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Verfasst von

Oana Loredana Pirnuta, Lic.

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List of abbreviations

BCBS - Basel Community on Banking Supervision
FSAP - Financial System Assessment Procedure
BIS - Bank for International Settlements
GDP - Gross Domestic Product
IFRS - International Financing Reporting Standards
CDS - Credit Default Swap
CEBS - Community of European Banking Supervisors
ABCP - Asset-Backed Commercial Paper
ABSs - Asset-Backed Securities
CDOs - Collateralized Debt Obligations
WACC - Weighted Average Cost of Capital
ROE - Return on Equity
MM - Modigliani Miller
Introduction

Equity requirements have been a highly debated issue after the financial crisis with supporters maintaining that increasing banks’ equity will be one of the best solutions to reach a sound financial system. Opponents, on the other hand, claim that increasing equity will drive the economy to a collapse.

Coerced by the financial crisis to operate quickly, regulators and supervisors have called for regulatory measures without questioning the causes why the system was incapable to cope with a crisis and without giving an empirical analysis of the anticipated effects of the implemented measures.

In order to test the effectiveness of their measures, regulators should be able to resolve the question, what will happen, in the event of a new financial crisis? Are the implemented steps able to deal successfully with a new financial crisis or with a macroeconomic shock? Are the reforms, which were contracted after the financial crisis capable to establish up a system that does not encourage competition in laxity, but it promotes an organic development of banks? Going further into these questions is of utmost importance, since inefficiencies of the banking system can affect the entire society due to their harmful externalities.

As far as I am concerned, I tend to believe that in spite of stricter regulation one of the basic problems of the system, i.e. that banks can operate with considerably high leverage, still remains unsolved. Regulators and supervisors, influenced in their decision by the lobbying group that increasing banks’ equity will create high distortions in the economic system, proposed only a slim increase in the equity ratio, from 2.0 to 4.5 percent with a counter-cyclical buffer of 0-2.5 percent.1

The goal of this master thesis is to provide evidence that a considerably higher increase in equity requirements and an eradication of the risk-adjusted approach of

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1 See Admati et al. (2013), P.140.
Basel will be the best course of action that regulators could take in order to build up a sound financial system and to prevent a future financial crisis from occurring.²

A large body of literature analyzes the theme of capital regulation, especially after the event of the financial crisis. Some important articles suggest that regulators should focus their attention on increasing equity requirements.³ Hellwig (2010) affirms that one major cause of the fragility of the financial system was undercapitalization, which was induced by the risk-based approach of Basel.

Nevertheless, there are papers that demonstrate that changing the banks’ capital structure to more equity will determine the increase of the lending rate.⁴ As a result, the economic activities (GDP) should go down due to an increase in the overall funding capital costs of the bank.⁵ However, Kashyap et al. (2010) and Miles at al. (2011) provide empirical arguments that increasing equity gradually over a certain period will not induce changes in the interest rate and on the economy. The article of Backer et al. (2013) asserts that higher equity requirements may increase the overall capital cost of the bank and simultaneously the lending rate, but to his mind, an increase of funding costs and of the interest rate is a viable solution, since the amount of the taxpayers money used to bail out banks will decrease.

It may be true that increasing equity and eradicating the risk-based approach will pose more or less troubles to the banking system. However, in order to avoid this, some financial experts suggest that banks should act professionally and choose the best fitted method to increase equity.⁶ Furthermore, they should consider a long-term of the implementation period.⁷

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² See Admati et.al (2013) and Hellwig (2010).
⁴ See Brinkmann et al. (1995), Ediz et al. (1998), Hancock et al. (1995) and Ediz et al. (1998).
⁵ See Godhart (2010).
⁶ See Acharya et al. (2013) and Admati et.al (2013).
⁷ See Kashyap et al (2010).
Apart from this, other papers pinpoint that increasing equity without a minimal regulation of the shadow banking system will provide great incentives for the banks to move their intermediation activities to the shadow banking. 8

This master thesis distinguishes itself among other papers because it provides a constructive analysis of the banking system’s drawbacks and it gives feasible and simple solutions to improve the system. The thesis is organized as follows.

The first section provides a deeper analysis of the role that capital regulation plays in the banking system. The idea that banks can regulate themselves only through market activities and that the liberalization of the global banking system will create economic value proved during the financial crisis to be inaccurate. This section proposes to clarify the role of the capital regulation and to furnish information about the benefits of capital regulation for society. To my mind, it is important for regulators and supervisors understand the major objective of capital regulation, i.e. to protect society from banks’ negative externalities because otherwise the lobbyist group can launch defective policies that can harm society. 9

Section two reviews the major causes of the financial crisis and underlines the great distortions created by the government subsidies and the tax shield. The analysis of the causes of the financial crisis is essential to figure out the flaws of the system and to extract the inadequate concepts from the regulatory framework and from economic policies. 10

Moreover, in order to rebuild a healthy system, it is mandatory to be conscious of the intermediation process employed by the traditional banking system to create value. Therefore, this part explains the functions of the banking system and underlines that an effective regulation should try to create incentives for banks to return to their intermediation process. That would block the transfer of intermediation activities in the shadow banking system. 11

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8 See Acharya et al. (2013) and Kahyap et al. (2010).
10 See Admati et.al (2013) and Kashyap et al. (2010).
11 See Admati et.al (2010) and Hellwig (2010).
The following section deals with an analysis of the advantages and drawbacks of one of the easiest ways to create a safer banking system, i.e. a considerable increase of equity requirements and a reduction of bank leverage. The facts and the myths about the higher equity requirements are discussed in this section thoroughly. In addition, this section will expose some methods for banks to increase equity without cutting down lending activities. 12

The fifth part of this thesis illustrates that one of the guiding principles of Basel, the risk-adjusted approach has stimulated banks to manipulate the risk and to become undercapitalized. This part highlights that Basel III, the international regulation framework issued after the crisis, still presents major loopholes that have to be removed. For instance, the slight increase of the equity requirement from 2 to 4.5 % from riskier assets will only determine banks to invest in low-risk-assets, such as government bonds or in opaque securities where the risk can be easily downplayed, and not in small and medium enterprises.13

The last section summarizes the conclusion and provides further recommendation for the banking system.

1. The Rationale for Capital Regulation in the Banking System

There has been a great deal of discussion in the media about capital regulation after the financial crisis. The major issue of these discussions was the necessity of imposing capital regulation to financial institutions. Why should government, regulators or supervision offer suggestions on how much risk the financial institutions should take, since their people are qualified for managing with financial products and have the necessary tools to evaluate the risk they assume.14

In order to understand if capital regulation is necessary, it may be of utmost importance to analyse the logic behind capital regulation and the signification of capital regulation. To put it simply, capital regulation signifies a mix of debt and

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13 See Adrian et al. (2012) and Admati et.al (2013).
14 See Goodhart (2010), P.166.
equity that should increase the ability of a bank to absorb losses. In the literature, it was shared the view that the task of capital regulation is mostly to assure that banks, as individual entities, will be able to absorb unexpected losses. Therefore, capital regulation was handled as a capital buffer that should permit the supervisor in time of crisis to intervene in order to avoid the insolvency of the bank.\textsuperscript{15}

The role of the capital regulation is indeed to work as capital buffer, but from a macroeconomic perspective the rationale of regulation is to avoid social externalities’ costs and bankruptcies costs of large, interconnected financial intermediaries and to protect the non-professional consumers. Therefore, the capital banking regulation is important in order to prevent bank’s behavior to harm the society.\textsuperscript{16}

Actually, the crisis was only a problem of capital deregulation because the bankers and their professional investors have not been able to internalize the risk by holding enough equity to absorb losses.\textsuperscript{17} In the last quarter of the 21st century, capital deregulation pushed the banking system to create complex financial innovations and encouraged the development of the shadow\textsuperscript{18} banking system.\textsuperscript{19} Facing financial problems, savings banks invested in very risky assets such as junk bond (high percent of default, high interest rate) with the hope to recover through shadow banking.\textsuperscript{20}

In the light of these evidences the question is, why did governments and supervisors allow the banking sector to become deregulated? Lobbyist campaign had brought forward the argument that regulation is unnecessary because banks can regulate themselves through market activities and regulation would slow down economical growth. Politicians have also supported this viewpoint because they receive financial assistance from banks for their political campaign. Nevertheless, to advance the view

\textsuperscript{15} See Hellwig (2010), P.9.
\textsuperscript{16} See Goodhart (2010), P.170.
\textsuperscript{17} See Admati et al. (2013), P.49.
\textsuperscript{18} The shadow banking system sums all the banks up, which intermediate funds through diverse securitization techniques such as asset-backed commercial paper (ABCP), asset-backed securities (ABS), collateralized debt obligations (CDOs) and repurchase agreements (repos). See for a better understanding Adrian et al. (2012), P.1.
\textsuperscript{19} See Admati et al. (2013), P.166.
\textsuperscript{20} See ibidem, P.49.
that regulation is redundant signifies to neglect the importance of regulators’ activities, i.e. to disregard the protection they offer to the non-professional customers and to neglect the supervision of banking activities that is performed to the benefits of the society.\footnote{See ibidem, P. 150.}

It may be possible up to a point, that banks can regulate themselves through market activities, but this is the case only when they have enough equity to bear the consequences of the risk they take. However, the objective of the regulation is to keep the system functional, and not to overload the banking system with complicated capital requirements to decrease economical growth. Additionally, supervisors and regulations policies are important because many banks are choosing the same lending strategy, and if the loans are doing badly, they will break down all banks at the same time and the central bank has to intervene in order to save the banking system from the collapse.\footnote{See ibidem, P.224.}

Lobbyists also strengthened the case against regulation by coming up with the idea to introduce a risk-related bank levy, which should have removed equity requirements.\footnote{Risk-related bank levy is a type of taxation only for financial institution where banks have to pay taxes correlated to the risk they take to the government. See Investopedia, http://www.investopedia.com/terms/b/bank-levy.asp, accessed at 16.05.2014.} A risk-related bank levies approach is inadequate since it disregards the importance of equity requirements, such as the avoidance of externalities in case of bankruptcy and the protection of the consumer. This idea can be translated into higher social externalities costs, higher bankruptcy costs, low consumer protection and higher asymmetric information between financial advisors and their clients.\footnote{See Goodhart (2010), P.170.}

In any case, the major purpose of regulation, nowadays should be to offer incentives for banks to return to their intermediation activities and to forward the system to more simplicity.\footnote{See Pakravan (2011), P.232.}

Regulation can work effectively and can be a good instrument in the market, only if equity requirements are much higher and consequently the leverage decreases.\footnote{See ibidem, P. 150.}
Nowadays a deep rethinking of the financial system with long-term solutions is imperious because the system cannot afford a new crisis. The role of regulation should be to reduce incentives for banks to offer poor quality financial products and to make the system capable of facing a possible future crisis.  

