

Financial Crisis -

the role of excessive leverage in the financial industry and the implications

Master's Thesis



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1.0 Introduction

1.1 *Executive summary*

This thesis describes the main events in the current crisis that has evolved since mid 2007. At the beginning it was an apparent isolated crisis in the subprime market, later it evolved into a liquidity crisis threatening financial institutions to bow under because of lacking liquidity. It then became a financial crisis causing large credit losses and defaults among large financial institutions before it spread into a severe economic crisis for especially the western world, causing recession and dramatically rising unemployment rates.

The first part of the thesis concentrates on explaining the significant catalysts in the crisis, the factors that can explain why it went so wrong. The focus is on the US, the UK and the EU financial industries. The catalysts are the savings glut, the loose monetary policies conducted by central banks in the North Atlantic region, the shadow banking industry with its highly leveraged off balance sheet entities, the transaction processes that has developed into securitization, monoline insurance industries and rating agencies. The thesis also describes authorities' role, the financial regulations that have shown to be insufficient as well as it examines the behaviour of the market participants, especially moral hazard which is a recurring theme in many of the catalysts.

The thesis discusses the massive rescue plans and rescue packages that central banks and governments have provided to the financial industry since the crisis emerged. A large nationalization process has been conducted in order to save large financial institutions from default. The incentives for rescuing privately owned institutions with tax payers money is discussed and it is clear that some large financial institutions have been and still are systematically important and therefore too big to fail. It is in the society's interest to save these large institutions in order to restore financial stability. Exit strategies from the government financed rescue packages are high on the political agenda at this point of time (medio September 2009), and the strategies for these are also discussed. It is evident to secure a smooth and sensible withdrawing of the subsidies in order to avoid new shocks to the financial markets. The financial regulations are discussed as well – it is crucial to enhance the regulations to prevent a repetition of the crisis. An excessive level of leverage are, without doubt, a significant reason of why the crisis evolved as severe as it did, and it is therefore crucial to tighten capital requirements in order to deleverage the financial industry.

1.2 Preface

This thesis is inspired by the incidents that have occurred in the financial markets since mid 2007. Through my daily contact with financial markets I have witnessed extreme changes in sentiment and agendas during the crisis. My wish was to get a thorough understanding of the mechanisms that have modelled the crisis. To get this it was evident to look at the crisis in a broader perspective and to look back in time in order to identify imbalances and movements that may have influenced the current crisis. It was also interesting to see how complex and widespread the background of the crisis is, and especially what the multiple and even more complex implications may be in the future.

I have chosen a subject that is extremely present and relevant which have been very interesting. By choosing this subject I have also been forced to change objective several times during the working process because new incidents kept changing the direction of the crisis. This element has been very challenging, but very educative. It has enabled me to stay open minded, but also critical to new issues that could influence my thesis.

I have achieved a thorough understanding of the catalysts that led to the crisis, a better overview of the interconnectivity between the incidents that have occurred during the crisis and consequently I have better opportunities to assess the future implications. It will be interesting to follow the aftermath of the crisis, and to see what implications this crisis will have to the financial industry.

I would like to thank my supervisor Professor Ole Risager (CBS) for inspiring and competent instruction during the process as well as I would like to thank Dr. Wencke Gwozdz (CBS) for valuable criticism and sparring. Lastly I would like to thank my employer, Danske Bank, for enabling me to follow this master study programme concurrently with my work.

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Hans Henrik Duus Gebauer Christensen

2.0 Area of research

This thesis will seek to investigate the role of excessive leveraging in the financial industry, the catalysts of the current financial crisis and discuss the possible implications.

The focus will be concentrated on a number of catalysts that is believed to have made significant contributions to the imbalances of the economy and the excessive level of leverage in the financial industry. These catalysts are inter alia low risk free interest rates, which have increased the search for yield. The present financial capital requirements for financial institutions called Basel II, which require more complex risk management. New institutions within the “shadow banking” industry have emanated and their role will be described. The development in the housing sector and the global macroeconomic imbalances will be illustrated as well as behavioural themes like moral hazard and corporate governance.

Combined all of the described catalysts have led to a financial crisis, which started as an isolated crisis within the financial industry, and later spread to a worldwide economic crisis since the middle of 2007. It has and will have massive implications on the central banks’ behaviour, governments actions, financial regulations as well as it has resulted in bailouts and nationalizations of financial institutions. These implications will be illuminated and discussed in order to give the reader a perspective of the long term consequences of the crisis.

To answer the above elements of the thesis, the following two research questions have been formulated:

- 1. What catalysts can explain the financial crisis - how are their characteristics and how did they contribute to the excessive level of leverage seen in the financial industry prior to the crisis?**
- 2. What are the implications of the crisis – how will central banks and governments react to restore credibility to the financial industry and what regulatory changes must be made to restore financial stability?**

In this thesis the overall focus will be to determine the implications and consequences of the crisis for the financial sector. The explaining factors will also be concentrated to this industry in particular and comments on other industries will only be used to a less extent.

However because of the financial industry's fundamental role in the society, the actions taken in the financial industry will have great impact on the surrounding society. These impacts will be many and could easily be relevant for several separate thesis studies.

It is not the attempt to make a complete list and discussion of possible catalysts to the crisis since it is impossible to list all. It is however anticipated to drag out a meaningful sample of catalysts that can help explain and illustrate how complex and widespread the prelude to the crisis has been, what has had significant influence since mid 2007 and how complex the aftermath is, even for one single industry.

The financial industry will in general be contemplated as one large industry, meaning that no specific institution will be used as a case study. In some cases it will be relevant to mention certain institutions as an example of a process or action - in these situations the data used will be secondary and official.

