

Gambling on a bail-out: Regulation, Moral Hazard and Time Inconsistencies in the International Banking System

M.Sc. Thesis International Finance and Banking

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ABSTRACT

The purpose of this thesis is to analyze the international banking system from a broad perspective. The intent is to study the legal and regulatory framework in modern banking in order to gain insights into key debates that are currently taking place amongst policy planners on an optimum banking structure. The subprime crisis of 2008 is used as an entry point into these debates as many of the initiatives to improve the architecture of international finance are directly induced by the disastrous effects of the crisis.

Banking systems are vulnerable to failures due to the maturity mediation process which banking institutions perform. Financial regulation is aimed at protecting banking systems and ensure financial stability. Various differences exist in the implementation and scope of financial regulation across financial markets and borders. These discrepancies challenge the principle of a single market in financial services in Europe. In the US, banks and financial institutions co-exist inside and outside of the Federal Reserve System. International financial markets are therefore fragmented from a regulatory perspective.

The problem of institutions considered too-big-to-fail relates to systemically important firms that cannot fail without discharging a shock throughout the financial system. In recent years, banks and financial institutions have achieved growth which is disproportional to growth in other sectors of the economy. The importance of a well run banking system has increased in proportion to this growth. At the same time, policy planners have not been able to formulate responses that facilitate financial stability without increasing moral hazard. Therefore, the growth of the banking sector has represented a shift in power from the government and to private financial companies. Current regulatory reforms are largely aimed at rebalancing control in the financial system and reduce moral hazard.

PREFACE

The rationale for choosing this topic relates to the interest in banks as systems that was triggered within the author pursuing the collapse of the major Icelandic commercial banks in the fall of 2008. This interest induced me to seek admission to the Master of Science program in International Finance and Banking at Bifröst University, in an attempt to gain understanding on the events that had taken place. The Icelandic case showed clearly how the relative size of banks to the economy gives them increased systemic importance and therefore leverage over governments. Investigations are now showing that Icelandic banks did not respect exposure limits with respect to related parties, and evidence shows a degree of market abuse with regards to uncollateralized loans made to insiders that were made to buy stocks in those same banks. Other investigations, both public and academic, seem to imply that the government and the supervisory authority were hesitant to take measures to curb risk in the banking system, and demonstrated regulatory forbearance at best, and gambling for resurrection at worst. The reason why Iceland was not chosen as a focal point for the paper is that although its crisis was certainly due to excessive growth and interest rate-and currency speculation, just as the international subprime crisis was originated from aggressive lending that was made possible by abundant liquidity, financial deregulation and inconsistencies with regards to incentives; the Icelandic case shows certain homemade traits that render it less interesting as a tool to understand banks within systems and more interesting as a criminal investigation. It does however show some of the issues related to cross border activities of European banks and the various gaps that exist in banking regulation.

Keeping a broad focus also allows comparing regulation in different countries and understanding the dynamics of international banking. Although this poses a challenge in terms of formulating a precise question and creating a clear answer to it, it offers the opportunity to indulge in the various debates that exist around the optimal banking structure to map the main controversies and problems that still exist, and are unresolved on the international level. Opting for a broad viewpoint is therefore intentional and serves a double purpose of providing an overview of key debates that are taking place internationally with regards to topics as regulation, supervision and moral hazard, and putting recent events into an academic perspective.

INDEX

ABSTRACT.....	3
PREFACE.....	4
LIST OF FIGURES	7
Introduction.....	9
I. The US – Financial Markets and Deregulation	11
Glass-Steagall and the deregulation of US Financial Markets.....	11
Subprime housing loans.....	12
Securitization	13
SIVs and SPVs.....	15
Serious consequences.....	18
II. Legal Framework and Supervision.....	20
Rationale for regulation	20
Legal framework in Europe	21
Legal framework in the UK	24
Legal framework in the US.....	25
The Dodd-Frank legal reform	26
Serious Gaps in Financial Regulation.....	27
Controversies	30
Different priorities	33
Effective Supervision and the Lamfalussy Framework	34
Consolidated Regulator with macro-economic responsibilities.....	39
The Bank of International Settlements and the Basel committee	42
Adequate Regulatory Capital	43
III. Too-Big to fail and moral hazard.....	49
Systemic Importance, Deposit Insurance and LOLR.....	49

Contagion effects	56
Looting and the fall of Lehman.....	58
IV. Remuneration and incentives.....	63
Agent theory and remuneration systems	63
V. Accounting analysis	67
Methodology	67
Consolidated Growth – Total Assets	70
Conclusions:.....	80
References:.....	85
Appendices:.....	94

LIST OF FIGURES

Figure 1 – Simplified SPV/SIV structure:	17
Figure 2 – Reformed US Supervisory Structure:.....	32
Figure 3 – Reformed EU Supervisory Structure:.....	41
Table 1 – US TARP Consolidated Growth of Total Assets.....	70
Table 2 – EU Banks Consolidated Growth of Total Assets.....	71
Table 3 – Icelandic Banks Consolidated Growth of Total Assets	71
Table 4 – US TARP Consolidated Growth in Total Deposits	72
Table 5 – EU Banks Consolidated Growth in Total Deposits	73
Table 6 – Icelandic Banks Growth in Deposits	73
Table 7 – US TARP Total Deposits to Total Assets Ratio	74
Table 8 – EU and Icelandic Banks Total Deposits to Total Assets Ratio.....	74
Table 9 – Lehman Brothers Inc. Growth in Total Assets	76
Table 10 – Average size: TARP Recipients 2008 vs. US Bank failures 2008-2011	77
Table 11 – GDP Growth vs. Bank Growth	79

Introduction

Cash is king. This simple phrase eloquently resumes the problems major financial institutions began facing in late 2007 in the wake of the most severe banking crisis for decades, a banking crisis that eventually turned into a world recession with serious consequences for the real economy. In this paper, some of the root causes of these events will be discussed. Factors such as global imbalances, financial innovation, and incorrect placing of risk played a large role in the folding of the crisis while an incomplete regulatory framework created the playing field in which excessive risk could be taken. The paper therefore focuses on the regulatory aspects of banking to answer questions on how moral hazard in the banking system induced perverse investment strategies that focused on growing the asset side of balance sheets via either generation of new assets (such as loaning and subsequent *originate-to-distribute* loaning) or deposit taking. The hypothesis is that certain financial institutions purposefully grew their balance sheet at the onset of the US originated subprime crisis and kept on doing so even after it became apparent that their business models were not sustainable. The hypothesis maintains that the purpose of this growth was to ensure a *too-big-to-fail* status from a systemic perspective, and thereby increase the probability of receiving emergency lending from a lender of a last resort when, and if, such assistance would become necessary. The hypothesis is made on the basis that deficiencies in the regulatory framework effectively allowed banks and other financial institutions to become too-big-to-fail and did little to curtail moral hazard. In other words, major banks stood ready to take on huge risks as ultimately the lender of last resort, the central bank, would provide a bail-out in the case of a failure. To demonstrate this, evidence from the United States and Europe will be used, as well as the case of the Lehman Brothers, to illustrate some of the risk taking that in retrospect is difficult to explain outside the concept of moral hazard.

To explain moral hazard and the notion of too-big-to-fail, the main theoretical work surrounding this topic will be introduced with a focus on the various perverse risk incentives that exist due to deposit insurance schemes on one hand, and the existence of lenders of last resort on the other. Classic agency theory will be introduced and used to understand incentive problems in a banking context and cast light on why it seems that short term focus was given

priority over long term investment strategies although the latter is by most viewed to be more suitable for a socially responsible bank. The paper begins with an analysis on the events leading to the subprime crisis, before looking at specific examples that enforce the hypothesis. Some thought will be given to the fact that financial markets evolve faster than regulation and a debate will be opened on the effects of government intervention to contain the size and activities of a given market, as opposed to adopting reactive regulation. The discussion is for instance relevant for the cross border activities of European Financial Institutions today.

The results of an independent analysis of accounting data of a selected pool of US and European financial institutions will be presented in a separate chapter. The purpose is neither to conduct an overly exhaustive technical analysis of accounting data nor to create a database that could be used for regression analysis. A large amount of data for international financial institutions will however be presented in an attempt to capture growth, as measured by total assets, and show that the hypothesis has merit.

The remainder of the paper is organized as follows: Chapter I includes an overview of the financial crisis of 2007 and its roots. Chapter II introduces the legal framework governing activities of financial institutions in the EU, the US and the UK, the supervision of financial companies and the reforms that are currently taking place on both fronts. Chapter III talks about moral hazard and the notion of too-big-to-fail institutions and outlines the main theory and practical problems related to these topics. Chapter IV introduces corporate incentive systems and remuneration of major financial firms using the Lehman Brothers as an example. Chapter V includes an accounting analysis that purports to reinforce our hypothesis. The last chapter is reserved for conclusions. An appendix with main results from the accounting analysis is provided separately.

I. The US – Financial Markets and Deregulation

Glass-Steagall and the deregulation of US Financial Markets

It is now widely accepted that the roots of the financial crisis lie in the United States and therefore this paper starts by reviewing the US market and its development over the last decades. The US market has gone through a series of deregulation since the legal reforms made with the Glass-Steagall act of 1933, by which the FDIC (Federal Deposit Insurance Corporation) in the United States was established. One part of the banking reforms the act introduced was a total separation between the activities of commercial banks, licensed to receive deposits from the public, and investment banks. Prior to the Great Depression banks could freely engage in both commercial and investment banking under the same entity. This led to the kind of excessive risk taking that collapsed the financial system at the time and the Glass-Steagall act was intended to restore trust in the system (Landsberg, 2006). The act was successful and regulation was reinforced over the next decades. In 1956 banks were prohibited from carrying out insurance activities under their own name. As financial markets grew more robust and trust in them strengthened, the demand for deregulation became louder. Financial markets were becoming more international and major financial institutions in the US were operating across borders. In other words, the feeling was that an asymmetric regulatory structure was a threat to the competitiveness of the financial system and that deregulation was necessary. In addition the general judgment had become that financial markets were in many ways self-regulatory and efficient, corresponding to the work of leading modern economists such as Paul A. Samuelson and Eugene F. Fama. In addition, Alan Greenspan, Chairman of the Federal Reserve of the United States from 1987-2006, was a firm believer in free market principles and strongly in favor of deregulation. These pressures led to progressive repealing of the Glass-Steagall act and it was effectively repealed when President Bill Clinton signed the Gramm-Leach Bliley Financial Service Modernization Act of 1999, eliminating the last barriers between commercial and investment banks and allowing deposit receiving banks to enter into more areas of risk, including underwriting and proprietary dealing. It was argued that with the now sophisticated risk management tools available to financial institutions the rationale for regulation was no longer

strong and that the market provided all the right incentives for self-regulation. In hindsight this was wrong.

Subprime housing loans

With the final repeal of the Glass-Steagall act in 1999 financial markets became more competitive with more of the major institutions providing services intersecting between traditional commercial banking, investment banking and insurance activities. This also meant that two regulators were now in charge of supervising separate ends of the same financial system. The FDIC was in charge of regulating commercial banks and supervising capital requirements and loaning standards. The SEC (Security and Exchange Commission) was in charge of regulating investment banks and stock brokerages. With added competition, market rates for loans and risk premium lowered and borrowers that due to the volatility of their income and limited asset base would normally not have had access to banking loans now could. We will later talk about how added competition among banks can decrease their franchise value and provide incentives to take on increased risk. First it is important to understand different types of credit quality criteria in the US.

Mortgage loans in the US are generally categorized in three broad classes: (A-Paper), Alt-A (Alternative A-Paper) and subprime. The subprime loans are the *non confirming* ones, i.e. they do not meet requirements for guarantee and resale to the two Government-Sponsored Enterprises for mortgage loans in the US: Fannie Mae (The Federal National Mortgage Association) and Freddie Mac (The Federal Home Mortgage Corporation). In other words, they do not meet underwriting criteria. Subprime lending was indeed prohibited in many states and was only made legally possible after the Depository Institutions Deregulations and Monetary Control Act of 1980. They did however not become commercially feasible until six years later when a tax reform (The Tax Reform act of 1986) created a tax incentive to engage in subprime lending. Before the reform, all consumer loans were deductible from income tax. After the reform, only interest rate charges on primary residence and second mortgage were deductible from this tax. Therefore, lending institutions found themselves with a tax incentive to allocate resources to making housing loans whereas before tax benefits were

associated with any type of consumer loans. The reform thus created a commercial incentive to focus on housing loans over other types of debt provided to consumers. As the amount of available prime and Alt-A borrowers is limited, loans to subprime borrowers became increasingly popular amongst consumer lenders. By 2003-2004 subprime debt was a growing part of the outstanding mortgage debt originated in the US (Federal Reserve Bank of San Francisco, 2007).

Securitization

After the burst of the high tech bubble in and around the years 2000 and 2001, investors became more risk averse and capital flowed to more tangible and traditional forms of investment such as real estate. Under normal conditions a larger proportion of risk adverse investors would have invested in the Government Bond market, but the Federal Reserve had already lowered the interest rate to a historically low level¹ in view of supporting growth and stimulating the economy. The growing real estate market therefore became quite attractive as it seemingly provided a high, low-risk yield. This led to rising asset prices and to more banks responding to the demand in housing mortgages by increasing lending. With the combination of subprime mortgages both legally possible and commercially feasible, and low market rates providing abundant liquidity, credit quality deteriorated as various agent-problems arose². One of these agent problems was manifested through the so called *originate-to-distribute model* that allowed lending institutions to make loans to consumers and move these loans away from their balance sheets via securitization³. Loan sales of this kind severed the link between lender and borrower and eliminated many of the incentives lending institutions had to screen loans and uphold strong credit standards. Securitization of housing loans had been in existence since 1970 but as subprime loans were not permitted, the securitized loans were generally of a higher credit standard than loans securitized after subprime loans were allowed

¹ See: <http://www.the-privateer.com/rates.html>. Retrieved Sep 1 2010.

² A more detailed discussion about agent problems is provided for in later chapters.

³ Financial securitization is a structured financial process that aggregates assets in a pool of assets which can be sold to end investors.

and became popular. This is e.g. supported by Purnanandam (2009) who shows that US banks primarily active in originating loans with the purpose of reselling them, generated lower quality loans than other banks and did not withhold adequate borrower screening standards. Others (Gorton & Panacchi, 1995 and Petersen & Rajan, 2002) have shown how loan screening and monitoring incentives deteriorate with loan sales and the absence of relationship banking; a clear example of moral hazard with regards to risk shifting/sharing.

One of the reasons securitization of consumer loans became popular was the belief that by mixing together assets with different credit quality, it was possible to diversify the risk of a given asset pool and to create a saleable asset out of an illiquid one. By this, in theory, risk could be spread more evenly throughout the economy and its capacity to absorb losses without systemic consequences increased. With securitization it was possible to structure financial products in such a way that they yielded higher returns for what appeared to be the same level of risk. This mixture of higher yield for the same perceived level of risk certainly responded to the demand for higher returns in the low interest rate environment of the beginning of the millennium. Another perceived benefit of securitization was the ability to allow banks to free up capital that could then be used for further lending, thereby permitting lending institutions to benefit from their comparative advantage in loan origination. Further, originate-to-distribute lending was indeed an effective way to enlarge the balance sheet and maintain the growth levels board members and investors demanded without being restricted by regulatory capital requirements. In the post stock crisis atmosphere of the beginning of this century this was viewed as a sensible strategy, both by market participants and the government, to prevent a slow-down in the real economy and to help speeding up recovery. There are several logical reasons for this. For one part, it is not clear whether originating banks are best suited to hold the loans they originate to maturity due to a classic credit paradox: loan originators risk over-concentration in certain industries and areas and face various behavioral pressures to maintain client relationship, sometimes via forbearance. In principle, this can be avoided with loan sales. For the other, capital requirements can be a suboptimal burden for banks that hold their loans to maturity and constitute an impediment to socially desirable macroeconomic growth (Demetz, 2000 and Cebenoyan & Strahan, 2002). In retrospect, the originate-to-distribute model raises questions about whether banks primarily involved in originating loans for sale did so purely for capital relief and risk

sharing motives or if, on the contrary, their motivation was to originate as many loans as possible to boost fee income and make way for further growth via lending.

SIVs and SPVs

Whatever the motives, growth was rapid and the volume of MBSs (Mortgage Backed Securities); created with pools of mortgage loans, and ABSs (Asset Backed Securities); made up of different kind of consumer loans (including commercial loans, automobile loans, credit card receivables and also mortgages), grew fivefold from 1990 till 2007⁴. In fact 39% of all loans outstanding in the US market were of this nature. Higher demand for these structured finance products was created through the creation of so-called SIVs (Structured Investment Vehicles) which were off-balance sheet entities indirectly owned by a sponsoring bank. The business model behind it was fairly simple; the SIV was funded by the issuance of short term, low interest bearing commercial papers and mid-term notes. These short term proceeds were then invested in long term-higher yielding securities, such as MBSs and ABSs, which again had been pooled together in structured finance products called CDOs (Collateralized Debt Obligations). Studying CDOs would be a topic for a whole dissertation but they will only briefly be introduced here as investment grade securities that due to their different tranches (risk classes) could receive different credit ratings from the credit rating agencies, and be sold to a large variety of end investors via underwriters. The different risk classes and the lack of transparency as to the quality of assets in the structure, made CDOs quite complicated. The spread between the long term high yield and the short term lower interest rate was a real source of revenue for the sponsoring owners of SIVs as long as liquidity was abundant and trust in markets high. In fact the SIVs formed a shadow banking system due to the maturity transformation⁵ performed by earning a spread between assets and liabilities; an activity that forms the essence of a deposit taking commercial bank. This system was outside the reach of banking regulation because of its ownership structure.

⁴ U.S. Federal Reserve – NERA Economic Consulting as quoted in “Multination Business Finance”, Eiterman, D., Stonehill, A., & Moffet, M. (2009).

⁵ Maturity transformation is the function of taking on short term risk to fund long term projects

A strongly related special vehicle was the SPV (Special Purpose Vehicle) that similarly was an off-balance sheet entity sponsored by investment banks to buy different kind of ABSs and group them together in CDOs. Special Purpose Vehicles are quite common throughout the economy and not only in the banking system. They are normally limited liability companies which are set up for a narrow, limited time purpose. Their main benefit is that they remove risk from a parent company and thus help achieving goals which are aligned with the strategy of a firm but not its risk appetite. The SPVs that were used to create CDOs were often located in offshore financial centers in view of evading regulation and take advantage of a laxer tax environment. To effectively remove these SPVs companies from consolidated balance sheets of sponsoring banks, the ownership structure had to be such that the company would neither be taken into consolidated accounts, nor be affected by the regulator overseeing the activities of the sponsor. Similar to the SIVs this could be achieved by setting them up as so called “orphan” companies⁶.

The SPVs’ purpose was to buy assets from lending institutions and banks and bundle them into commercial papers – the CDOs - whose value was collateralized with the underlying assets. These bundles were then rated by one of the credit agencies before being sold to one of the big underwriting investment banks such as Lehman and Bear Stearns, who in turn created others structures with them. Those commercial papers were then sold on to a large variety of investors, including hedge funds, pension funds and private investors.

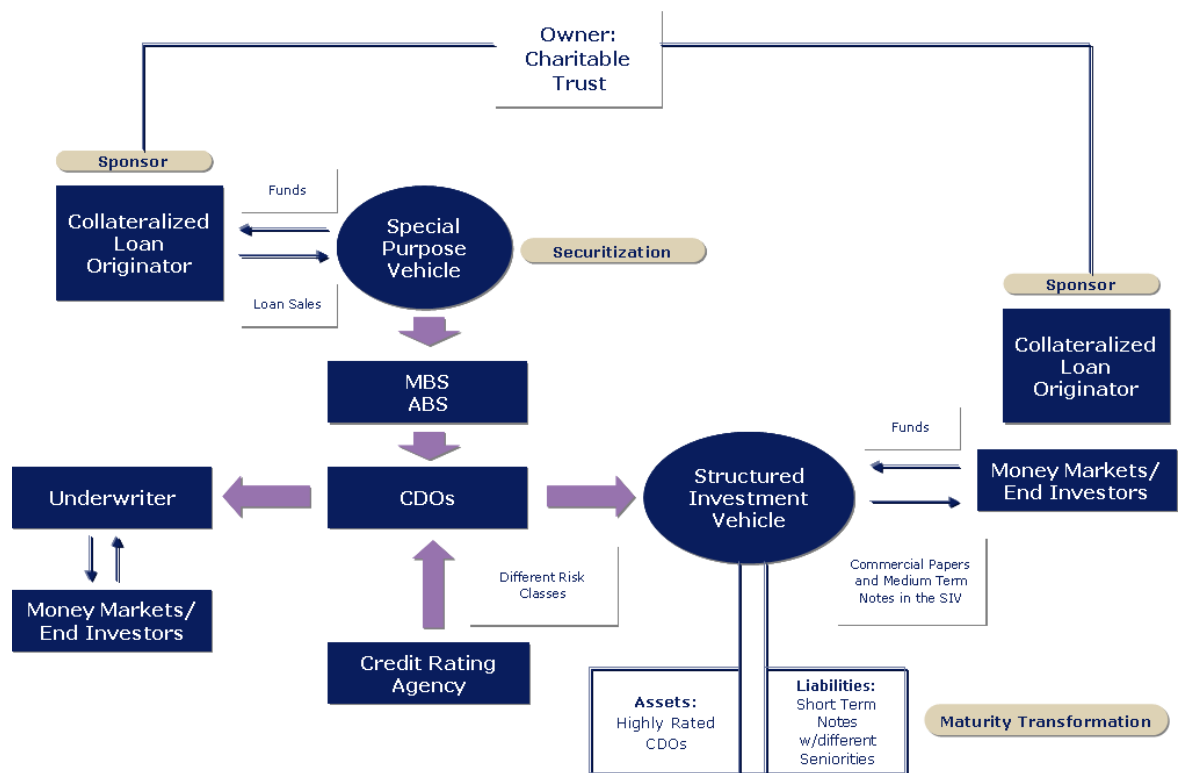
Along the lines of modern portfolio theory⁷, it was thought that by bundling securities of different credit quality together it was possible to achieve a diversification that would reduce risk and yield higher returns. Securities that did not meet investment grade were therefore grouped together with higher rated issues and sold to end-investors. In the low interest rate environment in the US, the CDOs reached high popularity and were bought by investors around the world. Looking back, it is quite clear that the spreading of CDOs all over the global financial system was one of the main reasons the banking crisis also spread so widely.

