

The impact of announcement of Basel III on the banking system performance: an empirical research on Egyptian Banking Sector

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Keywords

Banking System Performance, Banks Profitability, Liquidity, Stock Prices, Basel III.

Abstract

Research Purpose: This research aims at determining the effect of the announcement of Basel III on the equity valuation of Egyptian banks, as well as determine which are more affected by the announcement of Basel III, the large banks or small banks. It also explain which are more affected by the announcement of Basel III, the banks with more liquid assets on its balance sheet or the banks with less liquid assets on its balance sheet, the banks with higher capital ratios or lower capital ratios, the banks with a higher leverage ratio or a lower leverage ratio, the announcement of Basel III, the banks with high profitable banks or the low profitable banks, the banks with a higher book-to-market value of common equity or the banks with lower book-to-market equity.

Research Importance: It gives a first impression of the impact of Basel III. It also contributes to the existing literature because this research examines the effect of capital and liquidity requirements on banks and not the macroeconomic impact.

Finally, it contributes to the existing literature by investigating the effect of the Basel III announcement between small- and large-size banks, high- and low-capitalized banks and high- and low-liquid banks.

Introduction

Based on the lessons from the global financial crisis, financial regulators pay more attention to the stability of the banking system and soundness of banking development. However, bank management has to focus on ways to improve business performance. Recently, Basel Committee's Basel III regulatory standards revised require banks to raise the minimum capital adequacy, including raising the minimum common equity capital, from 2% to 4.5%; capital protection buffer of 2.5%; to promote the establishment of buffer capital (protective buffer capital and counter-cyclical capital buffers); leverage an initial period of 3%; the introduction of minimum standards of global liquidity, including short-term structural liquidity coverage ratio (LCR) and the net long-term structural stability of financing ratio (NSFR).

The financial regulatory standards lead to changes in bank risk-taking that affected bank system performance, but capital regulation may not reduce bank risk-taking (Laeven & Levin, 2009). Bank supervision always requires banks to maintain certain capital buffer (Kleff & Weber, 2008). Short-term capital buffered is positive to portfolio risk (Terhi & Alistair, 2010). The atrophy in Lower capital buffer of bank loans is larger than in higher (Merkl & Stolz, 2006). Deviation from the optimal risk weights, limited leverage and risk-based capital ratio is more suitable for control the bank asset risk (Gjerde & Semmen, 1995). Bikker and Metzmakers (2004) find that the bank's capital has little pro-cyclical.

Many researches find the announcement Basel III effect on the performance of the bank - in particular, the bank's market value - and these effects depend on the size of the bank. So, this research investigates the effect of the announcement Basel III effect on the performance of the bank and determine the mediate role of the bank size between the relationship between announcement Basel III and bank value and performance.

Literature Review

The Basel Accord: Basel I

In response to the different financial disruptions happening in the international financial markets during the 1970s, the Basel Committee on Banking Supervision has been created at the end of 1974. It was established by the central bank governors of the G10 countries, who wanted to have a forum for regular cooperation on banking supervisory matters. The main goal of this committee was to improve the quality

of banking supervision in the whole world in order to have a better financial stability. This goal may be achieved by setting minimum standards and guidelines, which should be implemented by the individual national authorities (Jablecki, 2008).

The Basel capital ratio is determined by using the following formula:

$$\text{Basel capital ratio} = \frac{\text{Capital}}{\text{Risk - weighted assets}} = \frac{\text{Capital (tier 1 and 2)}}{\text{Assets (weighted by credit type) + credit risk equivalents}}$$

The institutions were required to hold an amount of capital equal to at least 8% of risk weighted assets. Moreover, 4% must be made of core capital, also called tier 1. Not all capital is equally able of protecting a bank, several tiers exist.

Firstly, Tier 1 capital is made of issued and fully paid common stock, non-cumulative perpetual preferred stock and disclosed reserves. Secondly, Tier 2 capital comprises subordinated debt, non-qualifying hybrid securities and qualifying allowance for loan losses. The total capital is made of Tier 1 capital and Tier 2 capital (pwc, 2011).

