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The effects of implementing increased capital requirements on domestic lending

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ABSTRACT

The banking sector plays a pivotal role in the economy in which it operates. It is therefore imperative to institute international regulatory bodies and regulations which will ensure the protection of all stakeholders in the sector. The adoption and implementation of the Basel Accords and their revised versions has been encouraged at The World Bank level, but the opinions and studies regarding the impact of the tightened regulations on the banking sector generated varied reactions.

The objective of this research was to establish whether the increased capital requirements regulations, as guided by The Basel Accords, had negatively impacted the bank domestic lending of the countries which implemented the regulations by 2012. This quantitative research involved comparison of the domestic lending rates as a percentage of GDP of the countries which implemented Basel II for the years before, and after the implementation.

The study has revealed that, despite the concerns that the increased capital requirements regulations would increase the lending costs, the implementation of these regulations did not negatively affect domestic lending from the banking sector. This research document concludes by recommending a few process guidelines which the global banking regulators might consider during the implementation of Basel III.

KEYWORDS

Capital requirements

Macroprudential

Microprudential

Procyclicality

Systemically Important Banks

DECLARATION

I declare that this research project is my own work. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration at the Gordon Institute of Business Science, University of Pretoria. It has not been submitted before for any degree or examination at any other university. I further declare that I have obtained the necessary authorisation and consent to carry out this research.

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Bushang Colwell Seroka
11 November 2013

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1.1 Introduction

The effects of the 2008 global financial crisis warranted the need to tighten the regulations which govern the global financial sector. In an attempt to prevent the repeat of the global crisis, the international advisory authority on bank regulation introduced the third revision of the Basel prudential requirements. The improved regulations, from Basel I to Basel II, though they would be implemented globally, were aimed at the banks which were negatively affected by the crisis (Venter, 2012).

The implementation of the stricter regulations had significant implications on the operations of the banks operating in the affected countries as the banks were and are still expected to meet certain capital requirements. Despite discussions regarding the implementation of the third revision of the regulations, Basel III, with effect from 2013, the global financial commentators are already predicting another financial crisis (Denning, 2013). The first two regulations failed to prevent the 2008 financial crisis. This research reflects whether the introduction and ultimate implementation of Basel II had any negative effect on the economies of the countries which adopted the regulations.

1.2 Background

Commercial banks have a crucial function in the economy as they serve as an intermediary amongst its customers and provide payment settlement facilities. They have easy access to funds through collecting from the customers, issue of bonds, or borrowing amongst themselves at the inter-bank markets. The funds collected are invested in short-term and long-term risk assets, which consist mainly of loans to various economic participants such as individuals, companies, governments and other organisations. Through centralising money surplus and injecting it back into the economy, large banks play a crucial function in the society (Balthazar, 2006).

The operations and activities of most banks are not confined to the borders of the countries in which they are registered and therefore the banking

regulations which can be applied across countries became necessary. In order to meet the need for international cooperation in bank regulations among the governments, The Bank for International Settlements (BIS) was formed., The BIS is an international organisation based in Basel, Switzerland, whose mission is to serve central banks in their objective of monetary and financial stability, to foster international cooperation in those areas and to act as a bank for central banks (Bank for International Settlements, 2011). BIS formed the Basel Committee on Bank Supervision (BCBS) in 1974. See Appendix 1 for list of the BCBS committee members as at 2012.

Despite the regulatory requirements embodied in Basel II, the 2008 financial crisis in the international financial markets still surfaced. In his article, published by New Statesman under The Finance Column, Preston (2010) suggests that the Americans ignored Basel II and preferred to allow the invisible hand of the market to regulate their banks. As a response to this global crisis and the slow recovery of major economies, the third revision of the regulations, Basel III, was promoted (Venter, 2012). The regulations' aims are to improve the banking sector's ability to absorb shocks arising from financial and economic stress, irrespective of the source; to improve risk management and governance of the financial institutions and to strengthen banks' transparency and disclosures. The ability to absorb shocks can be attained through improving the quality and the amount of capital required to be held by the banks and that will ensure the stability of the financial industry.

1.2.1 Basel I

The BCBS introduced the capital regulations Basel I in December 1992. The introduction of the regulations followed an extensive development and consultations since 1998. The regulations' aims were to ensure that the banks maintain sufficient capital to absorb losses without affecting their normal trading operations and avoid international competitiveness conflicts (Blundell-Wignall & Atkinson, 2010).

Balthazar (2006) stated that the BCBS introduced The Basel 1988 Capital Accord, also known as Basel I, in an attempt to strengthen the validity and stability of the international banking system and to reduce existing sources of competitive inequality among international banks. The regulations provided for minimum capital requirements. The regulations set eight percent as the minimum level of capital to be held by the bank against the sum of all risk-weighted assets (Hannoun, 2010).

1.2.2 Basel II

As the banks were able to accumulate capital in excess of the minimum required by Basel I and had no constraints regarding risk taking, the revised framework known as Base II was introduced in June 2004 (Bank for International Settlements, 2004). In addition to defining the minimum capital needed to safeguard against unexpected losses, the bank's asset need to be weighed against the credit risk. Thus, the capital required to back a loan should only depend on the risk of such loan and not on the total portfolio of which it is the part (Blundell-Wignall & Atkinson, 2010).

Balthazar (2006) stated that Basel II introduced one additional objective of promoting the adoption of more stringent practices in risk management. The addition of this objective was an indication of the committee's shift from ratio-based regulation towards a regulation that will rely more on internal data, practices, and models. The new rules introduced by Basel II allowed banks to develop internal methodologies which would quantify the creditworthiness of their clients.

In response to the 2008 financial crisis, the BCBS introduced a set of revisions to the market risk section of Basel II in July 2009 as part of the Basel II rules. The rules were expected to be implemented at the end of 2011. The revised rules set the basis for Basel III (Hannoun, 2010).

1.2.3 Basel III

After the draft document was issued in September 2009, Basel III was endorsed by BCBS in November 2010. The new regulations were organised around higher capital ratios, higher quality regulatory capital standards and

new liquidity requirements (Biase, 2012). Hannoun (2010) stated that the regulations' objectives could be attained through realisation of what he referred to as nine "breakthroughs":

1. The inclusion and exclusion of certain types of capital from capital ratio calculations in order to accurately reflect a financial institution's capacity to react to market volatility.

2. The banks will be required to hold an average of four times the capital previously required by Basel II in order to cover trading book exposures.

3. The banks will be obliged to carry a minimum of four and half percent of risk-weighted assets in tangible common equity and an additional two and half percent in a capital conservation buffer.

4. The banks will be required to pursue dividend and bonus payment policies that are consistent with sound capital conservation principles.

5. The banks will be required to implement advanced risk management models and strong stress testing programmes in order to capture tail events and therefore determine sufficient capital buffers.

6. The introduction of a countercyclical capital charge to mitigate the procyclicality caused by excessive credit growth.

7. Systemically important financial institutions need higher loss-absorbing capacity to reflect the greater risks that they pose to the global financial system. A systemic capital surcharge is the most straightforward, but not the only way to achieve this.

8. Avoiding complacency. Managing and avoiding the thinking that a financial institution is too large to fail.

9. Guidance and supervision. Supervisors should avoid over-reliance on banks' internal models, and their supervision needs to be more intrusive to ensure that systemic risk and tail events are adequately captured in banks' risk modelling and stress testing.

Hannoun (2010) further stated that these nine regulatory breakthroughs will, if followed up by a phase of exploitation, reduce the probability and severity of future financial crises and promote higher growth over the long-term. The new capital standards are expected to be phased in between 2013 and 2019.

After recognising the difficulties encountered by the countries in understanding and ultimately adopting the changing banking regulations, the BCBS established The Regulatory Consistency Assessment Program (RCAP) in 2012 (Bank for International Settlements, 2013b). The RCAP's responsibility includes ensuring that the BCBS member jurisdictions are consistent in adopting and implementing the banking regulations. The teams formed within the programme are expected to obtain information from the jurisdictions through questionnaires. The concern is whether the completion of questionnaires will provide all the necessary information to the BCBS in order to assess the implementation progress of the member countries.

1.3 Purpose of the Research

There are diverse views regarding the possible impact of the increased capital regulations to be imposed by Basel III but very little has been done in establishing whether the implementation of Basel II produced desirable results. Although the arguments regarding this subject are started with good theoretical base, practical problems and important limitations are omitted when coming to the varied conclusions (Elliott, 2013).

Chapter two reflects two types of the studies and some of the problems and limitation omitted as suggested by Elliott (2013). Some studies argued that the implementation of stricter capital requirements regulations will not affect the pricing of the bank's products and services and will ensure the financial stability in the long run. Whilst some studies acknowledged the benefit of stabilised financial system, they argue that the increased capital regulations will lead to increased cost of doing business for the banks and therefore increase lending costs and decrease lending. Chapter two reflects some of the studies relating to the increased capital requirements.

The purpose of this research is to establish whether or not the implementation of increased capital requirements, as guided by Basel II, affected the lending growth of the countries which implemented them negatively. The report will establish whether the debt levels of the countries which adopted the regulations were any different after the implementation.

1.4 Context of the Study

The view of Venter (2012) regarding the liquidity cover ratio, which requires the banks to hold a portfolio of highly liquid and quality assets such as government bonds, is that the new regulations will have a significant impact on South African banks. According to Venter (2012), this ratio will help the banks meet the net obligations over a continuing 30 day period in case of a bank run while the banking regulator and the government is determining the course of action. In order for the banks to raise their liquid assets to levels set up by the regulations, lending might have to be diverted from the activities that stimulate economic activity and, in the case of the South African government, it might also have to issue a considerable amount of debt in order to help the situation (Venter, 2012). The emerging economies are also likely to make provision for higher capital requirements at the expense of spending on the economic activities which would lead to sought after developments and growth.

In order to avoid a substantial increase in the cost of funding in South Africa, the banks need to restructure their lending products portfolios while emphasizing profitability and terms of each loan types. According to Venter (2012), the banks might also consider increasing their retail deposits and not heavily relying on wholesale deposits. The four major banks in South Africa might consider reducing their long-term lending products which include home loans, in their endeavour to reduce the size of their balance sheets. The effect of reducing long-term loans, which do not exclude project and structured loans, on the economy has not been studied as yet and is therefore not known.

The Bank Regulation and Supervision Surveys (The Surveys) conducted by The World Bank between 1999 and 2012 and released in 2012 assessed the relationship between the changes in bank regulations and banking system performance. This relationship was measured through the use of indicators of banking system depth, efficiency and stability. The surveys do not analyse the impact of the regulatory changes on lending of the countries which have implemented Basel II.

Five of the Euro zone countries; Greece, Portugal, Ireland, Italy, and Spain failed to generate enough economic growth to pay back their debts when due, despite their implementation of Basel II (Venter 2012). Is it possible that the implementation of the regulations has somehow contributed to the financial woes of these countries? If so to what extend?

The latter author stated that the South African Reserve Bank has committed to setting up a R240 billion emergency facility in order to help local banks meet the requirements of increased regulations. The concern is whether this investment of resources is worth the anticipated results.

1.5 Conclusion

The banks serve an important role in the economy of the countries in which they operate. As their failure can lead to disastrous consequences, as recently shown by the extent of the global financial crisis, the financial system in which they operate should be governed by well thought rules in order to protect all stakeholders. The design, structure, implementation processes and consequences of implementing such rules should not generate adverse results despite their good intended purposes. The next chapter reflects the results of the studies undertaken, the possible implications of and opinions made with regard to the impact of the increased capital requirements regulations as guided by the BCBS.

2 CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This section of the document presents the literature review covering the main themes of the study. It reflects the discussions of the following themes:

- impacts of capital requirements regulations on the banks' capital structure;
- the impact of capital requirements regulations on the cost of bank capital;
- the effects of capital regulations on the optimal bank interest margin;
- how the financial institutions attempt to avoid compliance with the increased regulatory requirements;
- systemically important banks;
- relationship between the capital requirements and monetary policy;
- business cycle fluctuations;
- varied impact of the regulations between emerging market economies and advanced economies; and
- bank regulations after the global financial crisis.

The performance of the banks and their profitability depend mostly on the factors mentioned above (Demirguc-Kunt & Huizinga, 2000).
Hence they have been selected and discussed in no particular order.

The literature in this chapter will show that the increase in capital regulations affects the mix of the bank's capital and its sources. Due to the risks associated with each source, the returns for employing such resources vary accordingly.

As the regulations intend to increase the ratio of capital to total assets held on the bank's balance sheet, the rate of return on equity expected by the shareholders is likely to increase. If the operating costs of doing business cannot be decreased, the banks may either increase the margins they add to the lending rates or introduce and/or increase some form of fees in order to meet the increased expected rate of return. Some banks and those

deemed important in the countries in which they operate, may attempt to manoeuvre around the new regulations. In response to the difficulties, on the part of the banks, as a result of the increased capital requirements regulations, the countries might attempt to save the situation by moving the monetary policy stance.

It is also imperative to acknowledge what the banks are likely to do during and in response to the business cycle fluctuations. The pre-and post- crisis periods should be split as the regulations and supervision of the banking systems might have been changed during and/or after the financial crisis (Cihak, Demirguc-Kunt, Peria, & Mohseni-Cheraghlou, 2012).

2.2 The Impact of Capital Requirements Regulations on Banks' Capital Structure

The authors of banking literature have generally assumed that equity is an expensive form of finance for banks and financial institutions (Allen, Fulghieri, & Mehran, 2011). The authors stated that it is incorrect to assume that the banks are bound to use the minimum amount of capital possible if there are regulatory requirements. This was established after it was observed that United States banks held between 40 and 50 percent capital ratios in the nineteenth century, reduced to between six and eight percent in the middle of twentieth century and increased to above the regulatory minimum ratios towards the end of the millennium.

The banks which hold higher capital ratios than the required minimum have an incentive to monitor their lending book as it will increase the probability of the loans being repaid (Allen *et al*., 2011). The authors further stated that the monitoring of the loans is incentivised by the higher loan rate charged by the banks as it will lead to a higher average payoff. But monitoring will have to be compensated by higher loan rates. Therefore, the increased capital requirements regulations are likely to affect lending.

Naceur and Omran (2011) confirmed that since equity is considered an expensive financial device, the banks should provide better margins to the shareholders in order to compensate for additional risks. This will increase

the margins charged onto the lending interest rates and therefore result in higher profits. It is assumed that the bank lending levels to its customers will not be affected.