2. The Major Causes of Financial Crisis

The financial crisis has shaken the world, quick changes were undergone by the financial institution to avoid collapse and the confidence of market participants into the system had fallen dramatically. In fact, financial crises had been the last straw that broke the camel’s back.

Instead of elaborating stricter regulation, a thorough re-examination of the globalized financial system is highly needed. It is important to recognize that regulators, supervisors, bankers and politicians can create a financial system only if they understand correctly both the causes of the financial crisis and the function of the system as an interconnected one.  

It was widely recognized that the subprime mortgage securitization in the USA was actually the catalyst and not the major cause of the financial crisis. In fact, the failure of the global financial system happened due to the fragility of the major financial institution and high interconnectedness of “too-big-to-fail” banks as well.  

The interconnectedness of the system was stimulated by the Basel approach that calculated the necessary equity requirement in accordance to the riskiness of the assets. The risk-weighted approach of the Basel framework fostered the interconnectedness, but also the technical development of financial innovation.

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26 Banks are financed mostly with debt, equity represents in the best cases 10 percent, but often it is only 5 percent or even less. See Admati, et al (2013), P.32.
28 See Hellwig (2010), P.3.
A classic example of the Basel approach failure is the misuse of credit default swap (CDS). CDSs were used to shift the risk to other investors in order to escape capital regulation, without questioning the insurer’s abilities to provide the payment in case of default.  

In addition to the interconnectedness, the fragility played an enormous role in the failure of the financial system. Broadly speaking, the fragility of the whole system was induced by the undercapitalization of the bank and by the abused of maturity transformation activities. Maturity transformation advanced the expansion of the shadow banking system, a system that allowed to non-financial institution to finance bank’s activities by issuing short-term debt and then investing in long-term maturity assets.

Maturity transformation finances long-term investment with short-term debt, such as deposits. It presents not only a high risk of liquidity problem due to the differences in maturities, but also a high risk of insolvency. For instance, if the interest rate of the mortgage loan is fixed and the interest rate on deposits become higher, there will be a high probability for the bank to become insolvent. To skip the risk induced by maturity transformation, the solution found was the securitization of mortgages.

Securitization signifies that different risky long-term maturity assets were brought under one roof as a tradable asset, named asset-backed security and put into the financial markets. These kind of asset-backed securities were traded through a structured investment vehicle (SIV), a highly leveraged subsidiary of the bank, which should not fulfill the capital regulation rule because it was guaranteed by private investors and not by the government. So, the banks preferred to invest in these ABSs due to the low level of equity required to hold them. Actually, equity requirements had been closer to zero. During the crisis, refinancing these securities through short-term debt issuance was not any more possible because bank’s investors

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30 See Admati et al. (2013), P. 138.
31 Non-financial institutions were not subject to capital regulation.
32 See Hellwig (2010), P.3.
33 See Admati et al. (2013), P. 121.
34 See ibidem, P.120.
realized that these securities posed a large degree of risks. As a result, banks were forced to include these long-term assets in their own books.\footnote{See Kashyap et al. (2010), P.27.}

The problem arose when the banks did not hold on their balance sheet enough equity to cover the losses of these securities and they had to declare insolvency. Some of the banks have tried unsuccessfully to raise more equity and to deleverage by selling assets. However, banks could not raise equity since confidence in financial markets was decreasing and deleveraging with a low level of equity was a difficult task. For example, a deleverage multiplier for a bank having only 2.5% equity was around 40\footnote{Total asset (100%) divided by equity (2.5%) gives a deleverage multiplier of 40.}, which meant that for a loss of one dollar they had to sell assets which were worth 40 dollars.\footnote{See Hellwig (2010), P.4.} Consequently, the deleveraging multipliers will be much lower if the equity requirements are higher and the bank will not have to sell a high percentage of its assets. For example, holding 20% equity, the deleveraging multipliers will be five, that will mean that for a loss of 1 dollar, the banks will sell assets of 5 dollars.\footnote{See ibidem, P.11.}

Moreover, another cause of the crisis was the absence of a harmonized definition of regulatory capital at the international level. Neither Basel Community responsible for the international regulatory framework, nor Community of European Banking Supervisors (CEBS) were able to extract this major gap from the regulatory framework, even though CEBS identified this problem. Consequently, the bankers could easily interpret the definition of capital and declare risky securities as capital. The regulatory capital is a benchmark for market participants to measure the risk of the bank.\footnote{See Enria et al. (2011), P.8.} In contrast to accounting capital, which is composed by deducting the value of an institution's liabilities from its assets, the regulatory capital is the capital of the banks that should be capable to absorb losses at any time.\footnote{See European Commission, \url{http://europa.eu/rapid/press-release_MEMO-13-690_en.htm}, accessed at 14.05.2014.} However, risky securities of many banks treated as capital were not able to absorb any losses.
A shortage of consistency regarding the definition of regulatory capital proved interestingly that institutions with the same capital level reacted different against financial crisis. That was possible owing to the quality of capital, the availability of the capital base, the liquidity management, the effectiveness of their internal and corporate governance. The capital of the low performing institution was actually not loss absorbing and the liquidity management was failing.\textsuperscript{41}

These disagreements about regulatory capital provided incentives to bankers to issue a wide variety of capital instruments, combining elements of debt with equity, named hybrid capital instruments. These hybrid capital instruments were attached a number of complex clauses in order to be classified as regulatory capital. However, these instruments were incapable of absorbing losses in the financial crisis.\textsuperscript{42}

Another striking flaw of the system was that the rules on the supervisory field were not agreed at the international stage. Therefore, different national approaches were adopted, and even where the patterns were the same, different supervisory framework led to different supervisory outcomes.\textsuperscript{43}

International regulation and supervision is important in order to prevent that some banks enjoy the benefits of national advantages.\textsuperscript{44} An illustrative example of deficiencies at the international level is the relevant prudential requirements set under IFRS (International Financing Reporting Standards) which defines if a certain contract or an asset can be included in the calculation of prudential requirements.\textsuperscript{45} Although in EU the directive under IRFS are implemented through a regulation that is directly applicable in all member states, the same directive got different outcome due to the different interpretation of the supervisors. Partly for this reason, it was inevitable for the shadow banking system not to flourish.\textsuperscript{46}

\textsuperscript{41} See Enria et al. (2011), P.8.
\textsuperscript{42} See ibidem.
\textsuperscript{43} See Goodhart (2011), P.1.
\textsuperscript{44} See Goodhart (2010), P.166.
\textsuperscript{45} The capital regulation is one of the most important prudential requirement because the regulatory capital is defined and the minimum is established. See Scott (1994), P.22.
\textsuperscript{46} See Enria et al. (2011), P.9.
The last but not the least problem of the financial system was the absence of macro-prudential oversight and the disregard of the systemic risk. Systemic risk appears when each firm measures the risk rationally from its own perspective, but these risks valued together may produce systemic instability. Supervisors responsible for overseeing individual parts of the system concluded that from their sector no threat will arise, without considering the risk arising from the entire system. Due to the complexity of financial system, the interdependencies were not too easy to be observed, therefore the supervisors failed to measure the systemic risk. 47 The concept of Basel I had promoted the development of systemic risk since all banks should have copied the risk management strategy of the bank that performed the best. This principle was defective from the very beginning, as it has not taken into account the systemic risk of the banking industry. Obviously, the best bank measured only its individual risk disregarding the systemic risk. 48

As far as macro-prudential oversight is concerned, it was supposed to provide financial stability through monitoring and was mainly performed by central banks. Monitoring relied mostly on market data analysis and central banking statistics, often presenting a more quantitative analysis, whiteout to procure policy changes or recommendations. Although the central banks did not have the responsibility to intervene in supervisory matters, in some cases, they have underlined the emergence of risk and the necessity of changes, but their petition was unaccountable since there was no mechanism of enforcement. That happened, for example, with the case of securitization and credit risk transfer activities, whose opaqueness regarding the risk spreading was criticized before the financial crisis started. 49

Undercapitalization, misuse of maturity transformation tools, no harmonized definition of the regulatory capital were only a few causes of the financial crisis. Overall, financial crisis underlined that a much stronger regulatory and supervisory framework for international standard is needed that should leave little room for interpretation at the national level. 50

47 See Murphy (2013), P.11.
48 See Goodhart (2010), P.166.
49 See Enria et al. (2011), P.11.
50 See ibidem, P.8.
2.1 Defective economics policies

The high leverage of the banks may have been fostered by inadequate regulation, but it has also been promoted by economic policies, which subsidize corporations that borrow a lot and punish companies with high degree of fairness. In the section below, the negative externalities created by safety nets, such as government guarantee and tax shield will be studied and recommendations to improve the system will be displayed.