The capital requirement is expressed as a percentage of risk-weighted assets, meaning that the riskier the assets, the more capital an institution has to set aside. Safe assets, such as cash and government securities, are given a low risk-weight, while riskier assets, such as subprime mortgages, are attributed a higher risk - weight (Jablecki, 2008). The following rules are used to weight the assets:

Cash, gold and bonds issued by OECD governments are considered as being not risky and have a 0% weight;

Claims on agencies of OECD governments and local public sector entities have a weight of 20%;

Mortgage loans have a weight of 50% ;

Claims on the private sector, non-OECD governments, investments, real estate and other assets have a weight of 100% (Jablecki, 2008).

The Accord was intended to be improved over time, especially in 1996 with the Market Risk Amendment. The 1988 Accord only focused on credit risk, which arises whenever the borrower is unable to pay back a loan or meet a contractual obligation. The second kind of risk, the market risk, has only been added to the Basel Accord in 1996. The goal was to incorporate within the capital requirement the "risks arising from bank's exposures to foreign exchange, traded debt securities, equities, commodities and options" (Bank for International Settlements, 2009).

The Basel Accord: Basel II

Even if Basel I was revolutionary at the beginning, the development of the financial markets was too quick and the first accord was not sufficient anymore. A new capital adequacy framework had to be developed and was called Basel II. It was published in 2004 and was built on three different pillars.

First pillar

The first pillar concerns the minimum capital requirements. A new kind of risk has been added: the operational risk. It is associated with the losses deriving from internal factors such as the employees, the procedures and fraud as well as external factors such as the economic environment (Raman, 2015). The following formula is used to determine the capital adequacy ratio:

Total Capital

Credit risk + Market risk + Operational risk = capital adequacy ratio (minimum 8%)

These are the methods used for each kind of risk: Credit Risk

The *standardized approach* allocates different risk weights to the types of exposure to companies, banks or public entities. The *internal rating approach* provides the following formula to compute the credit risk RWA:

$$RWA = 12.5 * EAD * LGD * (WCDR - PD) * MA$$

Where: PD is the probability that an obligor defaults on its contractual obligations within one year. LGD estimates the loss that the bank will incur if there is a default of the obligor. EAD is the amount owed by the obligor at the time of default. M is the remaining economic maturity of an exposure. Finally, WCDR represents the worst case default rate and MA is the maturity adjustment, which is a function of M (Allen & Overy, 2008). This approach gives the bank the opportunity to make its own predictions on the

probability of default related to each customer. The supervision authorities set the other risk factors, which are the Loss given default and Exposure at Default. The advanced internal rating approach enables the institution to estimate the risks internally, and is used by banks which want to adhere to the most rigorous market authorities standards (Danila, 2012).

Market Risk

The standardized model and the internal value at Risk models, which were set by the Basel I amendment of 1996, are still used during Basel II (Danila, 2012).

Operational Risk

In the Basic indicator approach, a basic indicator such as revenues is chosen and the supervision authority indicates a percentage that should be applied. The Standardized approach divides the activity of the bank into different business segments. A basic indicator is chosen for every segment and the supervision authority indicates a percentage that should be applied (Danila, 2012).

Second Pillar

The second pillar is based on the prudential supervision process. On the one hand, the banks are directly responsible to maintain a capital level in accordance with their risk profile. On the other hand, the authorities have to create a good regulation environment and supervise it (Danila, 2012).

Third Pillar

The third pillar is related to the market discipline and the transparency principle. Some periodic reporting requirements about a bank's activity are needed in order to provide information on the different risks and the financial performance. This information should be given to all bank counterparties (Danila, 2012).

The Basel Accord: Basel III

Thanks to the experience of the financial crisis in 2008, it was clear that the Basel II Accord required some modification in order to prevent the same problem from reappearing (Raman, 2015).