There are two theories that explain the capital structure for corporations in general (Brewer III, Kaufman, & Wall, 2008). The first theory states that the capital structure of the corporation is determined by the trade-off between the benefits and cost of financing by debt. Debt financing benefits the corporation through tax shield and also reduces the cost of agency conflicts between owners and managers. The cost of agency conflict arises due to the divergence of the interests of managers and owners of the business and normally leads to inefficiencies in the use of the assets and management of operating expenses (Truong & Heaney, 2013). The disadvantages of debt financing include higher expected costs of financial distress and increased costs of agency conflicts between owners and creditors (Brewer III *et al*., 2008). The authors stated that the second theory holds that the short-term cost of changing the capital structure exceed the benefits of the change over a longer period. It is cheaper for the corporations to start by using retained earnings to fund new projects. If more funds are needed, the corporation will opt for the cheaper of equity and new debt.

Brewer III *et al.* (2008) found that if the costs of adjusting the capital structure are not large enough to prevent the adjustments, the impact of the capital requirement would depend on whether such requirements are above or below the bank's value maximising levels. The regulations would have no effect if the requirements are less than the bank's current capital ratio. But if the bank's capital ratio is below the required level, and the cost of violating the regulation are high, the bank would increase and maintain the capital levels at required minimums. The authors stated that the banks would increase and maintain the capital levels above the minimum required ratio if both the cost of adjusting the structure and the cost of non-compliance with the regulations are high.

Brewer III *et al*. (2008) concluded that the costs of adjusting the bank's capital structure are not large enough to prevent the adjustments as required by the increased capital requirements regulations. The authors stated that the impact will depend on whether the bank can absorb the costs of not abiding by the rules.

The optimal capital structure choice of the banks that operate in an environment where the regulators can initiate liquidation of the banks that fall below a certain capital standard depends significantly on the presence of deposit-based franchise value (Harding, Liang, & Ross, 2013). Without the brand value of the bank, the capital structure will be challenging for the banks who choose all debt if the capital regulation is loose and choose all equity if regulation is strict (Harding *et al*., 2013). The authors have established that the failure of major investment banks during the 2008 global financial crisis was largely due to high levels of leverage. The findings of this study revealed that the financial institutions are likely to hold capital in line with the minimum required standards if they perceive the regulators' ability to be weak or unwilling to liquidate the banks that violate the capital standards.

Shaw, Chang and Chen (2013) have found that so long as the banks do not change their capital structure by accumulating more equity as opposed to cutting on lending, the increased capital requirements regulation will not lead to reduction in equilibrium quantity of loans. However, the authors revealed different results when the banks are allowed to hold equities from firms.

Under the microprudential regulation introduced by the BCBS, the regulation that is aimed at preventing the costly failure of individual financial institutions, the banks have an option to shrink their balance sheets through the reduction of their assets or to raise new capital when they are faced with the losses which will reduce their capital ratios below the required levels (Hanson, Kashyap, & Stein, 2011). The authors stated that electing the balance sheet shrinkage may involve cutting back on lending, which may be desirable if market share is transferred to the

stronger banks, but not if the capital ratio levels have been breached by multiple banks.

Hanson *et al.*(2011) and Kashyap, Berner, and Goodhart (2011) argued that the banks that shrink their balance sheets, as a form of capital restructuring, in order to meet the required capital ratios are likely to involve cutting lending to their customers. If an alternative to cutting of lending cannot be found, the effects of increased capital requirements on capital structure cannot be ignored.

In an effort to control the costs associated with the excessive balance sheet shrinkage on a large scale when multiple financial institutions are faced with a similar predicament, the BCBS introduced the macroprudential regulation (Hanson *et al*., 2011). The previous microprutendial approach to monitoring individual financial institutions was deemed not sufficient (Kashyap *et al*., 2011). The decision has not been made regarding the alternative approach. Capital requirements regulation alone is not adequate to prevent the forced sale of an asset at a reduced price when the banks attempt to reduce their assets to the regulated levels (Kashyap *et al*., 2011).

2.3 The Impact of Capital Requirements Regulations on Cost of Bank Capital

While testing the impact of Basel III on cost of capital and output, both adjusting leverage and without adjustments in calculation of the cost of corporate borrowings, it was established that overall it is unlikely that the new capital requirements will increase the cost of funding by more than zero point two percent after tax (Allen, Chan, Milne, & Thomas, (2012). The results were arrived at after using the Capital Asset Pricing Model (CAPM) of equity returns in order to adjust the cost of bank equity adjusting for leverage. The calculation of the cost of funding, without leverage adjustment, showed that the after tax cost of the loan will increase by zero point seven four percentage points. The authors acknowledge that it is not easy to quantify the impact of the new liquidity requirements but still believe that the cost of funding corporate portfolio will not increase by

more than zero point four percent as the greater part of the impact will be offset by the easing of monetary policies. The authors did not consider the absolute values of the loans on which the interest will be calculated, and a zero point two percent of interest charge on US$1 trillion of debt is likely to be considerable to an emerging economy country. (Elliott, 2009), an expert on the financial sector and its regulations worldwide, obtained similar results after increasing the capital asset ratio by four percent.

Allen *et al*. (2012) argued in favour of increased capital requirements regulation hoping that the banks will lower their operating costs and profits in order minimise the increment in costs passed to clients. However, the authors have not considered the possible consequences of the banks not absorbing the mentioned costs.

Allen *et al*. (2012) acknowledged that there is a danger of the Basel III reform limiting the availability of credit and reducing the economic activity. The authors argued that the problem is not higher capital and liquidity requirements per se but rather the difficulties of ensuring a coordinated adaption to the new rules across the entire financial services industry.

Allen *et al*. (2012) also established that when the regulations force the banks to reduce their balance sheets and increase their liquid assets, lending to the riskiest of the bank customers is likely to be reduced. The banks are justifiably correct as the writing off of bad debts is highly likely with the risky customers. The authors further conclude that the negative impact these regulations might have on the small bank customers has not received the attention it deserves though these companies' contribution to the employment of the labour force and ultimate contribution to the economic growth is recognised.

The study done by Pasiouras, Tanna and Zopounidis (2009) revealed that the stricter capital requirements introduced by Basel II had a positive impact of cost efficiency but the opposite on profit efficiency due to the likelihood of financial distress. The lenient capital requirements had the opposite effect on the cost efficiency and profit efficiency. It should be

noted, though, that this study was only limited to establishing the impact of the bank regulations on the banks' cost and profit efficiencies and did not look at the effect the regulations brought on overall lending activities of the countries which implemented them. The question still remains: "Should the banks choose between cost efficiency and profit efficiency?"

The minimal increase in lending rates can only be achieved if the lenders are prepared to absorb the costs and reduce the shareholders required rate of return by half (Elliott, Salloy, & Santos, 2012). As the banks would be deemed safer in comparison to before the regulation increases, the authors expect the funding costs to be reduced despite increase in expenses as a result of change in mix of funding required by the regulations.
The authors further expect the lender to reduce their operation costs which include administrative and marketing expenses, reduction of salaries to the market rates and reduction of percentage range for bonuses. The possibilities of losing competent employees to other sectors which are likely to take advantage of disgruntled employees cannot be ignored.

In the same breath, the banks are also expected to restructure their business models, taking strategic decisions which might include selling or buying of other business or even mergers, in order to deal with the stringent regulations (Elliott *et al*., 2012). These include tightening the terms of loans, rejecting loans that do not meet certain standards and charging more for the lending they provide.
The authors acknowledge a need for research in different market economies. The assumptions applied in their study involving Japan, United Kingdom and United States may not be applicable in other regions and countries.

2.4 The Effects of Capital Regulations on the Optimal Bank Interest Margin

The global commercial banks generally operate under the oligopolistic market conditions and therefore do not act as price takers but they set their loan interest rates based on the demand for loans and deposits

(Gambacorta, 2008) . The author stated that there are five main channels that influence how banks set their interest rates. The first channel is the demand for loans and deposits. This channel is influenced by the economic conditions under which the bank operates. The second channel is based on bank efficiency, credit risk and interest rate volatility. These involve the bank's ability to maintain screening, monitoring and branch costs at low levels, the riskiness of the portfolio in which the bank will be investing and the volatility. The third channel is the monetary policy changes. Monetary tightening leads to an increase in market interest rates while easing leads to reduction in interest rates. The bank liquidity and asymmetry of information is the fourth channel. This channel relates to the bank's ability to raise alternative funds after changes in monetary policy. The bank capital channel which is based on the maturity mismatch of loans and deposits is the fifth. The reduction in loans, due to regulatory capital requirements, will lead to increases in lending interest rates (Gambacorta, 2008).

When examining the banks optimal loan rate under stringent capital requirements, Tsai (2012) has shown that an increase in the requirements results in an increased margin under risk aversion dominating regret aversion, whereas it results in a reduced margin under regret aversion dominating risk aversion. Under strict capital requirements, the bank, which prefers lower risks when lending compared to regretting having not taken the opportunity to provide higher loan amounts, is likely to provide lower loans at higher interest rates to the borrowers and hold higher levels of capital.

In their study entitled: "Optimal bank interest margin and default risk in equity returns under the return to domestic retail with structural breaks", Tsai and Lin (2013) have shown that a more stringent capital requirement is linked with lower return on equity, but higher default risk of the bank in the return to domestic retail banking. Despite what the authors stated, the question remains: Will the bank shareholders accept lower return on their equity whilst assuming higher default risk?"

Blundell-Wignall and Atkinson (2010), in their article named *Thinking beyond Basel III: necessary solutions for capital and liquidity,* stated that where short term liabilities fund long term assets, failure to roll over short-term financial instruments can force de-leveraging and sale of assets. Failure to immediately pay off any existing debt is likely to put the company in high risk of defaulting, which is likely to affect all its clients.

Barth, Caprio and Levine (2008) established that while many countries have followed the Basel guidelines by strengthening the capital requirements, there was no evidence that the implementation of the guidelines would improve the banking system stability, reduce lending corruption and improve banking efficiency. The authors stated that many countries have, instead, strengthened the restrictions on non-lending activities. This has negatively affected the stability of the banking system, reduces the efficiency of the banking intermediation and lowers the development of the bank.

2.5 Avoidance to Comply With the Increased Regulatory Requirements

Slovik (2012) concluded that capital regulation based on risk-weighted assets encouraged banks to avoid regulatory requirements by being innovative and shifting the bank's focus from their core businesses. The latter author argued that the high regulatory risk weights on loans relative to other assets leads to the banks engaging in non-loan-related activities in order to maintain a comparative advantage towards their strategies to seek profits. His survey revealed that prior to the 2008 financial crisis, the banks did not have an incentive to prioritise due diligence of the mortgage loans as their profits were being derived from securitisation of loans. This was verified by an observation of the drop in the ratio of risk-weighted assets to total assets from 75% since Basel Accord was introduced in the early 1990s to around 30% in the immediate pre-crisis period. The results of the survey should be viewed with caution as only data relating to systemically important banks (as discussed in section 2.6) was analysed. Research

needs to be done to establish what the data from other banks reveal, as they are just as important for the global economy.

It has always been challenging for the global financial sector to ensure that the financial system can minimise the regulatory arbitrage when new and stricter regulatory rules are implemented (Moshirian, 2012). In the absence of globally coordinated regulation, regulatory arbitrage and ineffectiveness of rules dealing with financial market failures could often emerge in the national regulation (Moshirian, 2011). In order to limit the regulatory arbitrage, Moshirian (2012) established that the global financial sector emphasised the ways of reducing the sizes of banks rather than finding ways of improving the global and regional financial systems which could minimise the financial risks.

The difference in bank regulations amongst countries in which the banks operate has an effect on the flow of capital within such banks (Houston, Lin, & Ma, 2012). The authors have established that the bank capital flows are positively related to the number of activity restrictions and the level of strictness of capital regulation imposed by the country from which the capital originates. Adverse effect has been established with regard to the recipient country. Specific regulations mentioned by Houston *et al*. (2012) include the restrictions on the bank's ownership of non-financial firms, the independence of the supervisory body of the government, the degree of audit and disclosure transparency and the level of the supervisory body's authority.

The banks in developing countries can issue a subordinated debt in order to mitigate the banks' risk taking appetite and also ensures a smooth transitioning into stricter capital requirements regime (Ahmed, 2009). The author defined a subordinated debt as a debt claim which is subordinated to other claims on the same asset. It should be noted that debt is not the same as equity.

2.6 Systemically Important Banks

Systemically important banks (SIB's) are part of Systemically Important Financial Institutions (SIFI's) which have been identified through a policy document produced by Financial Stability Board. SIB's are described as the banks whose distress or ultimate failure, due to their sizes, complexity and systemic interconnectedness, would cause significant disruption to the wider financial system and economic activity (Moshirian 2012).

The Basel committee is currently considering a surcharge on SIB's in order to force them to hold additional capital on top of the minimum set by the Basel II regulations (Drumond & Jorge, 2013). The intention of the additional rule is to prevent the SIB's from taking excessive risk due to their belief that they will be rescued by either the central bank or the government in order to prevent the bigger financial disaster (Slovik, 2012). It should not be assumed that SIB's will absorb the costs associated with either the penalty of holding minimum capital or holding higher capital than they need, in their opinions.

When analysing the macroeconomic impact of the increase in capital requirements for Globally Systemically Important Banks (GSIBs), Roger and Vitek (2012) found that the impact depends on the importance of the GSIB in lending in different countries. The authors estimated that a one percent increase in capital requirements for the top 30 GSIBs that were studied would cause a low zero point one seven percentage points in gross domestic product of the countries in which they operate.

2.7 The Structure of the Banking Industry

The implementation of risk-based capital requirements on the borrowers' cost of funds in a country with a more competitive banking structure may generate significantly different effects from the regulations in a country with an oligopolistic banking structure (Drumond & Jorge, 2013). The authors established that the intermediation costs rise with the introduction of risk-based capital requirements under the oligopolistic market whilst the perfect competition market structure is able to maintain the costs at the same levels. Therefore, the effects of the implementation of the risk-based

capital requirements depend on the banking structure of the country in which it is implemented (Drumond & Jorge, 2013).

High initial capital requirements regulations can create entry barriers for banking industry newcomers (Agoraki, Delis, & Pasiouras, 2011). The authors went on and stated that higher capital requirements are associated with high fixed costs of operating the banks. This would lead to fewer banks in the industry and therefore their market power through which the cost of lending can be influenced. The study was limited to data obtained from the Central and Eastern European banking sectors over the period 1998–2005. Due to this gap, there is a need for further studies involving the rest of the world, including the developing countries.

