pressure, they usually cut their expenses, especially marketing and administrative overheads;
4. Reducing the expected credit losses by modifying the terms and conditions under which they lend;
5. Limiting the regulatory effects through technical methods, such as improving modeling efforts, which reduce the risk weighting;
6. Rationing credit by rejecting loan applications that fail to meet newly heightened credit standards;
7. Increasing prices on loans. This option is limited by competitive market conditions within the banking industry; and
8. Restructuring the business by changing business lines, buying or selling new businesses, or merging with other financial institutions.

How Are Loans Priced?

A number of factors influence the method by which banks set their lending rates. The most important factors are the costs of equity funding, debt, and the losses that banks expect to suffer on their lending activities. A previous research by the reserve bank showed that the increase in the cost of debt funding, more specifically the higher costs of long term wholesale debt and deposits, has been a main driver of the rise in banks' lending rates. The past couple of years revealed that higher equity funding costs have highly attributed to the rise in lending rates. In simple terms, loan's interest rate should cover the cost of funds, administrative expenses, and any expected credit losses (Elliott, 2009).

What Are the Costs of Higher Capital Requirements?

After nearly five decades of efforts to regulate the minimum capital requirements, one might anticipate that a perusal of the academic banking literature would yield considerable agreement that capital requirements are a worthy tool within a bank regulator's arsenal. In fact, the theoretical banking literature did not reach a consensus about the effects of capital requirements on bank behavior and the associated risks faced by individual institutions and the banking system as a whole. Some academic work indicates that capital requirements unambiguously contribute to various possible measures of bank stability. In contrast, other work concludes that capital requirements make banks riskier than they would be in the absence of such requirements. The most debatable issue relates to how the required rate of return on equity by investors can be expected to change as the new resilient regulatory regime takes place.

2.8.1 Modigliani-Miller Perspective and Related Studies

In their classical 1958 work, Modigliani and Miller (M-M) demonstrate that under idealized conditions, a company's cost of funds would be unaffected by the mix of equity and debt. The main point of M-M is that a bigger equity base makes a bank less risky; therefore, investors would be content to accept a lower rate of return on equity. An increase in equity's fraction, which is more expensive than debt, would be precisely offset by a decline in the costs of both equity and debt in respect of the lower risk of insolvency. This theorem would imply that the loan's rate charged by a bank should be independent of its required capital ratio. If this were true, there would be no need for the rest of this research since the higher capital requirements by Basel III would have no impact on cost of funds and therefore would not affect lending behavior (Modigliani and Miller, 1958).

Theoretically, shareholders and creditors should require fewer returns when the bank's leverage is reduced. In reality, these theories are not applicable for many reasons. First, banks are viewed as holding implicit and explicit government guarantees, which decrease the risk of default. In addition, deposits have an insurance, which is a kind of subsidy leading to a drop in risk and, consequently, in required return. Not to forget that interest expenses are tax deductible while dividends are not (Elliott, 2009).

2.8.2 Other Related Studies

There are several theories that explain how bank capital could influence the lending spreads. The enforcement of capital requirements can link a bank's capital position with its lending simply as part of the process of a bank meeting regulatory standards. For instance, if bank equity is not perfectly elastic, a bank with too little capital could attempt to improve its capital position by reducing its size, and one way to do that is to decrease loans. Indeed, Keely (1988) finds that in the 1980's, banks deficient in capital grew purposefully slower than other banks to adjust their capital positions. More generally, banks with stronger capital positions have more capacity to expand loans and still meet regulatory capital standards. For a given level of capital, a bank can increase its risk-based capital-to-asset ratio simply by reducing the volume of loans held in its portfolio and acquiring Treasury securities. The growth rate of loans tends to be reduced by such an adjustment. One research (Van Hoose D., 2007) concluded that constraining capital standards produce immediate effects such as a reduction in total lending and an increase in market loan rates and substitution away from lending to holding alternative assets. Moreover, the research stated that the longer-term effect of capital regulation is likely to be an increase in capital ratios, which may or may not be accompanied by a rise in total lending.

Most of these theories reached the following conclusions:

1. Short-run effects of binding risk-based capital requirements are reductions in individual bank lending and, in analyses that include consideration of endogenous loan-market adjustments, increases in equilibrium loan rates.
2. Longer-run effects of risk-based capital regulation lead to increases in bank capital, both absolutely and relative to bank lending.

The empirical literature showed conflicting evidence on the direction and the magnitude of the relationship between capital ratios and lending spreads. Studies using cross-country studies reported a positive relation (Carbo-Valverde and Rodriguez, 2007); on the other hand, studies from data on individual countries found a negative relation (Steffen and Wahrenburg, 2008). This contrasting evidence could be the result of neglecting time variation when analyzing the relation between capital and lending spreads. An empirical study supporting this opinion (Fisher, 2009) documents a negative relation between capital ratio and loan ratios utilizing US individual loans for the period 1988-92; yet, a positive relation was showed over the period 1993-2005 when regulatory changes were requiring bank capital ratios upwards.

Osborne M., Fuertes A. M., Milne A. (2011) examined eight of the largest UK banks over the period 1998-2011. Their study found no evidence for the positive long-run relation between banks capital and lending spreads hypothesized during normal conditions. They interpret this as evidence that UK banks holdings of high quality capital (Tier 1) were on average close to their own cost-minimizing, optimal capital ratios during the pre-crisis period and thus capital requirements were not binding. However, the link becoming negative most probably reflects an increase in banks' optimal capital ratios in bad times, driven by an increase in expected bankruptcy costs. Furthermore, the study found a positive short-run relation between bank capital and lending spreads, which became stronger during the stress period. This evidence shows that banks utilize interest margins to adjust their high-quality Tier1 capital ratio in the short-run, both by raising the numerator via retained earnings and by reducing the denominator via downwards shifts in the supply of new assets.

Casimano and Hakura (2011) investigated the impact of the higher capital requirements on bank lending spreads and loan growth. They used the annual data for commercial banks and Bank Holding Companies for a big number of advanced countries for the 2001-2009 periods. They found that for a one percent rise in the equity to asset ratio, the loan rate for the 100 largest banks will increase by 12 basis points. For banks in countries that encountered the financial crisis 2007-09, the increase in loan rate will be 9 basis points, while in countries that did not encounter the crisis, the increase will be 13 basis points. This increase in loan rates will lead to reduced loans by 4.6 percent in the long run in banks in the countries that encountered the crisis and by

14.8 percent in banks in the countries that did not encounter the crisis. In addition, it could create big incentives for regulatory arbitrage and a shift away from traditional banking activity to the shadow-banking sector.