Regarding the capital requirements, the aim of the Basel III philosophy is to take on the same principle as Basel II, meaning that the banks need more capital for the activities generating a higher risk. Two main objectives are pursued. Firstly, the institutions have to possess a higher level of equity in order to deal with potential losses. Secondly, these institutions should operate at lower risk levels (Gual, 2011). In order to achieve these goals, several improvements are made, which are the strengthening of capital, the global liquidity standard, the risk coverage and the leverage ratio (Raman, 2015).

The Bank Performance Measurement

The performance of a bank can be defined as its ability to generate sustainable profitability. Profitability is the first element that can protect a bank against unexpected losses, because it strengthens the position of its capital and enables it to invest the retained earnings in order to improve the future profitability (European Central Bank, 2010).

Measures of Performance

Traditional Measures of Performance

These performance measures are also applied in other industries. Firstly, the *return on assets* (ROA) indicates how efficient management uses the assets to generate earnings. It is defined in the following way:

$$\text{Return on assets} = \frac{\text{Net income}}{(\text{Average}) \text{ total assets}}$$

The return on equity (ROE), which is the most popular measure of performance, is an indication of the profit generated by the bank with the money invested by the shareholders. The following formula is used to define this concept:

$$\text{Return on equity} = \frac{\text{Net income}}{(\text{Average}) \text{ total equity}}$$

$$\text{Cost - to - income ratio} = \frac{\text{operating expenses}}{\text{operating revenues}}$$

Moreover, the net interest margin gives an idea about the ability of income generation of the intermediation function of the institution.

$$\text{Net interest margin} = \frac{\text{Net interest income}}{\text{Assets (or interest - bearing assets)}}$$

Finally, the earnings per share give an indication about the portion of the bank's profit which is allocated to each outstanding share of common stock (European Central Bank, 2010).

$$\text{Earnings per share} = \frac{\text{Net income} - \text{Dividends on preferred stock}}{\text{Average outstanding shares}}$$

Market-based measures of performance

According to the European Central Bank (2010), the most common market-based measures are:

- The *total share return (TSR)*: $\frac{(\text{Ending stock price} - \text{Initial stock price}) + \text{Dividends}}{\text{Initial stock price}}$
- The *price-to-earnings ratio (P/E)*: $\frac{\text{Market value per share}}{\text{Earnings per share}}$
- The *price-to-book value (P/B)*: $\frac{\text{Stock price}}{\text{Total assets} - \text{Intangible assets and liabilities}}$

Decomposition of the ROE: The DuPont Ratio

The return on Equity is the most popular performance ratio, because it shows at which rate the wealth of the owners is increasing. The DuPont ratio is one method which is usually used to compute the Return on equity. It is computed in the following way:

$$\text{ROE} = \frac{\text{Net income}}{\text{Operating income}} * \frac{\text{Operating income}}{\text{Average assets}} * \frac{\text{Average assets}}{\text{Average equity}}$$

A good analysis of the financial statement of a bank provides information about its performance in the areas of liquidity, leverage, operating efficiency and profitability. The DuPont ratio conducts an analysis in three of the four measures, which implies that only the analysis of the liquidity should be made separately.

Egyptian Banking System and Basel Requirements

There are currently 40 banks licensed by and registered with the Central Bank of Egypt (the "CBE"). No new banking licenses have been issued in Egypt for at least the previous 15 years. Since the 2011 revolution, there have been several acquisitions of Egyptian banks with the significant departure of a number of international banks and entry of regional banks wishing to expand into Egypt. It is expected that the regulatory regime of banks in Egypt will be reformed extensively towards the second half of 2016. Regulatory architecture: overview of banking regulators and key regulations:

Banks and banking activities are mainly regulated under the Egyptian Banking Law No. 88 of 2003 (the "Banking Law") along with the executive regulations enacted there under, regulations and directives issued by the CBE and the Egyptian Commercial Code No. 17 of 1999 (the "Commercial Code"). The CBE is the sole market regulator and supervisor responsible for prudential supervision as well as consumer protection.