2.8 Capital Requirements and Monetary Policy

Before 2008 financial crisis, the general assumption was that the monetary policy should ignore financial matters and concentrate on chasing a low and stable consumer price inflation over a certain period (Angeloni & Faia, 2013). There has been a change of heart since the crisis. The authors stated that monetary policy should help control the systemic risks faced by the financial institutions.

While exploring the implications of risk-based capital requirements, as brought about by Basel Accord, Chami and Cosimano (2010) established that in the presence of these requirements, monetary policy affect the capacity of the banks to provide loans when competition is almost nonexistent. The authors also stated that in the economies with bank concentration and market power, oligopolistic industry, the capital requirements are seen to maintain and even enhance collusive behaviour amongst the banks. The capital requirements are seen to reduce the expected profits of the banks which are likely to renege on their agreements to collude. The authors also state that the tightening of the monetary policy will reduce the value of the capital and the profitability as the net interest margin earned by the banks will be reduced. This will result in constrained supply of loans in the future as low levels of capital will be held on the banks' balance sheets.

In coming to their conclusion, Chami and Cosimano (2010) assumed that the banks always ensure that they hold just enough capital for the operations during the next period and would lead to bank accelerator effect. As explained by the authors, this phenomenon happens when the effects of the monetary policy leads to the contraction in loans and a drop in economic activity. It is also assumed that the banks will be operating in the imperfectly competitive industry and the loans are restricted by the levels of capital held in the previous quarters.

Roger and Vitek (2012) found that in the absence of monetary policy response to the increase in spread between commercial bank lending rates and central policy rate, a one percent permanent synchronised global increase in capital requirements would lead to zero point five percent reduction in gross domestic product. The authors estimate the losses to be higher in emerging economies than in advanced economies. If the monetary policy responds, the impact of the increased capital requirements will be negligible (Roger & Vitek, 2012).

Roger and Vitek (2012) acknowledged the limitations of their study as it disregarded other possible measures which can be taken by the financial institutions in responding to the increase in capital requirements. The authors also assumed that the implementation of the regulations and the changes in monetary stance would be linear over the alternative implementation periods. As increase in regulations was only assumed to be at one percent and identical increase also assumed to be implemented in all countries, the effect of higher percentage increases were not considered.

In their effort to stabilise the financial system, the financial regulators can work against the central banks' goal of stabilising the economy of the country through sufficient supply of loans (Cecchetti & Lianfa Li, 2008). The latter authors argued that the capital requirement regulations can limit the lending capacity of the banks by dictating that all banks must maintain enough capital in relation to their risk exposures. Cecchetti and Lianfa Li

(2008) concluded that capital requirements are procyclical in the presence of passive monetary policy, and only the optimal monetary policy can neutralise such procyclicality. The trend in which an economic variable fluctuates around the economic cycle.

While looking at the link amongst bank regulation, economic stability and monetary policy, it is recorded that some studies found that the implementation of Basel I regulations might have contributed to the credit crunch of the 1990s. A few more could not find a good evidence of a link between the capital regulation and credit decrease (VanHoose, 2008).

2.9 Business Cycle Fluctuations

The existence of asymmetric information and the market imperfections lead to the procyclicality of the banking operations (Drumond, 2009). During recessions, the banks decrease their lending due to the concerns about the quality of the loans and the probability of recovering the total amount. The latter author argued that the introduction of the regulatory capital requirements is likely to increase the procyclical propensity of banking. Drumond (2009) went on and stated that the conclusion was based on the assumption that raising new capital may be difficult and costly during economic downturns. This will in turn increase the financing costs for the bank borrowers.

The study performed by Liu and Seeiso (2012), which investigated the impact of bank capital regulation on business cycle fluctuations, and the procyclical nature of Basel II, established that small adjustments in monetary policy can result in stronger and undesirable response in the real economy through a decline in investment, physical capital, and net worth, while the response of inflation remains unchanged. The authors acknowledged that their study does not claim that the liquidity premium and financial accelerator effects are the only contributors to procyclicality of the increased regulations. Therefore, monetary policy should not be adjusted in order to curb the procyclical nature of the banking regulations impacts.

Higher levels of capital, as required by the regulations, encourage the banks to screen and observe the borrowers more carefully (Agénor, Alper, & Pereira da Silva, 2012). The screening and monitoring of borrowers reduces the risk of default on the loans and increases the probability of repayment. The BCBS has since accepted a proposal to implement a countercyclical capital buffer as part of the new Basel III framework (Agénor *et al*., 2012). The central banks will encounter difficulties in accounting for the expected losses, as International Financial Reporting Standards (IFRS) only provide for expected credit losses due to financial derivatives. The question remains: "What is the likelihood that IFRS will redesign their accounting principles in order to make provision for this change?"

Repullo and Suarez (2013) have established that the buffers which banks choose to hold under cyclically-varying capital requirements are not sufficient to fully counteract the implications of the arrival of a recession. Such recession may cause a significant reduction in the supply of credit to bank-dependent borrowers. The authors have also established that the supply of bank credit is much more cyclical under risk-based capital requirements than under flat capital requirements. The advantages of procyclical capital requirements are very small in comparison to the effects that may be produced by the credit crunch (Repullo & Suarez, 2013).

2.10 Varied Impact of regulations between emerging market economies and advanced economies

The studies performed by Liebig, Porath, Weder, and Wedow (2007) when looking at the impact of Basel II regulations on bank lending to the emerging markets by taking evidence from the German banking sector, has shown that the increased capital regulations would not negatively affect lending. This would be expected only if the proposed capital requirements are already below the current capital ratios and such capital positions have already taken financial risks into consideration.

While testing the hypothesis that the enforcement of increased capital asset requirements reduce the supply of credit, which was only performed in G-10 countries, Concetta Chiuri, Ferri, and Majnoni, (2002) established that the enforcement reduces the supply of credit as it encourages the banks to reduce lending. The authors further stated that this impact is recognised more so in countries where alternative form of finance from the traditional banking sector is less developed.

While assessing the costs of financial regulation on behalf of The International Monetary Fund, (Elliott *et al*., 2012) concluded that changes in banking regulations come at a price. The authors confirmed that higher safety margins increase the operating costs for the lenders and part of these costs is passed on to the economy. Although the true costs of the increased regulations cannot be confirmed, the average lending rates for Europe are expected to increase by zero point one seven percent, Japan increase by zero point zero eight percents and zero point two six for the Unites States. The possible effect on under-developed countries has not been considered.

2.11 Bank regulations after the global financial crisis

"Following up on the large private and social costs incurred during the global crisis, the Basel Committee has significantly increased the regulations on capital and liquidity"(Dermine, 2013, p. 671). The latter author was concerned that this increase in regulations resulting from the global financial crisis might lead to reduction in supply of bank loans.

The fourth Bank Regulation and Supervision Survey covered the period after the global financial crisis has emerged and the introduction of Basel III (Barth, Caprio, & Levine, 2013). It has been shown that 79 percent of the countries which participated in the survey implemented stringent capital requirements regulations. These countries include the USA. The authors note that Austria, Mexico and United Kingdom relaxed their regulations just after the global financial crisis.

Berger and Bouwman (2013) argued that increased capital helps to enhance the survival probabilities and market share of small banks during banking crises, market crises and normal times. The authors stated that medium and large banks see the benefit during banking crises and credit crunch. Therefore, the benefits of the increased capital requirements depend on the size of the bank and the period during which the bank operates. The authors further stated that the public outcries to increase capital increased after the global financial crisis and subsequent reforms focus on preventing future crisis.

2.12 Summary and Conclusion of Literature Review

The empirical studies and surveys, cited above and in the succeeding paragraphs, reveal varied conclusions regarding the impacts of capital requirements regulations introduced by the BCBS since 1992. Elliott (2009) disagreed with the studies which suggest that the cost implications to the banking industry will be negligible as he believed that the transitional and tax effects were not entirely considered.

In their study of bank regulation and supervision in 180 countries from 1999 to 2011, Barth *et al*., (2013, p. 111) found that "the regulation and supervision of banks varies widely across countries in many different dimensions. The authors have also established that there has not been a convergence in bank regulatory regimes over the past decade despite the worst global financial crisis since the Great Depression."

The results of the studies of the impact of increased capital regulations in advanced economies cannot be assumed to be similar to those which can be obtained if the studies were performed in emerging economies. The studies relating to the effect of changing the stringency of the capital regulations in the aftermath of the global financial crisis still need to be performed.

Admati, DeMarzo, Hellwig, and Pfleiderer (2011) concluded that it is not equity which caused previous credit crunches but too much leverage. The

authors further stated that increased capital requirements do not force the banks to restrict lending. These arguments were made against the notion that increased capital requirements will negatively affect bank lending and therefore economic growth.

Various studies, mentioned above, have revealed differing results regarding the capital requirements introduced by Basel I and II, and have produced varying ideas about the possible consequences of the regulations to be introduced in line with Basel III. The authors have stated their assumptions and acknowledged their limitations in coming to their conclusions. Questions relating to whether the already implemented regulations have produced desired results have neither been asked nor answered. The correlation between the implementation of the capital requirement regulations and the change in level of country debt and, to some extent, the economic growth has not been looked at. Hence the purpose of this research was to establish whether or not the implementation of increased capital requirements, as guided by Basel II, had effects on the domestic lending growth of the countries which implemented them.

3 CHAPTER THREE: RESEARCH QUESTIONS

3.1 Introduction

Having looked at the studies which have been done with regard to the increased capital regulations, it is evident that the impact of these changes to the regulations, intended or otherwise, on the levels on domestic lending, has not been considered. The objective of this research was to establish whether the increased capital regulations had an impact on the domestic lending levels of the countries which implemented them at the time of this research.

3.2 Hypotheses testing and research questions

In order to meet the objective of this research, the levels of domestic lending as a percentage of the country's GDP, the year before the implementation of Basel II (Before) and the year of the implementation (After), have been looked at. The additional hypotheses regarding the type of economy, prior to 2008 financial crisis and after 2008 crisis have been tested.

The association between the implementation of Basel II and the type of economy has been tested to a limited extend. The null hypothesis was that there is no association between type of economy and implementation of Base II. The alternative hypothesis was that there is an association between type of economy and implementation of Base II.

The following research questions and main hypotheses have been answered and tested:

Research question 1

Did the increased capital requirements regulations have a negative impact on the level of domestic lending provided by the financial sector, of all the countries that implemented Basel II, comparing the year before the implementation and the year of the implementation?

Hypothesis for research question 1

Null hypothesis

(H_0): The mean domestic lending rate of all the countries that implemented Basel II, as a percentage of GDP Before the implementation is less than or equal to mean lending rate After the implementation.

(H_0): $(\mu_{Before} \leq \mu_{After})$

Alternative hypothesis

(H_1): The mean domestic lending rate of all the countries that implemented Basel II as a percentage of GDP Before the implementation is greater than the mean lending rate After the implementation.

(H_1): $(\mu_{Before} > \mu_{After})$

Research question 2

Did the increased capital requirements regulations have a negative impact on the level of domestic lending provided by the financial sector, of the emerging market economy countries that implemented Basel II comparing the year before the implementation and the year of the implementation?

Hypothesis for research question 2

Null hypothesis

(H_0): The mean domestic lending rate of the emerging market economy countries that implemented Basel II, as a percentage of GDP, Before is less than or equal to mean lending rate After.

(H_0): $(\mu_{Before} \leq \mu_{After})$

Alternative hypothesis

(H_1): The mean domestic lending rate, of the emerging market economy countries that implemented Basel II, a percentage of GDP Before is greater than the mean lending rate After.

(H_1): $(\mu_{Before} > \mu_{After})$

Research question 3

Did the increased capital requirements regulations have a negative impact on the level of domestic lending provided by the financial sector, of the advanced market economy countries that implemented Basel II comparing the year before the implementation and the year of the implementation?

Hypothesis for research question 3

Null hypothesis

(H_0): The mean domestic lending rate, of the advanced market economy countries that implemented Basel II as a percentage of GDP, Before is less than or equal to mean lending rate After.

(H_0): $(\mu_{Before} \leq \mu_{After})$

Alternative hypothesis

(H_1): The mean domestic lending rate, of the advanced market economy countries that implemented Basel II as a percentage of GDP Before is greater than the mean lending rate After.

(H_1): $(\mu_{Before} > \mu_{After})$

Research question 4

Did the increased capital requirements regulations have a negative impact on the level of domestic lending provided by the financial sector, of the countries that implemented Basel II between 2004 and 2008, comparing the year before the implementation and the year of the implementation?

Hypothesis for research question 4

Null hypothesis

(H_0): The mean domestic lending rate of the countries that implemented Basel II between 2004 and 2008, as a percentage of GDP, Before is less than or equal to mean lending rate After.

(H_0): $(\mu_{Before} \leq \mu_{After})$

Alternative hypothesis

(H_1): The mean domestic lending rate of the countries that implemented Basel II between 2004 and 2008, as a percentage of GDP, Before is greater than the mean lending rate After.

(H_1): $(\mu_{Before} > \mu_{After})$

Research question 5

Did the increased capital requirements regulations have a negative impact on the level of domestic lending provided by the financial sector, of the countries that implemented Basel II from 2008 to 2012, comparing the year before the implementation and the year of the implementation?

Hypothesis for research question 5

Null hypothesis

(H_0): The mean domestic lending rate of the countries that implemented Basel II from 2008 to 2012, as a percentage of GDP, Before is less than or equal to mean lending rate After.

(H_0): $(\mu_{Before} \leq \mu_{After})$

Alternative hypothesis

(H_1): The mean domestic lending rate, of the countries that implemented Basel II from 2008 to 2012, as a percentage of GDP, Before is greater than the mean lending rate After.

(H_1): $(\mu_{Before} > \mu_{After})$

This research established whether or not the countries which implemented Basel II saw changes in the domestic lending levels as a percentage of GDP. These levels have a direct link to economic growth as the borrowed funds are mainly used in capital expenditure projects or smooth running of companies within the economy. To a limited extent, the causal relationship between the implementation of the regulations and domestic lending growth has been discussed.

4 CHAPTER FOUR: RESEARCH METHODOLOGY

4.1 Introduction to the Research Methodology

This chapter describes the methodology which has been used to conduct the research. It provides details of the research method used to resolve questions set out in chapter three. This section includes the research design, survey population, sample selection, data gathering and data analysis. The limitations of the research are also discussed.

From the general theory that already exists, as stated in the literature review in chapter two, the research questions have been defined as reflected in chapter three. They will be answered through analyses of the data collected by and obtained from the World Bank database.