Firstly, government guarantee sustains excessive risk taking of managers and decreases the default risk premium required by bank’s creditors incorporated in the interest rate. Consequently, the bank will borrow more due to the low default risk premium that they have to offer. There has been a win-win situation for banks since in case of default, the government insures the creditors and in case of success, the shareholders of the bank can enjoy the return from low interest rate offered to deposits. As a result, bank’s managers will prefer the investment decision that brings them the higher benefits disregarding the risk attached. The situation will look, however, very different without the government debt guarantee. The bank’s creditors will impose covenants to contracts and in the event of unfulfilling the necessary conditions, the creditors will ask for higher interest rates and therefore the bank’s shareholders will bear the risk they take. A possible way to eradicate this problem would be to charge a fee for the protection that the government offers.

Secondly, tax code encourages banks and other financial institution to enjoy financial benefits from indebtedness since interest payments on debt are tax deductible. The bank may gain from this structure of taxation, while the taxpayers will surely lose due to the bias induced by preferring debt financing to equity financing. From a public perspective, the government tax revenue will be reduced through debt financing of the companies and the government will have consequently to cut down public spending or to increase other taxes. Nonetheless, the tax system should be capable to create in time of capitalism positive externalities to the society and not negative ones.

51 See Admati et al. (2010), P.18.
52 See Admati et al. (2010), P.20 and
53 See ibidem, P.17 and P. 18.
One way to cut down the benefits of tax shield and the government’s guarantee would be to increase the equity capital requirements in order to make banks liable for their investment decision. Opponents of increasing capital requirements may argue that through this measure, the lending will decrease and they will have to charge higher rates. This may be true, but the quality of the credit should be more significant for regulators than the number of credits. Actually, from a public policy view perspective, it should be found a better method than subsidizes competitive credits, and not encouraging high leverage of the banks that proved to be extremely costly for the entire society. 55

All things considered, it is obvious from the above arguments that the tax shield and government guarantee approaches encourage higher leverage that increases not only the probability of defaulting, but also the systemic risk. The bankers do have strong incentives to disapprove the rise of equity because tax advantages and government guarantees help them to keep a low level of capital cost. However, for the society the funding of the bank with debt is twice disadvantageous on the grounds that the government misses the taxes on corporate income and in case of bank default, they spend taxpayer’s money on bank bailout. 56 Furthermore, the widespread declarations of the politician, which guarantee that the bailout of financial institutions should never occur, it brings out their fully commitment in the case of default, even when the bailout may be the best taken action. 57

3. Functions of the Financial System

Maybe in solving the problem of building up a sound financial system, it would be advisable that politicians understand the function of the financial system and how it creates economic value. If it were to summarize the complex activities of the banks and the financial system, one distinction between its services may look as follows: intermediation through risk - sharing between providers of funds and users of funds,

54 See Hellwig (2010), P. 16.
55 See Admati et al. (2010), P. 41.
56 See Hellwig (2010), P. 16.
57 See Admati et al. (2010), P. 20.
provision of payment services, provision of pure insurance and the creation of markets in spot foreign exchange market. 58

In the traditional banking system, savers hold their saving in the form of deposits from which bank can offer loans to the borrowers. Savers own actually the equity of the bank. 59

The most problematic category of the system was the intermediation process of the funds, and not in the other category of financial services. It cannot be denied that other activities of the financial system was affected such as, the insurance one, which had mostly insured the derivatives. For instance, AIG could have gone bankrupt, if the government have not stepped in to bail out the company. However, the AIG bailout was necessary due to the insurance that they should have offered in case of bank’s default. If AIG had gone bankrupt, it could not have been able to offer any protection for the risk the bankers thought that they were insured. The problem of systemic risk appeared once more, as nobody knew where in the system the risk was going. Additionally, the inexistence of macro-prudential framework offered great incentives for the banks to escape the rules of regulations and to convey to the regulator the assurance that they had the risk hedged. 60

In the intermediation process, one valuable function is to match the provider’s and the user’s funds in order to perform the direct investment, but the most important function is indubitably to link the non-matching providers and users of funds through linkage creation between the supplier and the receiver of the funds. This mismatch can be realized through maturity transformation, liquidity transformation and risk return transformation. These types of transformation encouraged considerably the development of the shadow banking system with the intention to reduce the cost of lending. 61

Firstly, the maturity transformation finances long-term investment with short-term debt, for instance with deposits. Complex chains of transactions have made possible

59 See Adrian et al. (2012), P.4.
60 See Admati et al. (2013), P.122.
for investors to oversee risk and to neglect the substantial amount of the maturity transformation in the system. The securitization of mortgages through maturity transformation has accelerated the “production of liquid debt” and raised the demand for them due to their higher interest rate. 62

Secondly, the liquidity transformation is a funding form of a ten year mortgage loan by issuing a bond with the same maturity. 63 An amount of individual mortgages is backed together into a tradable bond and can be bought by different investors who can hold the equity in perpetuity, paying steady stream of interest forever. 64

Finally, the risk return transformation is the instrument, which creates an investment form for the saver providing a mix of debt and equity from the liabilities of the bank in order to facilitate the investors to hold a “backed security” in concordance with the level of the risk they want. Higher risk will bring a higher investment return. Consequently, the advantage of this transformation is that it enables investors to hold a mix of assets computed in function of the risk, return and liquidity. 65

In conclusion, the core function of these securitization processes was to produce an optimal level of saving which could suit the investor’s individual preferences and therefore to maximize the welfare and to increase the investment possibilities. Unfortunately, the greed and unethical behavior of the banks had used the securitization tool with the scope to shift the risk to other investors by loosing the track of risk in the system. 66

Although the financial innovation should have fostered the economic welfare, the financial crisis output losses, for example, nearly 3.8 % of GDP in Europe invalidate the argument that financial innovation had been beneficial to the society. (See Figure 1) Financial innovation and deregulation offered strong incentives to a few large banks to produce complex, opaque products, which posed difficulties to investors to

62 See Admati et al. (2013), P.121.
63 See ibidem, P.120.
64 See Turner (2010), P. 4.
65 See ibidem, P.4.
access their risk and simultaneously raised the level of interconnectedness. Likewise, regulators do not possess the necessary instruments to evaluate the risk properly.\textsuperscript{67}

**Figure 1: 2008 Financial crisis output losses**

![Figure 1: 2008 Financial crisis output losses](image)


Furthermore, the banks offered poor quality securities to its customers and that meant to put on their balance sheet low quality assets\textsuperscript{68} because the bank’s assets are also its liabilities.\textsuperscript{69}

To sum up, this maturity mix, when savers are able to hold short-term deposits and borrowers long-term maturity mortgages, should provide the assurance of access to liquid assets and should put capital to work efficiently in the society increasing the economic value of the capital.\textsuperscript{70} However, these maturity matches performed mostly by the shadow banks caused serious financial losses in the crisis. These transformation processes should be properly regulated in order to produce the desired increase in economic growth and should be traded on a special platform where the risk they are attached could be transparent.\textsuperscript{71}

\textsuperscript{67} See Pakravan (2011), P. 233.

\textsuperscript{68} Asset is equal to equity plus liabilities. Current liabilities are usually credit card and banks loan. See for further consideration Rosemary Peavler, Business Finance, [http://bizfinance.about.com/od/accountingandcash/ss/Beginning-Bookkeeping-Tutorial_4.htm](http://bizfinance.about.com/od/accountingandcash/ss/Beginning-Bookkeeping-Tutorial_4.htm), accessed at 23.06.2014.

\textsuperscript{69} See Pakravan (2011), P. 233.

\textsuperscript{70} See Turner (2010), P.4.

\textsuperscript{71} See Pakravan (2011), P.234.
4. Increasing Equity Requirements

The goal of this master thesis is to demonstrate that simplifying the regulatory rules from a realistic perspective should be the background of the banking system. Eliminating the illusion that through financial engineering the development of systemic risk can be foreseen, a thorough overhaul with concrete solutions is needed to avoid a future financial crisis. In order to realize this, two major changes may be applied, higher regulatory capital closer to twenty or thirty percent of the total assets and the elimination of risk-adjusted approach.\(^{72}\)

4.1 Facts and Myths about Higher Equity Requirements

One aim of this master thesis is to prove that an increase in the equity requirements will signify a much safer banking system, which will be capable to prevent or to face a new financial crisis.

After crisis, increasing equity requirements spark a great controversy among politicians, bankers and lobbyists. Supporters maintained that it is vital in order to rebuild the financial system, whereas the opponents, mostly the bankers and the lobbyist, hold that it will only decrease the lending activities and will affect negatively the society.\(^{73}\)

However, most experts agree that one clear scope of any financial reform should be the capitalization of banks. They should count much less on borrowing and fund their investments with much more equity. That should be the base to build upon the further reforms of the financial system, but unfortunately that is mostly overlooked due to the widespread myth that equity is expensive. There is some truth in this, but the question is, for whom is the equity actually expensive?\(^{74}\)

To some degree, increasing equity requirements is for banks expensive due to the fact that better capitalized banks will not any more enjoy the government subsidies. Alternatively, the high leverage of the banks signifies more reliance on the taxpayers’

\(^{72}\) See Hellwig (2010), P. 11.
\(^{73}\) See ibidem, P.17.
\(^{74}\) See Admati et al. (2013), P.15.
money and therefore it can create high disruptions to the society. However, if equity is expensive, why should borrowing be cheap? As a matter of fact, borrowing is cheap for the bankers because in case of default the government will save the bank with the taxpayers’ money and so the bank’s shareholders do not have to bear a high level of risk. 75

In the following part, a thorough analysis about the benefits and the drawbacks of higher equity requirements, as well as the advantages and disadvantages of having higher leverage will shed some light on this subject, equity requirements. 76

First of all, increasing the equity ratio decreases the probability of bankruptcy because equity will be able to absorb a greater decrease in the asset value. For instance, if a bank has 30 Mil Euro assets, 98% financed with debt (29.4Mill) and 2% financed with equity (0.6Mil), a decrease of 1 Million in the asset value will induce insolvency. It can be that the decrease in asset value will be lower and the bank may not be insolvent, but only the rumors may stop the inter-bank lending due to the distrust among market participants that the bank will not be able to meet its obligations. As a consequence, the bank will be forced to deleverage by selling assets at a lower price or to recapitalize in order to reestablish the debt-equity ratio. Selling the securities (asset) at lower price will also have negative influences on the other market participants that have these securities on their balance sheet. But if the bank have, for instance, 4% equity (1.2 Mill) than a loss of 1 Mill would not induce insolvency. They do have to deleverage by selling assets, but there will be no problem with the inter-banking lending. 77

Secondly, increasing equity requirements will lower the probability of the financial distress. As we have seen during the crisis, systemic risk in the financial crisis was a great issue because financial distress in one large institution will influence negatively the other institutions due to the inter-bank lending. Consequently, a credit crunch has great probability to occur. 78

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75 See ibidem, P.18.
76 See ibidem.
77 See Admati et al. (2010), P. 8.
78 See ibidem, P.7.
Needless to say, a clear method to reduce financial distress and systemic risk will be to have a larger equity capital cushion.\textsuperscript{79} If there will be more equity and less debt, the possible losses will be covered by the bank and their shareholders, and not by the taxpayers. When financial crisis started, the equity of the major financial institution was 2 or 3 percent of their total assets.\textsuperscript{80}

Naturally, even a slight decrease in prices in the financial market can release the rumor of insolvency and the interbank lending can cease. The ability of the bank to absorb losses in times of crisis is of utmost importance because it reduces the probability of default, and consequently the systemic risk will not cause such a great deal on other institutions.