⁶ Referring to a company whose shares are held by a trustee or a charitable purpose trust, thus the company is not beneficially owned by anyone. These structures were common features of vehicles used for securitization. For more insights, see e.g. Ashman, 2000.

⁷ Introduced by Harry Markowitz in 1952

Other factors also contributed to added risk and leverage in the financial system such as CDS (Credit Default Swaps)⁸ and the kind of credit enhancement⁹ that was done with the CDOs via credit ratings and at times, sponsoring banks.

Figure 1 – Simplified SPV/SIV structure:



Source: Original Chart

⁸ Credit Default Swap is a default insurance that does not require an exposure to the underlying assets. The seller of the swap guarantees the creditworthiness of the asset. The buyer can either hold the CDS for default protection, against a concrete risk exposure, or for speculation purposes.

⁹ Credit enhancement is the process of adding guarantees on the issue of a bond for principal and interest payments. This can be done explicitly, for example via credit rating, or implicitly via additional collateral.

Serious consequences

The purpose of securitization is to spread risks and as such it is viewed as a quite helpful tool. It has however become clear that the type of securitization done with CDOs did quite the contrary. These instruments became highly complicated and overreliance on credit ratings led investors to ignore the risks inherent to their non-transparent structure. When housing markets in the US started to tremble in the year 2005 and finally collapsed in 2007, because refinancing had become too difficult due to the adjustable-rate nature of most of the subprime borrowings, the overall exposure in the financial system to this increase in defaults was quite unclear. Two hedge funds at Bear Stearns holding mainly CDOs failed, and soon after the British bank Northern Rock had to be rescued by the Bank of England. In this environment, trust eroded and trade in CDOs came to a total halt while institutions rushed to liquid their positions. In an attempt to bring liquidity into the market, the US Federal Reserve bought \$38 billion in MBSs in August 2008 and a month later the US government had to place Fannie Mae and Freddie Mac into conservatorship¹⁰ as they were near insolvent. One week later (14th of September 2008) the world famous investment bank Lehman Brothers filed for bankruptcy. The news shot a shiver of panic around global financial markets. US LIBOR rates skyrocketed and equity markets plummeted. The world biggest insurance company, AIG (America International Group), was taken over by the US Federal Reserve two days after the fall of Lehman and in the following weeks financial institutions all over the world failed and others were saved with a variety of bail-out packages¹¹.

The effects of these events were disastrous for the real economy. Lending of all kind almost stopped, with companies relying on banks for short term funding of working capital going into bankruptcy or having to reorganize. What had started as a credit crisis had turned into a global crisis of recessional proportions with layoffs and dim outlook for return on future investment. While international macroeconomic developments and global imbalances¹², mixed with low interest rates and weakened equity markets, certainly played a major role in

¹⁰ Conservatorship is a legal concept in the US, where an entity or organization is subjected to the legal control of an external entity or organization, known as a conservator.

¹¹ See any financial publishing from this period for references

¹² Within the discussion on macroeconomic developments in the US and low interest rates it is important to keep in mind that US ran two expensive wars (in Iraq and Afghanistan) which attributed to global imbalances. At the same time the George Bush administration introduced large tax cuts.

creating the grounds for a global crisis throughout the first decade of this century, it is in retrospect clear that incentives were misplaced in the financial system. The focus on originating as many loans as possible only to have them underwritten, bundled together with different type of securities and sold, was made possible by the kind of financial deregulation that took place in the US over the last 15-20 years. Both factors will be studied in more detail but let us first introduce the main legal framework governing the activities of international financial institutions

II. Legal Framework and Supervision

Rationale for regulation

In the perfect market according to Adam Smith there are no market frictions. Market participants have symmetric access to information, all participants are without power to set prices with equal access to technology and there are no barriers to exit or entry. While this might be possible to attain in theoretical models, reality is that without some sort of regulation fair markets could not operate¹³. One of the reasons financial markets and the activities of financial institutions are regulated is that without proper regulation, markets are vulnerable to frictions such as dishonesty, decadence and fraud. In addition they are susceptible to externalities such as monopolistic behavior of key players. We will therefore claim that rules make markets possible and that they create a more level playing field, where unrelated parties can engage in contracts without fearing that disputes will not be settled fairly in accordance with predefined rules. In principle, rules are made to move markets closer to a perfect market condition. In reality, this is difficult due to the kind of externalities described above. Financial institutions are important for a well run society and as such are subjects to various rules, laws and regulations just like any other sector important for the well being of citizens (such the health-care sector). From this we derive that financial institutions and markets are regulated for a two-dimensional purpose that relates to the public interest of protecting consumers and establishing trust¹⁴. From a systemic point of view, some banks are more important than others and cannot fail without serious consequences far beyond the scope of their operations. Regulation is therefore also partially intended to make sure this type of institutions operate within a structure that reduces risk of failures. These banks are often referred to as too-big-to-fail and we will be studying this concept in more detail later. First let us introduce the legal framework in Europe governing the activities of financial undertakings before we introduce the US legislation and draw out the main differences.

¹³ For an original and an interesting view on the inefficiency of the market to regulate itself and on its irrationality, see e.g. Ubel, Peter A. (2009). *Free Market Madness: Why Human Nature Is At Odds With Economics — And Why It Matters*. Boston: Harvard Business Press and Shiller, Robert J. (2005). *Irrational Exuberance*, 2nd ed. NJ: Princeton University Press.

¹⁴ For a more detailed treatment, see Heffernan (2005), pp.173-174

Legal framework in Europe

In the interest of the internal single market in Europe - and the four freedoms of Goods, Capital, Services and People – financial services are regulated under EU law. The first directive which was made to create an integrated European market in banking and finance dates back to 1977 when the First Banking Directive came to being. It defined a credit institution as any firm making loans and accepting deposits¹⁵. In 1989, this directive was replaced by the Second Banking Directive which introduced the principle of “mutual recognition” in cross border banking, whereby credit institutions are granted a “passport” to offer its services anywhere within the single market as long as the member states have adopted financial laws that meet minimum standards. The permissible activities were very broad and included a long list of financial activities. Today, the key legislation relating to the banking sector is Directive 2006/48/EC which stipulates the prerequisites for the taking up and pursuit of the business of a credit institution. It was created as a part of the EU Financial Services Action Plan¹⁶ to complete the work needed for a single internal market in financial services and to allow for the kind of framework required to achieve a Community level legislation for the operations of credit institutions¹⁷. It essentially sets out the rules institutions need to adhere to and lies down the provisions regarding competent authorities with regards to supervision and quality control in the European Financial system. It similarly outlines the right for the carrying on of cross border activities and establishment of financial institutions within the EEA (European Economical Area. Members are the 27 EU countries plus Iceland, Norway and Lichtenstein) and sketches out the responsibility of host member states in banking supervision¹⁸. When analyzing the financial crisis of 2007 and 2008 it

¹⁵ See First Council Directive 77/780/EEC, Title 1, Article 1. Retrieved Sep 12, 2010 from <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31977L0780:EN:HTML>

¹⁶ The EU FSAP put down a timetable and a plan for specific measures to be taken to achieve the three strategic objectives of establishing a single market in wholesale financial services, open up retail markets and secure and strengthen the rules on prudential supervision. See http://europa.eu/legislation_summaries/internal_market/single_market_services/financial_services_general_framework/l24210_en.htm. Retrieved Sep 12, 2010

¹⁷ See section (4) of Directive 2006/48/EC: http://eur-lex.europa.eu/LexUriServ/site/en/oj/2006/l_177/l_17720060630en00010200.pdf. Retrieved Sep 12, 2010

¹⁸ Home member state is to carry out the responsibility of supervising the financial soundness of the credit institution, particularly its solvency (but also large exposures) while the competent authorities in the host member

becomes clear that cross border supervision between host and home member states was not adequately carried out and real losses occurred to society as a result. This can for instance be argued with regards to the branches of Icelandic commercial banks in the UK and the Netherlands as we will discuss later.

Banking activities in investments and securitizations are governed by Directive 2004/39/EC on Markets in Financial Instruments: MiFID. Similarly to directive 2006/48/EC, it was created to strengthen the internal market and to create a level legal playing ground for investment services and regulated markets. Its main purpose is to provide investors with legal protection and preserve market integrity with a harmonized set of rules across European markets over and above the national level. Another objective is to promote *fair, transparent, efficient* and *integrated* financial markets. It is a legal frame focusing on investor protection and market transparency via record keeping obligations and admission requirements for financial instruments, but also on the organizational aspects of the conduct of business. More detailed provisions on the organizational requirements and operations are provided for in the Directive 2006/73/EC which *effectively* implements the regime outlined in MiFID. Organizational requirements are such requirements that apply to compliance, risk management, complaints handling, personal transactions, outsourcing and identification, management and disclosure of conflicts of interests¹⁹. More detailed rules on transparency are set in Directive 2004/109/EC on the harmonization of transparency requirements about issuers of securities admitted for trading on regulated markets.

On the country level within the EEA, these directives are implemented into local legislation via various acts²⁰ which emphasize on the importance of written agreements outlining rights and obligations of the parties to the contract, and transparency with regards to costs such as transaction fees. There are also detailed rules on informational requirements to assure that

state is to supervise the liquidity of branches and monetary policy. Market risk is to be subject of close cooperation between the competent authorities in the home and host member states. See Title V, Chapter 1, Sec. 1 but also Articles 131, 132 and 142 of Directive 2006/48/EC. Retrieved Sep 12, 2010 from <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32006L0048:en:NOT>

¹⁹ See section (3) of the Directive 2006/73/EC. Retrieved Sep 15, 2010 from <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:241:0026:0026:EN:PDF>

²⁰ In Iceland, Act No. 108/2007 on securities transactions implements these EU Directives along with a separate set of rules on investor protection; regulation 995/2007

investors are given advice according to their understanding. An underlying principle is that any risk inherent to a specific transaction is known to the investor before the transaction is entered into. This information shall be *clear, reasonable* and not *misleading*²¹. The informational requirements vary depending on the three categories of investors: eligible counterparties, professional investors and retail clients, with some products only available for the first two and stronger investor protection for retail clients²².

In fact the MiFID Directive instructs that before an individual transaction certain information must be obtained from the client regarding his investment knowledge and experience in the particular security being traded, his financial situations with regards to the capability to absorb losses and his financial objectives, to ensure advice are given in line with the client's intention with the transaction. Admission of securities to official exchange listings and the information to be published on those securities are covered by Directive 2001/34/EC. Since its entry into force it has been complemented by two other directives to further consolidate the harmonization process according to the objectives of the EU Financial Services Action Plan. In Iceland, the main body of these legislations is implemented into Icelandic laws through Act no. 108/2007 on securities transactions.

Despite the harmonization in terms of Directives provided by the EU for European financial markets, regulation remains fragmented as national legislation diverges in the implementation in each member state. Similarly, the supervisory bodies have different ways of applying the legislation which in turn creates dangerous divergences with regards to under-and overlaps in financial supervision across member states. These are important points to consider and they will be brought up again later on.

²¹ See Article 19 (2) of Directive 2004/39/EC. Retrieved Sep 14, 2010 from <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2004:145:0001:0044:EN:PDF>

²² Professional clients are e.g. legal persons licensed to operate or engage in regulated activities in financial markets (such as financial undertakings, businesses in the financial sector, insurance companies, pension funds etc.) but also national or regional governments, central banks, international institutions and other parties approved as professional clients. Eligible counterparties are those from this group that agree to the classification of eligible counterparty (for all transactions or only a particular one) and as such receive limited investor protection). See Annex II of Directive 2004/39/EC.

Legal framework in the UK²³

Considering UK's position as non-EU Monetary Union participating member of the European Union, it is fitting to outline key legislation in place in the UK. Although EU Directives play a prominent role in shaping the applicable laws, UK's important position as one of the world's biggest financial centers make the UK a leader in shaping EU wide regulation in banking and finance. Before the Second Banking Directive of 1989, a series of financial reforms to change the structure of UK financial markets had already taken place. Their aim was to allow financial firms to expand into new area of operations and increase competition. During these reforms the concept of *market makers* was introduced, and stock exchanges were allowed to make markets in stock and simultaneously act as brokers. The reforms constituted a series of changes to applicable laws and concentrated in the beginning on reforming laws within which cartels could thrive. These initiatives culminated in the creation of the 1986 Financial Services Act, which stipulated a series of rules aimed at protecting investors and ensuring proper conduct of business through *fit and proper* standards for managers²⁴. The act also introduced a type of self-regulation that was to be conducted by an industry wide organization that held the responsibility of ensuring a properly behaved financial community. A year later, the UK Banking Act of 1979²⁵ was amended to reinforce exposure rules that prevented any single borrower to exceed certain predefined limits, to enhance auditors' rights to raise suspicions of bank fraud, to introduce flagging rules and to keep foreign investment in UK banks conditioned by approval of the Bank of England. It also introduced a Board of Bank Supervision to assist the Bank of England in its supervisory role.

In 1998, another Banking Act was passed to transfer supervisory powers to a newly created Financial Services Authority (FSA), and to enable this new entity to take over the role of authorizing financial undertakings and, where applicable, create prudential regulation for them. It was also entrusted with the supervision of clearing and settlements as well as financial markets. Its powers were further expanded in the Financial Services and Markets

²³ The content of this section is largely drawn on Heffernan (2005), pp. 224-242

²⁴ Standards aimed at ensuring that Directors and Managers of Financial Institutions have the necessary skills and qualities manage them.

²⁵ Created after a banking crisis in 1972, it assigned formal responsibility for prudential regulation of UK banks to the Bank of England and gave it rights to decide whether to authorize a bank. It also established a Depositors Protection Fund with 90% coverage for a deposit up to GBP 35K and a 10% co-insurance.

Acts of 2000 which established the FSA as the sole regulator of all UK financial institutions and bound by statute to achieve certain goals related to its safeguard of public interests²⁶.

Legal framework in the US

If the European regulation and supervision is fragmented, it is even more so the case in the US where banking and financial activities are regulated under federal and state statutory laws with acute differences between states. Different states have different laws on banking and the taking on of financial services with various regulators on both the federal and state level. On the Federal level, statutes for banks and their activities are found in title 12 of the United States Code²⁷. It is divided into 50 chapters with various subchapters and sections with provisions for the different facets of banking. Chapter two on national banks contains the provisions on the organizational requirements for the commencement of banking and defines the scope of their permissible activities. Chapter three provides for the legal text overseeing the Federal Reserve System and reserve requirements for institutions with rights to hold deposits²⁸ (Part (5) of Section 461 of Title 12 of the US code stipulates the reserve requirements of foreign branches, subsidiaries and international banking facilities operating within the US). Chapter three also sets out the objectives and reach of the FDIC (Federal Deposit Insurance Corporation) and the corresponding duties of banks as depositaries of public money. It also codifies the powers and duties of the Federal Reserve Banks within the Federal Reserve System and the subsequent requirements on state banks as members of a banking system. Provisions similar to those laid out in the MiFID Directive are provided for under Title 12 of the US code in various acts that promote consumer protection, information requirements and transparency. Federal laws often pre-empt state law that would else govern certain activities of national banking institution and its subsidiaries. In the US, not all banks are a part of the Federal Reserve System and are as such regulated under the laws of the state where they are chartered, and regulated by the charter state and the FDIC. Banks in the

²⁶ See Financial Services and Markets Act 2000: <http://www.legislation.gov.uk/ukpga/2000/8/section/2>. Retrieved Sep 18, 2010.

²⁷ The US code is a compilation of and codification of the federal law of the United States of America. It contains 50 titles divided in subjects.

Federal Reserve System are jointly regulated by the charter state and the Federal Reserve. The most significant legislation regarding the activities of financial institutions in the US in recent years is the Gramm-Leach Bliley Financial Service Modernization Act of 1999 which, as already mentioned, effectively repealed the last remains of the Glass-Steagall act of 1933 and allowed commercial banks, investment banks, securities firms and insurance companies to consolidate²⁹.

It is not the intend to holistically analyze the legal structure in the US in this paper, but rather to introduce main legislation and the system as a whole to identify regulatory and policy differences between the US and Europe. Such a task cannot be completed without understanding some of the criticism US legal structure has received in the years since the subprime crisis, and the current reforms in US legislation already made and put into effect.

The Dodd-Frank legal reform

Many of the world leading economists, such as the Nobel laureates Paul Krugman and Joseph Stieglitz, have expressed the view that the repeal of the Glass-Steagall act directly endorsed commercial banks to engage in high risk, predatory investment activities that increased the systemic leverage and risk (see e.g. Baram, 2008 and Krugman, 2008). Another view is that the act allowed companies to turn into giants who aggravated the “too-big-to fail” problem in the financial system. The fact remains that a strong need for a political response emerged soon after the onset of the crisis. It has now led to the so called Dodd-Frank Wall Street Reform and Consumer Protection Act, which is widely considered to be the most significant change in US financial regulation since the Great Depression. It attempts to address some of the issues at the heart of the crisis, such as the complicated regulatory structure in the US and the need for consolidation of regulatory agencies. Additionally, it deals with the problem of lack of transparency of *over-the-counter* derivative transactions³⁰ and the necessity to bring them to supervised exchanges. It also provides further protection

²⁹ Previous progressive repeals of the Glass-Steagall had already taken place. An example of this is the permission to allow commercial banks to pursue investment activities.

³⁰ Over-the-counter transaction is a transaction that is negotiated and entered into between two parties directly rather than through a regulated exchange or a clearing house.

for investors, defines the lines of authority between regulators and gives the FDIC power to take over and wind down bankrupt firms. Finally it reduces regulatory overhead by eliminating obsolete bodies and includes various ways designed to increase standards and international cooperation on accounting principles and create more stringent regulation of credit rating agencies. The legislation is the result of work that began immediately during the culminant point of the financial crisis in 2008 as a part of the Emergency Stabilization Act (EESA)³¹ and was aimed at identifying and resolving regulatory issues so to induce a comprehensive reform.

Serious Gaps in Financial Regulation

In the running up of the subprime crisis, serious gaps in financial regulation existed. The system of the so-called shadow banking, which consists of the non regulated generators of credit across the financial system such as SPVs/SIVs, hedge funds and non depositary lending institutions and insurance companies, lacked regulatory oversight and proficient regulation to limit their leverage and participation in maturity mismatch. This undermined the control of systemic risk by regulators focusing on the entities under their jurisdiction (Bernanke, 2010). To respond to this reality, the Dodd-Frank Wall Street Reform and Consumer Protection Act attempts to embed a macro-economic element to the prudential supervision with the creation of a Financial Stability Oversight Council (FSOC). This council is, under the new legislation, entrusted with the consolidated supervision of the financial market as a whole to identify early warning signals and propose corrective measures when necessary. This is largely in line with some of the proposals made on the European level as we will later discover, and effectively addresses the prior problem of regulators focusing on the safety and soundness of individual institutions as opposed to looking out for the system as a whole. Other new agencies created include the Office of Financial Research, a department within the Treasury in charge of providing analysis and support services to the FSOC, and the Bureau of Consumer Financial Protection, established within the Federal

³¹ The act was a direct response to the financial crisis legally allowing the Treasury to spend up to \$700 billion to purchase distressed assets (especially MBS) and make capital injections to banks - effectively bailing them out. For more information see http://www.house.gov/apps/list/press/financialsvcs_dem/essabill.pdf. Retrieved Sep 18, 2010

Reserve to regulate consumer financial products and service in compliance with federal law³².

Another fact put sharply into relief during the crisis was the lack of a resolution regime for systemically important banking and non commercial banking firms such as Lehman Brothers and AIG (American International Group Inc., one of the world's largest insurance companies). This relates back to the notion of companies considered too-big-to-fail and the systemic risks they represent. The reform in the US intends to provide for a resolution path that allows government to resolve a systemically important, distressed financial institution in a way that does not excessively reduce liquidity in the market as a whole and avoids disproportionate adverse effects on the economy. On this front there are various factors that need to be considered such as ways to simplify corporate structures, so that companies can be wound down in a less complicated way, and means to reduce non-transparent interconnections, for example due to complicated over-the-counter derivative contracts. This type of contracts is subject to a reform as well and suggestions made aim at creating centralized clearing houses for over-the-counter-derivatives. This is believed to provide for adequate transparency to assess exposure and accurately evaluate counterparty risk. A centralized clearing house would however need to be properly funded and could eventually become a systemically important institution in itself, and thereby pose a threat to financial stability in the case of becoming insolvent.

From the standpoint of consolidated financial supervision, the reform act intends to enhance the regulatory system by eliminating non-performing agencies such as the Office of Thrift Supervision³³, and transfer and merge powers under the Federal Reserve, the FDIC and the Office of the Comptroller of the Currency³⁴. This is congruent to the recommendations made by the Federal Reserve in the information collection phase prior to the writing of the Act (see Bernanke, 2010). After the reform, the Federal Reserve is in effect the most powerful

³² To read the final Dodd-Frank Act, please visit: http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=111_cong_bills&docid=f:h4173enr.txt.pdf. Retrieved Oct 3, 2010.

³³ The Office of Thrift Supervision was an agency under the US Treasury that held wide responsibilities in the supervision of the insurance company AIG.

³⁴ The Office of the Comptroller of the Currency (or OCC) is a US federal agency established by the National Currency Act of 1863 and serves to charter, regulate, and supervise all national banks and the federal branches and agencies of foreign banks in the United States

supervisory authority in the US with rights to supervise certain non banking holding companies in the same manner and to the same extend as if they were. It is complimented by the new Financial Stability Oversight Council and the Consumer Financial Protection Bureau, which under the new act is responsible of consumer protection and endowed with rights to autonomously write rules for consumer protections governing all financial institutions, whether they are bank or non banks, as long as they offer consumer financial services and products. The act does however not go as far in consolidated supervisory restructuring as it arguably could and leaves most federal regulators intact. It does however, as previously stated, determine lines of authority between regulators and provides instructions on information sharing and cooperation. With the reform the Office of the Comptroller of the Currency assumes the supervision of federal saving and loan associations while the FDIC is in charge of supervising entities on the state level.