Before continuing this literature review, it is important to discuss the costs associated with the changes in financial regulatory framework, summarized in Figure 4. It shows that higher capital requirements on banks may increase funding costs in the private sector, which can reduce credit availability and accordingly affect the real economy. In response to the rising cost of funding, the profitability of banks decreases; therefore, they would pass on these costs to the private sector through an increase in lending spreads.

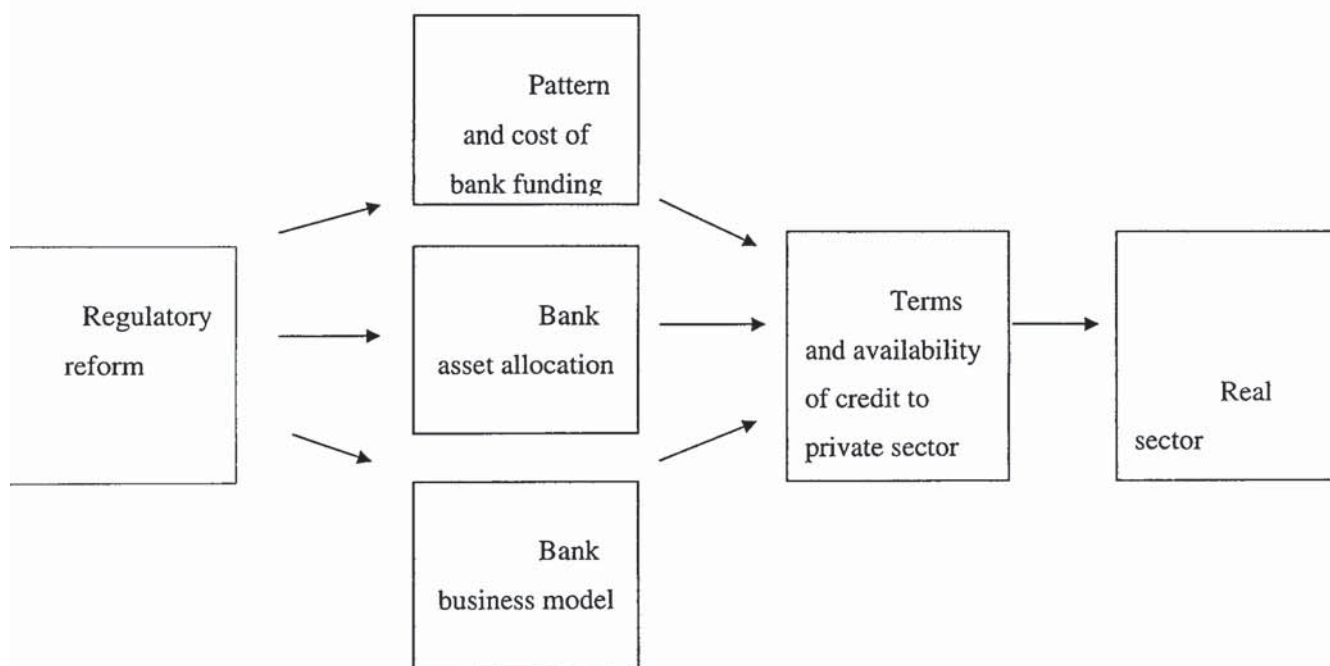


Figure 4: Stylized framework of the economic impact of regulatory framework
(Source: Institute of International Finance)

Santos and Elliot (2012) conducted a study at the International Monetary Fund (IMF). In their study, they estimated the costs of this new regulation while taking into consideration all the accord requirements: capital, liquidity, derivatives, and deposit insurance. This study sheds gives us insight on the relation between capital and lending spreads.

The IMF study assumed that the loan rate will offset the capital cost, other sources of funding, losses in credit, and operating costs. A sensitivity analysis was made to ensure that any changes in assumptions do not radically affect the results. To estimate the cost, they rely on large bank financial statements and disclosures, experimental analysis, previous studies, and academic theories (Santos and Elliott, 2012).

It is worth noting that the study did not assess the economic benefits of Basel III. In addition, it did not consider the transitional period when analyzing the long-term outcomes.

To estimate the impact on lending rates associated with higher capital and other safety margins requirements, they used the following loan pricing formula:

$$[L \times (1-t)] (E \times r_e) + [(D \times r_d) + C + A - O] \times (1-t)$$

Where:

- L = effective interest rate of loans that include the annualized impact of fees;
- T = income tax marginal rate;

- E = part of equity covering the loan;
- r_e = rate of return required by investors on equity;
- D = part of deposits and debt funding the loan. D is assumed to be the loan's amount minus E ;
- r_d = effective marginal interest rate on deposits and debt;
- C = the credit spread, equal to the probability weighted expected loss;
- A = operating expenses connected to the loan; and
- O = other expense and income items connected to the loan.

This formula can catch various risks coming from different type of loans by making a weighted average capital and credit cost. The impact of higher capital requirements on lending spreads is:

- 19 Basis points in Europe;
- 13 Basis points in Japan; and
- 40 Basis points in the US.

After estimating the increase in lending spreads, IMF's study considered the effect of Modigliani- Miller (M-M). In M-M's theory, increasing capital does not affect the costs of banks under ideal conditions. They assume that when banks switch their debts by equities, return on equity will decline and therefore the cost will not change. Accordingly, IMF's research deducted 50% from the lending rates increase and the net effect was:

- 9 Basis points in Europe;
- 7 Basis points in Japan; and
- 20 Basis points in the US.

Solving and Courneade (2011) conducted the organization for economic cooperation and development (OECD) study. The OECD's study has estimated the new accord impact on lending spreads, and then analyzed the macroeconomic outcomes.

The first part of the study assesses the existing levels of capital by using a research accomplished by the Institute of International Finance (IIF). Then, the study measures the quantity of capital remaining to comply with Basel III requirements in Europe, United States, and Japan.

To estimate the effects of Basel III on lending spreads, accounting relationships conducted on aggregated banking sector financial positions were used. For this purpose, banks' assets are distributed into two categories: lending assets, which include loans to households and non-financial institutions, and other assets containing trading assets, interbank funds, and government bonds. It was assumed that banks have control on lending assets price, while other assets are generally market driven and therefore they cannot affect their pricing (Slovik and Courneade, 2011). For every one-percentage point increase in regulatory capital, the rise in lending spreads will be calculated using the following equations:

$$r^{AL}(t) * AL + [r^{AO}(t) * AO] = [r^L(t) * L] + [r^E(t) * E]$$

$$[r^{AL}(t+1) * AL] + [r^{AO}(t) * AO] = [r^L(t) * (L - \frac{RWA}{100})] + [r^E(t) * (E + \frac{RWA}{100})]$$

$$[r^{AL}(t+1) - r^{AL}(t)] = \left[\frac{r^E(t) - r^L(t)}{AL} * \frac{RWA}{100} \right]$$

Where:

- AL is the percentage of lending assets from total assets;
- AO is the percentage of other assets from total assets;
- L is the percentage of liabilities from total assets;
- E is the percentage of common equity from total assets;
- RWA is the percentage of risk weighted assets from total assets;
- $r^{AL}(t)$ is the return on lending assets (%);
- $r^{AO}(t)$ is the return on other assets (%);
- $r^L(t)$ is the cost of borrowing (%); and
- $r^E(t)$ is the cost of equity (%).