4.2 Research Philosophy

The philosophical position of business and management researchers influences the way in which the research is conducted (Saunders & Lewis, 2012). Holden and Lynch (2004) state that the philosophical stance of the research should determine the research method to be applied. The authors went on further and stated that the decision to be made regarding what and how to research depends on the reasons for conducting such a research. The choice of the research methodology depends on the researchers' "assumptions concerning ontology (reality), epistemology (knowledge), and human nature (whether pre-determined or not)" (Holden & Lynch, 2004, p. 398). The authors warn against mismatching of research methodology to the research problem as this may lead to false results and tarnish the researcher's professionalism.

This research took a form of positivist approach as it predicted the possible outcome of the survey. The possible outcome is between failing to reject the null hypothesis that the mean of domestic debt issued by the financial institutions the year before implementation of Basel II is less or equal to the mean of domestic debt issued by the financial institutions during the year of implementation of Basel II and rejecting it. As guided by Holden

and Lynch (2004), the approach leaves a room for interpretation of the results and possible further research.

Muijs (2010) states that quantitative research is best suited for a hypothesis testing. This entails establishing whether there is a relationship between two or more variables and this is the approach which this research has taken.

4.3 Research Design

This research project has been oriented towards establishing the degrees of association between the implementation of increased capital requirements and the growth in domestic lending activities. The deductive research approach has been used in conducting this research. As defined by Saunders and Lewis (2012), the deductive research approach involves the testing of a theoretical proposition by following five stages in their determined sequence. The authors stated that process should follow the following sequence; the research questions should be defined from the general theory that already exists, the way in which these questions will be asked should be specified, the answers to the questions defined earlier should be obtained, the results obtained from the enquiry should be analysed in order to determine whether they support the theory or need to be modified, and confirm or modify the theory because of the results.

The research analysed and explained the capital requirements regulations, the processes which have been followed in their adoption, the countries which have adopted and implemented them and the period in which they have been implemented as guided by Basel II. Saunders and Lewis (2012) refer to this research design, which has been used in the research, as the descriptive quantitative research design.

This research took the form of a correlational descriptive design as it also looked at the relationship between the increased capital requirements regulations and the lending growth or contraction rate as defined by Mitchell and Jolley (2013). The authors stated that the correlational

descriptive design almost always look at the relationships between two or more variables in order to see whether those variables correlate.

The research has been based on secondary data which was obtained during surveys conducted by the World Bank and therefore took a survey strategy. Saunders and Lewis (2012) defined a survey as the research strategy which involves the structured collection of data from a big population through questionnaires, structured observations and structured interviews. The standardised questionnaire, which was used to collect data, has been completed by the respondents representing the participating countries from all over the world.

4.4 Data collection

4.4.1 Population

Saunders and Lewis (2012) defined population as the complete set of group members which do not have to be people and can be organisations and places. The population, for the purposes of this research, was the countries in the entire world. All countries have been considered, as Basel Accord regulations can be adopted by all the countries and their central banks before they could be enforced as part of regulations of the specific countries' financial sectors.

While conducting The Bank Regulation and Supervision Survey (The Survey) which looked at the evolution and the impact of bank regulations, The World Bank has collected data from 142 of its member countries between 1999 and 2012 (Barth, Caprio, & Levine, 2012).

4.4.2 Sampling

Saunders and Lewis (2012, p. 132) defined sampling as "a subgroup of the whole population. The subgroup need not necessarily be a subset of people or employees: it can be, for example, a subset of organisations, places or some of the tracks listed for a music CD". The secondary data has been used for the purposes of this research. Due to size of the population limited to about 194 countries in the world , the data that have been used were obtained from the data that were collected by The World Bank from

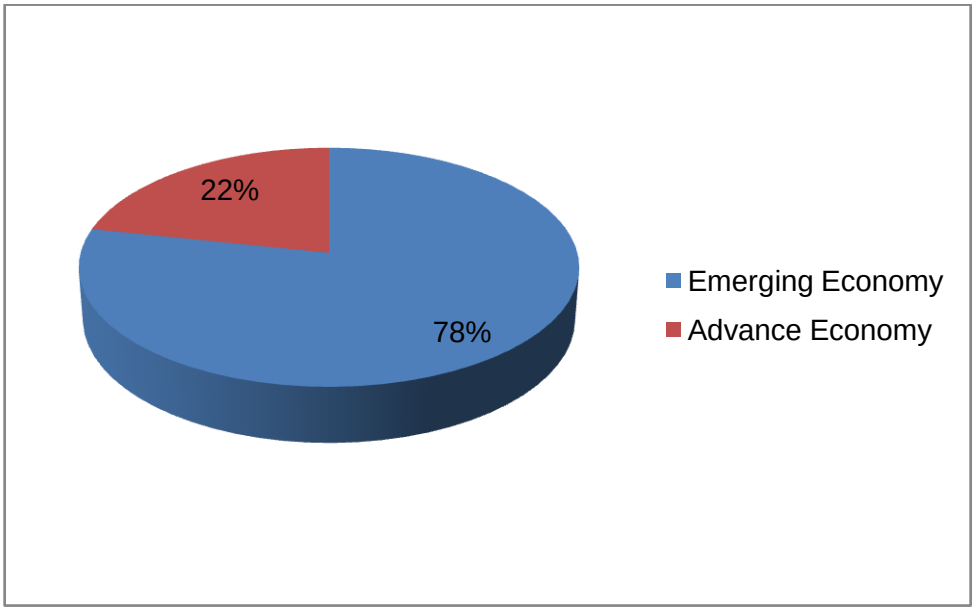
142 member countries, the sample, over a period of 12 years from 1999 to 2012 (Barth *et al*., 2012).

A non-probability self-selection sampling has been used in the surveys. Saunders and Lewis (2012) defined self-selection sampling as a type of non-probability sampling through which sample members identify themselves and take part in the research willingly. As stated by Barth *et al.* (2012), the countries which participated in the four surveys which were conducted over 12 years, did so in their own accord.

The survey which was conducted by the Financial Stability Institute (Bank for International Settlements, 2013a) was used to determine the years in which Basel II was implemented by the countries whose information was used in this research. The countries which had not implemented Basel II by the time of collecting data, for whatever reason including plans to implement in the future, were excluded from data analysed in order to come to the conclusion of this research.

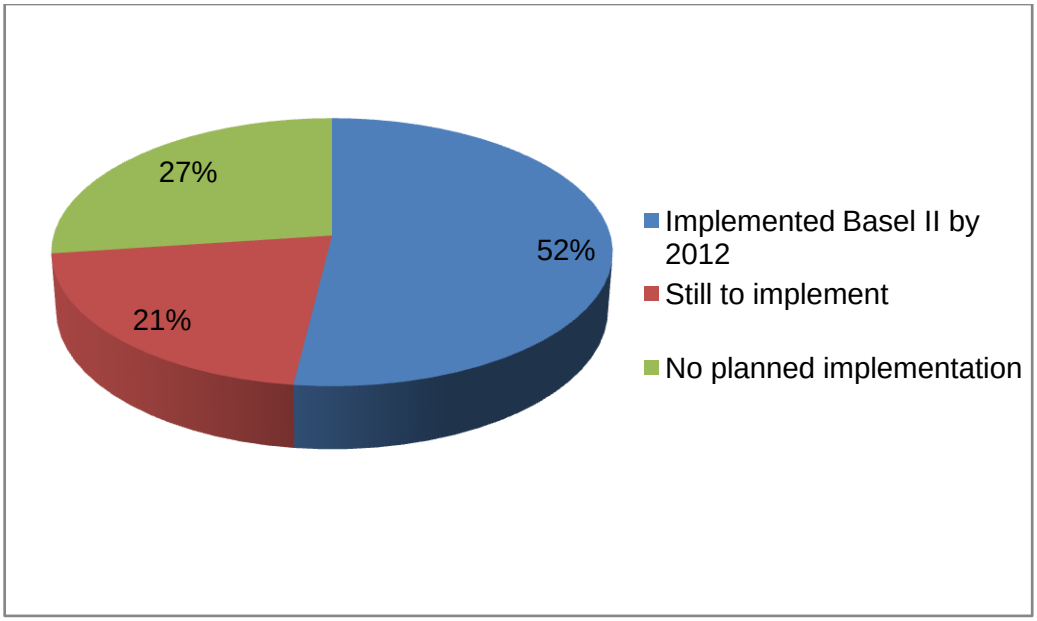
The sample was selected from 129 countries. Of the 129 countries, 78% were emerging economies and the other 22% were advanced economies. The countries were split so as to determine the results of the research based on the country wealth categories. See figure 1 and appendices 2 and 3 for lists of countries and data.

Figure 1: Country economy level (Wealth level)



More than half of the countries in the sample (52%) had implemented the Basel II by the year 2012, the other 21% were planning to implement whilst the other 27% had neither implemented Basel II nor shown the intentions of implementation. The results are shown in figure 2 and appendices 4 and 5 for lists of countries and data.

Figure 2: Implementation of Basel II



Of the countries which participated in The Survey, only the debt levels relating to 129 countries was collected by The World Bank. Since only 52% of the countries had implemented Basel II as at 2012, 67 countries were used as a sample for this research.

4.4.3 Data Collection Tool

The data relating to the levels of domestic debt provided by the banking sector as a percentage of GDP was obtained from The World Bank database. The data relate to the countries whose information was available from the year prior to the specific country's implementation of Basel II and the year on which the regulations were implemented (See appendix 6 for complete set of data).

With regard to the implementation of capital requirements, questionnaires were sent to all The World Bank member countries. According to the surveys, the respondents were senior banking supervisors. The questionnaires were generally addressed to the head of banking supervision in the central bank or head of a separate banking supervision agency. In some countries, the responses were provided directly by the agency head. In some countries, the agency head delegated the completion of the questionnaire to the relevant senior-level staff.

A total of 270 questions were answered through the questionnaire. These questions covered about 630 banking regulatory and supervision items and provide a unique and valuable set of information on a wide range of issues related to banking regulation and supervision. About 25 questions and sub-questions relate to the banking capital requirements and they were broad enough to cover the relevant information needed for the purposes of this research.

4.4.4 Unit of Analysis

The unit of analysis is the rate of growth or contraction of lending each country has experienced after the implementation of the capital requirements regulations as a percentage of the rate experienced before the implementation of the regulations. The lending growth rates of the

countries which implemented Basel II have been obtained and compared between the year before the implementation of the capital requirements regulations and the year after the implementation.

As mentioned earlier, the questionnaires were sent to all the member countries. According to the surveys, the respondents were senior banking supervisors. The survey was generally addressed to the head of banking supervision in the central bank or head of a separate banking supervision agency. In some countries, the responses were provided directly by the agency head. In some countries, the agency head delegated the completion of the questionnaire to the relevant senior-level staff.

As the surveys from which the data has been obtained were conducted by the highest possible authority in the banking industry and respondents were well aware of possible consequences of providing falsified information or lack of response, it is assumed that the information provided was accurate at the time of the data collection.

Based on the credibility of The World Bank Research division, it is also assumed that the data relating to the individual countries levels of domestic lending as a percentage of GDP were accurate at the time of this research. This information is provided to the members of the organisation, who are entitled to receive accurate information due to their rights and obligation to monitor the countries concerned.

4.5 Validity of Data

The surveys from which the data has been obtained were conducted by the highest possible authority in the banking industry and respondents were well aware of possible consequences of providing falsified information or lack of response. It is assumed that the information provided was accurate at the time of the data collection.

The design and implementation of the surveys conducted by The World Bank put in effort to ensure the consistency and comprehensiveness of the data collected from the various countries. Detailed guidelines were

provided with the questionnaire. The countries were given an option to provide other country specific information that was relevant to the surveys. On receipt of the survey responses, the external consulting company was used to cross check the information and errors and inconsistencies were referred back to the respective countries for corrections (Cihak *et al*., 2012).

4.6 Data Analysis Techniques

The data that was collected by the World Bank was edited, coded and transferred to data storage so that it can be useful for this research. The IBM SPSS statistical software was used in this research. In order to establish the countries which implemented Basel II, the data obtained from The Bank Regulation and Supervision Survey were coded into discrete numerical data.

The continuous numerical data relating to the levels of domestic debt was edited from information relating to the debt levels starting from 1967 until 2012. As Basel II was introduced in 2004 and could only be implemented as from 2005, the information relating to the period before 2004 was eliminated. Inclusion of 2004 data ensures that the debt levels of the countries which implemented the regulations in 2005 have comparable data for the year before implementation. The countries which had not implemented Basel II and those which have implemented the regulations but whose debt levels data were not available for the research period were excluded from the results of this research (See appendix 6).

4.6.1 Analysis Conducted

Descriptive statistics such as frequency distributions, and cross tabulations, mean and standard deviation were used to summarise the data. Pie charts were used to provide a visually picture of the frequencies. Pie charts were chosen to be the most appropriate charts because they are visually appealing and are used in cases where there were a few categories (less than 5) whilst bar graphs would have been used if there were many categories of a variable.

4.6.2 Chi square test for independence

Chi squared test was used to assess whether there was an association between categorical variables. It is used when there are two categorical variables from a single population. It is used to determine whether there is a significant association between the two variables. The test was conducted at 5% significance level. A p-value of less than 0.05 is an indication of a significant relationship between the variables.

4.6.3 Paired Samples t-test

A paired samples t-test compares the means of two samples when each element of one sample is matched to its corresponding element of the other sample. This paired t-test examines the mean of individual differences of paired measurements and thus is appropriate for pre-post situations. In this research, it was used to compare the mean lending rates before implementing Basel II against the mean rates after implementation of Basel II.

The paired sample t-test was chosen to be the most appropriate method of hypothesis testing because each country that had implemented Basel II had a score for before implementation and another score for after implementation.

The paired samples t-test examines if the mean of the differences is different from zero (no difference). If the p-value of the t-test is less than 0.05 (the significance level) then the difference between the two samples is considered to be significant. If the p-value is greater than 0.05 then the null hypothesis cannot be rejected and it is concluded that there is no difference between the two means.

4.6.4 Measure of normality

The skewness tests have been conducted, instead of providing histograms, as they provide a precise measure of shape of the distribution by showing the direction and the amount of the skew (Bulmer, 1979). Kurtosis provides a better evaluation of how tall or wide the central peak is in relation to the normal distribution (Sharma, 2013).

4.7 Research Limitations

Like any other research project, there are possible limitations which can threaten the validity of the findings. Not all the World Bank member countries have completed the questionnaires and their response, or lack thereof, might have influenced the results of the surveys. It is not known why only 117 countries responded to the surveys in 1999, 152 responded to the second survey which was completed in 2002, 142 countries responded between 2005 and 2006 during the third survey and only 125 countries responses were obtained during the fourth survey conducted between 2011 and 2012.