In its essence the reform is quite extensive, although many have argued it is neither broad nor far-fetched enough to address the underlying causes of last crisis (see e.g. Grading the bill, 2010), and will have material consequences on how financial services are provided in the United States. Through the creation of the FSOC, it focuses on monitoring systemic risk and mitigating it in a timely and cost effective manner. To reduce systemic risk, it focuses on introducing more rigid prudential standards to ensure adequate capital requirements, liquidity provisions and resolutions schemes for the winding down and taking over of systemically important companies³⁵. It therefore intends to employ a systemic approach to the problem of too-big-to-fail and the associated moral hazard. As already pointed out, this is largely harmonious to efforts made by the European Union to strengthen the financial system and induce macro-prudential supervision to the overall exercise of evaluating the soundness and safety of individual players in the market.

In terms of resolution schemes it expands the resolution authority of the FDIC for insured depository institutions, large banking holding companies and systemically significant non

³⁵ The Federal Reserve Board is required to set risk based capital requirements and liquidity requirements on systemically important bank and nonbank institutions (national and foreign). There are four provisions to capital requirements. See Sections 171, Section 165(b)(1)(A)(i), Section 165(j) and Section 115(c) - <http://www.opencongress.org/bill/111-h4173/text>. Retrieved Oct 10, 2010.

banking financial companies³⁶. To moderate the moral hazard associated with the resolution scheme, provisions that attempt to curtail moral hazard without disrupting the market are included. The financial reform act similarly intends to guarantee that losses are first confined to shareholders and non secured creditors rather than the public tax payer as certainly was the case in the large bail-outs made by the US government under the Emergency Economic Stabilization Act of 2008.

Controversies

One of the main controversies in the creation of the reform bill was the so called *Volcker rule* proposed by the American economist and former Federal Reserve Chairman Paul Volcker³⁷. The rule intended to prohibit financial institutions to conduct proprietary trading – that is trading with own capital for profit - to own or invest in hedge or investment funds and to hold certain type of liabilities. In passing through the US Senate, this rule was diluted to allow investment in hedge funds and private equity funds and proprietary trading in securities issued by some institutions³⁸. Although these exemptions go hand in hand with stricter capital and other quantitative requirements on banking and non banking firms actively performing proprietary trading, it has been argued that by watering down the Volcker rule not enough is done in terms of reducing speculation by systemically important companies (see e.g. Harper, 2010). What the new regulation indisputably achieves is to curtail some of the mortgage lending activities that led to the subprime crisis³⁹ and to bring over-the-counter derivative trading under centralized clearing houses, thus giving regulators more visibility on the scale and scope of the underlying activities and risks. The issue of overreliance of credit

³⁶ Systemically important banks and nonbanks will be required to periodically submit a plan to the FRB, FIDC and FSOC for the rapid and orderly resolution of the company in the event of material financial distress or failure that threatens financial stability. Failing to provide a workable plan can lead to a company being required to divest to facilitate an orderly resolution. See Section 164 (4)(d) - <http://www.opencongress.org/bill/111-h4173/text>. Retrieved Oct 10, 2010.

³⁷ Paul Volcker was in February 2009 appointed chairman of the *President's Economy Recovery Advisory Board* -the advisory body in charge of advising the Obama administration in its recovery efforts.

³⁸ Under the reform act proprietary trading in Treasuries, bonds issued by government entities (such as Fannie Mae and Freddie Mac) and bonds issued by municipalities is exempted from the original rule as proposed by Paul Volcker. See title VI of the reform act. <http://www.opencongress.org/bill/111-h4173/text>. Retrieved Oct 10, 2010.

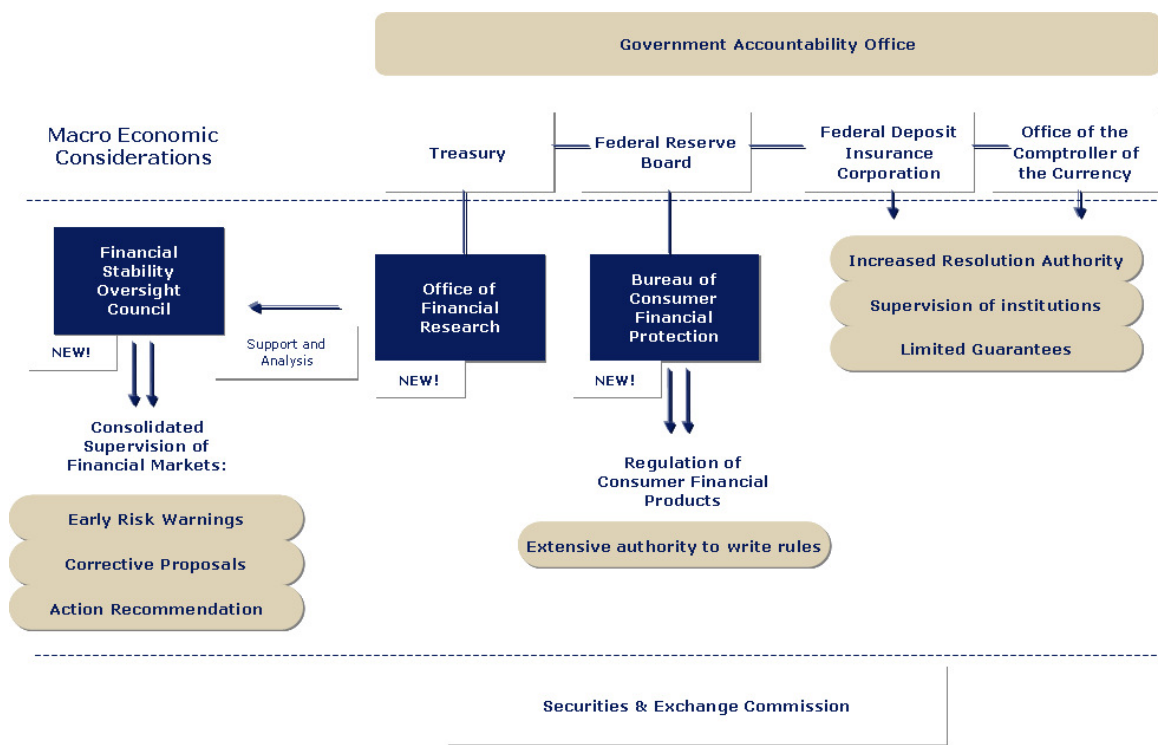
³⁹ For example recommending certain type of adjustable-rate mortgages over others – for more details see Title XIV of the Dodd-Frank Act - <http://www.opencongress.org/bill/111-h4173/text>. Retrieved Oct 10, 2010.

ratings is also dealt with and institutions are required to conduct proper due diligence in their lending and capital market activities.

As we have previously mentioned, the originate-to-distribute securitization of consumer loans severed the link between the originator and the borrower and created moral hazard through risk shifting. This is addressed in the Act in Title IX which guarantees that the originator of a security retains a minimum risk exposure to that particular security even if underwritten and sold. The Title also tries to limit disproportional compensation packages and give shareholders increased rights to influence incentive models. These measures are aimed at responding to the analysis of the recent financial turmoil and the action points recommended in terms of regulating financial risk. The reform act goes beyond merely reforming the private market and intends to reform the operations of the Federal Reserve System as far as emergency lending and loaning facilities to distressed institutions. In fact, the Act includes limitations on the ability of the Federal Reserve System to provide such assistance and does additionally constrain the FDIC's ability to provide loan enhancements in the form of guarantees on the short term obligations of institutions in trouble. For enhanced accountability the Government Accountability Office (GAO)⁴⁰ is given power to audit the emergency lending activities of the Federal Reserve System. These efforts are clearly aimed at reducing the moral hazard associated with the role of the Federal Reserve as a lender of last resort, and incentivizing a more moderate risk approach at financial institutions qualifying for emergency lending. From a theoretical point of view, it is however unclear whether explicit restrictions on the availability of emergency assistance are effective to counter moral hazard as we will later discover.

⁴⁰ The Government Accountability Office is the government entity responsible for audit, evaluation and investigation of Government activities in the US - <http://www.gao.gov/>. URL valid on Oct 12, 2010.

Figure 2 – Reformed US Supervisory Structure:



Source: Original Chart

As in any other legal reform of these proportions, the Act instructs a variety of studies and reports to be carried out by the federal regulatory bodies before a technical regulatory approach is defined. As many of these studies⁴¹ are of such scale that they can take months and even years to complete many of the provisions of the Act will neither come into effect nor be known to their full extent until at future dates. What is more, the implementation of vast majority of the provisions included in the act is left to the discretion of the relevant federal regulator and their ultimate impact is therefore not known. This also means that there is room for the financial sector to lobby for exceptions and added leniency and such efforts are already under way. To summarize, the Dodd-Frank Act raises the regulatory requirements on systemically important financial institutions to reduce risks and intends to apply

⁴¹ Among these studies are a study on Secured Creditor Haircuts, a study on Bankruptcy Processes for Financial and Nonbank Financial Institutions, study on the Operations of the SEC, study on Core Deposits and a study on the Volcker Rule. See e.g. Sec. 123, 215, 216, 217, 413, 415, 620 (and more) of the Dodd-Frank Wall Street Reform and Consumer Protection Act, 2010, <http://www.opencongress.org/bill/111-h4173/text>. Retrieved Oct 10, 2010.

macroeconomic foresight to respond to excessive risk compiling in the system. It also puts out requirement in matters of corporate governance, the conduct of credit rating by licensed agencies and reinforces accountability on the emergency lending activities of the FRB and FDIC.

Different priorities

Although the EU and US regulation is broadly similar on the surface in terms of its purpose of safeguarding a sound financial system and protecting consumers, there are technical differences in the permissible activities such as naked short selling⁴² and other forms of speculation. In general, the US approach favors added transparency and disclosure to reduce systemic risk and perverse incentives, while the European approach is more aimed at regulating certain activities or ban them all together. While both areas favor stronger capital requirements, variations exist in defining what kind of capital needs to be retained for requirement purposes⁴³. This could be related to the precarious state of the housing markets in some to the EU countries and low-quality loans outstanding, notably in Spain and Greece but also in Ireland and Portugal⁴⁴, that create political pressure for more leniencies in defining regulatory capital. Historically, the US has taken the role of moving regulation towards more leniencies, but due to a strong political response it is possible that in the future, banks in European markets will operate under less stringent rules. In a broad context, a comparison is possible with the political response that took place after the Enron scandal of 2001 and the enactment of the Sarbanes-Oxley Act⁴⁵. Whatever the case is, studying the negative effects of a well-intended regulatory reform such as the Sarbanes-Oxley Act, helps demonstrating the difficulties that policy makers face now with regards to the banking system.

⁴² Naked Short Selling is the activity of short selling a security for some future date without having secured a borrowing or ownership of the particular security at the moment the transaction is entered into.

⁴³ Title 1 of the Dodd-Frank Act includes provisions on the qualifying of hybrid capital instruments, such as trust-preferred securities etc., as components of required capital. See <http://www.opencongress.org/bill/111-h4173/text>. Retrieved Oct 10, 2010.

⁴⁴ For a quantitative analysis on outstanding loans in Europe, see the PWC report for Non Performing Loans in the EU for 2010: <http://www.scribd.com/doc/33695195/Non-Performing-Loans-Europe-June-2010-PriceWaterhouseCoopers>. Retrieved Oct 12, 2010.

⁴⁵ For an in-depth analysis of the Sarbanes-Oxley Act, see e.g. Zhang, Ivy (2007).

Effective Supervision and the Lamfalussy Framework

As borne out by the recent events, law is merely a powerless guideline without an effective implementation and supervision. In today's integrated financial markets it is however a daunting task to efficiently oversee financial markets and ensure that laws, rules and regulations are adhered to. Similarly, coordinating actions and responses of different regulatory authorities across different jurisdictions in the time of crisis creates problems of adverse selection, information asymmetry and inadequate response times. This is especially the case in Europe where regulatory efforts to strengthen the internal market for financial services, and to create a counterbalance to US dominance in lucrative sectors such as investment banking, have been far faster than the harmonization of rules of enforcement of financial regulation in the different member states. Thereby regulation is fragmented and such basic pillars of a well functioning integrated financial market as analogues sanctions for market misconduct is missing. There are concrete causes why this has been the case, such as the fear of the EU that added regulatory burden would decrease the competitiveness of the single market in financial services. Also, it is difficult to know in advance what kind of issues will arise from financial integration. As a result, Europe has opted for the principle of reactive regulation. What remains is that the deficiencies of a disjointed regulatory structure and no real crisis coordination plan became quite apparent with the numerous cross border problems we have witnessed recently with regards to resolution of firms with cross border activities, lack of equal tax treatment between countries, divergences in deposit insurance and sanctions etc. These problems arose because of missing structure for resolutions plans for liquidation of large European bank during the financial crisis.

These issues are no news for the EU and the fact that supervision of the single market in financial services has mainly been a member state mandate has already spurred EU initiatives to guarantee policies that promulgate convergence, cooperation and information sharing between financial supervisors. One of these was the creation of the so called Lamfalussy framework in 2001 which intended to facilitate the creation of rules and the rapid implementation of EU Directives into member state legislations. It also purported to minimize inconsistencies in national legislation. The Lamfalussy framework provides for a four level approach to creating financial regulation on the European level which each focuses

on different stages of the creation and implementation of legislation. It is carried out by various committees and their working groups with member state representatives as well as supervisors consulted at different levels of the process. The process can be briefly summarized as below⁴⁶:

Level 1: Develops and adopts proposals for Directives. It sets out the principles that define powers to implement legislation. It orders a full consultation process with the various committees of the Lamfalussy process (see Level 2 and Level 3).

Level 2: Outlines technical details with regards to the implementation of financial directives. At this level, the so called Level 2 committees⁴⁷ deal with political problems regarding the design of a particular directive and any pursuant issues in implementing it. Once a technical implementation measure has been decided at level 2 it is directly applicable in member states through EU regulation as long as the competent Level 2 committee has voted on it.

Level 3: Provides technical details and advice on how to implement directives at national level to ensure uniform implementation and interpretation in different member states. The level 3 committees⁴⁸ aim to reinforce convergence of supervision through information exchange between member banks and supervisors.

Level 4: Provides guidance on how to correctly transfer EU legislation into member state law and conduct effective supervision. The application of legislation is monitored and enforced by the European Commission and failure to comply with advised implementation can lead to action by the European Court of Justice.

One of the regulations on the EU level to have gone through this process is the Markets in Financial Instruments Directive. The recent financial crisis has however made it clear that the Lamfalussy process is neither properly designed to respond to the type of challenges brought by a crisis of such magnitude, nor has it achieved to tighten cross border supervision. In an effort to analyze the root causes of the crisis and to suggest corrective measures to

⁴⁶ Based on Vander Stichele (2008), pp 14-16.

⁴⁷ There are three Level 2 committees: European Banking Committee (EBC), European Insurance and Operations Pensions Committee (EIOPC) and the European Securities Committee (ESC).

⁴⁸ There are three Level 3 committees: Committee of European Banking Supervisors (CEBS), Committee of European Insurance and Occupational Pension Supervisors (CEIOPS) and Committee of European Securities Regulators (CESR).

consolidate the European rulebook, the European Commission created the *High Level Group of Financial Supervision in the EU*. Chaired by Jacques de Larosiere, former Head of the International Monetary Fund and former Governor of Banque de France, the group published an extensive report in February 2009 with concrete suggestions on how to reform European financial supervisory structure. The report makes an important distinction between financial regulation and supervision and emphasizes the role of effective supervision to avoid future crisis. The group makes 31 concrete suggestions to address some of the underlying shortages in the EU architecture in view of avoiding future systemic shocks. It draws on the findings of the G30 report⁴⁹ to scrutinize the crisis and identify the main weaknesses of the global financial system, namely (The Group of Thirty, 2009, pp. 13):

“...weak credit appraisal and underwriting standards; extreme and sometimes unrealized credit concentrations; misjudged maturity mismatches; wildly excessive use of leverage on and off balance sheets, often imbedded in little-understood financial products; and unwarranted and unsustainable confidence in uninterrupted market liquidity. Gaps in regulatory oversight, accounting, and risk management practices that exaggerated cycles, a flawed system of credit ratings, and weakness in governance“.

The group criticizes the reliance on institution based view of assessing system risk and recommends a macroeconomic foresight when assessing risks in the economy. As seen by the reform efforts in EU and the US, this critic is already being taking into account. Furthermore, it advises fundamental reforms on the Basel II framework to increase minimum capital requirements and establish stricter definition of Tier 1 capital⁵⁰, reduce pro-cyclicality and tighten rules. Additionally, it tries to address the need for a convergent resolution and burden sharing plan for the orderly liquidation of financial conglomerates operating in the EU area. In this way, it is similar to the systemic approach to the too-big-to-fail problem as seen in the US and we have already covered. A key recommendation of the group relates to creating a consolidated and harmonized Deposit Guarantee Scheme in the EU, to respond to

⁴⁹ The Group of 30 is a group of leading financiers and academics. In July 2008, the Group of Thirty (G30) launched a project on financial reform under the leadership of a Steering Committee chaired by Paul A. Volcker. This report has been used by the Obama administration to suggest financial reforms. See: <http://www.group30.org/>. Retrieved Oct 14, 2010.

⁵⁰ Tier 1 capital is the main measure for the core strength of financial institutions from a regulatory point of view. It is constituted of core capital: common stock and disclosed reserves.

the kind of issues that arose with Icelandic depositories receiving deposits from savers in the UK and the Netherlands, without a properly funded public guarantee by the home state. The group also makes suggestions to strengthen regulation over credit rating agencies in view of facilitating a fundamental review of their business model and financing, and address conflicts of interests between their rating and consulting activities. A special mention is made of the so called mark-to-market principle⁵¹, which the group considers a catalyst in making difficult market conditions worse and in creating pro-cyclicality, and recommendations are made to strengthen the IASB (International Accounting Standard Board) in order to further open its standard setting practices to regulatory, supervisory and business communities.

The group's main focus is on recommending measures to close gaps in regulation, consolidate supervision and define responsibilities between competent authorities, but also to ensure that those authorities have sufficient powers, including sanctions, to ensure compliance by the institutions they oversee. Many of the recommendations mirror similar legislative efforts in the US, e.g. to bring derivative markets to centralized clearing houses and guarantee that issuers of securities retain part of the risk of any instrument they issue throughout its lifetime, and thus purport to improve corporate governance, better align incentive plans and to craft resolution plans that facilitate effective liquidation of distressed institutions in times of crisis.

The European reality of reacting to financial crisis is in some aspects more complicated than in the US. This is due to the fact that Directives are implemented on national level with various degrees of inconsistencies between member states. While this is also the case in the US, up to a certain level, the Federal System is at present empowered with more authorities to overwrite state regulation than the European Central Bank. Institutions engaged in cross border activities on EU level are subject to different supervisory and resolution tools, insolvency laws and tax policies in the time of a crisis. There are various dimensions to this issue, such as differences in regulation across financial sectors, but we will draw the line here and not go into more specifics (for further insights see Basel Committee on Banking Supervision. The Joint Forum, 2010). Our point here is that with the intersection between

⁵¹ Mark-to-market is an accounting principle often referred to as "fair value accounting". It refers to accounting for the value of an asset and adjusting it according to current market value. While this makes sense from the standpoint of individual institutions to accurately assess book value, it can add to systemic imbalances in times of crisis.

financial undertakings in terms of their activities and the added complicity of their operations, supervision is no easy task and any effort to bring the market under control is counteracted by strong interest groups and the market itself. Further, social pressure for a political response will surge after any crisis of high magnitude and government will have to identify and reactively respond to gaps in regulation to restore trust. Whether the changes ultimately made really respond to the underlying risk factors is not always clear.

The report draws the conclusion that although supervisory deficiencies were not a main cause of the financial crisis, there were certainly important failures from the prudential supervisory perspective. The Group identifies eight crucial factors that went wrong in the supervision of international financial institutions operating in Europe⁵²:

- Lack of adequate macro-prudential supervision. It seems clear that too much emphasis was given to the supervision of individual firms on the expense of macroeconomic prudence. Some risk assessment tools such as the VaR (Value at Risk) model focus on institutional based trading risk and fail to incorporate macroeconomic elements and systemic risk into account.
- Ineffective Early Warning Mechanism. There was no shortage of academics, business makers and observers warning about macroeconomic imbalances and lowering of risk premium but there was no mechanism in place to react on such macro-prudential observations on a supervisory level.
- Problems of competences. Supervisors failed in performing quality assessments and fulfill their responsibilities.
- Failure to challenge supervisory practices on a cross-border basis. The EU had no mechanism to overrule or challenging decisions of national supervisors when deemed inadequate as the Icesave case between Icelandic and UK supervisors shows.

⁵² Drawn from Chapter III: EU Supervisory Repair of the High Level Group of Financial Supervision in the EU

- Lack of frankness and cooperation between supervisors. Supervisors were reluctant to engage in cross-border information sharing on the vulnerabilities of supervised entities.
- Lack of consistent supervisory powers across Member States. There were substantial differences between powers of national supervisors in different member states in terms of both enforcement actions on companies in breach and supervisory tools available to them.
- Lack of resources in the level 3 committees. The level 3 committees lacked resources to effectively perform all the tasks they were entrusted with such as peer-reviews and assessments of system wide risks.
- No means for supervisors to take common decisions. The level 3 committees had neither the ability to take urgent decisions nor the legal power to do so.

Consolidated Regulator with macro-economic responsibilities

It is interesting that the Group does not signal inadequate funding as one of the main deficiencies in achieving consolidated and effective supervision. It is though clear that funding plays a crucial part in attracting and retaining skilled staff as well as ensuring human capital is sufficient to supervise the activities and employees of growing financial companies. As the balance sheets of leading financial firms were booming and their new hires counted in hundreds and thousands from the year 2000 onwards⁵³, supervisory authorities had to monitor the activities of constantly bigger and more complicated companies with essentially the same resources.