By using the aggregated banks' financial positions for the years 2004-2006, the estimated increase in lending spreads relative to one percentage point rise in regulatory capital is:

- 14.3 Basis points in Europe;
- 8.4 Basis points in Japan; and
- 20.5 Basis points in the US.

The importance of the OECD study is that a macroeconomic assessment is performed starting by the numbers generated above. Knowing that this part is not in my study's scope, I will only brief the results. It was estimated that for every 100 basis points increase in lending spreads, the GDP growth would decline 1.45 percentage points 5 years after the implementation.

Another important related study is the one conducted by the Basel Committee on Banking Supervision (2010). The BCBS study intended to assess the long-term impact of the required higher capital and liquidity by Basel III. Unlike the IMF and OECD, the BCBS study evaluates the benefits of stronger capital and liquidity, as well as costs.

To measure the costs on the long run, different macroeconomic models were used including semi-structural and reduced-form models. The assumptions taken are as follows:

- The higher cost of funding resulting from higher capital requirements is totally offset by raising lending rates;
- The change in capital structure does not affect the cost of debt and of equity;

- The cost of equity is equal to 14.8%, which is the average return on equity over 15 years for 13 countries.
- The cost of debt is 100 basis points over deposits for short-term debt and 200 basis points for long-term debt (more than one year).

By aggregating the data of 13 countries including 6,660 banks for 15 years in a representative financial position, two main results were generated:

- For every one percentage point increase in capital, 13 basis points raise in lending spreads are needed;
- To meet the required liquidity by Basel III, 25 basis points raise in lending spreads are needed.

The second goal of the BCBS study was to estimate the economic benefits of the accord by measuring the probable yearly gain in output related to the decline in the frequency of financial and banking crises. They estimated two variables: the effect of higher capital and liquidity and the expected discounted cost of banking crises.

The main findings in this part are that banking crises are very costly with long-term losses of economic output (BCBS, 2010). Furthermore, higher leverage of capital and liquidity decrease the possibility and the severity of a crisis.

The BCBS study concluded that the benefits of the accord outweigh the costs of higher capital and liquidity.

Chapter 3

METHODOLOGY

3.1 Introduction

Following a model outlined by King (2010), we will estimate the potential impact of increased capital requirements on lending spreads, the difference between bank loans' interest rate and the cost of liabilities charged by banks operating in Lebanon, group alpha. King's methodology is a valuable instrument to examine the impact of Basel III on credit's cost and, naturally, on the economy. As we know, any increase on loans' interest rate will reduce the demand, which can decrease investments and output. This model was used by the Basel Committee to evaluate the long-term economic impact of the new accord and by many other researchers, while it has many benefits. For instance, it does not depend on historical datasets and relationships that are not available for the Lebanese banks.

King tested this methodology on thirteen Organizations for Economic Co-operation and Development (OECD) countries including 6,844 banks. Findings estimated that fifteen basis points increases in lending spreads needed to offset one percentage point rise in capital adequacy ratio. Many assumptions were taken to isolate different variable: return on equity, debt costs, operating expenses, behavior of banks' managers, and structure of the financial system are assumed unchanged. Lending spreads' rise can be substituted by reducing operating expenses four percentage points, or return on equity can fall by 0.9 percentage point.

To brief King's model, banks' capital ratio is increased by one percentage point of risk weighted assets, while the composition of assets is kept unchanged. The increase in shareholder's equity will be coincided by a decrease in liabilities. This change in capital structure generates an additional cost on banks' funding, knowing that equities have the most expensive cost of fund; interest expenses are reduced because we have fewer liabilities. This decrease in interest expense does not offset the increase in cost of equities; thus, the return on equity will fall down. King's mapping assumes that the required return on equity is unchanged and banks offset the higher capital requirements cost by lending spreads.

3.2 Methodology Used

Using accounting relationships, we can recognize how modifications in banks' capital structure and the composition of their assets affect the different components of net income. This is achieved by extracting the required data from banks' balance sheets, income statements, and disclosures related to these statements. The methodology starts by the stylized balance sheet of banks representing our study for the yearend 2011. Knowingly, assets of a typical bank are distributed into six main categories: cash and central bank balances, net loans, investments in securities, interbank claims, trading assets, and other assets. The other side of the balance sheet consists of liabilities and shareholders' equity. Liabilities include interbank funding, deposits, whole sale funding, trading liabilities, and other liabilities. After deducting liabilities from assets, the remaining part signifies shareholders' equity.

After showing banks' assets and liabilities, the next step is to present the income statement. In general, banks have two sources of revenue: interest income coming from interests charged on loans and other interest income, and non-interest income coming mainly from fees and commissions. On the other hand, banks' expenses are distributed on interest expenses, personal expenses, operating expenses, and income tax. Thus, the calculation of the net income is based on the following equation (1):

$$NetIncome = [(IncomeLoans + OtherIntIncome - IntExp) + NonIntInc - OpExp] \times (1 - tax). \quad (1)$$

The above steps specify the different assets, their ways of financing, and the income they produce. Subsequently, the costs of various sources of capital must be specified in order to know what is the price of capital increase, and after how will be offset. It is necessary to separate interest expenses into interests paid on deposits, short term liabilities, and long term liabilities, because every component has a cost and these variables will be used separately in the next equations. Thus, the distinction is prepared based on a one-year threshold for the liabilities' maturity as depicted in equation (2):

$$IntExp_t = (r_{deposits} \times Deposits) + [r_{Debt \leq 1 year} \times (IBfund + TradLiabs + Debt_t \times \rho_t)] + [r_{LiDebt} \times Debt_t \times (1 - \rho_t)] \quad (2)$$

Where:

- IntExp_t = interest expenses paid by the bank;
- r_{deposits} = average interest rate on deposits;
- $r_{\text{Debt} \leq 1 \text{ year}}$ = interest rate on short-term debt including interbank fund, trade liabilities, and debt with a maturity less than one year;
- ρ_t = fraction of the short term debt;
- $r_{\text{LtDebt } t}$ = Interest rate on long-term debt.