In 2008, the Basel II Program Memorandum of Understanding was signed between the CBE and the European Central Bank ("ECB") in cooperation with seven European National Central Banks ("NCBs"). Banks have been applying Basel II pillar I regulations since December 2012. The CBE is currently in the process of implementing Basel III and is studying monetary policy requirements in order to cater for Basel III.

Recent regulatory themes and key regulatory developments in Egypt:

Among the recent developments in the banking sector in Egypt were the limitations set on the monthly and daily deposit amounts in foreign currencies for individuals and corporations. The CBE has recently been updating the deposit thresholds extensively. A recent directive has been issued restricting the ability of Egyptian persons and entities to a make cash and/or wired deposit of an amount exceeding \$50,000 per month.

Another current key regulatory development is the amendments made by the CBE to concentration ratio per client. The CBE has recently decreased the maximum concentration ratio per client from 20% to 15% of the bank's tier one capital, provided that such client does not have any related parties (i.e. parties over which the client has actual control). The maximum concentration ratio per client and its related parties has also been decreased from 25% to 20% of the bank's tier two capital.

Further, the CBE has implemented a capital conservation buffer starting 2016, according to which the total capital adequacy ratio, in addition to the capital conservation buffer, shall be as follows:

January 2016 – 10.625%;

January 2017 – 11.250%;

January 2018 – 11.875%; and

January 2019 – 12.5%.

At present, the Banking Law and its executive regulations are being revised and will soon undergo major amendments. The timeline for the issuance of such amendments and their enforcement has not yet been published.

Bank governance and internal controls:

The CBE has published recent bank governance rules in 2011. According to the said rules, each bank must appoint a competent board of directors that is mainly responsible for determining the bank's strategic purposes, striving to achieve said purposes, supervising senior management, ensuring efficiency of internal control systems and risk management, in addition to the responsibilities and obligations of the board members. Each bank's board of directors must be constituted of an adequate number of members, bearing in mind diversification in skills, experience, abilities and knowledge, including one member representing minority shareholders, in case their total shareholding represents 5% of the total share capital. Each bank registered with the CBE must disclose the aggregate value (on an average monthly per annum basis) of the 20 highest paid employees, in terms of wages and benefits, jointly. The Banking Law provides that the board of directors in public sector banks must be established as follows: A Chairman; Two Deputy Chairmen; and Six specialized and experienced members in banking, monetary, financial, economic and legal matters.

Without prejudice to provisions of the Banking Law that oblige each bank to have an audit committee and an executive committee, each formed by three non-executive members of the board, the CBE bank governance rules require the board of directors to maintain the following committees: A risk committee formed by a minimum of three non-executive members of the board of directors. A remuneration and benefits committee formed by three non-executive members of the board of directors in charge of determining the remuneration of senior management and proposing its suggestions regarding board members' remuneration, including wages, benefits and any other elements of a financial nature; and a governance committee formed by three non-executive members of the board of directors.

The Impact of Basel III on the Banking System in Egypt and the Alignment Measures

Although the impact of Basel III on the Egyptian banks is considered to be limited, we propose some measures that banking companies could adopt to conform to the new requirements:

Restructuring the banks' balance sheet items.

BASEL III focuses on integrated management of assets, capital and financing, for the banking companies there is no opportunity for optimizing the level of assets and liabilities independently. Regarding credit institutions, a significant level of impact BASEL III derives from capital deductions. The new capital requirements differ from the BASEL II as the banking companies needed to infer (Harle et al., 2010):

The capital of insurance subsidiaries that exceed a threshold of 10 percent, lowering the ability to use much of this capital in the banking activity of the consolidated entity;

The value of any defined benefit of the pension fund assets;

Investments in unconsolidated financial institutions over 10 percent.

Review the profitability indicators.