A further advantage of the better capitalized banks is the encouragement of better lending decisions since it forces the bank manager to measure the risk better and not to involve itself in risky investment decisions.\textsuperscript{81} Furthermore, having more capital, banks will be able to fund their investments, without employing external capital and they can expand their lending activities without the need of issuing new equity that may be undervalued.\textsuperscript{82}

All things considered, achieving a balance between debt and equity would be the best course of action that regulators and supervisors can take. There is no doubt that better-capitalized banks will protect the public interest and will reduce the appetite of the bankers for taking unnecessary risk. Raising capital requirements, bankers will be liable for their mistake and taxpayer’s money will not be employed to relieve the banks.\textsuperscript{83}

Despite the benefits of higher equity requirements, the proposal to increase equity had been frequently declined because the bankers convinced the policymakers and the regulators that “equity is expensive”. For the bankers equity is now expensive, after

\textsuperscript{79} See ibidem.

\textsuperscript{80} See Admati et al. (2013), P.32. However, banks were though to be better capitalized due to the risk-weighted approach and accounting maneuvers.

\textsuperscript{81} See Admati et al. (2013), P. 77.

\textsuperscript{82} See ibidem, P.17.

\textsuperscript{83} See Meltzer (2012), P.23.
they used the taxpayer’s money to save them when they were in default. Obviously, any regulation that reduces their profits and make them responsible for their mistakes is expensive. Subsidizes offered by the government for the “too big to fail” companies during the financial crisis encouraged the “privatization of the profit and socialization of the costs”. The bankers benefit from this since they can take higher risks with no chance to lose something, since in case of failure the government will issue a bailout package.

Apart from this, it is often maintained that increasing equity will lead to a credit crunch, although the previous experience of the financial crisis has proven that a credit crunch happens when large financial institutions are undercapitalized. Bankers support the viewpoint that increasing equity requirements will affect the economical activities because lending will be reduced and will deter them from investing in valuable activities due to the strengthening of lending criteria.

The argument that increasing equity will diminish the lending activities is misguided since equity requirements is about how the bank is going to be funded and it does not request the bank to make a certain number of loans and to invest their money in certain activities. Most people believe that increasing equity requirement signifies an increase in the reserve requirements. For this reason, it is worthwhile to pinpoint the distinction between equity requirements and reserve requirements. Equity requirements represent the capital structure of the bank, which demands that a part of the bank’s assets must be funded with equity that means with unborrowed money. Changing the capital structure of the bank (more equity, less debt) is actually a change in the distribution of the risk, where bank’s shareholders bear more risk. On the other hand, reserve requirement represents the fraction of the deposit that a bank should hold at the central bank.

Moreover, bankers advocate that the strengthening of lending criteria will induce a decrease in the profitability of the bank because lower rated credits will not be offered any more. For the bank may be profitable to finance all lending activities, but from a

84 See Admati et al. (2013), P. 67 and P.68.
85 See Admati et al. (2010), P.3
86 See Admati (2010), P. 16.
87 See Admati et al. (2013), P. 16 and P. 17.
social point of view unworthy credit should be restrained. Unworthy credits signify using resources inefficiently. A better analyze of the lending decisions may lead to a reduction of lending, but the objective of the economy is to have credits which perform well, i.e. which are able to bear risk and not to have a great amount of credits. Therefore, I consider that the lending decisions will be better assessed when the equity is higher. A long-term analysis may demonstrate that having better capitalized banks will be more profitable not only for the society, but likewise for the bank. For example, let consider the situation when the major banks are in distress and valuable investment may rise its head, then the bank will not be able to invest due to the debt overhang. 88

Another very convincing argument against equity requirements is that equity has lower required return than debt. This claim is actually incorrect since equity has higher required return than debt because it is riskier. 89 What the bankers are trying to say is that the cost of equity finance is too high since they have to cede the tax subsidies incurred when the banks are financed with debt. From the individual perspective of the bank that can be like this, but from the public policy position is incorrect because it does not take into consideration the societal costs, which incur in case of nonpayment. This is actually a problem of the tax system because it does not promote the equity funding, but the debt financing due to the tax shield. 90 The tax should sustain the behavior of market participants that generates positive externalities in the society and condemn the behavior, which creates negative externalities.91

To sum up, it seems evident from the foregoing arguments that a better designed financial policy, which encourages higher equity requirements will lead to a saver financial system that can cope successfully with the challenges that arise in a highly interconnected world. The policies that are in force after the crisis are mostly influenced by the lobbying that base their arguments on inaccurate economic logic, for example, they sustain that an increase of the capital requirements will decrease

88 See Admati et al. (2010), P.38.
89 This is the basic principle in the corporate finance.
90 Companies have to pay corporate taxes and the interest payments on debt are considered a tax deductible expense, named tax shield. This provides debt financing an enormous advantage over equity financing because it reduces the tax payments. See Osborne et al. (2012), P.9.
91 See Admati et al. (2010), P.3.
the economic activities of the society because of the incapability of the bank to offer loans.  

If we look at the banking history, for instance, in the nineteenth century, banks was not so highly borrowed like nowadays, actually their equity was about 40-50 percent and they developed their activities as partnerships with unlimited liabilities. Afterwards, the trend was to decrease equity in favor of borrowing. Having more equity bankers were more prudent because in case of default they had to pay the depositors or other creditors from their own assets. (See Figure 2) Consequently, it has been created a higher level of confidence of depositors through unlimited liability. 

However, going back to unlimited liabilities is nowadays impossible because banks are mostly public corporation and raising equity funding through the capital markets exclude the possibility that the shareholders can assume unlimited liability. Therefore, the only solution that is available is to increase the ratio of equity to debt in order to be able to internalize the losses.

Considering everything, it seems that the best possible solution to enjoy the social benefit of a sound financial system is to increase equity requirements. Unfortunately, banks enjoy even after the financial crisis a preferential treatment since Basel III proposes an increase in the equity ratio of 2 to 4.5 percent with a counter-cyclical buffer of 0-2.5 percent. When banks make loans to other companies they impose to the corporation to have enough equity in order to absorb losses, but on the other hand, banks can have max. 7 percent equity requirement as proposed by Basel III. However, the experts hold that no healthy company can have an equity debt mix lower than 30 percent.

Figure 2: Book Equity to Book Assets for U.S. Commercial Banks, 1840 – 2009

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92 See Admati et al. (2013), P. 17.  
93 See ibidem, P. 32.  
94 See Goodhart (2012), P. 170.  
95 See Admati et al. (2013), P. 140.  
96 See ibidem, P. 32.
Besides increasing equity level, the development of the micro- and macro-prudential policies is also essentially in order to prevent a future crisis to happen. The micro-prudential policy should assure that the financial institution should have enough capital ratio to absorb losses and macro-prudential policy should supervise the systemic risk and assess the influence of macroeconomic development of the financial activities.97

4.2 Viable Methods for Banks to Increase Equity Requirements

The solution of increasing equity requirements may be a valuable one, but the question is how will find the bank the necessary funds to reinvest in their banks? What kinds of methods can be employed in order to increase the equity requirements? Obviously, the easiest method will be to issue new share and raise money from the capital market. Banks can raise money from capital markets to fund their activities, but it is easier to borrow due to the government subsidies and the benefits of the tax shield. For bankers borrowing is a desirable solution because if the things are going

smoothly, the shareholders enjoy the benefits and in case of bad scenario then the central banks and the governments will subsidize.\textsuperscript{98}

However, issuing shares after the crisis can be costly for banks due to the fact that the shares can be undervalued or issuing can be interpreted as a negative signal. Negative signal are send to the market participants because the rationale is, that the company is in trouble and they need money to recover.\textsuperscript{99} Moreover, the low level of transparency in the system and complex securities such as convertible debt security hinder the market participants to invest in the bank’s shares because they cannot value the share correctly. With the intention of minimizing the negative market signals, the regulators and the government should prepare a program for issuing equity with the purpose to help banks to finance correctly their activities.\textsuperscript{100}

Shares issuance is a safe resolution to increase the equity, only if bank’s managers provide more information about payout policies and disclose the causes why they issue new shares.\textsuperscript{101}

Another method to increase equity will be to impose rules for the “too big to fail” intermediaries on paying dividend. Imposing higher equity requirements will not any more provide an incentive to the bank’s managers to pay constantly dividends to its shareholders because there will be no financial gains to enjoy it at the expense of depositors holders and of those guaranteeing debt, mostly the government. Therefore, the better capitalized the bank is, the more earnings will be held for internal financing activities. On the other hand, having a higher debt-equity mix the bank’s shareholder will be more prone to have earnings paid out because they are aware, if the earnings are retained the debt holder claims will be satisfied firstly, in time of default.\textsuperscript{102}

\textsuperscript{98} See Goodhart (2010), P.166.
\textsuperscript{99} See ibidem, P.6.
\textsuperscript{100} See Admati et al. (2010), P. 4.
\textsuperscript{101} See ibidem, P. 33.
\textsuperscript{102} See Admati et al. (2013), P. 140.
In conclusion, better designed policies which sustain significantly higher equity requirements and also create incentives for banks to implement them are strongly recommended after the turmoil of the financial crisis.  