As per Modigliani-Miller theorem, the costs of different forms of capital should be as follows:

$$r_{\text{Deposits}} < r_{\text{Debt} \leq 1 \text{ year}} < r_{\text{LtDebt}} < r_{\text{Equity}} \quad (3)$$

The costs of deposits can either be derived from the bank's annual report or by dividing interest paid on deposits by total deposits.

Banks do not disclose their cost in financial statements. Therefore, following King's methodology and based on previous studies, we will assume that the rate of long-term debt liabilities is equal the deposits rate plus 200 basis points.

Equities have the highest cost of fund because they hold more risk for investors than debt, securities, or deposits (Elliott 2010). Investors require high returns on equities, since they bear the risk of loans, investments, and operations. Return on equity will be measured based on the following equation (4):

$$r_{equity} = \overline{ROE} = \frac{Net\ Income}{Equity} \quad (4)$$

Shareholders' equity consists of different type including common equity, preferred shares, among others. This research assumes all equities will bear the same cost as common equity. Since common equity elements were raised by Basel III Tier 1, results are supposed to be almost the same.

The fourth step is to calculate the total capital adequacy ratio, which is the total regulatory capital over risk weighted assets. It is necessary to distinguish between regulatory and accounting capital; while capital ratio presents total equity divided by total assets in an accounting financial position, regulatory capital considers that the capital part should covers assets based on their riskiness. Therefore, when Basel III requires a capital adequacy ratio of 8%, this means that capital represents 8% of risk weighted assets and not of total assets.

$$Total\ Capital\ Ratio = \frac{E}{RWA} \quad (5)$$

This equation illustrates an important variable in our study: increase in capital. Accordingly, when a one-percentage point of capital is increased, this does not mean that equities will augment one percent. The following example will clarify this point: consider 100 million total assets, 50 million risk weighted assets, and 5 million shareholders' equity. The capital adequacy ratio is equities over risk weighted assets: 10%. If we want to increase the

regulatory capital by one percentage point, equities will augment by one percent times risk weighted assets, which is 50 million in this example.

Subsequently, after a 1-percentage point increase in capital, shareholders' equity is calculated using the following equation (6).

$$E_{t+1} = E_t + \Delta \text{TotalCapitalRatio} \cdot RWA_{t+1} \quad (6)$$

Where E_t signifies shareholders equity before the increase and Δ Total Capital Ratio represents the increase in capital adequacy ratio (1%).

When the capital structure is changed by increasing capital ratio by one percent, an equal amount should be reduced from the liabilities to offset the difference. Knowing that the most expensive form of liabilities is long-term debt, it will be the first form to be substituted with equity.

$$\Delta \text{Debt} = -\Delta \text{Equity} \quad (7)$$

Theoretically, shareholders and creditors should require fewer returns when the bank's leverage is reduced. Yet, in reality, these theories are not applicable for many reasons. First, banks are viewed as holding an implicit and explicit government guarantee, which decreases the risk of default. In addition, deposits have insurance, which is a kind of subsidy leading to a drop in risk and thus in required return. Finally, interest expenses are tax deductible while dividends are not.

One on hand, the decline in debt outstanding quantity will reduce interest expenses of the bank while increasing the net income. The amount of fall in interest expenses or the increase in net income relies on the interest rate of long term debt. On the other hand, the return on equity will be reduced, knowing that the cost of equities is more than the cost of long term liabilities. As mentioned before, the return on equity ratio is measured through dividing net income by total equities. Since the cost of equities raised in the denominator is more than the cost of interest

expenses reduced in the numerator, which is the net income, the return on equity ratio will decline.

Banks can adjust to the regulatory reforms in a number of ways: accept the decrease in return on equity, reduce operating expenses, increase lending spread, move to a more profitable business sector, or improve non-interest profit sources. In this study, we will assume that Lebanese banks seek to pass on any additional costs by raising the lending spreads.

To measure the spreads – the difference between bank’s loans interest rate and the cost of liabilities – the following equation (8) will be used:

$$\alpha = \frac{\left[\frac{(ROE_{t+1} \cdot E_{t+1})}{(1-\tau_{ax})} - (OtherIntIncome_{t+1} - IntExp_{t+1} + NonIntIncome_{t+1} - OpExp_{t+1}) \right] - Incon}{Loans_{t+1}} \quad (8)$$

Where:

- α = lending spread;
- ROE_{t+1} = return on equity after the one percentage point increase in regulatory capital. In our study, and as above mentioned, this variable is unchanged;
- E_{t+1} = shareholders’ equity after the one percent increase;
- Tax rate = income tax rate;
- $Other IntIncome_{t+1}$ = interests charged on investments and interbank’s claims. This variable is unchanged after the one percentage increase;

- IntExp_{t+1} = interest expenses paid by the bank after the one percentage point increase in capital. Interest expenses paid on deposits and short-term liabilities do not vary. However, interests related to long-term liabilities decline by the quantity subtracted times the interest rate. Accordingly, we can calculate IntExp_{t+1} by deducting the decrease in long-term debt interests from total interest expense;
- $\text{NonIntIncome}_{t+1}$ = this component denotes revenues coming from sources other than interests, such as commissions and fees. It is not affected by the mapping used in this study;
- OpExp_{t+1} = this is an unchanged variable and its amount remains the same as before the capital increase;
- IncomeLoans_t = this variable represents revenues generated from interests charged on loans. It can be obtained from financial statement disclosures;
- Loans_{t+1} = the quantity of loans from total assets. This is a sensitive variable since it depends on how much we want to increase the lending spreads. The higher the quantity of loans, the more the decline in the lending spreads.

After a one-percentage point rise in regulatory capital ratio, an estimation of the increase in lending spreads required to compensate the decline in return on equity was provided by this methodology. Since long-term debt substituted by equity and their costs are the same, the rise in lending spreads and in the capital ratio are linear. For instance, if deposits or short-term debts, which are less expensive than long-term debt, are replaced by equity, the lending spreads will be higher.

Chapter 4

EMPIRICAL RESULTS

In the previous section, we have discussed the methodology for the estimation of the lending spreads increase, showing interrelated equations with accounting relationships. This part we will apply it on the Lebanese banks (Group Alpha).

4.1 Descriptive Statistics

First, we will illustrate the calculation of the stylized balance sheet and income statement using banks' reports for the year end 2011. Banks represented in our research are qualified as alpha group which have deposits more than two billion USD. Blom Bank Sal, Bank Audi Sal, Byblos Bank Sal, Bank Med Sal, Fransabank Sal, and Credit Libanais Sal, Banque Libano-Francaise Sal, Bank of Beirut Sal, IBL Bank Sal, First National Bank Sal, BBAC Sal, and SGBL Sal constitute 86% of all Lebanese banks as per total assets.