Thus, a number of credit institutions will be forced to redesign their products and customer service, taking steps to optimize the capital and bank liquidity. In redesigning the products and customer service, credit institutions may take action in the following areas:

Analysis upon the satisfaction level of customer by their products and services;

Improvement of parameters products and services that offer a degree of satisfaction to the customers so as to perform in the relationship with the clients;

Increasing the share of products and services that have a high degree of profitability in customer service contributing to a more efficient banking activity;

Launching and promotion of products that combine the credit with saving factor, thus generating a fundraising both from physical persons and companies.

Better corporate governance in the banking companies.

The crisis manifested in the banking sector pulled up the weaknesses in corporate governance. The financial crisis has demonstrated a lack of effectiveness of corporate governance principles (not achieving its objectives) in the banking sector, driven primarily by (Bunea, 2013):

A scope too broad, leaving a great deal of interpretation to the credit institutions, implementing its principles only declarative (policies, codes etc.);

A lack regarding clear segregation of roles and responsibilities within the credit institution;

Not imposing a legal obligation of compliance /implementation, and the absence of sanctions to discourage their violation (e.g. the use of "may" rather than the imperative "must").

The increasing of confidence in the banking system.

The confidence that the market players have (partners in the business) of the banking system is very important; it represents an intangible value that each credit institution owns and which ultimately has an impact on the profitability of the banking entity.

Hypotheses Development

In this section the empirical and theoretical findings from the literature review are used to formulate testable hypotheses. This section contains seven hypotheses that have been developed and tested in this research. The hypotheses are formulated with respect to the research question: 'What is the effect of the announcement of Basel III on the equity valuation of banks in Egypt?' The hypotheses test if specific variables had impact on the stock price reaction of banks.

Several studies examine the impact of announcements of capital and liquidity reform on performance. Eysell and Arshadi (1990) examined the effect of the announcements of the Basel Committee regarding the intention to introduce a minimum level of risk-adjusted capital on the equity value of banks. The announcements had a negative impact on bank value, especially on those banks with inadequate capital levels. Not all studies confirm this result; Suffer et al. (2012) find no significant impact of major event reforms, including Basel III, on bank stocks in Germany, Switzerland, and the UK and find mixed results for banks in the United States between 2009 and 2011. The authors use different events and a smaller sample in comparison with this study. Angelini et al. (2011), the Basel Committee (2010a) and McKinsey and Company (2010) examine the impact of the new liquidity rules of Basel III from a long-term economic perspective. Angelini et al. (2011) and the Basel Committee (2010a) both find the new NSFR to result in a 0.08% decline in the level of economic output, relative to the baseline and not including benefits. McKinsey and Company (2010) estimate that the new liquidity requirements affect the profitability of banks negatively and significantly reduce their return on equity on a long-term basis. Based on the previous research, the first hypothesis is formulated as follows:

H₁: The announcement of Basel III has a negative impact on the stock prices of banks that listed in Egyptian stock market.

Eysell and Arshadi (1990) find that the announcement of the Basel Committee to introduce an internationally applicable minimum level of risk-adjusted capital on the equity value of banks has a negative impact on bank value, especially on those banks with inadequate capital levels. It is expected that large banks have more adequate capital and liquidity levels than smaller banks because they are more likely to have a central liquidity management (McKinsey & Company, 2010). However, this will not always result in more adequate liquidity levels. Cucinelli (2013) shows that large banks, which are more

specialized in lending activities, are more likely to have lower liquidity levels. This may be a result of the tendency of large banks to think they can appeal to the lender of last resort in cases of problems (Vodovl, 2011). McKinsey and Company (2010) state that large banks are less affected by the heightened liquidity standards due to their centralized liquidity and funding management, which minimizes the need to raise funds. This leads to the second hypothesis:

H₂: Large banks are less affected by the announcement of Basel III than small banks.