4.3 **Possible Social Costs of Higher Equity Requirements**

I would like to review in this section how a higher level of equity would influence the funding costs of the bank and consequently the loan interest rate. Does the increased equity requirements mean a higher loan rate due to the higher funding cost? Will the economical activities (GDP) decrease if the bank’s equity increases? Which are, on the other hands, the arguments that support the view that higher equity will bring higher social benefits? What is actually the optimal equity requirement for a bank in order to be able to cope successfully with macroeconomic and systemic shocks? The answer to these questions should be found in the following argumentation.

It is generally held that increasing bank’s equity is a multidimensional problem that implies taking into consideration not only external parameters such as international regulation, tax code, systemic risk, government subsides, but also internal parameters like funding costs and the riskiness of equity. One of the most important question, which arises in the discussion about the higher equity level, is how the increase in equity will affect the overall funding costs, i.e. the weighted average cost of capital (WACC). The WACC is of utmost importance due to its influences on the lending rate, on the rate of return on equity (ROE) and therefore on the GDP.

As explained in the previous section, many lobbyist support the view that equity is expensive on the grounds that it involves taking more risks than debt and therefore

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103 See Admati et al. (2010), P. 41.
104 See Admati et al. (2013), P. 86.
105 See Backer et al. (2013), P. 1.
106 See Cummins et al. (1994), as Gilchrist et al. (2013) for the empirical evidence of overall cost of capital on the investment activities. It is widely held that higher equity will raise the overall cost of the bank (WACC) and therefore the bank will have to increase the interest rate on loans, which will mean a decrease of economic activities.
higher equity will mean an increase in the cost of the bank’s funding\textsuperscript{107}, which will be reflected in the rate loans. \textsuperscript{108}

Actually, there are strong arguments in financial theories, which demystifies the economical thinking that a high level of equity will create negative externalities on the economy due to higher risk of equity.

Firstly, one of the most persuasive argument is that the riskiness of the equity depends on debt level, and not on the equity amount. In fact, more equity and less debt signify less risky equity given its ability to absorb losses. Having a higher level of riskless equity, the shareholders will demand a lower expected return on equity because they will enjoy a better protection. \textsuperscript{109} Consequently, the lower expected rate on equity should actually decrease the rate loan and increase the economic activities. \textsuperscript{110}

Moreover, the Modigliani Miller (MM) theory, where under perfect conditions, such as no taxes, symmetric information and rational risk-based decisions, maintains that the capital structure of one company should not have any influences on its activities and on its funding costs. \textsuperscript{111} Additionally, the MM framework holds that there is a positive correlation between the riskiness of equity and the level of leverage, i.e. the higher the leverage of one company, the higher is the riskiness of its equity. \textsuperscript{112}

In the banking sector, the framework of MM theory would lead to the logic that the amount of equity and debt that a bank hold should not have further implications on

\textsuperscript{107} See Admati et al. (2013), P. 86.

\textsuperscript{108} There are papers, which demonstrate that changes in capital structure can affect lending (Brinkmann et al. (1995), Ediz et al. (1998), Hancock et al. (1995) and Ito et al. (2002)), but Kashyap et al. (2010) point out that changes on capital structure do affect lending, if the measures are implemented in a short period. Furthermore, it is also important the method applied in order to increase equity (See Admati et.al (2013) and Acharya et al. (2013)), the implementation period (See Kashyap et al. (2010)) and the regulation of the shadow banking. (See Acharya et al. (2013) and Kahyap et al. (2010))

\textsuperscript{109} See Kashyap et al. (2010), P.7 and Backer et al. (2013), P. 3.

\textsuperscript{110} See Admati et al. (2011), P.16. This argument of Admati et al. resumes the risk principle of the MM framework.

\textsuperscript{111} See Modigliani et al. (1958) for further discussion about the framework of the Modigliani Miller Theory.

\textsuperscript{112} See Miles et al. (2011), P.5.
the loan rate and on the funding costs. It is true that the MM framework cannot be applied in the real world of banking, since there are many imperfect conditions, such as taxes and government subsidies. However, despite the idealized conditions of MM Theory, one of its basic assumptions, the risk conservation, is a valuable assumption because it invalidates the lobbyist argument that equity is expensive.\(^{113}\)

The risk conservation principle says that when a bank minimized the debt-equity rate, the amount of equity increased and consequently its risk decreases. Decreasing the risk of equity, the overall funding cost of the bank will decrease considerably due to the fact that the shares will become more reliable and the demand will also increase. For instance, a company that has 10% equity and a stock market beta of 1.0\(^{114}\) with a riskless debt will double its equity to 20%. Under the assumption that the risk will remain constant, then the same risk will be covered by a double equity ratio, so the bank’s equity beta will measure only 0.5% because each euro of equity will cover only half of risk. A lower beta signalizes a lower risk investment.\(^{115}\)

Besides these theoretical arguments, the fact that the high level of equity will reduce the economical activities is from the historical point fallacious. For instance, in the USA and UK economic activities have not experienced a downward slope when banks used more equity. Moreover, the historical empirical evidences do not support the view that the higher leverage of banks would foster the economic activities. Actually, the graph below shows that there is no direct proportionality between the increase in leverage and economic activities (GDP). Despite the fact that the bank’s leverage increased over the last 100 years, the economic activities remain relatively stable.\(^{116}\) (See Figure 3)

Figure 3: UK Bank Leverage and real GDP growth (10-year moving average)

\(^{113}\) See Kashyap et al. (2010), P.15.


\(^{115}\) See Kashyap et al. (2010), P.15.

\(^{116}\) See Miles at al. (2011), P.5.
Another point brought into discussion about raising equity requirements is that the interest rate on loans will go up due to higher funding cost of the bank. From the historical perspective this argument is misguided, since at the beginning of the 20th century in the USA when banks were not highly leveraged like nowadays, the spread between the reference interest rate and the rate charged by banks moved within a constant range and there was no extraordinary increase of the borrowing cost. Additionally, there is also no clear evidence that the high leverage of the bank is correlated with a reduction in interest rate. In fact, in 1980’s in the USA when the leverage of the banks grew steadily, the spread between the interest rate charged on US business loan and 3 years Treasury bills also went up.  


117 See ibidem, P.7 and P.8.
Moreover, the fact that the high level of equity or a high level of indebtedness cannot influence greatly the interest rate can also be deduced from US bank’s activities. The left side of the panel represents the relation between book equity over book assets that is decreasing since 1930 and reveals the increase in leverage. The right side represents the loan rate that a bank charges its borrowers over the deposit rate. The loan rate is computed as the interest income on loans over loans and the deposit rate as interest on deposits over deposits. Despite the fact that the leverage increases the loan rate minus deposit rate is having also an ascendant trend, which signifies that higher leverage does not mean necessarily a lower loan rate. Since the historical facts reveals this, why then the opposite relation should hold? Why the lobbyist are maintaining that higher equity would increase the loan rate?  118

Figure 5: Loan Rate minus Deposit Rate

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118 See Kashyap et al. (2010), P.20.
There is no theoretical and historical evidence that an increased in equity will increase the funding cost and the lending rate. However, some studies do provide empirical evidence that higher equity requirements may increase the overall capital cost of the bank and the lending rate despite the lower riskiness of the equity.\(^{119}\) They pinpoint the fact that the increase of funding costs is suitable and strongly recommended for economics activities, if the social benefits and costs are also taken into consideration. After all, an increase in the cost of capital may not be the worst thing that can happen, if the unprofitable economic activities are cut down and social cost, such as the taxpayer’s money used to bail out the banks, decreases.\(^{120}\)

The foregoing analysis gives a deeper insight about the implication of better-capitalized banks on the overall funding cost of the bank, on the loan rates and on possible harmful externalities on GDP. From the social perspective, it is clear that increasing equity requirements will not incur such high costs, as the lobbyist groups consider. As a matter of fact, if it were to counterbalance the social costs and the social benefits in a quantitative model, then there will be a high probability that the benefits of a higher equity will be much greater than its costs, not only for the banks, but also for the economy as a whole.

\(^{119}\) See Backer et al. (2013), P. 6 who believe that an increase of funding cost and lending rates is possible due to lower tax shield and Kashyap et al. (2010), P. 32 who conclude that the bank higher equity requirements will have only low influence on the loan costs and on its funding costs.

\(^{120}\) See Backer et al. (2013), P.6.
For instance, one of the greatest advantages for the banks is that having more capital, in difficult times the deleveraging process would not create distortions in bank’s assets by selling it much more below the market price. An additional advantage of changing the capital structure to more equity, is that the riskiness of the equity will decrease and the investors will ask for a lower risk premium. Moreover, the investors will be more prone to invest in banking activities with a low volatility.

Apart from the bank’s benefits, there are also considerable advantages for the economy as a whole if banks were better capitalized.

Firstly, better-capitalized banks will reduce tremendously the probability of bankruptcy owing to the power of equity to absorb possible internal or external losses. The systemic risk will also decrease because there will be more trustiness in the system. Moreover, the moral hazard created by deposit insurance will be minimized and negative externalities incurred by bank’s bankruptcy will fall down.