Table 1 illustrates the stylized balance sheet of Byblos Bank, where items are showed as a percentage of total assets. From annual reports and Bilanbanques, data were consolidated into main assets and liabilities. Assets include cash and balances at central bank, interbank claims, loans, investments and securities, and others. Liabilities include deposits, interbank funding, and other liabilities. Our calculations showed the following:

Investments and securities represent the highest part of assets (35%), followed by loans (24%), cash and balances at central banks (17%), and interbank claims (20%). The main source of funds for these assets is coming from deposits (77%), shareholders' equity (10%), interbank funding (7%), and other liabilities (6%).

Byblos Bank's financial position, December 31, 2011		
(As percentage of total assets)		
Assets	Balance	% of total assets
Cash and balances at central banks	4,282,468.00	17.11%
Interbank claims	4,998,330.00	19.97%
Trading related assets	260,565.00	1.04%
Net loans	6,042,320.00	24.14%
Investments and securities	8,684,268.00	34.70%
other assets	759,362.00	3.03%
TOTAL ASSETS	25,027,313.00	100.00%
Liabilities		
Deposits	19,326,408.00	77.22%
Interbank funding	1,635,480.00	6.53%
Other Liabilities	1,595,626.00	6.38%
TOTAL LIABILITIES	22,557,514.00	90.13%
TOTAL SHAREHOLDERS' EQUITY	2,469,799.00	9.87%
TOTAL LIABILITIES & SHAREHOLDERS EQUITY	25,027,313.00	100.00%

Table 1: Byblos bank balance sheet as of December 31, 2011

(Source: 2011 annual reports of Byblos bank, Bilanbanques 2012, author's calculations)

Table 2 shows the income statement of Byblos Bank Sal for the year-end 2011, which displays all the components, as percentage of total assets, to generate the net income. First, interest expenses were deducted from interests' income, which includes interest income on loans

and other interest income to obtain net interest income (1.70%) of total assets. Then, non-interest income, mainly from commissions and fees, shows (1.15%). The addition of net interest income and non-interest income generated total revenues (2.85%). Operating and personnel expenses consist (1.50%) approximately, while the operating profit, which is the total revenues minus total expenses, equal (1.35%). Finally, we multiplied the operating profit by income tax rate to calculate the net income (1.08%).

Byblos Bank income statement, December 31, 2011		
(As percentage of total assets)		
	Balance	% of total assets
Interest income on loans	454,293.00	1.82%
Other interest income	810,444.00	3.24%
Interest expense	840,373.00	3.36%
A-Net interest income	424,364.00	1.70%
B-Non interest income	287,952.00	1.15%
C-Total revenues (A+B)	712,316.00	2.85%
Personal expense	161,286.00	0.64%
Other expenses	214,106.00	0.86%
D-Total expenses	375,392.00	1.50%
E-Operating profit (C-D)	336,924.00	1.35%
Income tax	65,987.00	0.26%
Net income	270,937.00	1.08%
Total Assets	25,027,313.00	

Table 2: Byblos Bank's income statement as of December 31, 2011

(Source: 2011 annual report of Byblos bank, Bilanbanques 2012, author's calculations)

4.2 Findings

Using the equations mentioned in the methodology section, many variables were calculated to generate the potential impact on lending spreads of higher capital requirements (α).

$$\alpha = \frac{\left[\frac{(ROE_{t+1} \cdot E_{t+1})}{(1 - tax)} - (OtherIntIncome_{t+1} - IntExp_{t+1} + NonIntIncome_{t+1} - OpExp_{t+1}) \right] - Incon}{Loans_{t+1}}$$

Amounts are illustrated in million LL

- $ROE_{t+1} = 10.97\%$;
- $RWA \% = 64.54\%$;
- Total RWA = 16.151.534;
- Total assets = 25.027.313;
- Long-term debt interest rate = 5.84%;
- $E_{t+1} = 2.631.314$;
- Tax rate = 19.59%;
- $OtherIntIncome_{t+1} = 810.444$;
- $IntExp_{t+1} = 830.940$;
- $NonIntIncome_{t+1} = 287.952$;

- $OpExp_{t+1} = 375.392$;
- $IncomeLoans_t = 454.293$;
- $Loans_{t+1} = 6.042.320$.

$$\alpha = \frac{\left[\frac{(ROE_{t+1} - E_{t+1})}{(1 - tax)} (OtherIntIncoms_{t+1} - IntExp_{t+1} + NonIntIncoms_{t+1} - OpExp_{t+1}) \right] - IncomeLoans_t}{Loans_{t+1}}$$

$\alpha = 21$ Basis points.

The same methodology was also applied on Blom Bank Sal, Bank Audi Sal, Fransabank Sal, Bank Med Sal, Credit Libanais Sal, Banque Libano-Francaise Sal, Bank of Beirut Sal, IBL Bank Sal, First National Bank Sal, BBAC Sal, and SGBL Sal. The results generated are the following:

- Increase in lending spreads for Blom Bank Sal: $\alpha = 36$ Basis points.
- Increase in lending spreads for Bank Audi Sal: $\alpha = 30$ Basis points.
- Increase in lending spreads for Fransabank Sal: $\alpha = 19$ Basis points.
- Increase in lending spreads for Bank Med Sal: $\alpha = 19$ Basis points.
- Increase in lending spreads for Credit Libanais Sal: $\alpha = 17$ Basis points.
- Increase in lending spreads for Banque Libano-Francaise Sal: $\alpha = 8$ Basis points.

- Increase in lending spreads for Bank of Beirut Sal: $\alpha = 12$ Basis points.
- Increase in lending spreads for IBL Bank Sal: $\alpha = 35$ Basis points.
- Increase in lending spreads for First National Bank Sal: $\alpha = 12$ Basis points.
- Increase in lending spreads for BBAC Sal: $\alpha = 21$ Basis points.
- Increase in lending spreads for SGBL Sal: $\alpha = 23$ Basis points.

Table 3 summarizes the total assets and the respective increase in lending spreads (α) for each alpha bank. The table also multiplies total assets and the increase in lending spreads (basis points) to be able to calculate the weighted average α .

Alpha banks	Total assets	α (basis points)	Total assets \times α (basis point)
Blom Bank Sal	34,921,949	36	1,257,190,164
Bank Audi Sal	43,320,686	30	1,299,620,580
Byblos Sal	25,027,313	21	525,573,573
Bank Med Sal	17,775,392	19	337,732,448
Fransabank Sal	21,774,505	19	413,715,595
Credit Libanais Sal	10,835,660	17	184,206,220
Banque Libano-Francaise Sal	15,377,984	8	123,023,872
Bank of Beirut Sal	14,668,023	12	176,016,276
IBL Bank Sal	5,703,550	35	199,624,250
First National Bank Sal	4,250,333	12	51,003,996
BBAC Sal	6,506,785	21	136,642,485
SGBL Sal	15,760,551	23	362,492,673
Total	215,922,731		5,066,842,132

Table 3: Data required to calculate the weighted average α of group alpha banks in Lebanon.
(Source: author's calculations)

$$\text{The weighted average } \alpha = \frac{5,066,842,132}{215,922,731} = 23.47 \text{ basis points.}$$

This value indicates that a one percentage point increase in capital adequacy ratio is 24 basis points rise on banks (group Alpha) operating in Lebanon.