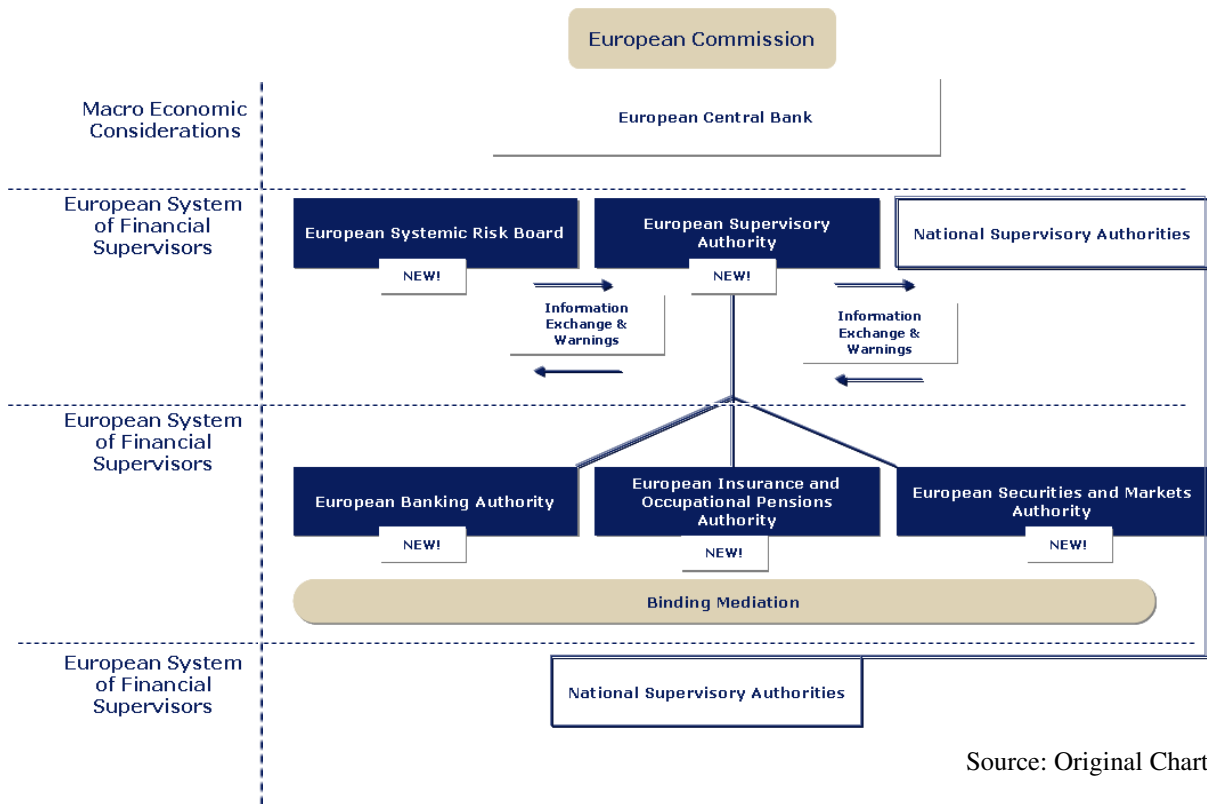
In order to reduce the impact of these factors and renew the supervisory framework, the group makes important suggestions that are now being implemented into legislation (see e.g. Commission of the European Communities, 2009 and EurActive.com, 2010). A pillar element in the supervisory reform is the creation of a centralized body under the auspices of the European Central Bank (ECB) to replace the Banking Supervision Committee of the

⁵³ See appendix.

ECB. This centralized body named the European Systemic Risk Board (ESRB) is intended to conduct macro-prudential supervision within the single market and make recommendations on policy, issue risk warnings and provide guidance regarding conclusions made by macro-economic observations. The group also recommends establishing a European System of Financial Supervisors (ESFS) that incorporates the supervisory bodies of each national level, and is to work closely with a new European Supervisory Authority (ESA). The new authority will be made up of three new committees that replace old ones⁵⁴. These committees are European Banking Authority (EBA), a European Insurance and Occupational Pensions Authority (EIOPA) and a European Securities and Markets Authority (ESMA). These regulatory bodies are currently being created by the European Commission. The intended purpose of these changes is to contribute to restoring confidence in the single market for financial services, help creating a single rule book within the EU, address problems arising with cross-border institutions and finally prevent risk from accumulating in the system and thus help safeguarding financial stability (Commission of the European Communities, 2009). Bearing in mind that European prudential supervision already existed in principle, these do not seem significant changes. Also, prudential supervision was already a part of the principles governing European financial markets. The supervision was however fragmented and neither endowed with the kind of enforcement authority it needed to ensure efficiency, nor the powers to override decisions made by national supervisors. By the establishment of two new entities within the ECB and three transformed committees, the EU commission aims to consolidate prudential supervision between member states and ensure that risk assessments made by both render into action when necessary. Putting up political goggles, the formation of new supervisory authorities, in stead of allocating new powers with the existing ones, conveys a message of commitment to supervisory reforms and publicly shows that actions are being taken to prevent future crisis.

⁵⁴The Committee of European Banking Supervisor (CEBS), the Committee of European Insurance and Occupational Pensions Supervisors (CEIOPS) and the Committee of European Securities Regulators (CESR)

Figure 3 – Reformed EU Supervisory Structure:



In any case it is clear, as already stated, that consolidating European prudential supervision is not an easy task and while fragments exist between national supervisors in various countries of the European Union, the mission ahead does indeed seem quite daunting. On the other side, national supervisors will continue to be fully responsible for the day to day supervision of firms and the new competence centers under the ESFS will perform a key task of providing legally binding mediation between national supervisors, issuing and adapting binding supervisory standards, licensing and supervising EU-wide institutions such as Credit Rating Agencies and centralized clearing houses, rather than supervising institutions on national level. Colleges of supervisors from different member states will remain the main method to supervise cross border firms.

As seen above, the policy response to the financial crisis, both in Europe and in the US, has been to emphasize on more stringent regulation, macroeconomic risk considerations and strong supervision. At the forefront of these more stringent regulations are conditions on regulatory capital. We will therefore next look more closely at this point through an analysis of the current regulatory capital requirements as set out by the Basel committee.

The Bank of International Settlements and the Basel committee

In 1930, during the aftermath of the First World War, the Bank for International Settlements (BIS) was established to administer the reparation payments imposed on Germany by the treaty of Versailles⁵⁵. The bank quickly became a centre for cooperation between central banks, and a pillar in pursuing financial and monetary stability in the world economy, and has been involved in all major monetary issues of the last eighty years, such as the implementation of the Bretton Woods system and the creation of the European Monetary Union. It has provided policy responses to the supervision of internationally active banks and leadership in times of crisis in matters of management of cross-border capital flows and financial stability. By 1988, the BIS had become increasingly focused on adequate capital to be held by international banks after the energy crisis in 1970, and the saving and loan crisis of 1980, had shown that stronger rules on minimum reserve capital for banks were needed in order to minimize credit risk. A group of eleven nations met in Basel to form a cooperative council to align regulation between and within their countries. This meeting was the consequence of the bankruptcy of Franklin National Bank in the US, and the difficult liquidation of a large German bank, Bank Herstatt, in 1974, which demonstrated a lack of concordant set of international rules to deal with settlement risk⁵⁶. These founding members were France, Germany, Italy, Japan, the Netherlands, Sweden, Switzerland, the United Kingdom, the United States and Luxembourg. Due to the international nature of the BIS, it was only logical that such a committee would be set up under the auspices of the BIS. Today the committee counts 28 member countries around the world and is best known for setting

⁵⁵ <http://www.bis.org/about/history.htm>. Retrieved Oct 29, 2010

⁵⁶ Settlement risk is the risk that counterparty does not deliver a security or its value as per agreement to its counterparty although a security or value as per a trade agreement has already been delivered.

international standards on capital adequacy but also for having put together the *Core Principles for Effective Banking Supervision* and a *Concordat on Cross-Border Banking Supervision*. The committee has no legal power but issues instead recommendations and instructions on best practices it expects to be implemented internationally by national authorities.

In July 1988 the committee published the so called Basel Capital Accord⁵⁷ to provide common minimal capital standards to the banking industry. It covered the definition of capital and the structure of risk weights to achieve international convergence of capital measurements and standards. It was amended and strengthened further in 2004 with the so called Basel II standard which up till now has formed the basis for capital adequacy for internationally operational financial institutions. The Basel II standard was published in 2004 and formed an important milestone in the effort of the Basel Committee to consolidate the work already done with the Basel Capital Accord.

Adequate Regulatory Capital

Definition of which types of capital qualifies as regulatory capital for minimum reserves is an area of much debate and a crucial part of the financial reforms that we have discussed. To understand this debate, it is important to know how the capital adequacy standards have evolved from them first being published in 1988.

The first standard was very much focused on credit risk and classified bank assets into five risk categories to weight assets according to their risk⁵⁸:

0% weight - Cash, gold, central bank and government debt of OECD countries

10% weight - Claims on domestic public sector entities and loans guaranteed by them

20% weight - Claims on Governments of OECD agencies and local public sector entities.

50% weight - Mortgage loans

⁵⁷ Also known as the *International Convergence of Capital Measurements and Capital Standards*.

⁵⁸ Built on Jablecki, 2009, pp.23.

100% weight - Claims on private sector, non OECD governments, real estate, investments and other assets.

The standard set out a formula for a minimum acceptable capital reserve for banks as a ratio of total risk weighted assets. It divides capital into Tier 1 capital – core capital – which constitutes of paid up share capital/common stock and disclosed reserves, and Tier 2 capital – supplementary capital – which is made out of all other capital (undisclosed reserves, asset revaluation reserves, general provisions/general loan reserves, hybrid capital instruments and subordinated debt)⁵⁹. Under the standard, banks were required to hold a minimum reserve for weighted assets of no less than 8% total capital of which half needed to qualify as Tier 1. As the standard relies on a single risk measure it was subject to different levels of arbitrage by international banks that in principle would only have two ways to comply, either to increase the numerator or to decrease the denominator of the following formula⁶⁰:

$$\text{Capital (Tier 1 and Tier 2) / assets weighted by credit type + credit risk equivalents}$$

However, a variety of research has been conducted on the effects of the Basel Capital Accord on banks with the general finding that in principle banks develop techniques to by-pass capital controls to the extent that they view them unnecessary, excessive or particularly burdensome. Jones (2000) points out some of the techniques banks routinely use, such as securitization of loans and financial innovation, to maintain sufficient regulatory capital without decreasing loaning or slowing down other activities. Merton (1995) observed that this kind of *capital arbitrage* is likely to persist as long as regulation is not based on the underlying risk of a portfolio, but rather on a broader class of risk weighted assets or product categories. His example of a mortgage holding and managing bank, operating under Basel I, that originates and sells loans to invest in US governments bonds (as government bonds do not arise reserve obligation) only to receive the proceeds on the mortgages by entering into a

⁵⁹ For a more detailed definitions see Heffernan (2005) pp. 182

⁶⁰ Although created for international financial institutions, the standard has been adopted for all banks in many countries. As an example, in the EU the minimum capital ratio applies to all credit institutions.

swap with a counterparty that receives the proceeds of the US government bond, is already a classic example of capital arbitrage. It has also been pointed out that securitization was indeed a convenient tool under the Basel capital rules to hide underlying risks from supervisors and investors. As the rules were based on a fixed risk measurement and devised to prevent excessive credit expansion, they did not cover how to handle transactions that vary in form, but share essentially the same economical and risk effect (see e.g. Jablecki, 2009). Companies structured as special vehicles did indeed allow a perceived transfer of risk off the balance sheet without reducing the total risk exposure of the sponsoring company (the bank). There are different factors to keep in mind here like the fact that the Basel Capital Accord had a visible effect in increasing the level of capital held by banks, both in Europe and in the US, and that competition seems to induce financial institutions to hover over a certain commonly acceptable minimum level of capital, that can be well above the regulatory threshold, to avoid higher capital cost (Furfine, 2000). This certainly indicates that the market upholds a type of discipline that restrains bank to remain within certain capital adequacy limits, not to convey any signals that could be interpreted as negative by the market.

With these deficiencies already visible to supervisors and market players, and to react to a transformation of the business of banking, risk measurement and management, supervisory approaches and financial markets in general, the Basel Committee released in 1999, a proposal to replace the original accord with a more risk sensitive one⁶¹. By the end of 2001, a new accord had been created and its implementation began in 2004. The new accord, Basel II, was significantly different from its predecessor and intended to impose a more sensitive approach to weighting risks with the aim of eliminating capital arbitrage and create a sounder financial system, with riskier banks holding more regulatory capital. The new framework rejected the fixed risk measurement reliance of Basel I, and introduced the use of bank's own internal estimates to assess risk⁶². It also aimed at improving the supervisory approach and

⁶¹ In total five amendments to the 1988 accord had already been done – in 1991, 1994, 1995, 1996 and 1998. These changes essentially allowed for more netting between banks to offset claims against each other, reclassification of risk weights for certain securities firms and stronger loan loss provisions. See <http://www.bis.org/publ/bcbsca.htm>. Retrieved Oct 16, 2010.

⁶² Namely on internal estimates of probability of default of borrowers (PD) and of losses given default (LGD). An amendment to Basel I in 1996 allowed certain banks to use internal systems to measure market risk. With the new

increase market discipline through added disclosures. The accord was structured in three pillars: minimum capital requirement, supervisory review process and market discipline.

The accord was significantly more complex than the first one due to the wide range of approaches it allowed for in assessing the risk of individual firms. It did however maintain both the previous definition of capital and the minimum requirement of 8% of capital to risk-weighted assets, but extended the requirements to holding companies of banking groups to ensure coverage on a consolidated basis. The new accord introduced for the first time a measure for operational risk⁶³ and a more diverse range of risk weights to increase risk sensitivity. Indeed, this contributed to the institute based supervisory approach on the basis that risk exposure was widely different between companies and internal assessments would be more adequate to capture the risk exposure of individual firms. What is important for our discussion is the role of credit rating agencies in providing assessment that were used to assign risk weights to different kinds of corporate loans, since the use of dynamic credit ratings clearly increased the pro-cyclicality nature of capital requirements imposed on banks. It was also a part of a more intertwined issue; the one of credit ratings gaining official backing via the use of ratings as a tool to comply with supervisory requirements. We have already spoken of the overreliance on ratings made by credit rating agencies with regards to securitization, and it is reasonable to assume that such official use of credit ratings as set forward in Basel II fuelled this development⁶⁴. It is clear that the second Basel Capital Accord moved away from the one-size-fits all rationale and adopted more diverse, risk sensitive approach, but at the expense of simplicity. It maintained a strong focus on different ways of computing regulatory capital through Pillar I of the accord, but did not outline as clear instructions regarding specific implementation of Pillar II and Pillar III, which were left to the discretion of national supervisory authorities. With our previous analysis on the

framework, this amendment was furthered to cover all institutions (Basel Committee on Banking Supervision, 2004, pp. 62).

⁶³ Operational risk is the risk of a loss from equipment failures, poor data management, theft or fraud etc. The previous accord singled market risk out of overall credit risk and assigned separate capital charges to it as of 1996.

⁶⁴ The FDIC Improvement Act in the United States of 1991 - the FIDICIA - also included rating based regulatory measures to determine when to apply regulation to financial institutions. Although not referring to ratings made by credit rating agencies but internal ratings of the supervisory authority, it can be argued that ratings made by CRAs became an attractive alternative to rating based regulatory measures. For a fuller treatment on the effectiveness of FIDICIA, see Aggarwal & Jacques (2001).

European financial system reform, it is not surprising that the second two pillars of Basel II were somewhat vague in terms of cross border convergence as no single European supervisory framework existed.

The Basel II capital accord has been criticized heavily and even blamed for the severity of last financial crisis. It is however interesting to point out that only a fraction of US banks decided to adhere to Basel II, judging the compliance cost to high. It also indicates that US supervisory authorities considered existing controls and measures of risk better than the ones put forward in Basel II or that the cost of compliance was not in line with the expected benefits of adopting the new approach. More broadly, it could also indicate that industry players viewed Basel I as a more convenient structure and less burdensome for their expansion. In the early stages of implementation of the Basel II framework it was already pointed out that due to some of the assumptions used to quantify risk, such as the VaR model, too many conceptual inappropriate measurements were being used to calculate regulatory capital under the regime. Example of this is the reliance of historical data that presumes recent past is an indicator of future events. While this can hold true, a whole set of events, so called extreme events, cannot be captured within a retrospective model. Basel II was also criticized for being pro-cyclical by assuming assets are marked-to-market, irrespective of the type of assets. In good times, this automatically creates regulatory capital during asset appreciations but similarly consumes capital when asset prices fall. In the adverse market conditions of 2008, the marked-to-market principle led to erosion of regulatory capital and forced financial institutions to raise new capital in a very unfavorable environment. By the same vain, the market was pro-cyclical and demanded higher risk premium and better collateral at the same time margin calls were being increased at the height of the crisis. This makes sense from a single institution based view, but augments systemic risk and aggravates any already serious crisis. Much has been written about the mark-to-market principle in international accounting standards and its role in exacerbating the subprime crisis⁶⁵. We will not go into these discussions in detail but rather point out that the principle was initially recommended in accounting standards after the Savings and Loan

⁶⁵ To follow the debates see for example: <http://www.marktomarketdebate.com/>. Valid URL on Oct 24, 2010.

Crisis of the 1980's in the US, to increase transparency in financial statements and make them more comparable between corporations⁶⁶. It now touches on fundamental aspects of accounting and how assets should be valued and many debates exist at the moment around this point. The fact that the principle arose from a regulatory reform, and is later considered as a contributor to a serious financial crisis, speaks volumes about the complexity of striking a balance in an optimum regulatory structure.

Another desired outcome of capital adequacy standards is to induce banks to invest prudently. As far as the principle, minimum capital requirements put more of the bank's own capital at risk and should in theory remove unwanted risk incentives and ensure that bank does not jeopardize its franchise value⁶⁷. If the minimum capital is however set too high, a stringent policy can have adverse effects in the form of competition for deposits. It can also induce banks to take on riskier investments to compensate for the loss in resources from too strict capital reserve requirements (Koehn & Santomero, 1980, and Buser, Chen & Kane, 1981). As will be covered later, competition between banks entails various risk taking incentives. What remains is that a new capital accord from the Basel Committee will be implemented in phases as of January 2013, and until January 2019. The new accord, Basel III, will raise regulatory capital and introduce capital buffers and reserves that are aimed at absorbing losses during adverse market conditions, and ensure solvency. It also serves to prevent firms from distributing capital outside of the operations of the firm in the time of crisis, e.g. for the purpose of dividend payments or the payment of bonuses⁶⁸.

From this interesting topic we will move to another which is closer to the scope of this paper; the concept of moral hazard and too-big-too-fail institutions.

⁶⁶ For more detailed treatment of fair value accounting of financial assets and mark-to-market see: Office of the Chief Accountant, 2008.

⁶⁷ Franchise value is the discounted stream of future profits of a bank. Franchise value can only be captured if a bank stays in operations. High franchise value is therefore viewed to induce prudential investment strategies (Demsetz, Saidenberg & Strahan, 1996).

⁶⁸ For more information see: Basel Committee on Banking Supervision (2010) and Basel Committee on Banking Supervision (2010, Ref. no.: 35/2010).

III. Too-Big to fail and moral hazard

Systemic Importance, Deposit Insurance and LOLR

As we have previously discussed the systemic importance of certain financial institutions gives rise to a so-called *moral hazard* in the banking system. Due to the seriousness of the repercussions that can ensue the failure of a large financial institution, the government and central banks stand ready to provide them with emergency assistance in the event of a liquidity problem. The term moral hazard originally comes from the insurance sector and refers to a perverse incentive with regards to prudent behavior that arises with all insurance. If the risk of bearing damage is transferred to a third party, the buyer of the insurance might not take all the necessary precautions to avoid it⁶⁹. In other words, insurance can, and regularly does, lead to riskier behavior by the insured party.

In banking, this problem is often discussed from a perspective of information asymmetry and adverse selection, both terms we will be discussing in more detail later, but first we will make an attempt to define moral hazard within the context we will treat it as the risk of undesirable behavior and perverse risk incentives associated with a lender of last resort and deposit insurance. On the bank asset side, this can mean less stringent loaning standards, lack of monitoring and more risk taking, and on the bank liability side, it can mean that lenders do not exercise due care when investing in bank debt or placing deposits. Either way the classical moral hazard in banking stems from the existence of a lender of last resort and/or deposit insurance. Moral hazard also exists within banks in various risk sharing scenarios where the risk bearer is not the originator of the risk. An example of this is originate-to-distribute securitization. Modern studies show deposit insurance as a source of a principal-agent problem and moral hazard, involving multiparty partners; banks, depositors, supervisors, politicians and tax payers (Calomiris, 1990, Kane, 1995 and Demirguc-Kunt & Kane, 2001).

⁶⁹ Seat belts are frequently used as an analogy to understand moral hazard. When a driver is not using a seat belt, it is possible that he will drive slower. Knowing that the seat belt decreases the risk of death in the case of an accident, the driver might drive faster when using a seat belt.

The rationale for a lender of last resort facility and deposit insurance is simple: considering the importance of trust and reputation of individual financial institutions in the well being of any banking system, negative market metrics in quarterly statements, market rumors etc., can decrease investor/depositor confidence and inflict damage to a solvent institution through bank runs or other reallocation of capital (see e.g. Diamond & Dybvig, 1983). Differently stated, financial systems are sensitive to irrationality and capital flight. For counterbalance and in an attempt to prevent crisis from happening, governments have resorted to providing liquidity assistance to solvent institutions that face temporary difficulties and thereby sever any undue link between liquidity and insolvency. In practice, it is very difficult to distinguish between an insolvent and an illiquid institution, both prior to and during a crisis, as balance sheet data can be manipulated and its opacity creates an adverse selection problem for the lender of last resort. This adverse selection exists due to the information asymmetry between top bank management and any third party seeking financial data on that particular firm. These difficulties add to the moral hazard as in the absence of a concrete method to distinguish between solvent and insolvent institutions the risk of extending assistance to firms that cannot be rescued increases. Thereby insolvent firms are given a chance to expand their riskier activities even more at a higher ultimate cost. Only bank insiders can fully know the degree to which a particular bank is insolvent. Therefore, lending of last resort facilities can result in bad banks being rewarded; risky investments/loans are entered into under the assumption that the government will provide liquidity assistance that can be used to fund losses in the case of an adverse outcome, and good banks being penalized; by applying sensible risk strategy they forgo opportunities to expand without any competitive advantages from a strategy point of view. What is more, prolonged lending by a lender of last resort to an insolvent institution allows uninsured depositors and subordinated debt holders to exit. In this scenario, collateralized central bank loans replace uninsured funds and the lender of last resort faces higher resolution costs in the case of failure. On the other side, keeping an insolvent institution alive with liquidity support gives the authorities more time to work towards its orderly resolution and closure while minimizing the systemic consequences (He, 2000). Demirguc-Kunt, Kane and Laeven (2006, pp.11) point out that during crisis, some governments indiscriminately issue guarantees or other type of bail-out or lender of last resort support in view of avoiding panics. This perverts market discipline and risk-taking

incentives and sets an example that fuels moral hazard. Furthermore, all sort of political issues come into play during financial distress of systemic proportions and the dynamics of a lender of last resort facility can alter (He, 2000 and Bartolini & Drazen, 2004).