The World Bank stated that the questionnaires were sent to senior banking supervisors in the respective countries but is unable to confirm whether or not the questionnaires were completed by knowledgeable employees at the central banks and the accuracy of the answers provided. The competence levels of the staff that completed the questionnaires would affect the quality of the data collected for the surveys and therefore this research.

The Surveys do not reflect the month of the adoption and therefore implementation of Basel regulations by the respective countries. As the complete implementation of the regulations by individual countries is expected to take at least a year, it has been assumed, during this research, that the possible results of the implementation were realised for the greater part of the years in which the countries stated as their implementation years. The period which the countries took to implement the regulations is also not known. It is therefore possible that the results of the regulations implementation could be realised during some of the Before years.

It might be difficult to obtain clarity regarding certain aspects of the data, should it be necessary to do so, as the primary source of the information may no longer be available or classified as confidential through their internal controls. The respondents to the surveys may, in most probability, not be accessible for the purposes confirming some of the information obtained from The World Bank database. Some central banks and also

countries might be concerned about the confidentiality aspect and therefore security of the information if they were to provide it to other bodies which they are not obliged to do so.

The definitions and categorisations of certain financial and economic indicators might be different from country to country. The analysis and comparisons of varying data might lead to different conclusions in comparison to what the results have reflected.

It is not known why the debt levels of some of the countries were not available from The World Bank database. It is therefore not known if their data could alter the results of this research.

4.8 *Conclusion*

The research has been orientated towards establishing the degrees of association between the implementation of increased capital requirements and the growth in lending activities. The deductive research approach, in the form of a correlational descriptive design, has been used in conducting this research. The data are publicly available information and has been sourced from The World Bank.

5 CHAPTER FIVE: RESULTS

5.1 Introduction

This chapter presents the results obtained from the data analysis method described in section 4.6 of chapter 4. It provides the statistical analysis which answers the research questions listed and the hypotheses stated in the same chapter.

5.2 Sample description

Of the 67 countries that had implemented Basel II by 2012, only 15% implemented before 2008 and the rest (85%) implemented Basel II in 2008 or later. The results are shown in figure 3.

Figure 3: Implementation year

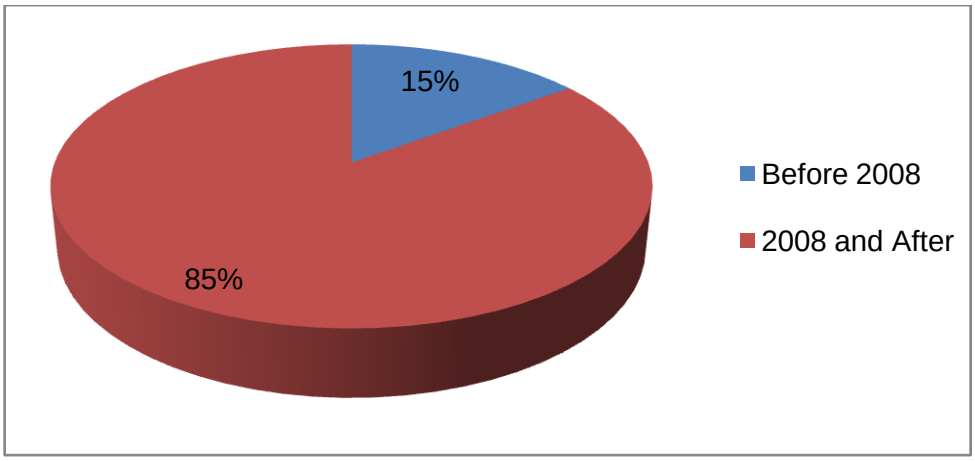


Table 1 shows the cross tabulations of the countries which implemented Basel II. As per some of the hypotheses tests which were performed, it shows level of country wealth and status of Basel II implementation as at 2012.

Table 1: Wealth level and Basel II implementation cross tabulation.

Wealth level * Implemented Cross tabulation						
			Implemented			Total
			Implemented Basel II by 2012	Still to implement	No planned implementation	
Economy	Emerging Economy	Count	41	26	34	101
		% within Economy	40.60%	25.70%	33.70%	100.00%
	Advance Economy	Count	26	1	1	28
		% within Economy	92.90%	3.60%	3.60%	100.00%
Total		Count	67	27	35	129
		% within Economy	51.90%	20.90%	27.10%	100.00%

In order to establish whether there is an association between the type of an economy and implementation of Basel II, a separate statistical test was performed. To evaluate the hypothesis, the chi-square test of independence was conducted as stated in Weiers, Gray and Peters (2011). The null hypothesis was that there is no association between type of economy and implementation of Basel II. The alternative hypothesis was that there is an association between type of economy and implementation of Basel II. The results are shown in table 2 below.

Table 2: Test of association between type of an economy and implementation of Basel II

Chi-Square Tests				
	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)
Pearson Chi-Square	23.994[a]	2	0.000	0.000
N of Valid Cases	129			
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.86.				

The results revealed that there is an association between type of economy and implementation of Basel II. The p-value of the chi-square tests was 0.000 which is less than 0.05 (significance level); this implies that the null hypothesis is rejected. From the cross tabulation, it can be noted that most of the advanced economies (92.9%) had implemented Basel II by 2012 compared to 40.6% of the emerging economies that had implemented Basel II during the same period.

Main Hypothesis Testing

The null hypotheses were;

Null hypothesis (H_0): The mean domestic lending rate as a percentage of GDP after implementation of Basel II is less than or equal to mean lending rate before implementation.

H_0: $(\mu_{After} \geq \mu_{Before})$

Alternative hypothesis (H_1): The mean domestic lending rate as a percentage of GDP after implementation of Basel II is greater than the mean lending rate before implementation.

H_1: $(\mu_{After} < \mu_{Before})$

The paired samples t-tests were conducted to assess whether the implementation of Basel II resulted in a change in the lending rates. Thus, the rates before implementation and after implementation of Basel II were compared.

The tests were conducted at 5% significance level. This implies that a test with a p-value of less than 0.05 is considered to be significant. Since the alternative hypothesis is $(\mu_{After} < \mu_{Before})$, it means a one-tailed t-test is applied.

The analysis was conducted on five different levels of countries which implemented Basel II, namely;

1. All countries
2. Emerging economies
3. Advanced Economies
4. Before 2008

5. After 2008

The results are shown in the following sections.

All the countries that implemented Basel II

The results as per table 3 below reveal that the average domestic lending as a percentage of GDP Before was 104.32% compared to 109.98% of After. The minimum rates were 12.00 and 18.00 for Before and After respectively whilst the maximum rates were at 305.000 and 314.000 for the respective periods. The standard deviations, the measure of how spread out the rates are as stated in Weiers *et al*. (2011) are 62.707 for Before and 64.783 for After.

Table 3: Descriptive statistics for all the countries that implemented Basel II

	N	Minimum	Maximum	Mean		Std. Deviation	Skewness	Kurtosis
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic	Statistic
Before	67	12.000	305.000	104.322	7.661	62.707	.802	.305
After	67	18.000	314.000	109.984	7.914	64.783	.859	.489

The results as per table 3 above reveal that the average domestic lending as a percentage of GDP Before was 104.32% compared to 109.98% of After. The minimum rates were 12.00 and 18.00 for Before and After respectively whilst the maximum rates were at 305.000 and 314.000 for the respective periods. The standard deviations, the measure of how spread out the rates are as stated in Weiers *et al*. (2011) are 62.707 for Before and 64.783 for After.

In order to measure the symmetry, or lack thereof, of the distribution, the skewness of the data set is measured. As guided by Bulmer (1979), the

skewness of 0.802 and 0.859 for Before and After periods respectively show that the data is moderately skewed to the right.

The measure of whether the data are peaked or flat in relation to a normal distribution has been conducted through kurtosis. The kurtosis of three indicate the normal distribution, greater than three reflect that the data set is peaked more sharply than the normal distribution, also called leptokurtic (narrow) whilst the kurtosis of less than three reflects a platykurtic (broad) distribution (Sharma, 2013). The kurtosis of 0.305 and 0.859 for Before and After respectively indicate that the distribution is broad. These results were obtained after data from 67 countries were tested.

Table 4: Paired samples statistics for all the countries that implemented Basel II

Paired Samples Test								
		Paired Differences				t	df	P-Value
		Mean	Std. Deviation	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1	Before and After	-5.661	10.590	-8.244	-3.078	-4.376	66	1.000

Table 4 reveals that the p-value of the paired samples t-test for the difference between the two means was 1.000. This value is greater than 0.05 (significance level). This implies that the null hypothesis should not be rejected and it is concluded that implementation of Basel II does not result in a decrease in the domestic lending rate as a percentage of GDP.

Emerging Economies

The results as per table 5 below reveal that the average domestic lending for emerging economies as a percentage of GDP Before was 71.44% compared to 75.58% for After. The minimum rates were 12.00 and 18.00 for Before and After respectively whilst the maximum rates were at 202.000

and 176.000 for the respective periods. The standard deviations were 42.357 for Before and 41.452 for After.

The skewness of 1.249 for the Before shows that the data are highly skewed to the right while the skewness of 0.989 for After period shows that the data are moderately skewed to the right. The kurtosis of 1.390 and 0.488 for Before and After respectively indicate that the distribution is broad. These results were obtained after data from 41 countries were tested.

Table 5: Descriptive statistics for the emerging market economies countries that implemented Basel II

Emerging Economy	N	Minimum	Maximum	Mean		Std. Deviation	Skewness	Kurtosis
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic	Statistic
Before	41	12.000	202.000	71.440	6.615	42.357	1.249	1.390
After	41	18.000	176.000	75.952	6.474	41.452	.989	.488

Table 6: Paired samples statistics for the emerging market economies countries that implemented Basel II

Paired Samples Test								
		Paired Differences				T	df	P-Value
		Mean	Std. Deviation	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1	Before After	-4.512	8.030	-7.046	-1.977	-3.597	40	1.000

Table 6 shows that the p-value of the paired samples t-test for the difference between the two means was 1.000. This value is greater than

0.05 (significance level). This implies that the null hypothesis should not be rejected and it is concluded that implementation of Basel II does not result in a decrease in the domestic lending rate for emerging economies.

Advanced Economies

The results as per table 7 below reveal that the average domestic lending for advanced economies as a percentage of GDP Before was 156.176 compared to 163.650 for After. The minimum rates were 52.00 and 54.00 for Before and After respectively whilst the maximum rates were at 305.000 and 314.000 for the respective periods. The standard deviations were 54.227 for Before and 58.614 for After.

The skewness of 0.687 and 0.657 for Before and After periods respectively show that the data are moderately skewed to the right and therefore positive. The kurtosis of 1.084 and 0.700 for Before and After respectively indicate that the distribution is broad. These results were obtained after data from 26 countries were tested.

Table 7: Descriptive statistics for the advanced market economies countries that implemented Basel II

Advance Economy	N	Minimum	Maximum	Mean		Std. Deviation	Skewness	Kurtosis
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic	Statistic
Before	26	52.000	305.000	156.176	10.635	54.227	.687	1.084
After	26	54.000	314.000	163.650	11.495	58.614	.657	.700

Table 8: Paired samples statistics for the advanced market economies countries that implemented Basel II

Paired Samples Test								
		Paired Differences				T	df	P-value
		Mean	Std. Deviation	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1	Before After	-7.474	13.685	-13.002	-1.947	-2.785	25	0.995

Table 8 reflects that the p-value of the paired samples t-test for the difference between the two means was 0.995. This value is greater than 0.05 (significance level). This implies that the null hypothesis should not be rejected and it is concluded that implementation of Basel II does not result in a decrease in the domestic lending rate for advanced economies as well

Before 2008

The results on table 9 below reveal that the average domestic lending rate Before was 94.321% to 95.376% After. The minimum rates were 21.210 and 21.763 for Before and After respectively whilst the maximum rates were at 305.000 and 314.000 for the respective periods. The standard deviations were 87.749 for Before and 90.051 for After.

The skewness of 1.812 and 1.885 for Before and After periods respectively show that the data are highly skewed to the right. The kurtosis of 3.286 and 3.595 for Before and After respectively indicate that the distribution is narrow. These results were obtained after data from 10 countries were tested.

The p-value of the paired samples t-test for the difference between the two means was 0.684 as shown in table 10. This value is greater than 0.05 (significance level). This implies that the null hypothesis is accepted and it is concluded that there is no evidence at 5% significance level to suggest that implementation of Basel II results in a decrease in domestic lending rate before 2008.

Table 9: Descriptive statistics for the countries that implemented Basel II between 2004 and 2008

Before 2008	N	Minimum	Maximum	Mean		Std. Deviation	Skewness	Kurtosis
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic	Statistic
Before	10	21.210	305.000	94.321	27.749	87.749	1.812	3.286
After	10	21.763	314.000	95.376	28.477	90.051	1.885	3.595

Table 10: Paired samples statistics for the countries that implemented Basel II between 2004 and 2008

Paired Samples Test								
		Paired Differences				t	df	P-value
		Mean	Std. Deviation	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1	Before After	-1.055	6.710	-5.855	3.744	-0.497	9	0.684

After 2008 (2008 to 2012)

The results of tables 11 reflect that the average domestic lending rate Before was 106.077 compared to 112.547 After. The minimum rates were 12.000 and 18.000 for Before and After respectively whilst the maximum rates were at 244.000 and 280.000 for the respective periods. The standard deviations were 58.102 for Before and 112.547 for After.

The skewness of 0.466 for the Before shows that the data are approximately symmetric while the skewness of 0.576 for After period shows that the data are moderately skewed to the right. The kurtosis of -0.704 and -0.296 for Before and After respectively indicate that the distribution is broad. These results were obtained after data from 57 countries were tested.

The p-value of the paired samples t-test for the difference between the two means was 1.000 as shown in table 12 below. This value is greater than 0.05 (significance level). This implies that the null hypothesis is not rejected and it is concluded that there is no evidence at 5% significance level that the implementation of Basel II results in a decrease in the domestic lending rate for the period after 2008.