In our study, the impact of higher capital requirements will be assessed on micro and macro level for the Lebanese banking sector. For this purpose, the starting point will be a Quantitative Impact Study (QIS) performed by the Banking Control Commission of Lebanon (BCCL) to evaluate the impact of Basel III on banks operating in Lebanon. BCCL assessed the capital adequacy ratio (CAR) of Lebanese banks as per December 31, 2012 implementing Basel III requirements. The study showed different results: some banks comply with the new accord requirements, while others do not.

Figure 5 presents the results of BCCL study on the banks studied in this paper [Byblos Bank Sal (13.88%), Blom Bank Sal (12.84%), Bank Audi Sal (10.08%), Bank Med Sal (9.55%), Fransabank Sal (11.10%), Credit Libanais Sal (14.15%), Banque Libano-Francaise Sal (11.06%), Bank of Beirut Sal (13.80%), IBL Bank Sal (13.02%), First National Bank Sal (8.14%), BBAC Sal (11.34%), and SGBL Sal (5.89%)] and on the entire Lebanese banks (11.64%) as per December 31, 2011. Then, the capital required from Basel III and Central Bank of Lebanon (BDL) is compared with these results to know the remaining capital needed for compliance.

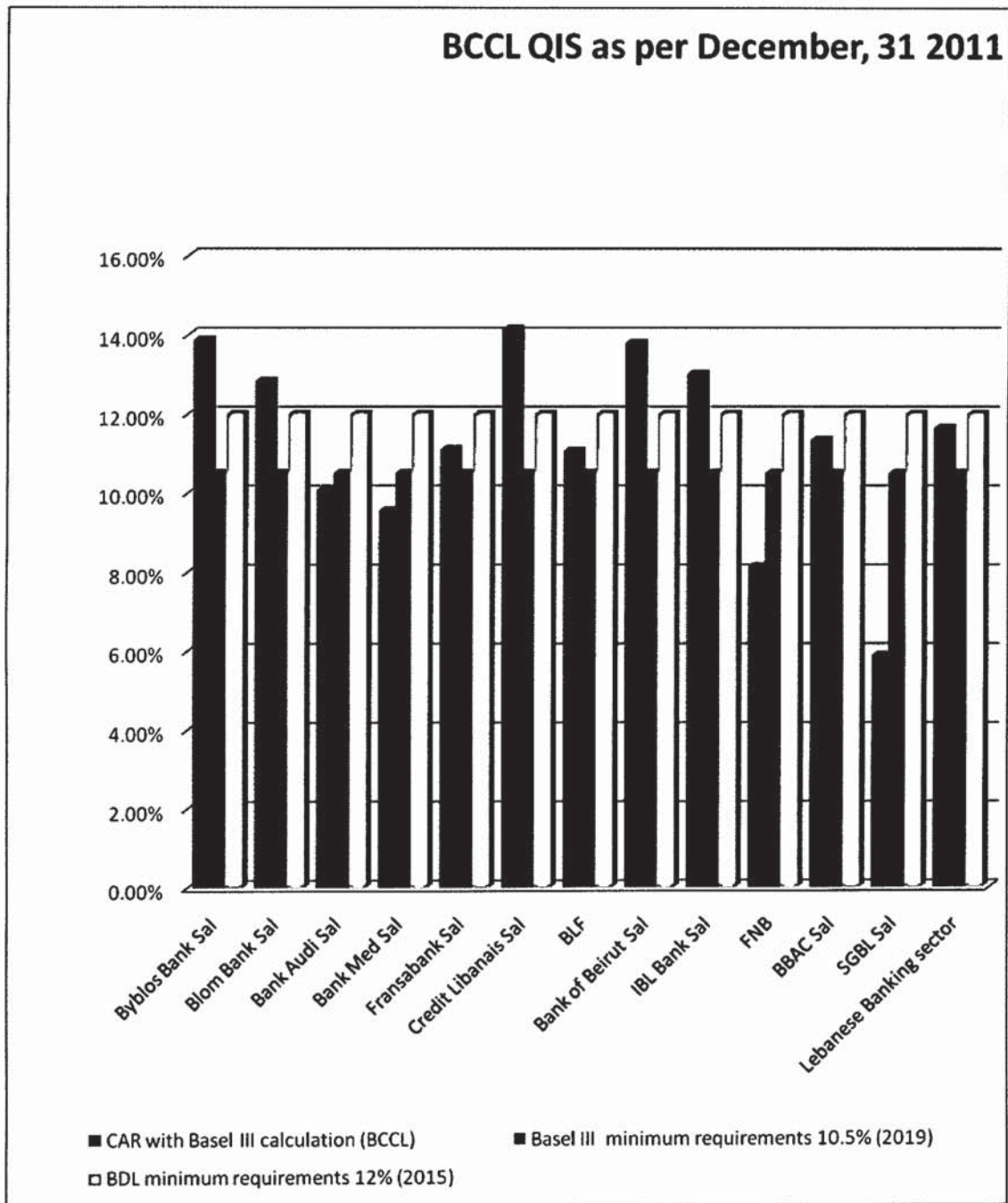


Figure 5: BCCL “QIS” as per December 31, 2011.
(Source: BCCL)

To measure the impact of Basel III on lending spreads of banks operating in Lebanon at a micro level, we will combine the bank lending spreads' sensitivities already calculated for Blom Bank Sal, Bank Audi Sal, Byblos Bank Sal, Bank Med Sal, Fransabank Sal, and Credit Libanais Sal, Banque Libano-Francaise Sal, Bank of Beirut Sal, IBL Bank Sal, First National Bank Sal, BBAC Sal, and SGBL Sal with the remaining bank capital increases illustrated in BCCL "QIS" study in figure 5.

To comply with Basel III capital requirements effective as of 2019 (10.5%), banks need to increase lending spreads as follows:

- Byblos Bank Sal: CAR above Basel III requirements.
- Blom Bank Sal: CAR above Basel III requirements.
- Bank Audi Sal: 12.6 basis points.
- Fransabank Sal: CAR above Basel III requirements.
- Bank Med Sal: $\alpha = 18.5$ Basis points.
- Credit Libanais Sal: CAR above Basel III requirements.
- Banque Libano-Francaise Sal: CAR above Basel III requirements.
- Bank of Beirut Sal: CAR above Basel III requirements.
- IBL Bank Sal: CAR above Basel III requirements.
- First National Bank Sal: 28.32 Basis points.
- BBAC Sal: CAR above Basel III requirements.