In order to understand their underlying principles, it is nevertheless of interest to look at the standard features of loans from a lender of last result. In general, these loans are granted to an institution which is of systemic importance in the form of short term lending to prevent temporary illiquidity. We will use Freixas et al. (1999, pp. 152) to define lending of last resort support as:

“...the discretionary provision of liquidity to a financial institution (or the market as a whole) by the central bank in reaction to an adverse shock which causes abnormal increase in demand for liquidity which cannot be met from an alternative source”.

Loans should only be made to illiquid but solvent institutions against pre-panic priced collateral and at a penalty rate. Lending at a penalty rate is in theory thought to prevent those who do not need a lending facility from applying for it and make sure that the loan is really a last resort measure, but two problems can be accredited to it. First, the market may use the penalty rate as a metric to assess the probability of default. The higher the penalty rate, the higher the risk. Second, if the penalty rate is excessive relative to the ability of the bank to repay the loan its managers may choose to enter into high risk transactions - *go for broke* - in the hope of resurrection or worse, to maximize personal gains on the cost of society – *to loot*. The adverse selection problem also makes it difficult to correctly set the penalty interest rate while closer a bank is to insolvency, less the penalty rate will matter (He, 2000). This is equally true for liquidity assistance in the form of *lifeboat* loans from other market participants. He (2000) outlines the key considerations of emergency lending in normal times and points out that beyond required collateral and a penalty rate, clearly laid out lending procedures, authority and accountability should be in place. To counteract the moral hazard associated with the existence of a lender of a last resort, some theorists have however advocated governments not to make the details or the availability of such facilities visible to the market so to make their availability uncertain (see e.g. Kindleberger, 1978). Others have

pointed out that while this can serve as market discipline, agents will most likely have certain expectations as to whether emergency assistance will be available, from previous examples and/or their perceived systemic importance, and creating ambiguity about its extend can lead to ad hoc measures that could be more costly than those conducted under predefined rules (Enoch et al., 1997).

There are strong arguments for creating a rulebook on emergency lending (see e.g. Fischer, 1999). These relate to added benefits from reduced risk of self-justifying crisis, incentives for certain asset generation behavior with rules about accepted collateral for emergency lending. More importantly predefined rules set the expectations for available emergency lending and reduce the risk of politically motivated actions, although governments have been known to, as we have previously discussed, change the pre-established dynamics of emergency lending. That is why some theorists have illustrated that since it is impossible to know, ex-ante, what will trigger problems in financial markets it is also impossible to know what kind of response is needed to counteract it (see e.g. Quinn, 1996). Thus, any explicit rule book only serves an illusionary purpose while if the water breaks central banks may often see themselves violating their own rules, something that inevitably affects their credibility and, again, creates undesirable precedents for future crisis resolution. This of course confirms how behavioral factors influence banking conduct and risk incentives, and illustrates the weaknesses of banking as a system. He (2000) shows that the concept of *constructive ambiguity* has gained popularity among central banks, supported by Enoch and al. (1997) who argue that ambiguous but credible rules are superior to predefined and transparent rules that lack credibility. He also demonstrates the different approaches around the world where, e.g. no reference is made to emergency support functions in the treaties establishing the European Monetary Union and the Statute of the ECB. Various other central banks have general statutes saying that emergency assistance may be available without specifying how such support would be given. An example of this is Norway and New Zealand. A different variation is seen in Japan where the central bank has a comprehensive set of internal rules about the process of emergency lending which is not disclosed to the public. On the other end, the

United States have a detailed rule-based regulation about the availability and procedure of liquidity assistance with regards to permissible collateral, interest rate, payment terms etc.

Mishkin (2006) puts these issues in the context of the time inconsistency problems⁷⁰ first discussed by Kydland and Prescott (1977) and Calvo (1978), and stresses that any pledge not to engage in a bailout, whether previously ambiguous or transparent, is not time consistent. That is, in the time of a crisis, policymakers will not honor their preannounced policies in an attempt to avoid the hugely adverse systemic consequences that could ensue. Under this assumption, the market anticipates that emergency assistance is provided to systemically important players. Therefore, risk is mispriced or differently stated; companies perceived as too-big-to-fail enjoy lower funding costs than smaller equally solvent institutions. Again this is consistent with our hypothesis and explains why under stressed circumstances banks can directly benefit from high risk growth strategies that cannot be sustainable on the long run. In other words they take advantage of the *too-big-to-fail subsidy* (Mishkin, 2006) and become larger than what is socially optimal. Further, relatively smaller banks are less likely to receive emergency liquidity assistance as their resolution is viewed as being easier. While it is of course desirable that emergency liquidity is not provided in vain, as insolvent firms should be wound down and closed, reality renders adverse selection into a mechanism that favors bigger banks with more interconnected ties amongst them and penalizes smaller banks. In his article, Mishkin comments on the work of Stern and Feldman (2004) to downplay the importance of too-big-to-fail in inducing banking crisis in developed markets. He argues that strong institutional environment with supervisory accountability, such as the one provided in the US with FDICIA (Federal Deposit Insurance Corporation Improvement Act of 1991)⁷¹, can truly reduce moral hazard through the creation of rigid procedures and processes that need to be honored before any bail-out is considered. In the light of the extensive bail-outs and liquidity support made by the US government in the last three years, his time inconsistency viewpoint of too-big-to-fail seems however more robust.

⁷⁰ In economics, a time consistency problems related to a situation in which an agent or a principal makes a choice about the course of action for some future event. When that future event arrives, what was optimal initially might no longer be optimal. See Kydlander and Prescott (1977).

⁷¹ For a more detailed discussion on FDICIA see e.g. Mishkin (1997), Kaufman (1997) and Stern and Feldman (2004).

In Mishkin (1999) and Mishkin and Strahan (1999) a proposal is made where supervisory agencies announce that the first large bank to fail will not be rescued and any losses will be inflicted on uninsured depositors and creditors. If the risk to the financial system proves to be overwhelming, the authorities would stand ready to provide assistance. The advantage to such a proposal, according to the proponents, is that uninsured parties would then have a strong incentive to monitor large financial institutions, and market discipline would be brought about. In hindsight, it is possible to speculate whether this explains why a decision was taken not to save the Lehman Brothers and Washington Mutual Bank⁷² from collapse. If that is the case, the answer to the question of whether any benefits in terms of financial stability and least costing resolution resulted from it is at best uncertain.

To decrease the risk of bank runs, insurance is extended to consumer deposits. Deposit insurance is either implicit or explicit. Explicit insurance refers to systems where the government guarantees a certain amount of deposits (normally per depositor per bank) via legislation. An example of this would be the 1994 EU Directive on Deposit Insurance or FDICIA in the US. Implicit insurance is for example provided when prior government actions in bailing out banks, and saving depositors, create expectations that this is an example to follow (McCoy 2007). Either way, it is a source of moral hazard as depending on the coverage levels, it removes incentives from the depositor to monitor the bank holding its funds and creates perverse incentives for troubled bank to seek additional funding through deposit taking when in trouble. Such behavior was for example observed with the Icelandic banks immediately prior to their demise (Danielsson & Zoega, 2009). Deposit insurance is also viewed to cause sub-optimal increase in the risk level of bank lending portfolios and to create other perverse incentives (Demirguc-Kunt & Kane, 2001). Further, Merton (1977) and Keeley (1990) show that deposit insurance intensifies the ability and incentives to increase risk. This is because when deposits are insured by a third party, consumers do not require risk premium on their deposits. Therefore no market discipline is exerted on the bank from the consumer direction and the bank can either increase its leverage, or invest in riskier assets without risking a bank run (Demirguc-Kunt & Huizinga, 1999). On the other side, deposit

⁷² See chapter V.

insurances limits or puts a total stop to bank runs and can prevent contagion (Diamond & Dybvig, 1983).

When viewing the too-big-to-fail problem from a behavioral/incentive perspective, theorists take factors such as ownership, national policy with regards to investor protection laws; guarantees etc.; corporate governance structure and remuneration systems into account to evaluate bank risk taking (Demetz & Lehn, 1985 and Kane, 1985). Ownership structure is for example viewed as important in predicting the risk taking of individual institutions as widely held firms are considered less likely to act on the risk incentives, that are provided by e.g. deposit insurance, than companies where a single shareholder has more power to shape the investment strategy of the firm. Therefore ownership of banks should be taken into account when speculating on the effects of deposit insurance on risk incentives in different markets in order to avoid misassumptions (Laeven & Levine, 2006). Other factors such as competition are similarly believed to increase incentives for risk taking (Gorton & Rosen, 1995). Reversely, as we already mentioned, factors such as higher franchise value of a company are thought to, in normal circumstances, decrease risk incentives associated with moral hazard as the bank stands to loose this value should it fail (Demetz, Saidenberg & Strahan, 1996).

While evaluating the above, it is important to remember that the kind of deregulation already described substantially increased competition. An unavoidable consequence of competition is a decrease in franchise value, measured as capitalized value of future profits, because added competition leads to less profits, and lowers incentives for pursuing cautious loaning strategies. To give an example: when banks compete for deposits they will need to invest in assets with a higher possible yield, and therefore higher risk, to satisfy deposit holders that shop around for the highest interest rate. On the lending side, this means that banks will need to offer more competitive loaning rates and generate loans to the same pool of borrowers as competitors. Knowing, from previous discussions about the US loan market and the different categories of loans (A-paper, Alt-A and subprime), that the amount of quality borrowers is limited the effect is, other factors constant, that banks will make riskier loans. Thus,

competition and deregulation can increase moral hazard in the banking system (Hellman, Murdock & Stiglitz 2000). What is unique about the risk taking incentives embedded in deposit insurance however is that beside of the moral hazard aspect of it, it guarantees, all things being equal, a continuous supply of funds from depositors that can be used to enter into transactions of different risk levels even during the time of financial distress. The example of the Icelandic banks shows this clearly. While their access to interbank funding decreased, they were advised to seek funding via deposit taking. Ironically they were quite successful and accumulated liabilities that were used to fund losses on other fronts and manipulate stock prices (see e.g. Danielsson and Zoega, 2009).

From the systemic viewpoint, the type of intervention described above is justified by alluding to the possible contagion effects a failure of a bank has on other financial institutions. While these are good arguments, it cannot be overlooked that while lenders of last resort certainly play a role in soothing turbulent financial markets, they undeniably create perverse incentives within and beyond the banking system⁷³. Another aspect of moral hazard would be emergency lending to sovereign economies, for example in the form of humanitarian aid or funding from the International Monetary Fund. In the interest of scope, our focus is solely on moral hazard as seen in the banking system through the lender of last resort capacities of central banks and the existence of deposit insurance schemes. We do however recognize that in emerging economies, IMF assistance might be needed to fund emergency lending by national central banks⁷⁴.

Contagion effects

As pointed out by Heffernan (2005), and He (2000), contagion is a serious problem in financial systems and can spread out quickly⁷⁵. This vulnerability is the very source of

⁷³ See footnote 74

⁷⁴ This was the case in Southeast Asia in its crisis in 1997.

⁷⁵ To illustrate this point Heffernan gives the example of the hedge fund Long Term Capital Markets which was a high profile hedge funds using sophisticated mathematics and risk assessment for its investment. When it became obvious that the fund would collapse the New York's Federal Reserve viewed the threat to the stability in international financial markets so great that it effectively intervened and arranged for a rescue loan by a consortium of lenders at total cost of USD 3.625 billion. Heffernan (2005), pp. 175-176.

systemic risk we have already referred to. The reason is that at the micro level banks are subject to many of the same threats and can all resort to similar tools to mitigate those risks. At the macro level, this means that investors and depositors, that due to lack of transparency with regards to maturity mismatches, risk profiles etc. of individual institutions, are sensitive to alterations in the reputation of those institutions. If a bank is seen as in trouble, it is often interpreted as an indicator of more widespread problems in the economy. As observed by Diamond and Dybvig (1983), the visible variable in information about a given bank needs not to convey anything fundamental about the bank's condition as once anything that causes depositor to anticipate a bank run will lead to a run⁷⁶. Their model assumes irrational behavior of people running on banks. This is congruent to the view that in the time of a crisis, any bank is too big to fail due to the potential panic effects such a failure entails. This is what Mishkin (2006, p. 992)) refers to as *too-politically-important-to fail*. The more traditional view considers a bank too-big-to fail if the cost of disruption or collapse of the financial system is higher than the cost of bailing out the bank (Heffernan, 2005, pp.33). In other words, the main principle in determining whether a bank should receive lending of a last resort facility should be its systemic importance and its interconnectedness with other institutions. Liquidity pressures on one firm can quickly spread out to other banks that are either connected through interbank deposits, which a troubled bank would be calling in to meet withdrawals; thus causing liquidity problems for other institutions, or because they share similar risk characteristics and exposures which are perceived as a main contributor to the problem at hand. All in all, systemic interconnectedness increases the risk of contagion and the systemic importance of the firms that constitute it. Contagion is an acute problem which is difficult to reign in due to the reasons explained above. It partially explains why governments sometimes resolve to blanket insurances in the time of crisis and helps understanding the issue of too-big-to-fail institutions.

Diamond and Dybvig (1983) also point out that uninsured deposit contracts (between banks and the depositor) to hold liquid assets provide banks with increased liquidity but leave them vulnerable to bank runs. This is important as it has been used as a rationale for deposit insurance schemes. They elaborate further and maintain that confidence in the banking

⁷⁶ For a more detailed discussion of why this is the case, see: Azariadis, 1981.

system allows for the kind of risk sharing through maturity mismatch that is required for competitive markets. In the case of a panic, the risk sharing does not take place as institutions are forced to liquidate their assets at a loss to meet withdrawals. This also explains why governments seem to underestimate the moral hazard inherent to lenders of last resort and deposit insurance, and stand ready to bail-out troubled banks.

Because of the pivotal place that financial institutions hold in the economy, the financial stability benefits of their prevalence is viewed more important than any adverse effects of government intervention. These findings lead us to a fundamental question regarding moral hazard in a banking context: *Is governmental intervention, either through central banks as lender of last resorts or through deposit insurance schemes, justified in terms of a social benefit derived from financial stability and a well running financial system, or does it create unsustainable moral hazard that ultimately leads to social costs?* Answering this is highly complex, and somewhat out of the immediate range of this paper but we will still look closer at this question in view of gaining understanding on some of the issues related to moral hazard in banking.

Looting and the fall of Lehman

As we have partially covered, deposit insurance has been a source of much debate over the years due to its potential to influence financial behavior and the different set of incentive consequences it can have. The existence of a lender of last resort, normally a central bank or the treasury, creates similar issues and shares the *gamble on resurrection* or worse *gambling on failure* features of deposit insurance. Here a reference is made to Danielsson and Zoega (2009), for an example from an Icelandic context, but more importantly to Kane (1989), and Cole et al. (1995), for a description of gamble on resurrection, and to the looting hypothesis set forward by Akerlof and Romer (1993), for a picture of gambling on failure. In essence, the theoretical analysis behind these shows that in certain conditions, firms can have an incentive to go broke for profit at society's expense (to loot) instead of going for broke (to gamble on success). This is most likely to occur when a government guarantees a firm's debt obligation, as is arguably the case for financial firms considered too-big-to fail, either ex-ante

or ex-post via explicit or implicit guarantees. In both scenarios banks choose to increase risk that could potentially deliver high returns in case the gamble is successful, but leaves the depositors, and thereby the insurers, with the bill in the case of failure. The difference is that when gambling on resurrection, management does not derive any other profits than those confined to excessive risk returns, while in a gambling on failure scenario management tries to maximize private utility at the expense of tax payers without anticipating or hoping for a positive outcome for shareholders. The latter is a case of looting.

Looting, according to Akerlof and Romer, can take place in an environment where poor accounting, lax regulation or low penalties for abuse give owners an incentive to pay themselves more than their firms are worth and then default on their own debt obligations. It does therefore not come as a surprise that financial reforms on both sides of the Atlantic include limitations on the ability of central banks to provide emergency lending or any form of guarantee to a troubled institution. Within the hypothesis made in this paper, a new dimension to the gambling scenarios can be added by introducing the concept *gambling on a bail-out*, which would take place during disproportional systemic shocks that threaten the stability of the financial systems, when financial institutions rush to ensure their too-big-to-fail status through mergers, more deposit taking and lending. Essentially this would be a variation of *gambling on resurrection* but at a later stage when it is clear that the gamble will not be successful but this information is not known to outsiders. Therefore, *gambling on a bail-out* would exist due to adverse selection problems very much like the others.

For curiosity sake, and for demonstration purposes, it is of interest to ask whether any of the above applied for the financial institutions considered too-big-to fail from a traditional standpoint. Lehman Brothers, as we will discover, shows the kind of behavior our hypothesis assumes systematically important banks in the US engaged in. At the onset of the financial crisis we have already discussed, Lehman Brothers Holding Inc. was certainly a systematically important firm. As a result of its size and reputation, its fall created panics in financial markets and beyond. In the interest of scope we will not conduct an independent research on Lehman Brothers but rather draw upon the findings of Anton R. Valukas, special examiner of the United States Bankruptcy Court (Southern District of New York), in his

report about the bankruptcy of Lehman Brothers. In the over 2000 pages report, it is noted that the actions of Lehman's executives (from Valukas, pp. 4):

"...ranged from serious but non-culpable errors of business judgment to actionable balance sheet manipulation..."

The report also shows that facing eroding trust, the firm resorted to accounting gimmicks to improve its balance sheet condition. In essence, the purpose was to maintain good ratings by manipulating some of the key ratios Credit Rating Agencies were focusing on such as net leverage and liquidity numbers and thereby maintain confidence. In technical terms, the manipulated accounting was performed by temporally removing troubled assets from the balance sheets by pledging them as collateral in repurchase agreements (Repo's) with counterparties. In a normal repurchasing agreement, a company raises short term cash by selling securities with the obligation of buying them back within a day or several days. From an accounting point of view, these transactions are treated as financing and stay on the balance sheet. What Lehman did however was to employ an almost identical transaction which internally was referred to as Repo 105. In a Repo 105, the firm pledged at least 105% of the value of the cash received as collateral so that the transaction could be accounted for as sale rather than financing, effectively altering the balance sheet position. This allowed for the troubled assets to be moved from the balance sheet just long enough to positively affect quarterly statements (see Valukas, 2010, pp. 732)⁷⁷. Those actions, according to the examiner, go beyond questionable judgments and become *colorable* in terms of legal liability⁷⁸.

Within the theory of looting, we can speculate whether the accounting manipulation served to ensure that balance sheet targets for revenue based bonuses would be reached at the same

⁷⁷ The accounting treatment of repurchase agreements under US GAAP is outlined in *Statement of Financial Accounting Standards 140*. FASB 2000. The main condition for the treatment of transfer of securities as sale is that the transferor must demonstrate that it has given up control over the transferred assets. Paragraphs 47-49 and 217-218 of *Statement of Financial Accounting Standards 140* discuss this requirement.

⁷⁸ Colorable claims mean there appears to be enough evidence to award civil damages in a trial in the US.

time it provided for a life line for the company⁷⁹. Although the examiner concludes that other transactions than the more than questionable repo transaction, fall within the business judgment rule⁸⁰, and do therefore not give rise to colorable claims, it does not exclude regulation manipulation. Examining how, to which extent, and in what interest, such actions took place requires extensive analysis of accounting data, benchmark setting and comparison with similar companies. In the absence of such an extensive analysis, we will ascertain that accounting manipulation created enough breathing space for Lehman's executives to make transactions that grew the balance sheet and hid excessive losses. It is noted that Lehman's management chose to "*disregard or overrule the firm's risk controls on a regular basis*" (Valukas, 2010, pp. 49). This allowed the bank to pursue an aggressive high-risk strategy and invest heavily in a declining housing market at the same time market conditions made it difficult for Lehman's main mortgage originating subsidiaries, BNC Mortgage Inc. and Aurora Loan Services, LLC, to transfer assets they had originated. In retrospect, this was clearly a wrong strategy although it does not give rise to liability claims and falls under the business judgment rule in the Examiner's view.

The bank's senior management did however repeatedly exceed risk limits and purposefully omitted risky investments from risk assessment and stress tests, thereby misleading both the regulator, the credit agencies and shareholders, who looked at these metrics to evaluate the health of the balance sheet⁸¹. These actions were however not illegal and fall under the business judgment rule and do not breach the duty of care, whereby a plaintiff must proof both *reckless* and *irrational* behavior by managers. The fact that irregularities of this kind seem not to give rise to colorable claims signals deficiencies in the legal framework⁸² that are difficult to address due to the high protection directors enjoy from the business judgment

⁷⁹ Lehman's Fixed Income Division, in particular, employed Repo 105 transactions to reach quarter-end balance sheet targets set by senior management. Valukas, 2010, pp. 744.

⁸⁰ A legal principle that makes officers, directors, managers, and other agents of a corporation immune from liability to the corporation for loss incurred in corporate transactions that are within their authority and power to make when sufficient evidence demonstrates that the transactions were made in *Good Faith* (source: Legal-dictionary.com).

⁸¹ For more examples of how Lehman's risk limits were systemically breached by senior management, see Valukas, 2010, pp. 51.

⁸² The Examiner places the fault on Delaware Law's high bar to proof liability in such cases, see Valukas, 2010, pp. 52 and pp. 208.

rule. Another question that can be brought up in the context of the one already raised about the social effectiveness of lenders of last resort, is whether the Lehman case displays moral hazard of gigantic proportions. By observing Lehman's balance sheet it becomes visible that its aggressive growth strategy was highly successful in growing the balance sheet, growing it from USD 268,963 billion to USD 396,673 billion from Q4 in 2006 till Q1 in 2008, or by 48%.⁸³ This certainly aggravated the too-big-to-fail problem the bank already posed to the systemic stability in the US and increased its systemic importance.

Consistent with the hypothesis made in this paper, the growth strategy Lehman initiated in the beginning of 2006 would have been created as the bank's management assumed that if this high risk approach would not be successful, the tax payer would pay the bill via government bail-out or a Federal Reserve loan. While this is difficult to quantify in terms of hard proofs, it could be a case in point for the inherent moral hazard in modern banking⁸⁴. To enforce this hypothesis, it is helpful to study the growth of other big banks during the period and see if comparable balance sheet growth took place after the first signs of problems with the US housing market. We will present the method and main findings in chapter V but first let us examine incentives in corporate remuneration systems and the different agent problems that arise in corporate governance to better understand the problem of incentive misalignment in a banking context.