Table 11: Descriptive statistics for the countries that implemented Basel II from 2008 to 2012

2008 and After	N	Minimum	Maximum	Mean		Std. Deviation	Skewness	Kurtosis
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic	Statistic
Before	57	12.000	244.000	106.077	7.696	58.102	.466	-.704
After	57	18.000	280.000	112.547	7.945	59.985	.576	-.296

Table 12: Paired samples statistics for the countries that implemented Basel II from 2008 to 2012

Paired Samples Test								
		Paired Differences				t	df	P-value
		Mean	Std. Deviation	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1	Before After	-6.469	10.976	-9.382	-3.557	-4.450	56	1.000

Conclusion

It can be noted that the implementation of Basel II and therefore the increase in capital requirements does not lead to a decrease in lending rates as a proportion of GDP. These results were consistent on all five levels of analysis.

6 CHAPTER SIX: DISCUSSION

6.1 Introduction

The previous chapter provided the statistical results of the research whilst this chapter interprets and analyse the results. The data relating to the countries which implemented Basel II as at 2012 and the domestic lending as a percentage of each country's GDP was gathered from The World Bank. The results are discussed in relation to the research questions and hypotheses as stated in chapter three.

6.2 Association between the type of an economy and implementation of Basel II

The chi-square test of association, as shown on table two, has revealed that there is an association between the type of economy and the implementation of Basel II. With a p-value of 0.000 at a significance level of 0.05, the test has shown that the null hypothesis that there is no association should be rejected.

It should be noted the 92.9% of advanced economy countries which were tested are those which have provided the domestic lending data to The World Bank, participated in the BCBS survey and have implemented Basel II by 2012. The countries from emerging market economies were represented by only 40.6% as shown in table 2. Though this research was limited to 67 countries, it relieves the concerns of Concetta Chiuri *et al*. (2002) regarding the possible macroeconomic effects of the increased capital requirements regulations on countries which depend mainly on financial sector for borrowings.

The results of this research concur with Liebig *et al*.'s (2007) findings that have shown that the increased capital regulations would not negatively affect lending. It should also be noted that the author came to their conclusion after studying the German banking sector only.

6.3 Research question 1

Did the increased capital requirements regulations have an impact on the level of domestic lending provided by the financial sector, of all the countries that implemented Basel II, comparing the year before the implementation and the year of the implementation?

The results of the paired samples statistics test at 95% confidence level reveal that the null hypothesis that the mean domestic lending rate of all the countries as a percentage of GDP before implementation of Basel II is less than or equal to mean lending rate after implementation, should not be rejected. The p-value of 1.000 is greater than the 0.05 significance level. This implies that the implementation of increased capital requirements does not result in a decrease in the domestic lending as a percentage of GDP. These results are consistent with the findings of Allen *et al*. (2012) when testing the impact of Basel III on cost of capital and output. It should be noted that the authors estimated the minimal increase in lending interests rates assuming that the banks would lower the operating costs and profits in order to minimise the increment in costs to be passed to clients.

It should be noted that the results of this research were obtained from data with the averages of 104.32 and 109.98 of the rates Before implementation of Basel II and After respectively. Although the minimum rates of 12.00 and 18.00 for Before and After respectively and maximum rates of 305.00 and 314.00 for After seem to be outliers, as shown in table 3, the skewness test conducted reflects that the entire data are moderately skewed to the right.

6.4 Research question 2

Did the increased capital requirements regulations have an impact on the level of domestic lending provided by the financial sector, of the emerging market economy countries that implemented Basel II comparing the year before the implementation and the year of the implementation?

The 95% confidence level test revealed that the null hypothesis that the mean domestic lending rate of the emerging economies countries as a

percentage of GDP before implementation of Basel II is less than or equal to mean lending rate after implementation, should not be rejected. The p-value of 1.000 is greater than the 0.05 significance level. This implies that the implementation of increased capital requirements does not result in a decrease in the domestic lending as a percentage of GDP. The concern that the unavailability of capital due to the enforcement of increased capital requirements regulations in countries which mainly rely on the typical financial institutions for supply of credit would be prevalent (Concetta Chiuri *et al*., 2002) should be soothed by the findings of this research.

It should be noted as reflected in table 5 that the countries in the emerging market economies had the lowest of the domestic lending rates as a percentage of GDP both Before and After. This could be due to the "banks in many developing countries facing an inherently risky and unpredictable business environment, which makes them reluctant to engage with the private sector"(Abbas & Christensen, 2010, p. 214).

6.5 Research question 3

Did the increased capital requirements regulations have an impact on the level of domestic lending provided by the financial sector, of the advanced market economy countries that implemented Basel II comparing the year before the implementation and the year of the implementation?

Table 8 shows that the p-value of the paired samples t-test for the difference between the two means was 0.995. This value is greater than 0,05 significance level. This implies that the null hypothesis should not be rejected and it is concluded that implementation of Basel II does not result in a decrease in the domestic lending rate for advanced economies.

The results were obtained from the moderately and positively skewed distribution as shown in table 7. It is also possible that the banks in the advanced economies are able to minimise their operation costs as stated by Naceur and Omran (2011).

6.6 Research question 4

Did the increased capital requirements regulations have an impact on the level of domestic lending provided by the financial sector, of the countries that implemented Basel II between 2004 and 2008, comparing the year before the implementation and the year of the implementation?

The p-value of the paired samples t-test for the difference between the two means was 0.684 as shown in table 10. This value is greater than 0,05 significance level. This implies that the null hypothesis is accepted and it is concluded that there is no evidence at 5% significance level to suggest that implementation of Basel II results in a decrease in domestic lending rate before 2008. Despite the banks not prioritising due diligence on mortgage loans as their profits were mainly derived from the securitisation of loans prior to 2008 financial crisis (Slovik, 2012), the amount of loans issued were not negatively affected as shown by the results of this research. It is acknowledged that the authors analysed only the systemically important banks in their study.

6.7 Research question 5

Did the increased capital requirements regulations have an impact on the level of domestic lending provided by the financial sector of the countries that implemented Basel II from 2008 to 2012, comparing the year before the implementation and the year of the implementation?

The p-value of the paired samples t-test for the difference between the two means was 1.000 as shown in table 12 above. This value is greater than 0.05 (significance level). This implies that the null hypothesis is not rejected and it is concluded that there is no evidence at 5% significance level that the implementation of Basel II results in a decrease in the domestic lending rate for the period from 2008 to 2012.

The argument by Dermine (2013) that too stringent regulations lead to securitisation and increased interest rate margins on loans and also inefficiency in banking ultimately lead to expensive equity seem to be misplaced. The banks would have no reason to hold excessive capital

beyond what is required by the regulations if they deem equity to be more expensive than debt.

It is not known whether or not the monetary policy was used in assisting the banks when dealing with the challenges of increased capital regulations after the global financial crisis as suggested by Angeloni and Faia (2013). If that is the case, the monetary policy changes might have had an influence of the above-mentioned results. There is a need for research to establish the effect of changes of monetary policy stance in dealing with the increase in capital requirements regulations.

6.8 Discussion of findings in relation to literature review

The consideration by The Basel committee to impose additional charges on SIB's in order to force them to hold additional capital on top of the minimum set by the regulators (Drumond & Jorge, 2013) might have an impact of the level of capital the banks held. There is a need for research in order to establish the impact thereof.

With regard to the structure of the banking industry, the statement by (Agoraki *et al*. (2011) that higher capital requirements are associated with high fixed costs for banks and therefore lead to fewer banks in the industry does not seem to hold for all the countries that implemented the regulations for the period under review. If the regulations brought about higher fixed costs, then the banks ensured that they did not prevent them from operating their businesses as usual.

With regard to changes in monetary policy in response to increment of capital requirements regulations, Chami and Cosimano's (2010) concerns that the banks might collude while providing loans to customers in order to protect their profits have not been ruled out. It has also not been established, in this research, whether or not Roger and Vitek (2012)'s argument that in the absence of monetary policy response to the increase in margins between commercial bank lending rates and central policy rate, one percentage synchronised increase in capital requirements would lead

to negligible zero point five percent in GDP. If that is the case, the change in domestic lending as a percentage of GDP would not be visible between the years in which the regulations were implemented.

The business cycle fluctuations do not seem to have an effect on the lending activities of the banks as feared by (Drumond, 2009). The latter author acknowledged, though, that the conclusion was based on the assumption that it might be difficult for the banks to raise new capital as it would be expensive during the downturns. Therefore, there has not been a noticeable downturn since authors' suggestions were made.

Agénor *et al*.'s (2012) pointed that high levels of capital, as guided by Basel II, encourage the lenders to screen and observe the borrowers more carefully before providing loans can be attributed to the findings of this research. The banks are able to offer more loans if the risk of default and the probability of repayments are within their desired benchmarks.

6.9 Conclusion

The findings of this research are supported by Pasiouras *et al*. (2009) regarding the positive impact of stricter capital requirements on cost efficiency and profit efficiency as long as financial distress is not envisaged. The inclusion of the impact of increased regulations on overall lending activities of the countries which implemented them, in the authors' study would not have produced different results.

Although limited to the study of 67 countries which implemented Basel II as at 2012 and those which The World bank had collated domestic lending rates as a percentage of GDP, it can be concluded that the implementation of increased capital regulations as guided by Basel II did not negatively affect the lending business of commercial banks to their customers. This research has confirmed what most authors have been arguing; that the implementation has and will enhance the banking system and ensure safety against another possible financial crisis.

7 CHAPTER SEVEN: CONCLUSION

7.1 Introduction

This chapter highlights the main findings of this research and provides the recommendations, to the BCBS, which might lead to acceptance of the latest banking system regulations, Basel III, and ultimate implementation by all the countries in the world. The areas for further studies are also highlighted in this chapter.

7.2 Research findings

This research has established that the implementation of increased capital requirements regulations, as guided by Basel II, did not have a negative impact on the level of domestic lending in the countries which implemented them. In addition to the countries which implemented the regulations as at 2012, this research was limited to the countries whose lending rates as a percentage of GDP were provided to The World Bank as at the end of 2012 calendar year.

From the data that have been collected by The World Bank and were found usable for this research, it has been established that the level of country development (emerging market or advanced economy) and the period in which the regulations were implemented (before the global financial crisis or after and up to 2012) had no effect on the results of this research.

It should be noted that it was the individual countries' choice whether or not to implement and the timing of the compliance with the Basel Accord regulations. It has also been established that each country is at liberty to choose the level of compliance with the regulations. It is therefore not known if the results would be different if all the countries had implemented the regulations at a same time.

It should be noted that even the domestic lending as a percentage of GDP of the European countries; Greece, Ireland, Italy, Portugal and Spain, increased after implementation of Basel II in 2008. The increment was

sustained until 2010. It should be born in mind that these troubled Euro Zone countries failed to generate enough economic growth to pay their debts when due.

The crucial function of the commercial banks in the economy has been acknowledged by most of the studies referred to in this research document The application of necessary banking regulations to banks which operate across countries and have a systemic importance in the countries which they operate has been welcomed.

As stated by (Elliott *et al*., 2012), the banking sector has acknowledged, since the 2008 financial crisis, that the banks need to hold considerably higher levels of capital. Hence the introduction of Basel III. The banks which do not meet the increased ratios will be running a risk of being taken over by the regulators.

Despite the studies which have been conducted at various levels, including regions and country specific, there are still concerns about the possible implications of implementing stricter capital requirements regulations. The arguments by Elliot (2013) include the disregard of tax effects, the assumption that the government would rescue the failing banks, difficulties of raising additional capital, market perceptions regarding the safety of capital, challenges of the transition between the regulations and an attempt to move banking into non-banking institutions, by the proponents of the regulations.

The attainment of the objectives of Basel III will need a complete understanding of the nine “breakthroughs” mentioned in chapter one. With the implementation expected over a period of 6 years, the transitional costs may be spread over similar accounting periods and may therefore lead to minimal increases in lending rates.

It is possible that the equity holders accepted the reduced rate of return on their investments as they realised the need to comply with the new regulations and at the same time grow their businesses. In order to avoid

the repeat of 2008 global financial crises, it is possible that the bankers recognised a need to pursue dividend and bonus payment policies that are consistent with sound capital conservation principles.

The global financial crisis has shown that there is no financial institution which is too big to fail and the banks' internal risk and liquidity management models are not sufficient to protect their businesses. The banks have probably learned that due diligence is imperative on all levels of dealings with the clients.

The results of this research confirm the important role played by the banking sector in the economy of the countries in which they operate. As their failure can lead to disastrous consequences, the financial system in which they operate should be governed by well thought rules in order to protect all stakeholders. The bankers need the borrowing customers as much as they need the depositors.

7.3 Recommendations to the regulators

In order to attain high level of implementation and compliance with the regulations, The BCBS may need to call for a World Banking Forum and invite all the countries in the world in order to encourage consultative processes regarding the design, structure, effects and implementation of the banking system regulations. The consultations would generate interest from the countries which had not implemented the regulations either due to lack of interest or necessary resources. The countries which have delayed implementation would also be assisted in order to expedite the process.

The RCAP might not be sufficient to ensure the timely adoption of Base III. The monitoring of the implementation of Basel Accords and the assessment of regulatory outcomes through completion of questionnaires is unlikely to encourage other countries to adopt the banking regulations.

The BCBS could also consider the possible effect of stricter regulations on emerging market economies and poor countries whose bank financed

projects have a considerable impact on their economy. Should these financial institutions, which would be regarded as SIB's in their respective countries, decide to reduce lending in their attempt to reach minimum capital ratios as required by the regulations, the economic activity in those countries might be negatively affected.

The regional committees could also be established so that the countries which encounter difficulties regarding the regulations and implementation could be assisted. The consultations at regional level would reduce implementation periods as region specific challenges would be dealt with by the regional experts.

The BCBS could also recommend that the countries should submit implementation progress reports at regular intervals to either their regional committees or directly to BCBS. The reports would highlight problems which the countries are facing and may lead to adjustments of certain regulatory guidelines. These might include Islamic countries whose banking practices differ from the typical banking operations practiced in non-Islamic countries.

In order to alleviate fears regarding the possibility of negative impact of changes in regulations, BCBS could recommend to countries to encourage independent bodies from the banking sector, including academics, to conduct studies in relation to such changes. The findings of such studies are likely to be accepted as reasons for biases may not be found.

7.4 Need for further research

Although various studies regarding bank regulations and supervision have been conducted, there is still a need for further research regarding the impact of increased capital requirements regulations. The research can be conducted to establish the challenges which the countries which did not implement Basel II encountered. Is it possible that these countries noticed the negative consequences of the implementation?

Further research can be done to establish detailed causal relationships between the implementation of the increased capital regulations and the debt level growths of the countries which adopted Basel II. This would be taking a descriptive design further by providing statistical test results and explanations for correlation amongst certain occurrences as described by Saunders and Lewis (2012).