- SGBL Sal: 106.03 Basis points.

To comply with BDL capital requirements effective as of 2015 (12%), banks need to increase lending spreads as follows (12%):

- Byblos Bank Sal: CAR above BDL requirements.
- Blom Bank Sal: CAR above BDL requirements.
- Bank Audi Sal: 57.6 basis points.
- Fransabank Sal: 17.1 basis points.
- Bank Med Sal: $\alpha = 46.55$ Basis points.
- Credit Libanais Sal: CAR above BDL requirements.
- Banque Libano-Francaise Sal: 7.52 Basis points.
- Bank of Beirut Sal: CAR above Basel III requirements.
- IBL Bank Sal: CAR above Basel III requirements.
- First National Bank Sal: 46.32 Basis points.
- BBAC Sal: 13.86 Basis points.
- SGBL Sal: 140.53 Basis points.

Note that the SGBL acquisition of other Lebanese bank put it in a unique position and the central bank is considering it a special case and is monitoring closely this issue.

4.3 Conclusion

These results showed that some Lebanese banks (group alpha) need to increase their lending spreads, while others do not. The banks that need to increase their lending spreads encounter some difficulty to offset the impact of increasing the capital adequacy ratio to the lending spreads, knowing that their competitor banks do not have to worry about this issue due to their current compliance with the accord's requirements. Furthermore, these banks are unable to profit from their investments in securities and deposits, because their investments are placed with the Central Bank of Lebanon, the government, and banks; therefore, the lending rate is not under the banks' control. To make things even more serious, the banks are unable to decrease the deposits' interest rate due to their deep need for these funding sources to back their growth and avoid liquidity problems in case of deposit run-off when interest rates decrease. It becomes obvious that the said banks have some serious decisions to make.

At a macro level, the results show that the impact of Basel III on lending spreads will be slight. Based on BCCL impact study, the capital adequacy ratio of the entire Lebanese banks is 11.64% as per December 31, 2011. This means that the capital should be increased by 0.36%. Accordingly, the lending spreads paralleled with the capital shortage will be 9 basis points.

Chapter 5

CONCLUSION

5.1 Introduction

The last financial crisis revealed the need for international financial regulatory reforms to maintain the global financial stability. The answer came with Basel III which mainly aimed to increase the quality, quantity, transparency and consistency of a bank's capital. Higher safety margins, especially from higher capital requirements have additional costs on banks and then on the wide economy.

The above study has measured the due cost on banks operating in Lebanon by using the methodology outlined by King (2010), assuming that banks will offset these costs by rising the lending spreads.

Regardless of whether this Accord is positively or negatively affecting the Lebanese banking sector, Lebanese banks are obligated to adopt it in order to maintain and even enhance the sector's image and credibility on the international level.

5.2 Main Findings

The study highlighted the offset by 24 basis points rise in lending spreads for every one percentage point increase in capital, assuming the return on equity remains intact. This result varies from the additional 15 basis points required in the 13 OECD countries, subject to the referred King's study.

The noted 9 basis points offset are mainly due to the following facts:

- Risk weighted assets for the Lebanese banks constitute 60% of total assets, compared to 53% for the same composition study in 13 OECD countries. This means that any growth in assets for the two groups will lead to a higher Risk Weighted Assets for Lebanese banks, resulting in a lower Capital Adequacy

Ratio. That is why more capital will be needed for Lebanese banks resulting in a higher cost for lending to offset the increase in cost of capital.

- The percentage of sovereign investments (central banks and government papers) and placements with banks is considerably high in the Lebanese banking sector, reaching around 65%. This means that the return on these investments is not determined by the banks itself and they have no say in the matter.
- The stake of commercial loans portfolio for the Lebanese banking sector is considerably low, averaging around 31% compared to a 50% commercial portfolio share in the 13 OECD countries that were subject to King's study. This will force Lebanese banks to increase the cost of lending more than the other group in order to offset the cost of capital, because the percentage on which Lebanese banks can maneuver is lower.

These factors are emphatically affecting the study results and eventually leading to the above noted 9 basis points increment.

5.3 Limitation of the Research

With no doubts, this paper has its limitations:

- It focuses on the steady state, while ignoring the transition period to the new requirements.
- The economic benefits of Basel III are not evaluated in this study.
- The ability of banks to increase their lending spreads with a highly competitive market is above the scope of this study.

5.4 Implications

In light of the above study, it is worth noting that most of the Lebanese banks are expected to be in compliance with Basel III requirements as of 2015, noting that some of them will be definitely in default by 2019.

The Lebanese Central Bank regulations that required additional capital adequacy ratio by 2015 (12% by BDL comparing to the required 8% by Basel III), will put several Lebanese banks in default, where any potential actions that might be taken to comply with Basel III requirements will have a notable impact on these banks' ranking and their ability to compete with the other main market players.

In these special cases, we must highlight the concerned banks' difficulty to offset the impact of increasing the capital adequacy ratio to the lending spreads, while other competitor banks do not have to worry due to their current compliance with the accord's requirements.

Furthermore, these banks are unable to profit from their investments in securities and deposits, because their investments are placed with the Central Bank of Lebanon, the government, and banks; therefore, the lending rate is not under the banks' control. To make things even more serious, the banks are unable to decrease the deposits' interest rate due to their deep need for these funding sources to back their growth and avoid liquidity problems in case of deposit run-off when interest rates decrease. It becomes obvious that the said banks have some serious decisions to make:

- Maintaining the same level of profits and not to showing a decrease in banks' net income;
- Reducing the Risk Weighted Assets; or
- Increasing capital.

5.5 Recommendations

The results outlined in this paper provide a starting point for analyzing the economic impact of higher capital and liquidity requirements on bank's profitability and lending spreads. As highlighted throughout this paper, the analysis in this study focuses on group alpha banks in Lebanon. Therefore, future research may perform similar analysis for a different category of banks on the regional or the multinational level. Finally, it is worth studying the potential impact of having a national specialized department in respective banks to conduct the needed research for complying with international and national regulations. Such an analysis can highlight the economic impact of implementing regulations similar to Basel III, as well as the potential setbacks.