⁸³ Data extracted from Valukas, 2010, pp. 57. Original data from Lehman Brothers Holdings Inc., Annual Report for 2007, 10-K as of Nov. 30, 2007 (Form 10-K) (filed on Jan. 29, 2008), pp. 63. Growth in Total Assets on consolidated basis is comparable to this growth. See appendix.

⁸⁴ Valukas observes that senior members in Government, Wall Street executives and experts doubted that the Government would really refuse to make money available for Lehman if necessary. Valukas, 2010, pp. 617.

IV. Remuneration and incentives

Agent theory and remuneration systems

In economics, the agent theory treats the incentive problems that exist because of asymmetric information and incentive differences between parties. These problems arise when cooperating parties have different expectations as to the optimum outcome, and when risk sharing takes place. In the first case, the principal is seeking a result that might not be optimum for the agent which in turn tries to achieve the best result from a self interest point of view. In the latter, the different perception of risk can lead to different preferences and actions regarding that particular risk. Agent theory uses the contract as a unit of analysis and purports to describe the most effective contract to govern the relationship between a principal and an agent in order to minimize conflicts of interest (Eisenhardt, 1989). The main theoretical pursuits can be divided between so called *positivist agency theory* and *principal-agent theory*. Both cover the dimensions described above but differ in the object of analysis which for the positivists is the relationship between owners and employees (shareholders and managers) and for the others the focus is on relationships and diverting goals of cooperating individuals.

Agency theory is helpful to understand moral hazard in the banking system as it explains the alteration in incentives that happens when a transfer of risk takes place. As already discussed, risk transfer occurs frequently in the banking system among banks, as securitization and loan sales illustrate, but also between banks and the government due to explicit or implicit guarantees. It is also useful to understand why managers; the agents, can be inclined to take decisions that are detrimental to shareholders; the principals.

Initial view of the firm suggested that firms organize when transaction costs for coordinating production are higher outside of an organization than within one (Coase, 1937). This school of thought did not take into account relationship dynamics and later dated managerial and behavioral theories challenged it (see e.g. Baumol, 1959 and Marris, 1964). The principal-agent issue was first observed by Alchian & Demsetz (1972) who maintained that certain informational asymmetries must be overcome to effectively monitor effort input by

employees. Later work has drawn on these notions to show that managers can be inclined towards pursuing own interests and maximizing personal utility instead of maximizing shareholder's wealth. Behavioral theories and so called *efficiency wage models* (see e.g. Akerlof, 1982 and Shapiro & Stiglitz, 1984) have all contributed to the understanding of incentives in the performance of workforce and in minimizing agent problems. Within the banking domain, this is especially relevant as remuneration systems in the financial sectors have been under criticism after the meltdown of 2008. High remuneration does not seem to have prevented top management from taking on risks which ex-post negatively affected performance and shareholder wealth. We have already mentioned concrete examples of this with regards to Lehman Brothers' demise, and have explained risk incentives from a moral hazard perspective, but other examples are abundant. At Lehman the compensation structure was net revenue-driven⁸⁵ which meant that unrealized gains in form of marked-to-market positions were included in the basis for compensation calculation. This certainly created incentives for the maximization of short-term profit but failed to induce the liquidation of unprofitable positions that would have translated into mark-downs on the balance sheet. Such liquidation would have resulted in a lower compensation basis but a more accurate view of the true financial position. Principal-agent issues between top management and shareholders of financial institutions are therefore very much related to incentive alignment. Indeed, achieving that remuneration allocates higher rewards to long-term risk sensitive strategies than high-risk short term investment decisions has proved difficult to attain. These issues have not gone unnoticed on the policy level and the Basel committee issued in October 2010 a consultative document on how to align risk and performance to remuneration as it views this as “...*key element to reduce incentives for excessive risk-taking in banks*” (Basel Committee on Banking Supervision, 2010, pp. 2).

It is tempting to site a deficient remuneration alignment in the banking sector as a main contributor to the subprime crisis. Remuneration systems must though been viewed in a broad context and studies made after the crisis have shown that banks where shareholders interest were better aligned with management incentives did not fare better than those where

⁸⁵ See Vulker 2010, appendix 11, and Bebchuk, Cohen & Spamann, 2010

this was not the case (Fahlenbrach & Stulz, 2010). The question is what is the purpose of special remuneration systems in the banking sector? The rationale relates to staff retention: attracting and retaining talent is expensive as top performers hold special skills and privileged internal information that make them valuable to competitors. Remuneration is also aimed at promoting better employee performance and motivating certain kind of behavior. Incentive based remuneration, such as the one in the financial sector, relies on variable remuneration between a fix and a variable component. For such strategies to be successful, it is of critical importance to ensure the variable component is indeed so and directly linked to performance. This is by no means an easy task and the design of the remuneration system decides on the success or failure of it. Within the agency theory, a bank's board can use variable based remuneration systems to reward good performance and provide incentives to execute a strategy it deems appropriate to maximize the firm's value. If we look at the major investment banks in the US at the time of the crisis of 2008, incentives seem though to have been geared towards rewarding short term gains over long term ones⁸⁶. Using Lehman as an example, we have already mentioned that the compensation basis was balance sheet net revenue which means that there were incentives to delay pending mark downs and thereby to maximize book value of assets. In an attempt to align these incentives with the long term vision of the firm, the variable part of a compensation paid out in shares followed a vesting and delivery schedule⁸⁷ with periods ranging from 3-5 years. Although this does in theory align management's interests with long term goals and shareholder interests, forthcoming work has shown that top executive had regular short-term incentives to try to positively influence the price of the shares they were entitled to as they became vested and delivered (see e.g. Bebchuk, *et al* 2010).

The criticism of the remuneration systems in the financial world does not so much evolve around whether firms where interests were better aligned between shareholders and top management did worse or better. Any praise or disapproval is rather reflected on the fact that the whole banking sector was geared towards short term profits between 2000 and 2008 with

⁸⁶ See Vulkar, 2010, appendix 11, and Bebchuk et al., 2010

⁸⁷ At Lehman's a component of the total compensation was deferred as in other comparable firms. See Valukas, 2010, appendix 11, pp. 10

the consent of shareholders via board approval, and top executives were able to cash out large amounts of bonus compensation, as well as making large amounts from selling shares⁸⁸. Efforts on policy level are now aimed at implementing systems that provide for risk adjusted remunerations⁸⁹. In other words: to ensure that any incentive to take risks is counterbalanced with incentives to manage that risk. Such methods include among other things risk considerations when making investments ex-ante, or so called claw-backs based on actual risk adjusted performance ex-post.

There is a distinction to be made between the behavioral incentives of remuneration systems and the kind of perverse incentives already covered and brought about with factors such as added competition, deposit insurance and emergency lender facilities. Also, the kind of risk shifting made possible with loan sales alters screening standards and seems to lead to inferior quality originations. As discussed in previous chapters, macroeconomic factors such as low interest rates and abundant supply of credit contributed to excessive leverage and risk in the years preceding the subprime crisis. From a remuneration perspective it can be maintained that as long as top management stood to make high gains on periodically selling vested shares, short term incentives existed to positively influence quarterly gains and increase share price temporarily. As true as it is that increasing share price must be the goal of any management, sustainable long term business principles must always prevail. Remuneration to executives in the financial sector has furthermore become a political issue resting on debates on the ethical aspects of multi-million dollar bonuses. These debates are largely out of scope of this paper and we will not extend the discussion further. We content with summarizing the chapter by claiming that evidence from the US shows that incentives in the banking system were inclined towards short-term objectives of maximizing book value of assets so to assure quarterly bonuses. This in turn led to actions that did not favor shareholders and generated losses. Finally, agent problems between shareholders and managers increase the complexity of an optimal governing structure in banking, and the risk sharing that takes place due to explicit or implicit government guarantee increases moral hazard.

⁸⁸ See Bebchuk, *et al.*, 2010, pp. 11-16

⁸⁹ As seen in Basel Committee on Banking Supervision, 2010.

V. Accounting analysis

Methodology

In this chapter, an analysis will be made to determine whether there is a reason to believe that international financial institutions purposefully grew their balance sheet, to ensure a too-big-to fail status from a systemic perspective, once turbulence in financial markets became apparent. The hypothesis made suggests exactly that and by analyzing available accounting data it is possible to observe whether this was the case. An analysis on the three Icelandic banks: Glitnir, Kaupthing and Landsbanki, is also included as those all collapsed towards the end of 2008, in view of analyzing their growth and check for evidence that would support the hypothesis.

For the US analysis, the focus is on the ten biggest bank recipients of funding from the TARP⁹⁰ program, out of the many that received funds. These are Citigroup, JP Morgan, Wells Fargo, Bank of America, Goldman Sachs, Morgan Stanley, PNP Financial Services, US Bancorp and Capital One Financial Corporation. As the accounting data available for Goldman Sachs does not cover the entire period of analysis, the bank is replaced by the 11th biggest bank recipient of TARP funds: SunTrust Banks. Equally, Lehman Brothers, Royal Bank of Scotland, Lloyds and BNP Paribas are included in the analysis. Lehman is considered as its example is used as a case in point throughout the paper, and the latter three to expand the discussion to systemically important banks in Europe that received emergency funding or a bail-out. The first period of analysis ranges from Q4 2006, as this is when the first signs of problems in the US housing market were already visible, and to Q4 2008, when the world economy had reached a state of emergency. Focusing on this period allows studying data before the distribution of any funds under TARP and to determine whether banks grew during the period. In the case of growth, it is compared with the other period of analysis, which spans from Q1 2001, till Q4 2006, and checked for disproportional increases in year to year numbers. For an idea on the growth in the banking sector compared to the

⁹⁰ TARP refers to the Troubled Asset Relief Program which was signed into law by George W. Bush on October 3rd, 2008 to purchase assets and equity from troubled institutions and restore trust to markets.

economy as a whole, the average growth is computed and compared with increases in the GDP for both the analyzed periods in the US and in Europe.

The main object of analysis is growth in reported total assets, and in the case of deposit taking institutions, growth in reported deposits. By analyzing this subset, it is possible to cover the two sources of moral hazard in modern banking already mentioned: existence of a lender of last resorts on one hand, and deposit insurance schemes on the other. To compute increases in deposit levels, the unit of analysis used is total deposits and not core deposits, although the latter is considered as a key metric in assessing bank's performance in raising funds via traditional bank channels. As the focus is on mere growth in the balance sheet, no discrimination is made between different types of deposits. The main reason for this is that only few of the institutions from the sample report consumer deposit and bank deposit separately, effectively excluding any screening for growth in deposits covered by deposit insurance. Total deposits are therefore used as a proxy for deposits covered by insurance. Under the assumption that uninsured depositors would withdraw their deposits when faced with uncertainty as to the creditworthiness of the depository institution, any growth in deposits can accurately be accredited to insured depositors. Consequently, the approach is robust.

The analysis is confined to mere balance sheet size, measured in total assets, and does neither provide further breakdown on individual components of the balance sheet, other than deposits and loans-to-total asset ratios, nor outline trends in the asset generation. The sample of TARP recipients is identified from a list published by US Today⁹¹. The ten biggest recipients of funds from the banking sector are singled out, and once identified published accounting data is used to extract relevant information regarding total assets, deposits and loans. For quarter to quarter comparison, earning releases or forms filed away to the regulator (such as SEC-10Q and SEC-10K) serve as a source for accounting data. Where information is not readily available all the way back to 2001, the earliest year when the information

⁹¹ See: <http://www.usatoday.com/money/economy/tarp-chart.htm>. URL valid Feb 11, 2011. This list has already been used to identify TARP sample firms for studies focusing on accounting performance of TARP recipients. See for example Fahlenbrach, R. & Stulz, 2010.

becomes available is used.⁹² Where reliable quarter to quarter data was not found, balance sheet data was extracted from the annual account for a year to year comparison. The data on GDP growth in the US and Europe is extracted from Indexmundi and Eurostats respectively⁹³.

The main weakness of this approach is that accounting numbers can be elusive and susceptible to differences in use of accounting principles and or/creative accounting. In addition, the so-called shadow banking system allowed financial institutions to remove assets and certain liabilities from financial statements. This certainly masked visible growth in loans held on the balance sheet. The main strength of the approach lies in its simplicity as despite the shadow banking system, assets were nevertheless generated on the balance sheet in form of cash or securities held for sale. Therefore, for the purpose of this paper, we, as Laeven and Levina (2006, pp. 6), deem growth in total assets as indicative of overall developments in the firm. It is acknowledged that for certain firms, growth on balance sheet can be attributed to assets from SIVs being taken on book again. This is taken into account in the conclusions. Simple computation of growth in total assets does however present an indicator on the assertiveness of the hypothesis.

When analyzing total assets, consolidated data is used. In other words, the accounting data is not analyzed domestically for each of the subsidiaries of the financial institutions from the sample, but rather on a group level. While such an approach precludes the observer from making any meaningful assumptions regarding individual contributors to the balances sheet data from a group perspective, it gives an advantage of clear focus on growth without risking an unnecessary exhaustive accounting analysis. Furthermore, the main US banks were quite concentrated in their domestic market and excluding foreign subsidiaries from the analysis is not likely to yield materially different results. However, foreign subsidiaries would not receive emergency lending facilities from the home country as subsidiaries are treated as national banks in the host country. Therefore, foreign operations only contribute to a too-big-

⁹² For JP Morgan this is Q3 2004.

⁹³ See: <http://www.indexmundi.com/g/g.aspx?c=us&v=66> and <http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&plugin=1&language=en&pcode=tec00001>. Retrieved May 25, 2011.

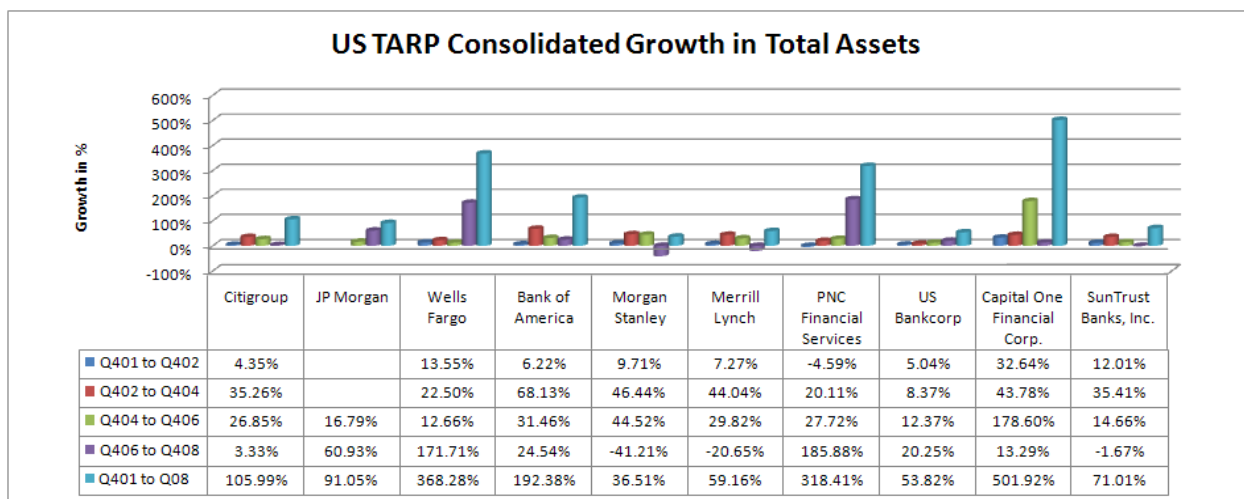
to-fail pressure if the legal structure is a branch. Only using consolidated data for the analysis can create a bias in the results in that regard. Due to the reasons explained above, this bias is more likely to affect the results for the European banks from the sample than their US counterparts.

From a ratio analysis point of view, the ratios computed are for loans-to-total-assets and deposits-to-total-assets. These ratios are used to gauge any disproportional change in the composition of assets and liabilities. Three variables from the balance sheet and one operational variable are used for the analysis: total assets (including goodwill and intangibles) on a consolidated basis, total deposits on a consolidated basis, loans on a consolidated basis and headcount (when available).

Consolidated Growth – Total Assets

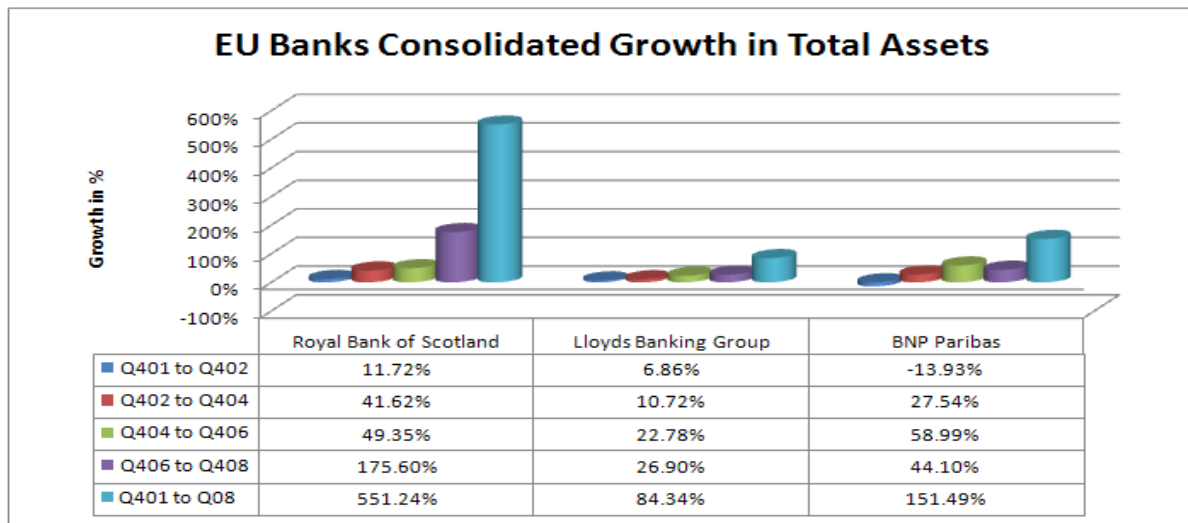
We find that a significant number of firms from the sample did not wind down their operations in the face of adverse market conditions. Instead their balance sheets continued to grow as measured in total assets and total deposits. From the sample of TARP-recipients, seven out of ten showed growth in total assets on a consolidated basis from Q4 2006, to Q4 2008. For four of those, the growth in total assets was disproportional to any two year periods dating back to 2001.

Table 1 – US TARP Consolidated Growth of Total Assets



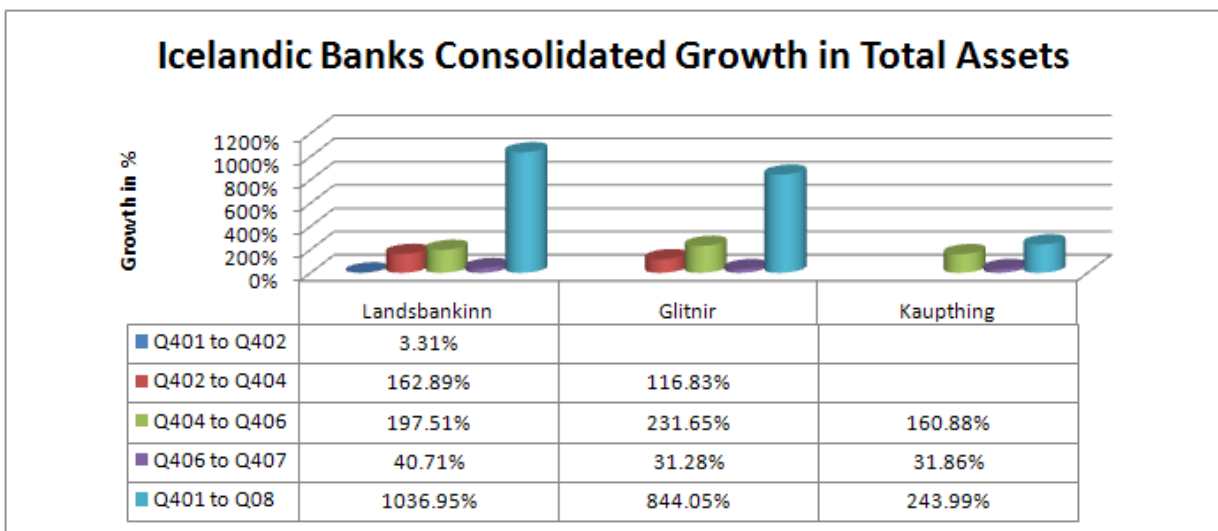
The banks from the European sample all booked an increase in total assets on a consolidated basis from Q4 2006, to Q4 2008. For one of them, the increase was clearly disproportional to prior periods (due to an acquisition). For two, the growth was strong but in line with what was observed in the prior periods analyzed.

Table 2 – EU Banks Consolidated Growth of Total Assets



None of the Icelandic banks grew disproportionately in consolidated total assets as compared to other periods, from Q4 2006, to Q4 2007. Their growth curb was however very steep with e.g. Landsbankinn swelling its total assets by a staggering 1036.95% from 2001-2007.