Secondly, the government’s revenue will increase since the banks will have to pay higher corporate income taxes due to the change in the capital structure. It is generally known, that the capital structure of the bank is influenced by the tax code of debt and equity. Tax code creates distortions in the funding structure of one company because companies can deduct interest payments when they use a greater level of debt funding.

Thirdly, higher equity will diminish the costs of the governments allocated to insure the bank’s deposits. The deposit insurances are actually the bank’s liabilities that are insured by the government. Insuring the bank’s deposits-liabilities type securities are costly for governments because in case of the default they are liable for the payment, and not the equity holders. Besides this, deposit insurance can create a bias on the

121 See Miles et al. (2011), P.40.
122 See Kashyap et al. (2010), P.5.
123 For further discussion about the role of deposit insurance, see Giammarino et al. (1993) and Morrison et al. (2005).
124 See Van der Heuvel (2008), P.298.
125 Kashyap et al. (2010), P.10.
funding costs of the banks, since borrowing will be cheaper for the banks due to fact that the government insures the deposits and therefore the debt will be riskless. 126

Finally, increasing the equity requirement will bring the desired financial stability in the system and a competitive and performing credit market will be achieved. 127 Moreover, higher bank equity capital will discourage the investment in risky assets and will provide the necessary funds in order to overcome macro- and microeconomics shocks. Consequently, the taxpayers money will not any more be used for saving banks because shareholders and the manager will bear the risk of their company. 128

However, if there are such great benefits, one interesting question will be why then not increase equity to 100%? What happens if banks are imposed to finance themselves only with equity and without debt? Which are actually the advantages of using debt, besides the tax advantages and the government subsidies?

In the banking sector, the liabilities are playing an important role since major parts of the bank’s liabilities are the customer’s deposits. Using no debt will mean that the bank will not any more exercise its intermediation role and will not be able to create liquidity from deposits. For this reason, it is utterly important to achieve an optimal equilibrium between bank’s liabilities and equity. Imposing higher equity requirements implies also to hold more equity for the deposit-type liabilities. 129

Despite different opinions that the increase of equity will decrease the amount of deposits and the liquidity will go down, 130 it is my belief that the equity and deposits-type liabilities can increase simultaneously since the asset of the bank should not remain constant. The relation between increase in equity and decrease of deposit creation would hold, if the bank asset should reach a certain value of its assets. Since this is not the case in capital regulation, than the increase in equity can also induce an increase in deposits.

126 See ibidem.
127 See Admati et al. (2010), P.51.
128 See Meltzer (2012), P. 23
129 See ibidem.
Taking everything into account, experts are convinced that higher equity requirements, which are gradually implemented, would not induce in the long-run higher funding and borrowing cost, but will decrease for sure the probability of systemic banking crises.\textsuperscript{131} To some degree, it is true that there may be some drawbacks if bank’s equity are raised, such as a slight increase in the loan rate, a decrease in economic activities and in bank’s profitability.

Nevertheless, the clear scope of the banking regulation after the turmoil of the financial crisis should be the creation of a healthy banking system that encourages sustainable investments and not the profitability of the system, when the profitability is achieved at the expenses of the taxpayers money.\textsuperscript{132}

\textbf{4.4 Concerns Correlated with an Increase in Equity}

In the attempt to address the problem of raising equity, the regulators may be confronted with various sets of problems, such as reducing the lending activities or trying to transfer the credit activities in the shadow banking system.\textsuperscript{133}

In the first place, if banks are asked to raise their equity, they will try to slow down the growth of their assets by taking few deposits and they will therefore cut down the lending activities. Serious attempt to prevent this happening should be made. For instance, a solution to prevent this will be to implement the equity requirements gradually over a long period. It was empirically proved that the implementation of equity requirements based on long–term considerations would provide few incentives for banks to cease lending or to increase the interest rate. Increasing equity is suitable for the economy if banks bring new equity trough external financing or through retained earnings.\textsuperscript{134}

\textsuperscript{131} See Miles et al. (2011), P.5.
\textsuperscript{133} Admati et al. (2013), P.120.
\textsuperscript{134} See Kashyap et al. (2010), P.1.
Bankers may argue that issuing equity after the financial crisis may be extremely costly for them since the investors will ask for a higher rate of return due to the increased level of risk. While this is true, the other solution would be to forbid paying dividend until they reach the imposed equity requirements. With the intention of finding a suitable solution also for the banks, regulators and supervisors may ask the bankers to create a special account in order to retain earnings, where a separate minimum ratio for the special capital account should be required. When the minimum capital ratio is reached, then dividend payment can also be made. Furthermore, the retained earnings from this special account would be advisable to be invested in safer assets, such as treasury securities. If there will be a macroeconomic shock or bank specific shock than they should be able to sell these government securities and transfer capital from this special capital account to the regular one.

Another great concern of increasing equity is that banks will try to transfer the credit activities to the shadow banking system, which is not subject to the same regulation, in order to avoid equity regulation. Thus, increasing equity will force the regulators to increase also the regulation of the shadow banking system.

The mechanism of moving the lending activities to shadow banking is in fact a simple one. Loans will be securitized as an asset-backed security and will be transferred to SIV or to other subsidiaries of the bank or to a hedge fund that are not subject to the same banking regulation. These subsidiaries are allowed to be highly leveraged because the government does not guarantee them. Therefore, the loan market may become even riskier, unless the shadow banking system is also regulated.

135 It would be preferable to invest in government’s bonds that are saver and not in government’s bonds that have a high probability of default, such as Greece governments bonds.
136 See Acharya et al. (2013), P.1 and P.26.
137 See Kashyap et al. (2010), P.6. The author defines this as a regulatory arbitrage.
138 Despite the fact that this kind of bank’s subsidiaries (SIVs) are not guaranteed by the government, in the previous financial crisis the government had to guarantee the shadow banking system in order to avoid the collapse of the traditional banking system. For further consideration, see Admati et al. (2013), P.120.
In order to prevent a shift of credit activities from traditional banks to shadow banks, governments and regulators should focus their attention on ways to reduce this kind of regulatory arbitrage. 139

It is a fact that prior to the crisis banks have tried to avoid capital regulation, using different off-balance sheet structure, such as SIVs financed by private investment in asset-backed securities. 140 However, when the crisis begun, investors realized that they cannot measure the value of the asset backed securities (ABSs) and stop their investment. Without access to private funding, banks could have let the SIVs go bankrupt, but due to the high reputational losses, they prefer to take the SIVs in their balance sheet. As a consequence, the bank had to delever and high losses incurred due to the fact that the equity level was too low and could not absorb such great losses. 141

Furthermore, from figure 6 it is obvious that the securitization process encouraged by different regulation stimulate the investment in ABCP in comparison to other financial securities. 142 (See Figure 6)

In the light of this evidence, substantially higher equity requirements without a minimum regulation of the shadow banking system will create greater incentives for the bankers to transfer its major activities in the shadow banking system. 143

Figure 6: Comparison between Financial Commercial Paper (CP) and Asset Backed Commercial Paper (ABCP)

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139 See Kashyap et al. (2010), P.6.
140 See Admati et al. (2013), P.6.
141 See Hellwig (2010), P. 3.
142 See Admati et al. (2013), P.27.
143 See ibidem, P.32.
It is true that the regulation of the shadow banking system will be a difficult task, but one feasible solution to regulate it will be to set a “minimum margin requirements on asset-backed securities”. In this way, investors that are going to buy the asset-backed securities will demonstrate their ability to absorb possible losses. 144 Another solution that is worthy of pointing-out is the creation of a special platform where ABSs could be traded. Actually, all complex derivatives backed with sophisticated mathematical and statistical packages should be traded on special trading platforms where the risk they are attached could be transparent. Furthermore, risky instrument traded on this special platform should not enjoy any government guarantee. Needless to say, this way of action would encourage capital markets to price correctly and transparent all financial instruments. 145

5. The Risk-Adjusted Approach of Basel

The second goal of this master thesis is to provide enough arguments that the risk calibration method, especially risk-adjusted method, has contributed substantially to the development of the shadow banking system. Furthermore, this section shows that

144 See Kashyap et al. (2010), P.3.
145 See Pakravan (2011), P.236.
for the sake of having a sound financial system is essential to eliminate the conceptual flaws from the international regulatory framework (Basel III).

There has been some minor changes in the regulatory framework after the crisis, some abuses have been removed, but major problems that determined the financial crisis to expand still remain unresolved. One of the most important question that regulators and supervisors should answer positively in their pursuit of having a healthier financial system is what would have been different during the financial crisis, if Basel III were in place? Some experts held that Basel III fails to analyze the major problems of its concept due to the lobbying campaign of the bankers against major changes in regulation.

To begin with, Basel Community, which is responsible for setting international regulation, has proposed a new capital adequacy standard under the name “Basel III”. “A guiding principle of the Basel standards is that capital requirements should be risk-based. The riskier an asset, the more capital a bank should hold against possible losses.”

Basel III proposes an increase in the equity requirement ratio of 2 to 4.5 percent with a counter-cyclical buffer within the range 0-2.5% bringing the maximal amount of the equity requirements to 7%. (See Appendix 1) Additionally, Basel III fixed the minimum bank equity at 3 percent of the total bank’s assets, i.e. requiring the bank not to exceed 97% debt from its total asset.