References

- Association of Banks in Lebanon (2011). *Activity and Performance of the Lebanese banking sector in 2011*. Annual report 2011; pp. 2-15.
- Balthazar L. (2006). *From Basel I to Basel III: The Integration of State of the Art Risk Modeling in Banking Regulation*. Great Britain: Anthony Rowe Ltd.
- Bank Audi Sal (2011). *Annual Report 2011*. Retrieved November, 8 2012, from <http://www.banqueaudi.com/Publications/Documents/AnnualReports/BankAudiAnnualReport2011.pdf>
- Bank for International Settlements (BIS). (2009b). *History of the Basel Committee and its Membership*.
- Bank for International Settlements (BIS). *BIS History – Overview*. Retrieved June, 15 2012, from Bank for International Settlements: <http://www.bis.org/about/history.htm>
- Banking Control Commission of Lebanon. *About BCCL overview*. Retrieved June 10, 2012, from <http://www.bccl.gov.lb/>.
- Banking Control Commission of Lebanon (2012). *Computing Capital Adequacy Ratio*. Memo n° 6/2012. retrieved October 23, 2012, from <http://www.bccl.gov.lb/>.
- Banking Control Commission of Lebanon (2007). *Computing Market Risk*. Circular n° 256, retrieved October 20, 2012, from <http://www.bccl.gov.lb/>.
- BankMed Sal (2011). *Annual Report 2011*. Retrieved November, 8 2012, from <http://www.bankmed.com.lb/Pages/AnnualReports.aspx>
- Banque du Liban (2011, December 7). *Capital Adequacy Ratio*. Intermediary circular n°282. retrieved December 15, 2011, from <http://www.bdl.gov.lb/circ/en/listbanksInt.asp>.
- Banque du Liban. *Banque du Liban Role and Function*. Retrieved June 5, 2012, from <http://www.bdl.gov.lb/bdl/role.htm>.
- Banque du Liban (2011, December 7). *Shareholders' Equity*. Intermediary circular n°283, retrieved December 15, 2011, from <http://www.bdl.gov.lb/circ/en/listbanksInt.asp>.
- Basel Committee on Banking Supervision (2011). *Basel III: A global regulatory framework for more resilient banks and banking systems*. Basel, pp. 1-57.
- Basel Committee on Banking Supervision (2010). *An Assessment of the Long Term Economic Impact of Stronger Capital and Liquidity requirements*. Basel, pp. 7-12.

- Basel Committee on Banking Supervision (1988). *International Convergence of Capital Measurement and Capital Standards*. Basel, pp. 17-21.
- Basel Committee on Banking Supervision (2006). *International Convergence of Capital Measurement and Capital Standards. A revised framework*; Basel, pp. 218-225.
- Basel Committee on Banking Supervision (2012). *Results of the Basel III monitoring exercise as of 31 December 2011*. Basel, pp. 8-12.
- Basel Committee on Banking Supervision (2010). *The Basel Committee's response to the financial crisis: report to the G20*. Basel, pp. 7-14.
- Baz F. (2012). *Bilanbanques 2012*. Lebanon: Bankdata.
- Berrosipide, J. and Edge, R. (2010). *The effects of bank capital on lending: What do we know, and what does it mean?* International Journal of Central Banking.
- Blom Bank Sal (2011). *Annual Report 2011*. Retrieved November, 8 2012, from <http://www.blombank.com/english/sub.aspx?pageid=9113>
- Byblos Bank Sal (2011). *Annual Report 2011*. Retrieved November, 7 2012, from <http://www.byblosbank.com/Global-Annual-Reports>.
- Carbo-Valverde, S. and Rodriguez, F. (2007). *The determinants of bank margins in European banking*, Journal of Banking and Finance 31, 2043-2063.
- Cannata F., & Quagliariello M. (2011). *Basel III and Beyond: A Guide to Banking Regulation after the Crisis*. London: Risk Books.
- Cosimano, T. & Hakura, D. (2011). *Bank Behavior in Response to Basel III: A Cross-Country Analysis*.
- Credit Libanais (2011). *Annual Report 2011*. Retrieved November, 8 2012, from <http://www.creditlibanais.com.lb/Publications/AnnualReport>.
- Deloitte (2006). *Basel II- The Securitization Framework*. Retrieved August, 5 2012, from http://www.deloitte.com/assets/DcomSouthAfrica/Local%20Assets/Documents/ZA_FinancialInstitutionServices_Basel%20II-TheSecuritisationFramework_090107.pdf.
- Elliott D. J. (2010). *A Primer on Bank Capital*. The Brookings Institution.
- Elliott D. J. (2009). *Quantifying the Effects on Lending of Increased Capital Requirements*. The Brookings Institution.

- Fransabank Sal (2011). *Annual Report 2011*. Retrieved November, 10 2012, from <http://www.fransabank.com/English/MediaCenter/AnnualReports/Pages/default.aspx>.
- Gujarati D. N. (2003). *Basic Econometrics*. New York: McGraw-Hill.
- International Monetary Fund (2012). *IMF Lebanon Report No. 12/39*. Retrieved August 8, 2012, from <http://www.imf.org/external/pubs/ft/scr/2012/cr1239.pdf>. pp.24
- King M., R., (2010). *Mapping Capital and Liquidity Requirements to Bank Lending Spreads*. Bank for International Settlements. Working Paper No. 324.
- Mazumder, I. & Ahmad, N. (2010). *Greed, financial innovation or laxity of regulation?* Vol. 27, pp. 110-134, Emerald Group Publishing Limited DOI 10.1108/10867371011048616.
- Mishkin, F. S. (2009). *The Economics of Money, Banking and Financial Markets* (9th ed.). Boston: Pearson, pp.201-211.
- Modigliani, Franco and Merton H. Miller (1958). *The Cost of Capital, Corporation Finance and the Theory of Investment*. American Economic Review pp. 48, 261-297
- Osborne M., Fuertes A. M., Milne A.. *In Good Times and in Bad: Bank Capital Ratios and Lending Rates*. London (2011).
- Santos A. O., Elliott D. J. (2012). *Estimating the Cost of financial Regulation*. International Monetary Fund.
- Shearman & Sterling (2011). *The New Basel III Framework: Implications for Banking Organizations*. pp. 1-20.
- Slovik P., Cournede B. (2011). *Macroeconomic Impact of Basel III*. OECD Economic Department, Working Papers No. 844.
- Schwerter, S.(2011). *Basel III's ability to mitigate systemic risk*. Vol. 19 pp. 337-354, Emerald Group Publishing Limited, DOI 10.1108/135819811111182947.
- Torbey J. (2010). Lebanon gradually applying Basel III guidelines. *Daily Star*. Retrieved November 8, 2011, from <http://www.dailystar.com.lb/Business/Lebanon/Dec/04/Torbey-Lebanon-gradually-applying-Basel-III-guidelines.ashx#ixzz1b1TBACKf>
- Van Hoose D. (2007). *Bank Capital Regulation, Economic Stability, and Monetary Policy: What Does the Academic Literature Tell Us?*
- Van Hoose D. (2007). *Theories of Bank Behavior under Capital Regulation*