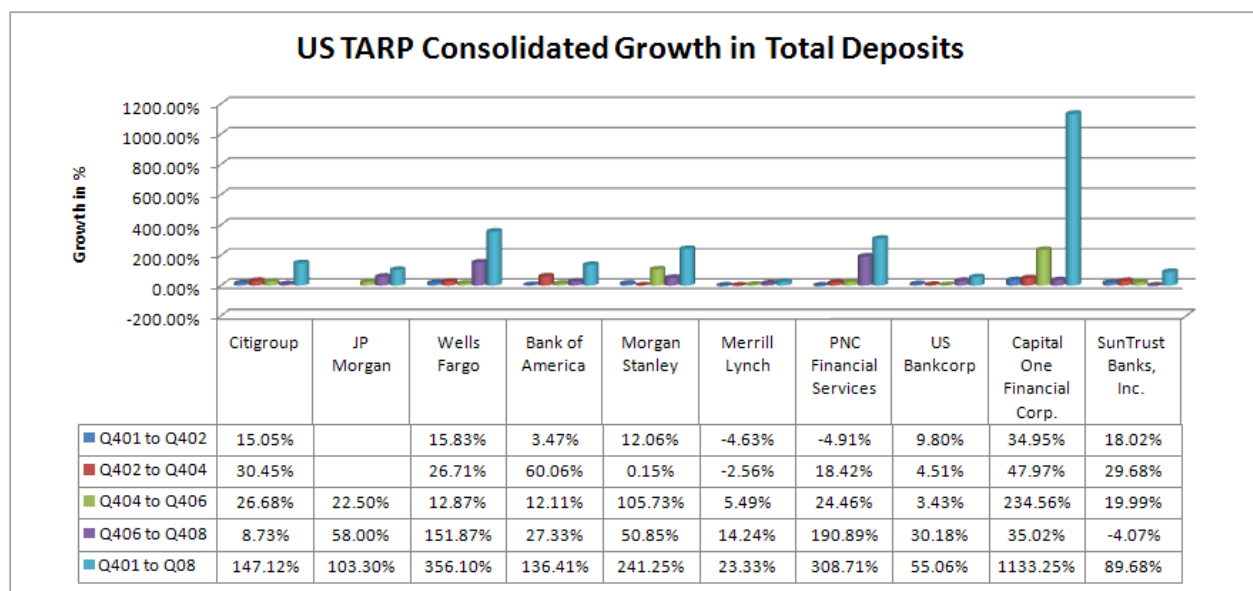
Table 3 – Icelandic Banks Consolidated Growth of Total Assets



Consolidated Growth – Total Deposits

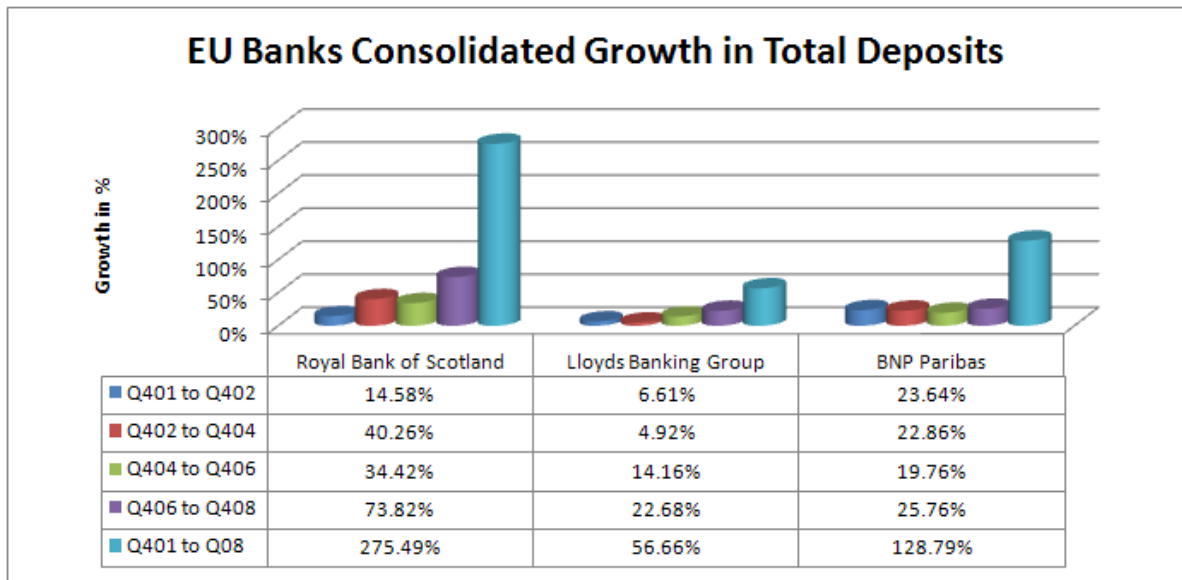
Nine of the ten US banks booked an increase in their deposits on a consolidated basis during this period. For five out of those, the growth can be considered disproportional to any two year period dating back to 2001. For two, the increase was not disproportional to the prior two year period, but still out of proportions compared to any other two year period from 2001. Other two booked a deposit growth which was below, or equal to, the level of prior periods.

Table 4 – US TARP Consolidated Growth in Total Deposits



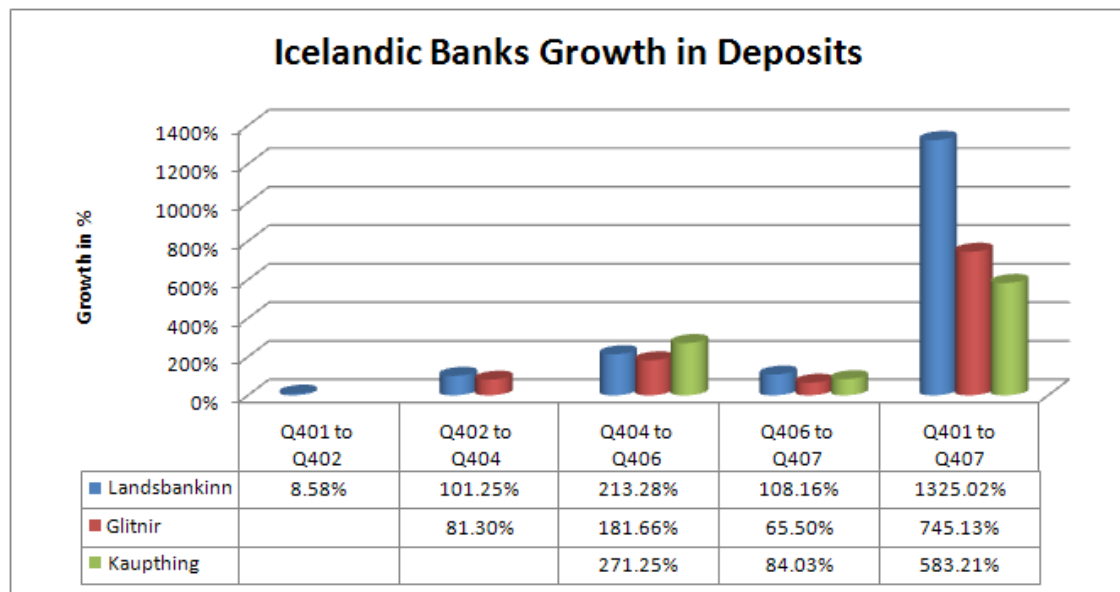
Three out of three of the European banks demonstrated an increase in deposits on a consolidated based during the period. For two out of three, this increase was clearly disproportional to prior growth levels. For one, it was robust but not significantly higher than for the other observed periods.

Table 5 – EU Banks Consolidated Growth in Total Deposits



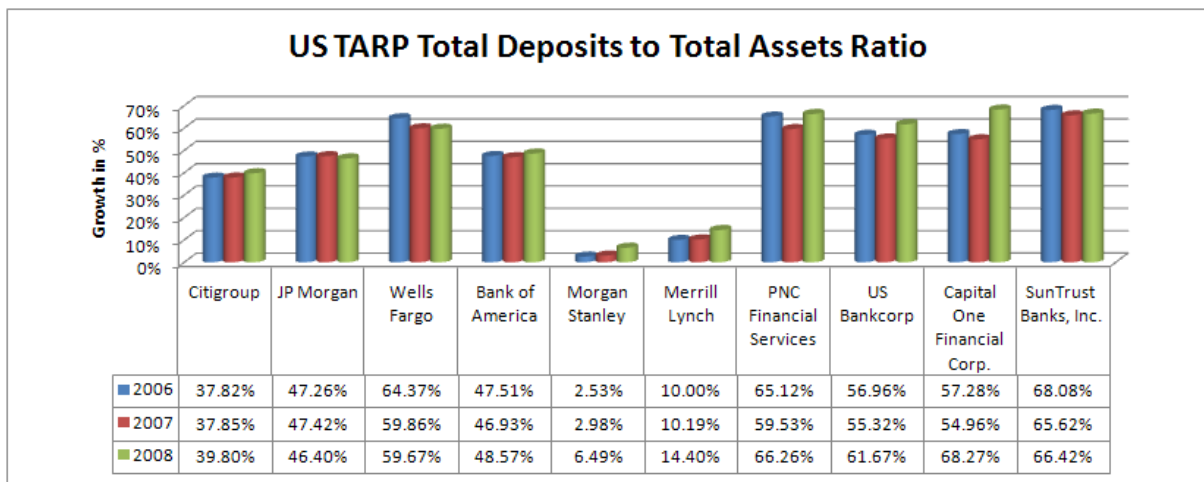
None of the Icelandic banks demonstrated disproportional growth in deposits on a consolidated basis from Q4 2006, to Q4 2007. However, the growth curb was steep, with increases ranging from 65.5% to 108.16%. The numbers for the Icelandic banks include consumer deposits only.

Table 6 – Icelandic Banks Growth in Deposits



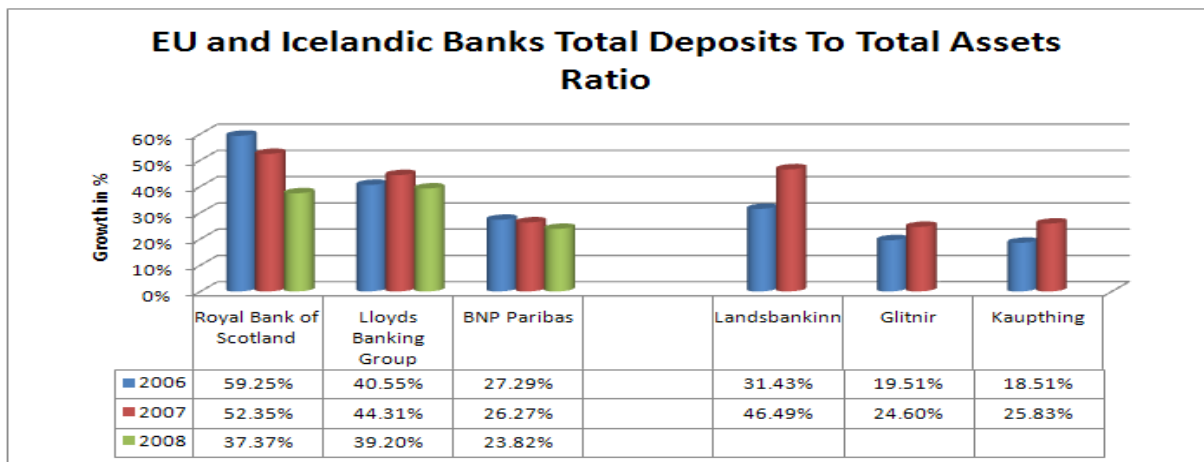
Seven out of ten of the US financial institutions showed growth in both total assets and total deposits on a consolidated basis from Q4 2006, to Q4 2008. The fact that deposit levels increase as a ratio of total assets, while total assets either remain same or decrease, indicates that more importance is being given to deposit taking as a funding method. A visible increase in total deposits as a ratio of total assets is observed for seven out of ten from the US sample.

Table 7 – US TARP Total Deposits to Total Assets Ratio



Total deposits as a ratio of total assets declined from Q4 2006, to Q4 2008 for the three European banks. For the Icelandic banks, this ratio increases disproportionately during the same period.

Table 8 – EU and Icelandic Banks Total Deposits to Total Assets Ratio



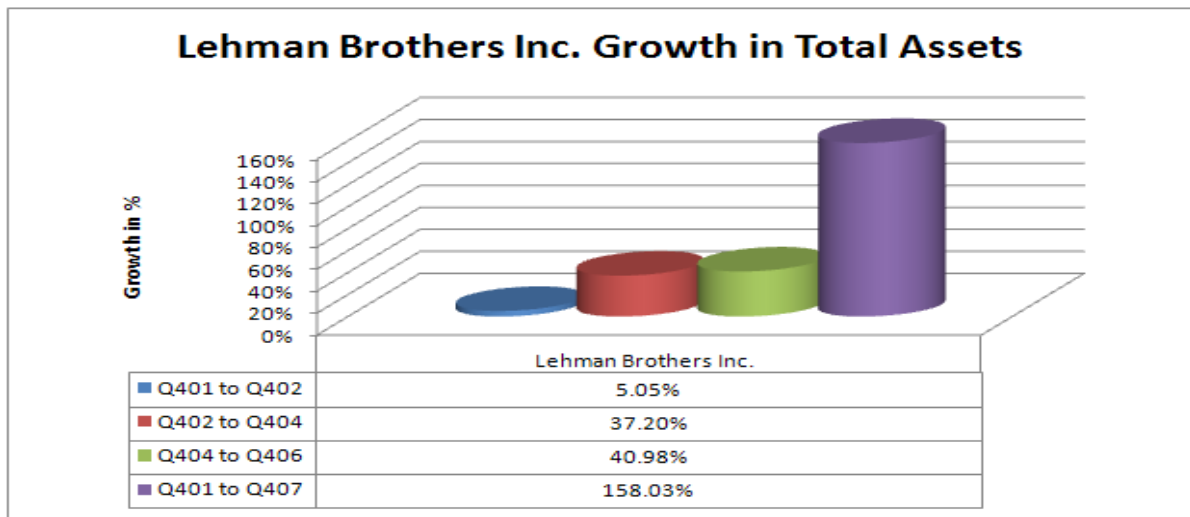
Although the international banking system was undeniably on a growth track as from 2001 on, due to abundant liquidity and the vast amount of profits that could be made from aggressive strategies, the economical outlook was quite different after the onset of the subprime crisis. Nevertheless, four out of ten from the sample of TARP recipients demonstrated growth to total assets that was disproportional to prior periods. It must be taken into account however that mergers and acquisitions add to the excessive increase in total assets for half of those. For five out of ten from the same sample, deposits increased disproportional. This shows that because of deposit insurance, demand deposits can be a continuous source of funding even during a crisis period. Looking at the Icelandic banks, deposit taking increased substantially throughout the entire observed period.

Indeed, it is important to keep in mind that during market distress, it is neither always sensible nor possible to draw in the sails as fire sales of assets can result. Also, in difficult market conditions deposits become an affordable way of funding compared to borrowing at a penalty rate. To witness a disproportional growth during distress, does on the other hand raise questions as to what induces it. In terms of the results, it is clear that size relative to the economy raises systemic importance and effectively increases bargaining power with the government. After all, the conceptualization of the term too-big-to-fail is originated from this observation.

Evidence that support the hypothesis made in this paper abound when scrutinizing the available accounting data from the sample. This holds true for both the US recipients of TARP as well as the EU banks that are a part of the analysis. The Volcker report shows how Lehman's management was certain that the bank was too big to fail and the government would step in to avoid its failure. According to our analysis, a proportion of other banks that were already considered to hold a systemically important position in the financial system, seem to have followed the trend in responding to difficulties in the markets and loan losses by generating more assets and expand.

In Lehman's case we see that a countercyclical growth strategy was taken. An independent report has already determined that management did not expect a fall, and within the hypothesis it is maintained that this growth strategy was taken anticipating great profits in the case of assertiveness and government bail-out in the case of failure. Without this explanation it is difficult to justify such a high risk countercyclical growth strategy, one that bypassed internal risk controls and tweaked risk limits substantially, as observed at Lehman Brothers.

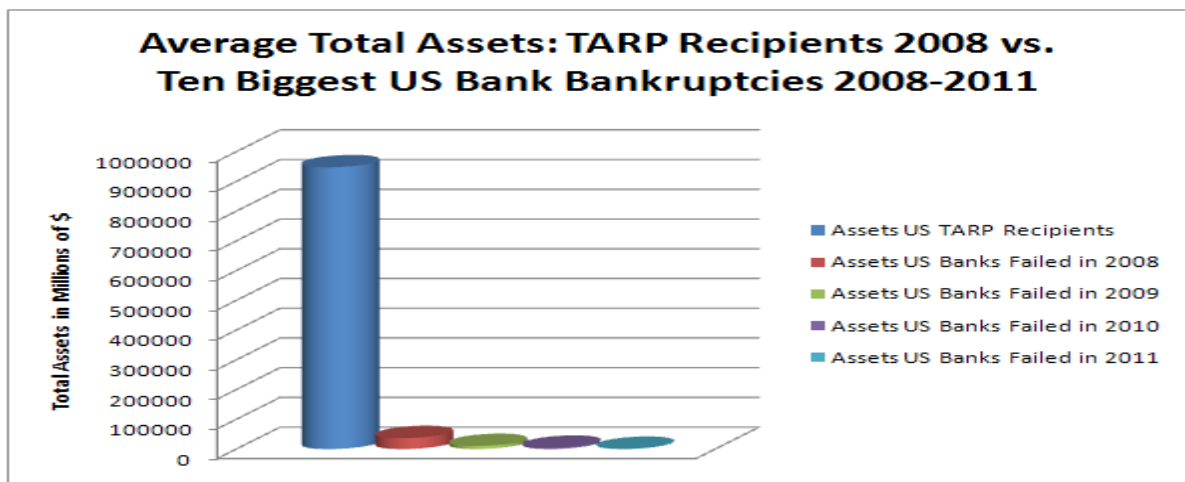
Table 9 – Lehman Brothers Inc. Growth in Total Assets



As already pointed out, the so-called shadow banking system was a convenient tool to free up balance sheet space and reduce capital to be held for regulatory purposes. It so happened as when banks found themselves obliged to take assets back on the balance sheet, all too conveniently their systemic importance and interconnectedness increased, therefore making their resolution in case of failure harder, and the consequences of it for the economy greater. All in all, this increased their systemic importance. It is not maintained that this was masterminded in advance but what can be derived nevertheless is that in banking context size does matter. To emphasize on this point, the banks from the sample of US TARP recipients are compared with a pool of commercial banks that failed in the United States between 2008 and 2011, and did not receive liquidity assistance, to find out that higher proportion of relatively small banks, measured in total assets, did not receive liquidity assistance compared to bigger banks. In other words, smaller banks were allowed to fail.

The biggest bank by far that has failed in the US after the fall of Lehman Brothers is Washington Mutual Bank that was taken over by the FDIC on September 25th, 2008, or roughly two weeks after Lehman had collapsed, and its subsidiaries sold to JP Morgan Chase. The bank had 307bn in total assets, which is larger than four out of the ten biggest recipients of TARP funding. The Since 2008, the biggest bank bankruptcy in the United States is from 2009 and involves Colonial Bank with assets of 25bn, or roughly 8% of the size of Washington Mutual Bank. It would be interesting to compare the fall of Washington Mutual Bank with the Lehman case with respect to any political pressures that would have existed not to rescue a systemically important institution after opting not to rescue Lehman. It is quite clear on the other hand, that the fall of Washington Mutual Bank triggered an ad hoc policy response that involved bailing-out systemically important banks, hence the TARP program. Therefore, the policy response by US authorities during the height of the subprime crisis demonstrates the validity of the time inconsistency theory of Prescott and Kydland, and the privileges that are attributed to financial firms in proportion to their relative size to the economy.

Table 10 – Average size: TARP Recipients 2008 vs. US Bank failures 2008-2011⁹⁴

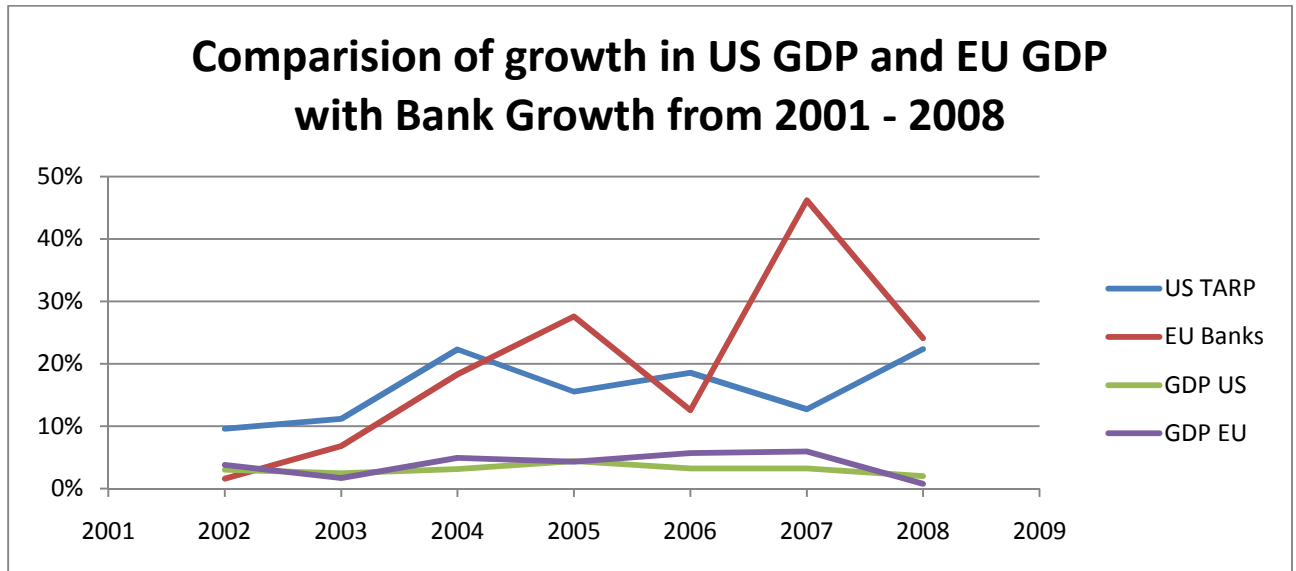


⁹⁴ Data extracted from the FDIC Failed Bank List - <http://www.fdic.gov/bank/individual/failed/banklist.html>. Retrieved Mar, 2011. Total Assets number retrived from <http://graphicsweb.wsj.com/documents/Failed-US-Banks.html>

Small banks appear to be under pressure from both sides in the sense that during troubled times, risk averse investors will bypass relatively smaller banks due to the risk of failure and rather invest in a systemically important bank. A systemically important bank is likely to receive liquidity assistance if required, while at the same time it is unlikely that the government/central bank will rescue relatively smaller banks. If we allow for a further look at recent bank failures, it seems small banks are more likely to fail than big banks. Furthermore, in efforts to curtail moral hazard because of deposit insurance certain countries, e.g. Denmark, have decreased the amount covered by the insurance. By decreasing the amount covered by deposit insurance, it is already visible that capital is allocated to relatively bigger institutions which are perceived as more likely to receive assistance in case of difficulties. This shows that by attempting to rein in one problem, in this case moral hazard from deposit insurance, another one can become more acute, in this case too-big-to fail. In the US, the approach has been different and the deposit insurance limit increased substantially.