The LCR requires banks to hold more liquid assets of high-quality under a stress scenario. Banks with more liquid assets benefit from a low required stable funding (RSF) factor in the calculation of the NSFR. Therefore, banks have to hold a lower amount of stable funding available. Heightened liquidity standards raise the costs for banks because they are required to hold more liquid assets and longer-term funding (Saunders & Cornett, (2011)). This indicates an opportunity cost on a bank, which negatively affects the profitability and shareholder value of a bank (Bordelau & Graham, 2010). Banks with more liquid assets are expected to be in a better position to reduce their balance sheet and to cope with financing difficulties (Beltratti & Stulz, 2012). Therefore, the third hypothesis states:

H₃: Banks with more liquid assets on its balance sheet are less affected by the announcement of Basel III than banks with less liquid assets on its balance sheet.

The required amount of capital to assets is likely to have a negative impact on the profitability of a bank, because of a more cautious investment profile (Giordana & Schumacher, 2012). Basel III includes a stricter set of capital regulations. Banks with high capital ratios are less likely to be affected by the announcement of the Basel Committee. This stems from the fact that adjusting the capital may be costly to banks (Rime, 2001). Moreover, stricter capital requirements have a stronger effect on banks with lower capital ratios, since these banks have to make more adjustments in order to meet the new capital requirement compared to banks with higher capital ratios:

H₄: Banks with higher capital ratios are less affected by the announcement of Basel III than banks with lower capital ratios.

The Basel Committee inserted a new ratio in the Basel III framework, the leverage ratio. The deleveraging process exacerbates the feedback loop between losses, failing bank capital and the decreasing amount of credit availability according to the Basel Committee (2014). The parallel run period from January 1, 2013 to December 31, 2016 will test a minimum leverage ratio of 3%. The higher the leverage ratio of a bank already is, the less a bank has to change according to the leverage ratio:

H₅: Banks with a higher leverage ratio are less affected by the announcement of Basel III than banks with a lower leverage ratio.

More profitable banks tend to have more capital relative to assets (Gropp & Heider, 2007). This has been confirmed by Brewer, Kaufman, and Wall (2008), who found that profitability is positively related to a bank's leverage ratio and tier 1 ratio. This indicates that high profitable banks have to make less adjustment in order to meet the requirements of Basel III than low profitable banks. Therefore, high profitable banks are less likely to be affected by the announcement of Basel III:

H₆: High profitable banks are less affected by the announcement of Basel III than low profitable banks.

According to Fama and French (1992), size and book-to-market equity combine to capture the cross-sectional variation in average stock returns. This is in line with Stattman (1980) and Rosenberg, Reid, and Lanstein (1985) who found that average returns on U.S. stocks are positively related to the book-to-market equity value, therefore:

H₇: Banks with a higher book-to-market value of common equity are less affected by the announcement of Basel III than banks with lower book-to-market equity.

Data and Research Methodology

To achieve the aforementioned research objectives, qualitative research methods, as well as a descriptive analysis of the findings, the data for this study has been gathered from published financial statements of commercial banks, their web-sites, Egyptian Stock market site, CBE reports and other published reports. The annual data for all Egyptian commercial banks during (2013-2016) are used for calculating key financial ratios in order to assess the impact of Basel III implementation on capital adequacy and financial performance in commercial Egyptian Banks. In addition, another source of data

was through reference to the library and the review of different articles, papers, and relevant previous studies.

The study has been done among the therein leading local commercial banks which include:

Table (3): Research Sample

(Source: <http://www.egx.com.eg>)

No	Bank
1	Egyptian Gulf Bank
2	Suez Canal Bank
3	Qatar National Bank Al-Ahli
4	Egyptian Development Bank of Export
5	National bank of Kuwait
6	Commercial International Bank
7	National Union Bank
8	Credit Agricole Bank
9	United Bank
10	Bank of Alexandria
11	Banque du Caire
12	Arab African Bank
13	Egyptian Gulf Bank

The research measures are Basel III indicators "liquidity ratios, capital ratios, leverage ratio, profitability ratios, book-to-market value of common equity" and the financial performance or profitability of commercial banks was measured in terms of ROA, ROE, and debt-to equity Ratio, Market value (stock price).