Further research can be conducted to establish the reasons which led to the delay of implementation of Basel II by the countries which had not implemented the regulations but had plans to implement by a certain period. Did these countries notice a need to change a certain aspects within their banking sectors? Were (are) their economic climates not yet conducive to the implementation of stricter capital regulations?

As the legislations vary from country to country, what are the implications of implementation of increased capital requirements regulations in countries which do not have tax shields? One of the arguments against higher equity is that debt is cheaper. But this is only possible in countries which have tax shield.

Have there been changes in monetary policy in any of the countries which implemented the regulations in order to help the banking sector and economy at large, in response to the consequences of the change in banking regulations? If so, to what extend were these changes in monetary policy?

Have there been any or are there envisaged amendments to the International Financial Reporting Standards (IFRS) in response to implementing stricter capital requirements regulations. If any, what are they? Agénor *et al*. (2012) projected that the central banks will encounter difficulties in accounting for the expected losses, as International Financial Reporting Standards (IFRS) only provide for expected credit losses due to financial derivatives.

Were the expectations of shareholders required return on equity (ROE) change in response to the change in regulations? If so, by how much (rate) and why? Tsai and Lin (2013) expect the shareholder to decrease the required rate of return on equity in order to ensure minimal increase in interest rates on loans to the bank customers.

7.5 Conclusion

This research examined various claims and arguments that assert that increased capital requirements regulations for the banks have minimal impact of their overall operations. A few articles argued against this notion as there is no evidence of empirical studies proving that all the costs associated with the implementation of the regulations have been considered. The antagonists further refuted that the assumptions under which the proponents of the regulations base their arguments cannot be applied on all the countries which are expected to adopt the stricter regulations.

Despite lack of evidence regarding the assumptions stated by both sides, this research has established that the increased capital requirements regulations did not have a negative impact of the levels of domestic lending offered in countries which implemented them. It should be noted, though, that this findings were based on data collected from 67 countries which participated in The Survey and whose domestic lending data were available from The World Bank database. This represents only 52% of the countries which participated in and completed the questionnaires of The Survey satisfactorily and had also provided their domestic lending data to The World Bank. They represent just over 36% of all the countries in the world.

As Basel Accord regulations are not laws and cannot be imposed on any country or banking sector, the findings of this research should be deemed valid. The research questions were based on the countries which implemented the increased capital requirements regulations and so are these results. The implementation of increased capital requirements regulations do not affect the domestic lending negatively. The global financial sector needs to avoid the repeat of 2008 financial crisis.

Implementation of international rules will protect the domestic economies and corporations which operate on the global scale.

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9 APPENDICES

9.1 Appendix 1. List of Basel Committee on Bank Supervision member Countries as at 2012

1. Argentina
2. Australia
3. Belgium
4. Brazil
5. Canada
6. China
7. France
8. Germany,
9. Hong Kong SAR
1 India
2 Indonesia
3 Italy
4 Japan
5 Korea,
6 Luxembourg,
7 Mexico
8 The Netherlands
9 Russia
10 Saudi Arabia
11 Singapore
12 South Africa
13 Spain
14 Sweden
15 Switzerland
16 Turkey
17 The United Kingdom
18 The United States

9.2 Appendix 2. Emerging market economy countries which implemented Basel II by 2012(sorted by year of implementation)

EMERGING MARKET ECONOMIES													
			Domestic lending rates as a percentage of GDP										
	Country Name	Year	Y2004	Y2005	Y2006	Y2007	Y2008	Y2009	Y2010	Y2011	Y2012		Before rate	After rate
1	Belarus	2005	21	22	27	27	33	34	45	32	32		21.210	21.763
2	Kuwait	2005	70	62	62	69	65	87	66	50			70.000	62.000
3	Qatar	2006	43	44	42	51	52	76	70	70			44.000	42.000
4	Pakistan	2006	43	46	45	48	53	48	46	43	45		46.000	45.000
5	Oman	2007	34	28	28	33	29	41	38	32			28.000	33.000
6	Philippines	2007	54	47	48	48	47	49	49	52	51		48.000	48.000
7	Morocco	2007	68	73	78	90	98	100	104	111	114		78.000	90.000
8	Armenia	2008	7	9	8	12	19	22	28	36	44		12.000	19.000
9	Romania	2008	17	21	24	35	46	52	54	52	54		35.000	46.000
10	Poland	2008	38	37	42	46	60	61	64	66	64		46.000	60.000
11	Costa Rica	2008	43	44	44	48	54	55	51	53			48.000	54.000
12	Nepal	2008	42	42	45	50	65	69	67	67	67		50.000	65.000
13	Bulgaria	2008	35	40	41	56	64	70	71	71	71		55.639	64.266
14	Bahrain	2008	48	50	47	56	67	85	75				56.462	67.267
15	Lithuania	2008	31	43	49	60	64	70	65	57	52		60.000	64.000
16	India	2008	58	58	61	61	68	70	72	74	77		60.810	67.674
17	Croatia	2008	58	64	69	72	75	78	92	97	96		72.000	75.000
18	Hungary	2008	58	62	68	76	81	81	82	76	68		76.000	81.000
19	Montenegro	2008	17	18	36	78	88	76	68	62	58		78.000	88.000
20	Slovenia	2008	13442	15676	17521	82	87	93	97	93	93		82.000	87.000
21	Latvia	2008	54	72	90	90	89	94	90	79	63		90.000	89.000

EMERGING MARKET ECONOMIES *(Continued)*

			Domestic lending rates as a percentage of GDP											
	Country Name	**Year**	**Y2004**	**Y2005**	**Y2006**	**Y2007**	**Y2008**	**Y2009**	**Y2010**	**Y2011**	**Y2012**		**Before rate**	**After rate**
22	Mauritius	2008	102	107	106	99	108	100	103	106	114		99.000	108.000
23	Jordan	2008	91	110	109	114	111	105	100	107	113		114.00	111.000
24	Thailand	2008	125	119	109	132	131	137	143	159	169		132.00	131.000
25	Korea, Rep.	2008	129	133	147	154	171	170	163	165	169		154.00	171.000
26	South Africa	2008	175	186	200	202	176	189	192	178	80		202.00	176.000
27	Bangladesh	2009	52	55	58	58	59	60	66	70	69		59.000	60.000
28	United Arab Emirates	2009	36	43	49	60	73	98	92	81			73.000	98.000
29	Peru	2010	16	17	15	16	19	19	18	19	18		19.000	18.000
30	Namibia	2010	50	56	53	48	44	46	53	51	51		46.000	53.000
31	Malaysia	2010	127	118	115	109	111	131	127	129	134		131.00	127.000
32	Lebanon	2010	178	177	190	182	168	164	173	174	176		164.00	173.000
33	Mexico	2011	32	32	35	37	37	44	45	45	47		45.000	45.000
34	Vanuatu	2011	44	45	42	43	50	60	64	68			64.000	68.000
35	Burundi	2012	28	25	30	25	21	24	26	28	26		27.913	26.044
36	Argentina	2012	45	38	31	29	24	28	29	31	37		31.000	37.000
37	Indonesia	2012	50	46	42	41	37	37	36	39	43		39.000	43.000
38	Serbia	2012	25	29	26	32	40	48	60	57	62		57.000	62.000
39	Turkey	2012	41	46	46	49	53	63	70	69	72		69.000	72.000
40	Brazil	2012	73	74	87	92	97	93	96	101	111		101.00	111.000
41	China	2012	140	134	133	128	121	145	146	145	155		145.00	155.000

9.3 *Appendix 3. Advanced* market economy countries which implemented Basel II by 2012(sorted by year of implementation)

ADVANCED ECONOMIES													
			Domestic lending rates as a percentage of GDP										
	Country Name	Year	Y2004	Y2005	Y2006	Y2007	Y2008	Y2009	Y2010	Y2011	Y2012	Before rate	After rate
1	Switzerland	2006	168	171	175	178	174	187	183	185	193	171.000	175.000
2	Hong Kong SAR, China	2007	144	140	132	123	122	164	195	207	201	132.000	123.000
3	Iceland	2007	164	242	305	314	186	183	167	148	143	305.000	314.000
4	Slovak Republic	2008	43	48	50	52	54					52.000	54.000
5	Finland	2008	70	77	82	85	88	98	101	102	104	85.000	88.000
6	Estonia	2008	60	68	81	90	96	106	99	86	79	90.000	96.000
7	Belgium	2008	102	103	109	112	113	119	117	117	117	111.669	113.057
8	Greece	2008	95	107	109	114	116	116	149	153	136	114.000	116.000
9	France	2008	106	109	115	122	124	129	133	133	136	122.000	124.000
10	Germany	2008	139	137	132	125	127	133	131	125	124	125.000	127.000
11	Austria	2008	122	130	130	127	131	140	137	135	133	126.903	130.850
12	Italy	2008	103	107	112	128	132	142	156	157	168	128.000	132.000
13	New Zealand	2008	119	128	137	141	154	155	158			141.000	154.000
14	Australia	2008	108	113	118	147	160	151	155	153	154	147.000	160.000
15	Canada	2008	194	203	220	154	178					154.000	178.000
16	Portugal	2008	139	144	155	166	178	195	209	204	199	166.000	178.000
17	United Kingdom	2008	154	161	171	187	212	228	222	213	210	187.000	212.000
18	Ireland	2008	133	159	180	196	209	223	232	222	202	196.000	209.000
19	Netherlands	2008	170	177	178	198	196	223	212	211	216	198.000	196.000
20	Spain	2008	140	159	177	198	214	229	234	231	221	198.000	214.000
21	Denmark	2008	165	178	190	205	209	222	215	205	207	205.000	209.000

ADVANCED ECONOMIES *(Continued)*

			Domestic lending rates as a percentage of GDP										
	Country Name	**Year**	**Y2004**	**Y2005**	**Y2006**	**Y2007**	**Y2008**	**Y2009**	**Y2010**	**Y2011**	**Y2012**	**Before rate**	**After rate**
22	Cyprus	2008	188	191	204	224	280	303	316	326	344	224.000	280.000
23	United States	2008	222	225	236	244	224	233	225	226	229	244.000	224.000
24	Malta	2009	134	128	132	136	144	157	156	155	154	144.000	157.000
25	Cayman Islands	2011							122	124	119	122.000	124.000
26	Luxembourg	2012	98	127	152	183	194	197	188	172	167	172.000	167.000

9.4 *Appendix 4.* Countries which planned to implement Basel II and the respective year of implementation

STILL TO IMPLEMENT (BOTH EMERGING AND ADVANCED ECONOMIES)												
				Domestic lending rates as a percentage of GDP								
	Country Name	Wealth level	Year	Y2004	Y2005	Y2006	Y2007	Y2008	Y2009	Y2010	Y2011	Y2012
1	Botswana	1	2013		-5	-15	-18	-13	-1	10	8	15
2	Egypt, Arab Rep.	1	2013		98	93	84	78	75	69	75	79
3	Moldova	1	2013		32	35	40	40	41	37	39	42
4	Mozambique	1	2013		8	8	10	14	23	25	25	28
5	Seychelles	1	2013		104	89	78	66	44	51	46	39
6	Sri Lanka	1	2013		44	47	45	43	40	40	46	48
7	Guatemala	1	2014		34	39	39	37	37	37	37	39
8	Lesotho	1	2014		-1	-6	-18	-18	-15	-6	1	3
9	Malawi	1	2014		17	14	16	26	30	30	38	36
10	Sierra Leone	1	2014		19	17	9	12	14	17	16	14
11	Uruguay	1	2014		37	31	24	34	29	33	30	32
12	Benin	1	2015		12	10	9	15	19	18	22	20
13	Bhutan	1	2015		15	13	14	12	31	39	47	50
14	Burkina Faso	1	2015		15	15	12	15	15	16	18	20
15	Cote d'Ivoire	1	2015		18	18	21	20	23	25	25	27
16	El Salvador	1	2015		59	58	61	61	63	65	66	66
17	Gambia, The	1	2015		20	23	21	28	31	39	44	44
18	Guinea-Bissau	1	2015		5	6	6	7	5	8	14	19
19	Kosovo	1	2015		11	7	3	11	14	18	21	22
20	Mali	1	2015		16	14	14	13	11	12	17	20
21	Niger	1	2015		11	8	7	6	13	13	15	14

STILL TO IMPLEMENT (BOTH EMERGING AND ADVANCED ECONOMIES) *(Continued)*												
				Domestic lending rates as a percentage of GDP								
	Country Name	**Wealth level**	**Year**	**Y2004**	**Y2005**	**Y2006**	**Y2007**	**Y2008**	**Y2009**	**Y2010**	**Y2011**	**Y2012**
22	Russian Federation	1	2015		22	22	24	24	34	37	39	42
23	Senegal	1	2015		22	23	24	24	27	29	31	31
24	Togo	1	2015		18	17	22	23	27	32	35	38
25	Bosnia and Herzegovina	1	2016		40	56	62	67	53	64	65	67
26	Ukraine	1	2016		33	46	61	83	89	80	75	74
27	**Virgin Islands (U.S.)**	**2**	**2015**									

9.5 *Appendix 5. C*ountries which had neither implemented nor had shown intentions of implementing Basel II

NO PLANNED IMPLEMENTATION										
		Domestic lending rates as a percentage of GDP								
	Country Name	Y2004	Y2005	Y2006	Y2007	Y2008	Y2009	Y2010	Y2011	Y2012
1	Angola		2	-6	2	9	29	23	18	17
2	Belize		62	63	69	70	73	70	67	
3	Chile		79	79	85	93	70	66	70	74
4	Colombia		50	52	53	55	62	66	65	70
5	Dominican Republic		31	38	40	41	44	43	44	46
6	Ecuador		18	17	20	20	20	23	24	
7	Ethiopia		50	47	42	37				
8	Fiji		112	122	120	126	140	131	114	117
9	Guyana		99	60	52	50	49	49	51	51
10	Honduras		38	43	51	52	55	53	53	58
11	Iraq		-2	-4	-11	-16	-10	-1	-1	-2
12	Jamaica		56	54	53	58	60	51	50	52
13	Kazakhstan		25	32	41	54	55	45	40	42
14	Kenya		38	38	37	40	43	51	52	52
15	Kyrgyz Republic		9	12	14					
16	Madagascar		13	10	10	9	12	10	12	13
17	Maldives		55	58	72	78	85	84	79	70
18	Myanmar									
19	Nicaragua		62	58	57	53	51	48	45	44
20	Nigeria		9	5	20	27	37	31	37	35
21	Panama		90	91	88	86	83	87	90	89