Basel Committee recognized that the undercapitalization of the banks has been a major problem in the crisis. Consequently, they increased slightly the capital requirements, including the countercyclical buffer and the leverage ratio of the total assets. However, Basel Committee fails to provide a logical explanation about the low

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146 See Hellwig (2010), P. 3.
147 See Admati et al. (2013), P. 77.
148 See Murphy (2013), P. 19.
150 See Admati et al. (2013), P. 133.
level of equity requirements of the banks prior to the crisis and they avoid presenting a through analysis of the effect of their measure on the banking system. 151

Despite the fact that many questions about the financial crisis remain unanswered, such as how was possible for the banks to have such a low level of equity, regulatory commission seems to be very satisfied with bureaucratic regulation of capital. They are not providing any theoretical or empirical evidence why the approved changes should work out this time. Forced by the financial crisis to take action as quickly as possible, they have overseen the most important condition for implementing some measures, like the necessity of a pre-test or a simulation of the actual banking activity with the new measures in order to asses future effects. 152

It is first necessary to explain the basic concept of the Basel and afterwards to analyze its consequences on the financial system with the intention of understanding the conceptual defects. The thinking behind Basel was to adjust equity requirements to the risk the bank was taking, which signifies that the banks were required to hold equity only for risky assets. For example, there was no need to hold equity for the government bonds because they were considered riskless. However, if we take the case of Greece, which defaulted on its debt in March 2012, the assumptions that government bonds present no risk is wrong.153

This approach is misleading since it means to have the necessary tools to measure the risk. It is partly true that different quantitative models help measure the risk, but the risk measurement of the bank is an illusion due to the fact that it depends on the counterparties risks, which can be asses with great difficulties. Thus, this risk adjustment approach has offered incentives to banks to shift the risk towards other financial institution through hedge contracts, an action that had fostered the interconnectedness of financial institution, of the shadow banking system and increased the systemic risk.154

151 See Hellwig (2010), P. 2.
152 See ibidem.
153 See Admati et al. (2013), P. 137.
154 See ibidem, P. 11.
Moreover, the adjustment of equity requirements to the bank’s risk is in practice a good strategy to escape regulation because with the help of the financial engineering it creates the impression that banks are safe. Prior to the crisis, one of the major problems was that the banks could calculate risk based on their own models and therefore they have measured the risk from their own perspective. This was actually an invitation to manipulate the bank’s risk, consequently the equity requirements. Supervisors and regulators knew that the bank possessed better information about the risk they took and that they could develop better methods to measure the risk, so they have transferred the regulation task to the bankers. \(^{155}\)

It is clear, that the regulatory system failed to identify the clear role of regulation. \(^{156}\) The purpose of any regulation schemes should be to enhance transparency and to provide the necessary tools to measure the risk properly and not to leave the banks to measure the risk only from their perspective. \(^{157}\)

Another negative aspect of the risk-weighted approach is that it encourages banks to invest in assets where the risk can be easily manipulate, such as mortgage securities and decline the investment where the risk cannot be easily downplayed, such as the lending to small and medium enterprises. \(^{158}\)

Taking the assumption that the risk of mortgages related securities is closer to zero, banks registered it in the trading book and not in the banking book in order to escape holding equity for these securities. This bank behavior explains the reason why many funds have been invested in residential building over the world, building that are standing now empty and not in small and medium enterprises that could have fostered the economical development. \(^{159}\)

A further common criticism of the calculation of equity requirements based on risky assets has been the stimulation of interdependency of financial institution. A striking

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\(^{155}\) See Admati et al. (2013), P. 137.

\(^{156}\) See Hellwig (2010), P. 8.

\(^{157}\) See Pakravan (2011), P.235.

\(^{158}\) See Admati et al. (2013), P. 127.

\(^{159}\) See Admati et al. (2013), P. 137.
example is the excessive use of credit default swap\textsuperscript{160} in order to shift the risk to other financial players without offering a clear report about the risk involved, only with the prior scope to avoid holding equity for the risky securities.\textsuperscript{161}

Furthermore, it is widely believed that the securitization process that enhanced the shadow banking system to appear has been also one of the consequences of the risk-weighted asset calculation. How was that possible? Which is the connection between securitization, shadow banking and equity requirements?

Firstly, low rated securities were compiled through securitization with new issued securities and with the help of the rating agencies, they achieved to be rated AAA. As a result, these securities do not have to be backed by any equity because they were considered riskless. The buyers of these securities did not know what kind of risk they have to bear given that the sellers were not motivated to give the correct information. The effect of the risk-weighted approach was in fact the creation of artificial demand for AAA-rated securities.\textsuperscript{162}

Secondly, banks put the mortgages-securities with higher risk into structured investment vehicles (SIVs) in order to escape the equity requirements. The SIVs, a subsidiary created by the bank, operate with a high level of leverage and pursuit to realize profit from credit spread between short-term debt and long-term finance, like the covered bonds or asset backed security. These SIVs were not the subject of the regulation and the mother bank could transfer all risky securities to one of them, an action that encouraged the development of the shadow banking system.\textsuperscript{163}

Partly for the above reasons, it is obvious that the expansion of the shadow banking system has been fostered by defective regulation methods. For a better understanding, how could that be possible, it may be important to clarify the scope of the shadow banking system.

\textsuperscript{160} Through credit default swap, banks have received credit protection and the risk of default is transfer from the bank to the insurer.

See Investopedia, \url{http://www.investopedia.com/terms/c/creditdefaultswap.asp}, accessed at 27.05.2014

\textsuperscript{161} See Admati et al. (2013), P. 138.

\textsuperscript{162} See ibidem.

\textsuperscript{163} See ibidem, P. 120.
The major role of the shadow banking was to provide funds by converting opaque, long-term assets, such as residential building assets, into a money-like, short-term liabilities trough issuing of short-term securities. To put is simply, shadow-banking system created artificial credit through conversion of maturity, liquidity and risk return in order to reduce the true costs of lending.\textsuperscript{164} They do conduct credit, maturity and risk transformation as the traditional bank, but the distinction between shadow banking and traditional banking system was that they were not subject to the same regulation as traditional banks because they do not have access to government guarantee, such as deposit insurance or discount window.\textsuperscript{165} The shadow banks were though to be safer due to the liquidity that the private sector provided.\textsuperscript{166} However, prior to crisis due to increasing concern that a collapse of credit intermediation may happen, governments have granted access to the public liquidity funds, such as discount windows and deposit insurance replacing the private sector guarantees.\textsuperscript{167}

Overall, the obvious conclusion to be drawn is that the defective approach of the risk calibration provided great incentive for banks to increase the leverage level, to transfer a lot of activities trough securitization to the shadow banks and to create artificial credit demand through diverse techniques, as maturity transformation.

\subsection*{5.1 Drawbacks of Basel III}

Apart from the disadvantages of the risk-adjusted approach, most experts are against the low Basel III requirements. They point out that the equity requirements are still too low in order to succeed to build-up a healthy financial system. Basel III fixed the minimum leverage ratio\textsuperscript{168} of 3 percent of the total assets, that means requiring banks not to exceed a 97 percent debt. That would mean that a loss of 1 percent would reduce one-third of the bank’s assets. In order to reestablish the equity requirement of

\textsuperscript{164} See Adrian et al. (2012), P. 1.

\textsuperscript{165} Discount windows allows a financial institution at a discount rate from the central banks. See Investopedia, \url{http://www.investopedia.com/terms/d/discountwindow.asp}, accessed at 27.05.2014.

\textsuperscript{166} See Adrian et al. (2012), P. 1.

\textsuperscript{167} See ibidem, P. 2.

\textsuperscript{168} Leverage ratio represents the relation between debt and equity. Banks’s equity should be at least 3 percent of the total assets, i.e. the sum of debt and equity. Therefore, the relation between debt and equity must be 32.3:1. See Admati et al. (2013), P. 211, Note. 42.
3 percent, the bank should sell 32 percent of its assets. On the other hands, a loss of 1 percent with equity requirements of 25 percent will decrease equity only by 4 percent\(^ {169} \) and to restore the equity requirements would signify selling 3 percent of its assets.\(^ {170} \)

Furthermore, increasing the equity requirements on risky assets, Basel III increases once more the bankers’ incentives to invest in low-risk-weighted assets, such as bonds or high rated securities, because banks do not have to hold any equity for them and can fund them with money from the deposits.\(^ {171} \)

Another weakness that presents the Basel approach is that it absolutely disregards the correlation of the risk, assuming that the risks are independent. It is not right to assume this since banks are highly interconnected. Moreover, the risk is greater when many banks apply a similar strategy and the principle of the Basel approach was to encourage the banks to follow the strategy of the bank that achieved the best performance. The basic thinking of Basel is defective since in case of financial turmoil, banks will fail all at the same time and the government will have to intervene.\(^ {172} \)

Furthermore, the encouragement of the bank to follow the same strategy promoted a lack of diversity in the markets. The majority of the banks was involved in activities with a similar risk, a major factor that caused the systemic crisis of 2007-2009. If the banks were asked to specialize in different activities, than the homogeneity of the banking system will be lower.\(^ {173} \)

Furthermore, another drawback of Basel was to consider the government bonds riskless. Therefore, the banks were not required to hold equity for them. Governments could borrow very cheaply and invest in their campaign or in unprofitable projects.

\(^{169} \) A loss of 1 percent when equity is 25 percent and debt is 75 percent would reduce the total asset only with 4 percent. (Total asset/equity=100/25).

\(^{170} \) See Admati et al. (2013), P. 135.


\(^{172} \) See Admati et al. (2013), P.213, Note 62.

\(^{173} \) See Goodhart et al., http://www.voxeu.org/article/regulators-should-encourage-more-diversity-financial-system?quicktabs_tabbed_recent_articles_block=0, accessed at 27.05.2014.
On the other hands, the banks were stimulated to invest in government bonds, and not in small and medium enterprises. 174

The regulations seem to be advantageous not only for the banks, but also for the governments. As long as the governments will have their preferred investment funded, banks will exercise their influence on the regulatory decisions in order to enjoy further the benefits of public money. Since the regulation is so profitable for the bankers and for the politicians at the cost of the taxpayer’s money, why should politicians sustain the required changes in the regulatory framework? The things would look for sure completely different, if regulators, bankers and politicians, people who are responsible for the public money would have to bear the consequences of their action. It is a fact that the system will remain fragile and will not create economic value, if politicians and regulators are not going to formulate an efficient strategy for the banking system. 175

Moreover, it is generally believed that Basel III continued to offer too much room to maneuver since banks are allowed once more to use their own model to access the risk. The risk will be measured to their own benefits and risky securities will be kept away from the balance sheet. 176

It is clear from the above points that Basel III still presents some important deficiencies in its approach, such as the increase of equity requirements on risky assets and not on the overall assets, the neglect of the risk correlation and the allowance of the banks to use their own risk model. Not changing these weaknesses will signify in the end a deep illness of the financial system. Moreover, without a proper analysis on the expected effects of Basel measures, the policies in force will be defective due the influence of the lobbying groups on governments and regulators.