As Mishkin (2006, pp. 991) argues, larger banks receive direct benefits relative to their size in the form of lower borrowing cost, lower deposit premium and better credit rating, and that the market directly prices the too-big-to fail subsidy as to reflect a decreased risk of default. While government bailouts were partially made to guarantee that banks would not stop lending to otherwise healthy businesses, it is by no means clear that funds were really used for this purpose. Rather, evidence from forthcoming work (Gunnþórsson, 2011) shows, using Danske Bank in Denmark as an example, that liquidity support was amongst other things used to fund losses of foreign branches. In any case, these government actions were by no means a policy measure to enlarge the banking system. Analyzing the data above, it is obvious that banks took on aggressive growth strategies and that they were successful in expanding their balance sheet. By comparing this growth with GDP growth all through the period, it is clear that the banking sector was expanding far faster than the rest of the economy.

Table 11 – GDP Growth vs. Bank Growth



Conclusions:

The US originated subprime crisis that spread out through the economy and ultimately led to a world recession was the result of various intertwined factors. Global imbalances, financial innovation and misaligned incentives all played a role in prompting it. The depth of the crisis and its serious repercussions put the vulnerability of banking systems on display and showed serious gaps and deficiencies from a structural, regulatory and supervisory points of view. Although capital flows freely within the global financial system, acute differences exist in financial regulation and supervision practices across countries. While this is to be expected to a certain degree when comparing the US and Europe, it is surprising to see how far the European Commission is from creating a truly convergent single market in financial services. During the crisis the lack of cross border resolution and equal treatment of European firms and depositors was obvious at the same time that no binding mediation between member state authorities existed.

Proponents of reforms on both sides of the Atlantic do well in identifying the key issues that need to be resolved in order to reduce the risk of future crisis. Convergence of rules, coordinated supervision, timely resolution of insolvent firms and clear mandate to exercise authority, are all topics that are in the front of the line for a more robust financial system. Furthermore, it is important to align incentives with the long term growth objectives of the firm and make sure lenders have incentives to screen borrowers. Market pressure and lobbying is however likely to weaken stringent proposals for rules and as with any financial rules that are made, new issues will arise with regards to its implementation and possibly side effects. An example of this is the debate on bringing over-the-counter derivatives to centralized clearing houses and the risk of these clearing houses to become yet another too-big-to-fail institution.

Empirical research and theoretical models imply that having lender of last resorts and deposit insurance creates incentives to take on more risks. Factors such as ownership structure, national policies and cover limits all influence the degree to which this holds true. Moral hazard problems that arise due to these factors are acute and difficult to counter.

Due to the risk of contagion it can be questioned whether banks should be allowed to fail unless their orderly resolution can be guaranteed. It is however clear that government faces pressure not to inject more money into the banking system than absolutely necessary during a crisis. Furthermore, a lender of last resort, or a provider of liquidity assistance, faces a dilemma: those who least deserve assistance are the ones who need it the most. While reflecting on this last statement it is helpful to think in context of moral hazard to put forward an original statement: *lenders of last resort ensure the survival of the most reckless.*

The existence of lenders of last resort and deposit insurance are nevertheless important tools to ensure financial stability. Even without maintaining that they should be disposed of, it is clear that the moral hazard stemming from them is quite a source of perverse incentives and a potential contributor of financial instability. According to Ben Bernanke, Chairman of the Federal Reserve, the single most important lesson from the financial crisis of 2008 is precisely that the issue of too-big-to-fail banks must be solved. On the other hand, it is highly unlikely that the existence of lender of last resorts or deposit insurances will be threatened. For that, their utility to counteract instability is too high. In effect, this weakness of the banking system is difficult, if not impossible, to curb. Due to time inconsistencies, as those previously discussed, it is unlikely that governments will accept systemic failure if it can potentially be avoided by intervention. Indeed, this creates a vicious circle and distorts risk incentives.

Macroeconomic measures to identify and counteract undesirable developments in financial markets are in theory a tool to ensure financial stability. Adverse selection problems and lack of cross border coordination however stand in the way of timely interpretation and consequent provisioning of remedies for any early warning signals. Therefore, corporate structures that ensure timely and effective resolution and winding down of insolvent firms seem paramount in any effort to stem moral hazard and ensure stability. In contrast, behavioral issues such as herding, irrationality and panics will have adverse effects even with the existence of smooth resolutions provisions, as long as the market views that similar risk exposures are widespread through the financial system or if the credibility of a parent firm is questioned. As a result, it is difficult to envisage a framework that is effective in responding

to all the issues surrounding financial institutions within a system, and unfortunately future crisis are likely to occur. The extent of their repercussions will be determined by the capability of the government, and the financial system itself, to convey credibility and restore trust. Banks are vulnerable to risk due to the maturity mismatch of assets and liabilities, and as long as they hold the important economical role of taking on short term liabilities to fund long term projects, there is no absolute way to prevent banking crisis. In essence, uncertainty on the degree of risk exposures of individual firms must be eradicated with transparency rules that minimize the risk of contagion, and bring about more market discipline. Again, this is difficult to attain and the unavoidable uncertainty on what it will ultimately be that triggers a crisis makes any ex-ante measures susceptible to issues related to time inconsistencies and make ad hoc solutions more likely. As previously pointed out, it is difficult to know beforehand what kind of measures will be necessary to counteract adverse developments whose triggers are yet not known.

When viewing growth measured as increase in total consolidated assets, evidence that supports the hypothesis of this paper is found. Although the results are preliminary and more research will be needed to test for other variables, the analysis of balance sheet data of the ten biggest recipients of TARP funding and key European players that received emergency assistance shows asset growth, in some cases disproportional to growth observed during previous years, from the onset of the subprime crisis until its culminant point towards the end of 2008. It is possible that this growth was not intentional, but rather a consequence of illiquid markets and an obligation to take over assets from SIVs. Conversely, this could indicate that during extreme systemic shocks, the existence of a lender of last resort facilities gives large financial institutions an incentive to increase their exposure and interconnectedness, and not to decrease it and liquidate unprofitable positions. The fact that big financial institutions experience lower borrowing costs in proportion to their perceived systemic importance, provides yet another incentive to banks to seek a too-big-to-fail status. Furthermore, the analysis made in this paper illustrates that when deposits are insured, consumer deposits seem to be easy and an effective way for alternative funding.

Judging from the sample, systemically important European banks are as guilty of the behavior described above as their American counterparts but more research, with a bigger sample that can be used for regression analysis, is needed to assert this further.

The preliminary results presented here open a field for new research on the original concept of *gambling on a bail-out* which, according to the hypothesis, takes place when systems face disproportional shocks and financial intuitions rush to ensure their too-big-to-fail status. Whether the central bank and government act upon predefined rules when distributing emergency assistance, or if measures are taken on the go, is possibly irrelevant as the high costs associated with systemic failures create an implicit guarantee that the biggest players with most interconnected ties will be rescued. The Lehman case showed that the market was expecting a bail-out and its failure created a panic that spread across borders. Whether government will be more hesitant to allow big banks to fail going forward, remains to be seen. Various relatively smaller banks have been allowed to fail in the US and Europe after 2008, and the question of whether these were less or equally solvent than institutions receiving emergency assistance is essentially an empirical one. The main policy recommendations that can be made from this paper, upon further investigation on the original concept presented above, is to create growth limits on systemically important financial institutions. There are various ways to do this, such as imposing higher capital requirements and capital buffers on these firms, but restraints on permissible growth should also be made to limit disproportional increases in total assets, total deposits, loans and leverage. Counterarguments to such measures are the loss in economic output and efficiency that can follow, but a fundamental question is if any growth that can be erased over night is really desirable. With this in mind, rules that increase market transparency on the risk exposures of individual firms seem adequate to enhance market discipline, and thus induce desirable behavior of key players in the market. Measures in this direction are already being taken by policy makers across major financial markets. The task of creating a rulebook that is neither too burdensome nor too moderate in curtailing market frictions, is an arduous one. Well intended regulation can have unexpected and adverse effects. To conclude, as pointed out by Merton (1995, pp. 471):

“...a single minded policy, focused exclusively on systemic-risk concerns, could derail the engine of innovation and bring to halt the financial system’s trip to greater efficiency. Imbalances between derivative-product innovation and the evolution of the infrastructure to support it are inevitable. Government actions however can either mitigate or aggravate their disruptive effect. By analogy, hurricanes are inevitable. Government policy can either reduce their devastation by establishing early warning systems or it can aggravate the damage by encouraging the building of housing in locations that are especially vulnerable to such storms. Government action can significantly influence the path of development of financial innovation. However, successful public policy depends as importantly on recognizing the limits of what government can do to improve efficiency and on recognizing when government inaction is the best choice.”

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Appendices:

Appendix I. US Bank Failures 2008-2011

Bank Failures in 2008	Total Assets
Washington Mutual Bank	307,000,000,000
IndyMac	32,000,000,000
Downey Savings and Loan	12,800,000,000
Franklin Bank	5,100,000,000
PFF Bank and Trust	3,700,000,000
First National Bank of Nevada	3,400,000,000
ANB Financial NA	2,100,000,000
Silver State Bank	2,000,000,000
Integrity Bancshares Inc.	1,100,000,000
The Columbian Bank and Trust Company	752,000,000
The Community Bank	681,000,000
Haven Trust Bank	572,000,000
Security Pacific Bank	561,000,000
Alpha Bank & Trust	354,000,000
Freedom Bank	287,000,000
First Priority Bank	259,000,000
First Heritage Bank, NA	254,000,000
First Georgia Community Bank	238,000,000
Ameribank	113,000,000
Main Street Bank	98,000,000
Douglass National Bank	59,000,000
First Integrity Bank, NA	55,000,000
Meridian Bank	39,000,000
Sanderson State Bank	37,000,000
Hume Bank	19,000,000

Bank Failures in 2009	Total Assets
Colonial Bank	25,000,000,000
Guaranty Bank	13,000,000,000
BankUnited FSB	12,800,000,000
AmTrust Bank	12,000,000,000
United Commercial Bank	11,200,000,000
California National Bank	7,800,000,000
Corus Bank	7,000,000,000
First Federal Bank of California, F.S.B.	6,100,000,000
Park National Bank	4,700,000,000
Silverton Bank, NA	4,100,000,000
Imperial Capital Bank	4,000,000,000
San Diego National Bank	3,600,000,000
Irwin Union Bank and Trust Company	2,700,000,000
Orion Bank	2,700,000,000
Pacific National Bank	2,300,000,000
New Frontier Bank	2,000,000,000
Georgian Bank	2,000,000,000
Vineyard Bank Rancho	1,900,000,000
Peoples First Community Bank	1,800,000,000
Mutual Bank	1,600,000,000

First Bank of Beverly Hills	1,500,000,000
Temecula Valley Bank	1,500,000,000
New South Federal Savings Bank	1,500,000,000
Security Bank of Bibb County	1,200,000,000
Affinity Bank	1,000,000,000
Cooperative Bank	970,000,000
Venture Bank	970,000,000
Founders Bank	963,000,000
Omni National Bank	956,000,000
The Buckhead Community Bank	874,000,000
San Joaquin Bank	775,000,000
Century Bank, F.S.B.	728,000,000
Peoples Community Bank	706,000,000
TeamBank, NA	670,000,000
CapitalSouth Bank	617,000,000
Independent Bankers' Bank	586,000,000
Warren Bank	538,000,000
Strategic Capital Bank	537,000,000
Solutions Bank	511,000,000
Irwin Union Bank, F.S.B.	493,000,000
Cape Fear Bank	492,000,000
First Bank of Idaho	489,000,000
First State Bank	463,000,000
Mainstreet Bank	459,000,000
Vantus Bank	458,000,000
Mirae Bank	456,000,000
Security Bank of Jones County	453,000,000
Bradford Bank	452,000,000
Citizens National Bank	437,000,000
Republic Federal Bank, N.A.	433,000,000
Security Bank of Houston County	383,000,000
Southern Community Bank	377,000,000
Platinum Community Bank	346,000,000
Westsound Bank	335,000,000
Bank of Elmwood	327,000,000
North Houston Bank	326,000,000
Security Bank of Gwinnett County	322,000,000
America West Bank	299,000,000
FirstCity Bank	297,000,000
RockBridge Commercial Bank	294,000,000
First DuPage Bank of Westmont	279,000,000
BankFirst	275,000,000
Great Basin Bank of Nevada	271,000,000
Madisonville State Bank	257,000,000
1st Centennial Bank	227,000,000
Security Bank of North Metro	224,000,000
Neighborhood Community Bank	222,000,000
Bank of Lincolnwood	214,000,000

Bank USA, N.A.	213,000,000
InBank	212,000,000
Security Bank of North Fulton	209,000,000
Community First Bank	209,000,000
Alliance Bank	206,000,000
Greater Atlantic Bank	203,000,000
Riverside Bank of the Gulf Coast	202,000,000
Prosperan Bank	200,000,000
Community Bank of West Georgia	199,000,000
Flagship National Bank	190,000,000
Michigan Heritage Bank	185,000,000
American Sterling Bank	181,000,000
Benchmark Bank	170,000,000
Citizens State Bank	169,000,000
First Coweta Bank	167,000,000
First National Bank of Danville	166,000,000
First BankAmericano	166,000,000
Community Bank of Nevada	159,000,000
Fist National Bank of Anthony	157,000,000
United Security Bank	157,000,000
Community Bank of Arizona	156,000,000
ebank	143,000,000
County Bank	135,000,000
Pacific Coast National Bank	134,000,000
First Security National Bank	128,000,000
Suburban FSB	126,000,000
Colorado National Bank	124,000,000
Union Bank, National Association	124,000,000
Bank of Clark County	120,000,000
MagnetBank	119,000,000
Integrity Bank	119,000,000
Millennium State Bank of Texas	118,000,000
Citizens National Bank	118,000,000
First Piedmont Bank	115,000,000
American Southern Bank	112,000,000
FirstBank Financial Service	111,000,000
American United Bank	111,000,000
Riverview Community Bank	108,000,000
First State Bank	105,000,000
First State Bank of Altus	103,000,000
Ocala National Bank	100,000,000
Corn Belt Bank & Trust Co.	100,000,000
National Bank of Commerce	97,000,000
Community National Bank of Sarasota Cou	97,000,000
Horizon Bank	88,000,000
Hillcrest Bank Florida	83,000,000
Community Bank of Lemont	82,000,000
MetroPacific Bank	80,000,000
Commerce Bank of Southwest Florida	80,000,000
Rock River Bank	77,000,000
Brickwell Community Bank	72,000,000
John Warner Bank	70,000,000
Bank of Wyoming	70,000,000
Partners Bank	66,000,000
Waterford Village Bank	61,000,000
Security Savings Bank	59,000,000
Elizabeth State Bank	56,000,000

Jennings State Bank	56,000,000
Silver Falls Bank	50,000,000
The Tattnall Bank	50,000,000
Citizens Community Bank	45,000,000
Heritage Community Bank	42,000,000
South Colorado National Bank	40,000,000
Valley Capital Bank, N.A.	40,000,000
Freedom Bank of Georgia	36,000,000
First State Bank of Winchester	36,000,000
Sherman County Bank	28,000,000
Gateway Bank of St. Louis	28,000,000
First Bank of Kansas City	16,000,000
Home Federal Savings Bank	15,000,000
Dwelling House Savings and Loan Associati	13,000,000
Pinnacle Bank of Oregon	12,000,000

Bank Failures 2010	Total Assets
Westernbank Puerto Rico	11,940,000,000
R-G Premier Bank of Puerto Rico	5,920,000,000
La Jolla Bank	3,600,000,000
Frontier Bank	3,500,000,000
Riverside National Bank of Florida	3,420,000,000
Amcore Bank	3,400,000,000
Midwest Bank and Trust Company	3,170,000,000
TierOne Bank	2,800,000,000
Eurobank	2,560,000,000
First Regional Bank	2,180,000,000
ShoreBank	2,160,000,000
CF Bancorp	1,650,000,000
Advanta Bank Corp	1,600,000,000
Hillcrest Bank	1,600,000,000
Horizon Bank	1,300,000,000
Community Bank and Trust	1,210,000,000
Charter Bank	1,200,000,000
Broadway Bank	1,200,000,000
Premier Bank	1,200,000,000
City Bank	1,130,000,000
Columbia River Bank	1,100,000,000
Appalachian Community Bank	1,010,000,000
Crescent Bank and Trust Co	1,000,000,000
Florida Community Bank	876,000,000
Los Padres Bank	870,000,000
First National Bank of Georgia	833,000,000
Barnes Banking Company	828,000,000
First Banking Center	821,000,000
Liberty Bank	768,000,000
Rainier Pacific Bank	718,000,000
First National Bank of the South	682,000,000
Darby Bank & Trust	655,000,000
Peninsula Bank	644,000,000
Bank of Florida-Southwest	641,000,000
Tamalpais Bank	629,000,000
Bank of Florida-Southeast	595,000,000
Beach First National Bank	585,000,000
Home National Bank	561,000,000
K Bank	538,000,000
Sun American Bank	536,000,000

The Cowlitz Bank	529,000,000
Washington First International Bank	521,000,000
The Park Avenue Bank	520,000,000
Security Savings Bank, FSB	508,000,000
Butte Community Bank	499,000,000
Desert Hills Bank	497,000,000
Palos Bank and Trust	493,000,000
Evergreen Bank	489,000,000
New Century Bank	486,000,000
Nevada Security Bank	480,000,000
The Bank of Miami	448,000,000
Peoples Bank	447,000,000
Metro Bank of Dade County	442,000,000
Wheatland Bank	437,000,000
Wakulla Bank	424,000,000
George Washington Savings Bank	413,000,000
Sterling Bank	408,000,000
First Federal Bank of North Florida	393,000,000
Bank of Hiawassee	378,000,000
Woodlands Bank	376,000,000
American Marine Bank	373,000,000
Coastal Community Bank	373,000,000
McIntosh Commercial Bank	363,000,000
Sun West Bank	361,000,000
Premier American Bank	351,000,000
Maritime Savings Bank	351,000,000
Sonoma Valley Bank	337,000,000
1st Pacific Bank of California	336,000,000
Old Southern Bank	316,000,000
Pacific State Bank	312,000,000
Unity National Bank	292,000,000
North County Bank	289,000,000
Bay National Bank	282,000,000
First Arizona Savings	272,000,000
Innovative Bank	269,000,000
Butler Bank	268,000,000
Ravenswood Bank	265,000,000
Turnberry Bank	264,000,000
First National Bank	253,000,000
Paramount Bank	253,000,000
Home Valley Bank	252,000,000
First Commerce Community Bank	248,000,000
Bank of Florida-Tampa Bay	245,000,000
Chestatee State Bank	244,000,000
Statewide Bank	243,000,000
The Bank of Bonifay	243,000,000
Pierce Commercial Bank	221,000,000
Centennial Bank	215,000,000
SouthwestUSA Bank	214,000,000
Bank of Illinois	212,000,000
LibertyPointe Bank	210,000,000
Copper Star Bank	204,000,000
Lincoln Park Saving Bank	200,000,000
United Americas Bank	194,000,000
USA Bank	190,000,000
Horizon Bank	188,000,000
Champion Bank	187,000,000

Olde Cypress Community Bank	169,000,000
Bank of Ellijay	169,000,000
NorthWest Bank and Trust	168,000,000
Waterfield Bank	156,000,000
Independent National Bank	156,000,000
First Southern Bank	156,000,000
Haven Trust Bank Florida	149,000,000
First Suburban National Bank	149,000,000
Tifton Banking Company	144,000,000
Williamsburg First National Bank	139,000,000
First Lowndes Bank	137,000,000
Satilla Community Bank	136,000,000
First National Bank of Barnesville	131,000,000
Peotone Bank and Trust Company	130,000,000
Marco Community Bank	120,000,000
Towne Bank of Arizona	120,000,000
Earthstar Bank	113,000,000
Gulf State Community Bank	112,000,000
Progress Bank of Florida	111,000,000
New Liberty Bank	109,000,000
Community Security Bank	108,000,000
Allegiance Bank of North America	106,000,000
Shoreline Bank	104,000,000
Granite Community Bank	103,000,000
Western Commercial Bank	99,000,000
Century Security Bank	97,000,000
Southwest Community Bank	97,000,000
Mainstreet Savings Bank	97,000,000
WestBridge Bank and Trust Company	92,000,000
AmericanFirst Bank	91,000,000
Key West Bank	88,000,000
ISN Bank	82,000,000
High Desert State Bank	81,000,000
First Bank of Jacksonville	81,000,000
Citizens Bank and Trust Company of Chicago	77,000,000
Town Community Bank & Trust	70,000,000
American National Bank	70,000,000
Community National Bank	68,000,000
Appalachian Community Bank	68,000,000
BC National Banks	67,000,000
Bayside Savings Bank	66,000,000
Pinehurst Bank	61,000,000
Marshall Bank, N.A.	60,000,000
First National Bank	60,000,000
The La Coste National Bank	54,000,000
Lakeside Community Bank	53,000,000
Carson River Community Bank	51,000,000
Bramble Savings Bank	48,000,000
First Vietnamese American Bank	48,000,000
Thunder Bank	33,000,000
Access Bank	32,000,000
Gordon Bank	29,000,000
Community National Bank	29,000,000
State Bank of Aurora	28,000,000
St. Stephen State Bank	25,000,000
Bank of Leeton	20,000,000
1st American State Bank of Minnesota	18,000,000

Arcola Homestead Savings Bank	17,000,000
Imperial Savings & Loan	9,000,000
Ideal Federal Savings Bank	6,000,000

Bank Failures 2011	Total Assets
First Community Bank	2,300,000,000
United Western Bank	1,650,000,000
FirsTier Bank	782,000,000
First Commercial Bank of Florida	599,000,000
CommunitySouth Bank and Trust	402,000,000
Peoples State Bank	391,000,000
Habersham Bank	387,000,000
San Luis Trust Bank, FSB	333,000,000
Evergreen State Bank	247,000,000
American Trust Bank	238,000,000
Oglethorpe Bank	231,000,000
Citizens Bank of Effingham	214,000,000
Canyon National Bank	211,000,000
Legacy Bank	190,000,000
Bank of Asheville	188,000,000
North Georgia Bank	153,000,000
Legacy Bank	151,000,000
Sunshine State Community Bank	126,000,000
Valley Community Bank	123,000,000
Charter Oak Bank	121,000,000
Enterprise Banking Company	96,000,000
First National Bank of Davis	90,000,000
Badger State Bank	84,000,000
Community First Bank	51,000,000
First State Bank	44,000,000

Appendix II. US TARP Banking Growth. Variable Analysis

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Appendix III. EU Banking Growth. Variable Analysis

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