NO PLANNED IMPLEMENTATION *(Continued)*										
		Domestic lending rates as a percentage of GDP								
	Country Name	**Y2004**	**Y2005**	**Y2006**	**Y2007**	**Y2008**	**Y2009**	**Y2010**	**Y2011**	**Y2012**
22	Paraguay		17	16	17	23	27	30	32	37
23	Puerto Rico									
24	Samoa		36	42	45	46	46	45	47	46
25	Suriname		27	23	24	24	26	27	24	29
26	Swaziland		17	13	6	2	8	17	27	21
27	Tajikistan		16	15	27					
28	Tanzania		12	11	14	17	18	21	24	25
29	Tonga		48	46	51	47	43	40	29	27
30	Trinidad and Tobago		23	19	23	15	33			
31	Tunisia		64	64	64	66	68	74	82	82
32	Uganda		9	8	5	12	12	17	19	16
33	Venezuela, RB		13	18	20	20	26	23	29	42
34	Yemen, Rep.		6	5	10	11	20	19	23	27
35	**Macao SAR, China**		**2**	**-3**	**-5**	**-8**	**-17**	**-21**	**-28**	**-13**

9.6 Appendix 6 Basel II implementation and domestic lending data (Combined)

BASEL II IMPLEMENTATION DATA and DOMESTIC LENDING DATA														
			Domestic lending rates as a percentage of GDP											
	Country Name	Year	Y2004	Y2005	Y2006	Y2007	Y2008	Y2009	Y2010	Y2011	Y2012		Before rate	After rate
1	Belarus	2005	21	22	27	27	33	34	45	32	32		21.210	21.763
2	Kuwait	2005	70	62	62	69	65	87	66	50			70.000	62.000
3	Qatar	2006	43	44	42	51	52	76	70	70			44.000	42.000
4	Pakistan	2006	43	46	45	48	53	48	46	43	45		46.000	45.000
5	Oman	2007	34	28	28	33	29	41	38	32			28.000	33.000
6	Philippines	2007	54	47	48	48	47	49	49	52	51		48.000	48.000
7	Morocco	2007	68	73	78	90	98	100	104	111	114		78.000	90.000
8	Armenia	2008	7	9	8	12	19	22	28	36	44		12.000	19.000
9	Romania	2008	17	21	24	35	46	52	54	52	54		35.000	46.000
10	Poland	2008	38	37	42	46	60	61	64	66	64		46.000	60.000
11	Costa Rica	2008	43	44	44	48	54	55	51	53			48.000	54.000
12	Nepal	2008	42	42	45	50	65	69	67	67	67		50.000	65.000
13	Bulgaria	2008	35	40	41	56	64	70	71	71	71		55.639	64.266
14	Bahrain	2008	48	50	47	56	67	85	75				56.462	67.267
15	Lithuania	2008	31	43	49	60	64	70	65	57	52		60.000	64.000
16	India	2008	58	58	61	61	68	70	72	74	77		60.810	67.674
17	Croatia	2008	58	64	69	72	75	78	92	97	96		72.000	75.000
18	Hungary	2008	58	62	68	76	81	81	82	76	68		76.000	81.000
19	Montenegro	2008	17	18	36	78	88	76	68	62	58		78.000	88.000
20	Slovenia	2008	13 442	15 676	17 521	82	87	93	97	93	93		82.000	87.000
21	Latvia	2008	54	72	90	90	89	94	90	79	63		90.000	89.000
22	Mauritius	2008	102	107	106	99	108	100	103	106	114		99.000	108.000
23	Jordan	2008	91	110	109	114	111	105	100	107	113		114.000	111.000
24	Thailand	2008	125	119	109	132	131	137	143	159	169		132.000	131.000
25	Korea, Rep.	2008	129	133	147	154	171	170	163	165	169		154.000	171.000
26	South Africa	2008	175	186	200	202	176	189	192	178	80		202.000	176.000

BASEL II IMPLEMENTATION DATA and DOMESTIC LENDING DATA *(Continued)*

			Domestic lending rates as a percentage of GDP											
	Country Name	**Year**	**Y2004**	**Y2005**	**Y2006**	**Y2007**	**Y2008**	**Y2009**	**Y2010**	**Y2011**	**Y2012**		**Before rate**	**After rate**
27	Bangladesh	2009	52	55	58	58	59	60	66	70	69		59.000	60.000
28	United Arab Emirates	2009	36	43	49	60	73	98	92	81			73.000	98.000
29	Peru	2010	16	17	15	16	19	19	18	19	18		19.000	18.000
30	Namibia	2010	50	56	53	48	44	46	53	51	51		46.000	53.000
31	Malaysia	2010	127	118	115	109	111	131	127	129	134		131.00	127.00
32	Lebanon	2010	178	177	190	182	168	164	173	174	176		164.00	173.00
33	Mexico	2011	32	32	35	37	37	44	45	45	47		45.000	45.000
34	Vanuatu	2011	44	45	42	43	50	60	64	68			64.000	68.000
35	Burundi	2012	28	25	30	25	21	24	26	28	26		27.913	26.044
36	Argentina	2012	45	38	31	29	24	28	29	31	37		31.000	37.000
37	Indonesia	2012	50	46	42	41	37	37	36	39	43		39.000	43.000
38	Serbia	2012	25	29	26	32	40	48	60	57	62		57.000	62.000
39	Turkey	2012	41	46	46	49	53	63	70	69	72		69.000	72.000
40	Brazil	2012	73	74	87	92	97	93	96	101	111		101.00	111.00
41	China	2012	140	134	133	128	121	145	146	145	155		145.00	155.00
42	**Switzerland**	**2006**	**168**	**171**	**175**	**178**	**174**	**187**	**183**	**185**	**193**		**171.00**	175.00
43	**Hong Kong SAR, China**	**2007**	**144**	**140**	**132**	**123**	**122**	**164**	**195**	**207**	**201**		**132.00**	123.00
44	**Iceland**	**2007**	**164**	**242**	**305**	**314**	**186**	**183**	**167**	**148**	**143**		**305.00**	314.00
45	**Slovak Republic**	**2008**	**43**	**48**	**50**	**52**	**54**						**52.000**	54.000
46	**Finland**	**2008**	**70**	**77**	**82**	**85**	**88**	**98**	**101**	**102**	**104**		**85.000**	88.000
47	**Estonia**	**2008**	**60**	**68**	**81**	**90**	**96**	**106**	**99**	**86**	**79**		**90.000**	96.000
48	**Belgium**	**2008**	**102**	**103**	**109**	**112**	**113**	**119**	**117**	**117**	**117**		**111.67**	113.06
49	**Greece**	**2008**	**95**	**107**	**109**	**114**	**116**	**116**	**149**	**153**	**136**		**114.00**	116.00
50	**France**	**2008**	**106**	**109**	**115**	**122**	**124**	**129**	**133**	**133**	**136**		**122.00**	124.00
51	**Germany**	**2008**	**139**	**137**	**132**	**125**	**127**	**133**	**131**	**125**	**124**		**125.00**	127.00
52	**Austria**	**2008**	**122**	**130**	**130**	**127**	**131**	**140**	**137**	**135**	**133**		**126.90**	130.85

BASEL II IMPLEMENTATION DATA and DOMESTIC LENDING DATA *(Continued)*														
			Domestic lending rates as a percentage of GDP											
	Country Name	**Year**	**Y2004**	**Y2005**	**Y2006**	**Y2007**	**Y2008**	**Y2009**	**Y2010**	**Y2011**	**Y2012**		**Before rate**	**After rate**
53	**Italy**	**2008**	**103**	**107**	**112**	**128**	**132**	**142**	**156**	**157**	**168**		**128.000**	132.000
54	**New Zealand**	**2008**	**119**	**128**	**137**	**141**	**154**	**155**	**158**				**141.000**	154.000
55	**Australia**	**2008**	**108**	**113**	**118**	**147**	**160**	**151**	**155**	**153**	**154**		**147.000**	160.000
56	**Canada**	**2008**	**194**	**203**	**220**	**154**	**178**						**154.000**	178.000
57	**Portugal**	**2008**	**139**	**144**	**155**	**166**	**178**	**195**	**209**	**204**	**199**		**166.000**	178.000
58	**United Kingdom**	**2008**	**154**	**161**	**171**	**187**	**212**	**228**	**222**	**213**	**210**		**187.000**	212.000
59	**Ireland**	**2008**	**133**	**159**	**180**	**196**	**209**	**223**	**232**	**222**	**202**		**196.000**	209.000
60	**Netherlands**	**2008**	**170**	**177**	**178**	**198**	**196**	**223**	**212**	**211**	**216**		**198.000**	196.000
61	**Spain**	**2008**	**140**	**159**	**177**	**198**	**214**	**229**	**234**	**231**	**221**		**198.000**	214.000
62	**Denmark**	**2008**	**165**	**178**	**190**	**205**	**209**	**222**	**215**	**205**	**207**		**205.000**	209.000
63	**Cyprus**	**2008**	**188**	**191**	**204**	**224**	**280**	**303**	**316**	**326**	**344**		**224.000**	280.000
64	**United States**	**2008**	**222**	**225**	**236**	**244**	**224**	**233**	**225**	**226**	**229**		**244.000**	224.000
65	**Malta**	**2009**	**134**	**128**	**132**	**136**	**144**	**157**	**156**	**155**	**154**		**144.000**	157.000
66	**Cayman Islands**	**2011**							**122**	**124**	**119**		**122.000**	124.000
67	**Luxembourg**	**2012**	**98**	**127**	**152**	**183**	**194**	**197**	**188**	**172**	**167**		**172.000**	167.000
68	Botswana	2013		-5	-15	-18	-13	-1	10	8	15			
69	Egypt, Arab Rep.	2013		98	93	84	78	75	69	75	79			
70	Moldova	2013		32	35	40	40	41	37	39	42			
71	Mozambique	2013		8	8	10	14	23	25	25	28			
72	Seychelles	2013		104	89	78	66	44	51	46	39			
73	Sri Lanka	2013		44	47	45	43	40	40	46	48			
74	Guatemala	2014		34	39	39	37	37	37	37	39			
75	Lesotho	2014		-1	-6	-18	-18	-15	-6	1	3			
76	Malawi	2014		17	14	16	26	30	30	38	36			
77	Sierra Leone	2014		19	17	9	12	14	17	16	14			
78	Uruguay	2014		37	31	24	34	29	33	30	32			

BASEL II IMPLEMENTATION DATA and DOMESTIC LENDING DATA *(Continued)*														
			Domestic lending rates as a percentage of GDP											
	Country Name	**Year**	**Y2004**	**Y2005**	**Y2006**	**Y2007**	**Y2008**	**Y2009**	**Y2010**	**Y2011**	**Y2012**		**Before rate**	**After rate**
79	Benin	2015		12	10	9	15	19	18	22	20			
80	Bhutan	2015		15	13	14	12	31	39	47	50			
81	Burkina Faso	2015		15	15	12	15	15	16	18	20			
82	Cote d'Ivoire	2015		18	18	21	20	23	25	25	27			
83	El Salvador	2015		59	58	61	61	63	65	66	66			
84	Gambia, The	2015		20	23	21	28	31	39	44	44			
85	Guinea-Bissau	2015		5	6	6	7	5	8	14	19			
86	Kosovo	2015		11	7	3	11	14	18	21	22			
87	Mali	2015		16	14	14	13	11	12	17	20			
88	Niger	2015		11	8	7	6	13	13	15	14			
89	Russian Federation	2015		22	22	24	24	34	37	39	42			
90	Senegal	2015		22	23	24	24	27	29	31	31			
91	Togo	2015		18	17	22	23	27	32	35	38			
92	Bosnia and Herzegovina	2016		40	56	62	67	53	64	65	67			
93	Ukraine	2016		33	46	61	83	89	80	75	74			
94	**Virgin Islands (U.S.)**	**2015**												
95	Angola	0		2	-6	2	9	29	23	18	17			
96	Belize	0		62	63	69	70	73	70	67				
97	Chile	0		79	79	85	93	70	66	70	74			
98	Colombia	0		50	52	53	55	62	66	65	70			
99	Dominican Republic	0		31	38	40	41	44	43	44	46			
100	Ecuador	0		18	17	20	20	20	23	24				
101	Ethiopia	0		50	47	42	37							
102	Fiji	0		112	122	120	126	140	131	114	117			
103	Guyana	0		99	60	52	50	49	49	51	51			
104	Honduras	0		38	43	51	52	55	53	53	58			

BASEL II IMPLEMENTATION DATA and DOMESTIC LENDING DATA *(Continued)*

			Domestic lending rates as a percentage of GDP											
	Country Name	**Year**	**Y2004**	**Y2005**	**Y2006**	**Y2007**	**Y2008**	**Y2009**	**Y2010**	**Y2011**	**Y2012**		**Before rate**	**After rate**
105	Iraq	0		-2	-4	-11	-16	-10	-1	-1	-2			
106	Jamaica	0		56	54	53	58	60	51	50	52			
107	Kazakhstan	0		25	32	41	54	55	45	40	42			
108	Kenya	0		38	38	37	40	43	51	52	52			
109	Kyrgyz Republic	0		9	12	14								
110	Madagascar	0		13	10	10	9	12	10	12	13			
111	Maldives	0		55	58	72	78	85	84	79	70			
112	Myanmar	0												
113	Nicaragua	0		62	58	57	53	51	48	45	44			
114	Nigeria	0		9	5	20	27	37	31	37	35			
115	Panama	0		90	91	88	86	83	87	90	89			
116	Paraguay	0		17	16	17	23	27	30	32	37			
117	Puerto Rico	0												
118	Samoa	0		36	42	45	46	46	45	47	46			
119	Suriname	0		27	23	24	24	26	27	24	29			
120	Swaziland	0		17	13	6	2	8	17	27	21			
121	Tajikistan	0		16	15	27								
122	Tanzania	0		12	11	14	17	18	21	24	25			
123	Tonga	0		48	46	51	47	43	40	29	27			
124	Trinidad and Tobago	0		23	19	23	15	33						
125	Tunisia	0		64	64	64	66	68	74	82	82			
126	Uganda	0		9	8	5	12	12	17	19	16			
127	Venezuela, RB	0		13	18	20	20	26	23	29	42			
128	Yemen, Rep.	0		6	5	10	11	20	19	23	27			
129	Macao SAR, China	0		2	-3	-5	-8	-17	-21	-28	-13			

Notes:
Advanced economies countries captioned in **bold**.
Year : Year of Basel II implementation, or planned implementation, 0= no planned implementation