174 See Admati et al. (2013), P. 161.
175 See ibidem.
6. **Conclusions and Recommendations**

In my view, capital regulation still provides a lot of room to maneuver for bankers and politicians, despite stricter bureaucratic rules imposed after the financial crisis. It is clear that measures must be taken in order to create a safer banking system.
The first measure will be to ask banks to hold higher equity requirements of the total asset, and not only from riskier assets. 177 It is true that increasing equity may slightly increase the lending rate and decrease the economical activities, but there will also be some important benefits of this, such as a lower probability default of banks and better social investment decisions.

However, setting higher equity requirements will bring for sure the bankers dissatisfaction because they will not be able any more to enjoy the benefits of higher leverage. If this is the case, these bankers should consider taking necessary measures such as reducing paying dividends to its shareholders, changing the management system or issuing new shares. If they still argue that high requirements is an illusion, than in a market economy, the unprofitable companies are closed and only the profitable ones succeed. 178

The banking specialists propose an equity requirement of 20-30 percent of the total asset. They underline that a capital conservation buffer within the range of 0-10 percent will get away from the idea of having or not having enough equity. 179 For example, the bank should have 30 percent equity in good times, but if losses incur that reduce the equity lower than 30 percent, but not below than 20 percent, the supervisors should intervene and stop managers to pay dividends and retain profits to rebuild equity. If equity is lower than 20 percent, supervisors should ask the manager to issue new equity. 180

Besides increasing equity requirements, regulators should overcome the idea that a bank should hold equity only for their risky assets, as risk-based approach of Basel proposes and implement a simple equity-debt ratio of the total bank’s asset.

Furthermore, it is important to keep the regulation rules simple because they have to be enforced at the international level. Complex regulation rules will only provide

177 See Admati et al. (2013), P. 135.
178 See ibidem, P. 136.
179 See Pakravan (2011), P. 236.
180 See Admati et al. (2013), P. 140.
incentives for bankers to escape regulation and force the financial institution to transfer their activities to the shadow banking system.\textsuperscript{181}

Taking everything into account, the clear conclusion to be drawn is that the elimination of risk-weighted average method of Basel and the introduction of higher equity requirements of the total assets will not incur considerable costs to the society and to the system, as the lobbyist group maintain. In fact, these steps will make the banking system capable to handle professionally a macro - or a microeconomic shock and will stop the expansion of the shadow banking system. Furthermore, social efficiency of the banking system will increase if governments decide to reduce the “safety nets” that creates negative externalities, such as government guarantee and tax shield.

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\textsuperscript{181} See Hellwig (2010), P. 8.


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**Books**


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Appendix

Abstract

This master thesis discusses the undertaken reforms of capital regulation after the financial crisis. It is specifically concerned with the effect of increasing bank’s equity requirement on the society.

Constrained by the turmoil of the financial crisis to take quickly regulatory measures, regulators and supervisors have not investigated enough the reasons why the banking system was so vulnerable and failed to provide empirical evidences, why these measures should work out this time.

For this reason, this study proposes to demonstrate that one of the major causes of the crisis, i.e. bank’s undercapitalization, was actually stimulated by the risk-adjusted approach of Basel. Moreover, it presents strong arguments that the minimal applied regulatory changes will not be able to rebuild a healthy banking system and calls for a thorough reexamination of the regulatory schemes.

The results of this study indicate that the elimination of the risk-adjusted approach from the regulatory framework and a substantially increase of equity requirements, for example 20-30% of the total asset, will help the bank fulfill effectively its core function in the society. Raising capital requirements may increase slightly the overall funding costs of the banks and the lending rate may also go up, but this can be beneficial to the society, if the probability of bank’s default decreases and therefore the taxpayer’s money are not used to bail out banks, but invested in sustainable social projects.

Key Words: equity requirements, Basel III, shadow banking, financial crisis, risk-adjusted approach, tax shield, government subsidies.
Kurzbeschreibung

Diese Masterarbeit beschreibt die Reformen der Eigenkapitalregulierung, die nach der Finanzkrise unternommen wurden. Sie untersucht besonders die möglichen Folgen der Erhöhung des Eigenkapitals der Banken auf die Gesellschaft.

Die Aufsichtsbehörden waren von der Finanzkrise gezwungen, so schnell wie möglich Regulierungsmaßnahmen zu ergreifen. Folglich hatten sie nicht die Zeit gehabt, genau zu untersuchen, warum das weltweite Bankensystem so instabil sein könnte. Das vorgeschlagene Konzept von Basel III, die keine empirischen Überprüfungen unterzogen wurde, sollte das weltweite Bankensystem rehabilitieren.


Die Ergebnisse dieser Studie zeigen, dass die Beseitigung des risikoadjustierten Basel Ansatzes von dem internationalen Rechtsrahmen eine Grundanforderung der Auferstehung des Bankensystems ist. Dafür sei notwendig eine wesentliche Erhöhung des Eigenkapitals der Banken, beispielsweise 20 bis 30% von dem Gesamtvermögen. Es ist die höchste Zeit für die Bankgesellschafter mehr Risiko zu übernehmen und mehr Eigenkapital zu bringen.

Die Steigerung des Eigenkapitals ist ein heikles Thema nicht nur wegen einer möglichen Erhöhung der Gesamtfinanzierungskosten der Banken, sondern auch wegen einer Steigerung der Kreditzinsen. Aber die Steigerung der Kreditzinsen sollte für die Gesellschaft nicht nachteilig sein, weil die Erhöhung der Zinsen die Wahrscheinlichkeit des Bankenbankrottes maßgeblich sinken wird. Folglich sollte das Geld des Steuerzahlers nicht mehr zur
Rettung der Banken eingesetzt werden, sondern in nachhaltigen sozialen Projekten investiert.


_Schlüsselwörter: Eigenkapitalanforderungen, Basel III, Shadow Banking, Finanzkrise, risikoadjustierter Ansatz, Steuerbegünstigung, staatliche Subventionen._
Lebenslauf

Oana Pirnuta, Lic.
rumänische Staatsbürgerschaft

Berufserfahrung

7.2011 - 09.2011 Praktikum Procter&Gamble Bukarest, Rumänien
SAP User - Internal Buyer Analyst
Verantwortliche für die Beschaffung der Materialien für das Unternehmen Procter&Gamble Köln und Crailsheim
Verwaltung von Verträgen mit den Lieferanten
Wirtschaftliche Analyse von SAP-Berichten

09.2010 – 05.2011 S.C Unic Rucar S.R.L, Junior Consultant für EU-Fördermittel
Verantwortliche für die Analyse der Berechtigungskriterien für die Auswahl der passenden EU-Fördermittel
Überwachung der legislativen Veränderungen betreffend die EU-Fördermittel
Erstellung von Machbarkeitsstudien (rückzahlbare und nicht rückzahlbare Aufwendungen, Investitionsplan mit DCF und WACC)

Studium

03.2012 Master of Science Betriebswirtschaft Universität Wien
Finanzwirtschaft und Finanzdienstleistungen

09.2008 – 07.2011 Bachelor of Science Betriebswirtschaftslehre an der Akademie für Wirtschaftsstudien Bukarest, Unterrichtssprache Deutsch

09.2009 – 10.2010 Stipendium Technische Universität Dresden
Studiengang Wirtschaftswissenschaft, Hauptfächer Internationale Betriebswirtschaft und Finanzmärkte
Auslandsaufenthalt

2011  Setubal, Portugal
Teilnahme an dem Projekt “Europäische Fördermittel. Eine Herausforderung für Rumänien”

2009 - 2010  Dresden, Deutschland
Stipendium Technische Universität Dresden

2007  Saarbrücken, Deutschland
Intensivsprachkurs Deutsch als Fremdsprache

Sprachkenntnisse

Muttersprache  Rumänisch
Fremdsprachen  Englisch (Fließend)
               Deutsch (Fließend)
               Spanisch (Gut)
               Französisch (Schulkenntnisse)

EDV-Kenntnisse  MS Windows (Anwenderkenntnisse)
                MS-Office
                SAP, R Statistical Package, SPSS Statistical Analysis

Nebenbeschäftigungen

2013 – 2014  Universität Wien
Forschungsprojekt „Gesundheitsverhalten und – investitionen“ im Rahmen der Vorlesung Empirische Sozialforschung

2012  Delloite, Wien
Finanzielle Bewertung von AT&S für eine M&A

2012  Austrian-Illinois Exchange Programm, Wien
Vorlesung „20. Jahrhundert Deutsche Literatur“

2011  Akademie für Wirtschaftsstudien, Bukarest
Spezieller Preis an der Tagung der studentischen wissenschaftlichen Forschung, Artikel “Beziehung zwischen Politik und Wirtschaft im Kontext der Wirtschaftskrise”

2010  
**BRD Groupe Societe Generale, Bukarest**
Teilnahme an der Studie “Study Challenge - Corporate Social Responsibility”

2010  
**Technische Universität Dresden**
Organisation und Teilnahme an der Konferenz “New Challenges for Technology and Sciences in Our Lives” mit dem Artikel “The role of innovation in the financial crisis”

2010  
**Technische Universität Dresden**
Forschungsarbeit “Romania transaction to a market economy - a retrospective analysis”

**Urkunden**

2012  
Rumänisches Justizministerium
Deutsch-Rumänisch, Rumänisch-Deutsch Übersetzerin

2010  
Technische Universität Dresden
Advanced Business English Zertifikat, Niveau C1

2011  
Goethe Institut
Test Deutsch als Fremdsprache (DAF)