To test first hypothesis, we will used simple regression between the announcement of Basel III and the stock prices of banks that listed in Egyptian stock market. But to test other hypotheses we will use ANOVA technique to determine the deference between the large and small banks.

Therefore, this Research examines the following research questions:

- What is the effect of the announcement of Basel III on the equity valuation of Egyptian banks?
- Are the large banks less affected by the announcement of Basel III than small banks?
- Are the banks with more liquid assets on its balance sheet less affected by the announcement of Basel III than banks with less liquid assets on its balance sheet?
- Are banks with higher capital ratios less affected by the announcement of Basel III than banks with lower capital ratios?
- Are banks with a higher leverage ratio less affected by the announcement of Basel III than banks with a lower leverage ratio?
- Are high profitable banks less affected by the announcement of Basel III than low profitable banks?
- Are banks with a higher book-to-market value of common equity less affected by the announcement of Basel III than banks with lower book-to-market equity?

Findings and Conclusion

The research finding depends on the results of hypotheses test. According to the results we can determine:

- The effect of the announcement of Basel III on the equity valuation of Egyptian banks.
- Which are more affected by the announcement of Basel III, the large banks or small banks?
- Which are more affected by the announcement of Basel III, the banks with more liquid assets on its balance sheet or the banks with less liquid assets on its balance sheet?
- Which are more affected by the announcement of Basel III, the banks with higher capital ratios or lower capital ratios?
- Which are more affected by the announcement of Basel III, the banks with a higher leverage ratio or a lower leverage ratio?
- Which are more affected by the announcement of Basel III, the banks with high profitable banks or the low profitable banks?
- Which are more affected by the announcement of Basel III, the banks with a higher book-to-market value of common equity or the banks with lower book-to-market equity?

Reference

- Aboura, S., & Lépinette, E. (2015). Do banks satisfy the Modigliani-Miller theorem? *Economic Bulletin*; 35, 924-935.
- Abreu, M., & Mendes, V. (2002). *Commercial bank interest margin and profitability: Evidence for some EU countries*.
- Admati, A. R., DeMarzo, P. M., Hellwig, M. F., & Pfleiderer, P. (2013). *Fallacies, irrelevant facts, and myths in the discussion of capital regulation: Why bank equity is not socially expensive*.
- Agyei, S., & Yiadom, E. (2011). Dividend policy and bank performance in Ghana. *International Journal of Economics and Finance*, 3.
- Allen & Overy . (2008). *Regulatory Capital: Internal ratings based approach to credit risk in the banking book*. Allen & Overy.
- Amidu, M. (2007). How does dividend policy affect performance of the firm on Ghana stock exchange. *Investment Management and Financial innovations*; 4, 103-112.
- Ang, J., Cole, R., & Lin, J. (2000). Agency costs and ownership structure. *Journal of Finance*, 55.
- Baer, T., Mehta, A., & Samandari, H. (2011). *The use of economic capital in performance management for banks: a perspective*. McKinsey & Company.
- Bank for International Settlements. (2009). *Range of practices and issues in economic capital frameworks*. Bank for International Settlements.
- Bank for International Settlements. (2010). *The Basel Committee's response to the financial crisis: report to the G20*. Bank for International Settlements.
- Bank for International Settlements. (2011). *Global systemically important banks: Assessment methodology and the additional loss absorbency requirement*. Basel.
- Bank for International Settlements. (2013, January). *Basel III: The Liquidity Coverage Ratio and liquidity risk monitoring tools*. Retrieved from Bank for International Settlements:
<http://www.bis.org/publ/bcbs238.htm>
- Bouzgarrou, H., Rouissi, R., & Sassi, S. (2011). *L'analyse des déterminants de la rentabilité des banques françaises: Comparaison entre banques domestiques et banques étrangères*.
- Buckova, V., & Reuse, S. (2011). *Basel III Global liquidity standards: Critical discussion and impact onto the European banking sector*.
- Capgemini. (2014). *Impact of regulations on bank lending*.
- Chadha, S., & Sharma, A. K. (2015). *Capital structure and firm performance: Empirical evidence from India*. Sage India.
- Chun, S., Kim, H., & Ko, W. (2012). *The impact of strengthened Basel III Banking regulation on lending spreads: Comparisons across countries and business models*.
- Danila, O. M. (2012). Impact and limitations deriving from Basel II within the context of the current financial crisis. *Theoretical and Applied Economics*, XIX(6), 121-134.
- deBandt, O., Camara, B., Pessarossi, P., & Rose, M. (2014). *Does the capital structure affect bank's profitability? Pre and post financial crisis evidence from significant banks in France*.
- D'Hulster, K. (2009, December). The leverage Ratio. *The World Bank Group*.

- Elizalde, A., & Repullo, R. (2007). Economic and regulatory capital in banking: What is the difference. *International Journal of Central Banking*.
- European Central Bank. (2010). *Beyond ROE - How to measure bank performance*.
- European Central Bank. (2015). *ECB Banking Supervision recommends prudent dividend policy and announces review of variable remuneration*. Retrieved from European Central Bank: <https://www.bankingsupervision.europa.eu/press/pr/date/2015/html/sr150129.en.html>
- European Council. (2015). *Capital requirements for the banking sector*. Récupéré sur European Council: <http://www.consilium.europa.eu/en/policies/banking-union/singlerulebook/capital-requirements>
- Goyal, A. (2013). Impact of capital structure on the performance of listed public sector banks in India. *International Journal of Business and Management Invention*, 2, 35-43.
- Gropper, D., Ivey, J., & Rutherford, M. (2005). Bank capital, performance and regulation: Some international evidence. *Investment Management and Financial Innovations*.
- Gual, J. (2011). *Capital requirements under Basel III and their impact on the banking industry*. Barcelona: La Caixa.
- Hsiao, C. (2003). *Analysis of Panel Data*. Cambridge University press.
- Hsiao, C. (2007). *Panel data analysis: Advantages and challenges*.
- Isberg, S. C. (2008). Financial analysis with the DuPont ratio: A useful Compass. *The credit and Financial Management review*, 11-21.
- Jablecki, J. (2008). The impact of Basel I capital requirements on bank behavior and the efficacy of monetary policy. *International Journal of Economic Sciences and Applied Research*.
- Kosmidou, K., Pasiouras, F., & Tanna, S. (2012). *Determinants of profitability of domestic UK commercial banks: panel evidence from the period 1995-2002*. Coventry University.
- National Bank of Belgium. (2016). *Annual disclosure regarding the designation of capital surcharges on Belgian O-SIIs*.
- Pais, A., & Stork, P. A. (2013). Bank Size and Systemic Risk. *European Financial Management*, 19, 430.
- Pasiouras, F., & Kosmidou, K. (2007). Factors influencing the profitability of domestic and foreign commercial banks in the European Union. *Research in International Business and Finance*, 21, 222-237.
- Raman, R. (2015). *Basel III - An easy way to understand*. Retrieved from iCreate Software: <http://www.icreate.in/pdf/Basel%20III%20%20An%20easy%20to%20understand%20summary.pdf>
- Roy, P. V. (2005). *Credit ratings and the standardised approach to credit risk in Basel II*. European Central Bank.
- Sandback, A. (2003). *Demystifying securitization for unsecured investors*. Moody's Investors Service.
- Siapartners. (2007). *Fonds propres économiques et fonds propres réglementaires: vers une totale convergence?* Retrieved from Sia Partners Finance and Strategy : <http://finance.siapartners.com/20070828/fonds-propres-economiques-fonds-propres-reglementaires-versune-totale-convergence>
- Sutorova, B., & Teply, P. (2013). The impact of Basel III on lending rates of EU Banks. *Journal of Economics and Finance*, 63.
- Svitek, M. (2001). *Functions of bank capital*. Narodna Banka Slovenska.
- Witmer, J., & Zorn, L. (2007). *Estimating and comparing the implied cost of equity for Canadian and U.S firms*. Bank of Canada.