Geographical focus will be on the North Atlantic region, which means the US, the UK and the EU. The incentives for choosing this region are many; the current financial crisis has originated from these countries, in particular the US. Additionally the region were known for having large, well developed and effective capital markets as well as a solid economy compared to many countries outside the region. It is therefore even more interesting to examine the themes and catalysts that have led to the crisis originating from this region and the possible implications to this regions' financial markets.

There are differences within the region as regards to what catalysts that have been severe for the separate country or state and which actions that have been taken from central banks, governments and authorities in general. It is not the attempt to divide and illustrate each catalyst or theme equal to each country, but it is anticipated to illustrate the interconnectivity between the catalysts and the

countries, even though the impacts and actions to some extent have been different from country to country. The US financial industry as well as actions taken from the US authorities will have a leading role, partly because it is the biggest economy of the three and partly because it is the country the crisis originated from.

It is not the purpose to describe financial regulations exhaustively in each country within the region. Basel II is not yet fully implemented in all countries and the local authorities have the right to change the recommendations in the accords before implementation. The attempt is to illustrate that even the newest suggested standards have shown to suffer from insufficiency that must be addressed.

3.0 The financial crisis' timeline

The current financial crisis evolved in spring 2007 as a growing concern within the US subprime mortgage market. Many American homeowners were about to have their mortgage loans re-financed. After years of falling house prices and rising interest rates, there was a growing concern that many low income homeowners would be unable to service their debt. The risk of loan losses among the low rated debtors was rising and therefore it was called the Subprime Crisis, at first.

The first defaults of the crisis occurred when the American mortgage finance institution, New Century Financial and the German IKB Deutsche Industriebank defaulted as a consequence of the bad subprime mortgages. For a few months the subprime crisis was considered as an isolated occurrence regarding this debtor segment and it was believed to have little impact on the rest of the financial system.

By summer 2007, the financial sector worldwide started to acknowledge the threatening consequences to the industry. The fifth biggest investment bank on Wall Street, Bear Stearns prepared its investors on large credit losses as a consequence of the breakdown in subprime.

By then the subprime crisis was about to transform into a liquidity crisis as the interbank market froze because of concern over creditworthiness among the market participants. It became a common perception that credit risk was so difficult to quantify that many financial institutions could not cover their short term liquidity needs in the interbank market. The fear of sudden default among the market participants was high and as a consequence of this, interbank interest rates rose sharply. The central banks from the US (FED) and the EU (ECB) pumped large amounts into the interbank market in order to avoid a liquidity meltdown.

By fall 2007, the crisis has also reached UK, and the British mortgage lender and retail bank Northern Rock was in big trouble because of liquidity scarcity. The Bank of England (BOE) served as underwriter trying to keep the bank from defaulting. Additionally, some of the world's biggest financial institutions like Merrill Lynch, Citigroup and Union Bank of Switzerland (UBS) announced, as a consequence of the subprime crisis, large losses for the first time in several years.

Global stock markets started to deteriorate through fall 2007 from historical peak levels, and thereby a historical downturn in equity value began.

By end 2007, the crisis was for the first time getting high attention on the American domestic political agenda when President Bush announced initiatives to improve the conditions for the families most threatened of foreclosure sale.

The FED took action on the growing fear of economic deterioration by cutting FED funds target rate by 75 basis points (bp) at an extraordinary meeting at 21st January 2008. Approximately one week later, the rate was cut again by 50 bp at an ordinary meeting. Global stock markets experienced some of the biggest daily losses since September 2001.

By spring 2008, Bear Stearns was on the brink of defaulting, and was overtaken by JP Morgan in a transaction where FED also played a significant role by issuing loan of 30 billion USD as collateral in order to keep the bank floating.

By summer 2008, the US mortgage lenders, Fannie Mae and Freddie Mac, which were responsible for over 50% of mortgage lending, were in a disorder that required backup from the government and additional loaning facilities to survive. Later they were overtaken by the authorities because independent survival was no longer possible.

By mid September 2008, the financial crisis accelerated; three American financial giants, Lehman Brothers, Merrill Lynch and AIG bowed under for the large credit losses they had experienced. AIG was overtaken by the authorities, Merrill Lynch was acquired by Bank of America and Lehman Brothers collapsed. Another British mortgage lender HBOS, was on the brink of bankruptcy, but was sold to Lloyds with help of the authorities.

The nine leading central banks around the world made a large coordinated incentive to stabilise the financial markets - over 120 billion EUR was poured into the interbank market to secure short term funding.

By the end of September 2008, US experienced another default when the 10th largest retail bank, Washington Mutual defaulted. It was quickly overtaken by the authorities and sold to JP Morgan. Also the fourth largest retail bank, Wachovia was on the brink of bankruptcy and was sold to Citigroup.

The European bank and insurance giant, Fortis was saved from default by three nations: Belgium, Netherlands and Luxembourg.

In the beginning of October 2008, the American parliament passed through a rescue plan of 700 billions USD to the financial system. In UK, rescue packages of 50 billion GBP supported the largest financial institutions. For the EU countries, Germany and France led the way for an agreement on a transnational rescue package of 1.350 billions EUR for the European financial system.

2009 started with the German Commerzbank being partly overtaken by the German government.

By the end of January 2009, the British as well as the German governments launched more rescue packages for the financial system and in February the new American government issued a large growth package aiming at cutting taxes and accelerating public expenses i.e. through investments in infrastructure and hospitals.

Since the beginning of 2009 several smaller financial institutions in the US, the UK and the EU have defaulted because of high loan losses and inadequate capital reserves to absorb the losses. None of these have been large enough to be systematically important in the corresponding countries.

4.0 Catalysts

In the last two decades, the presence of financial engineering also known as structured finance has been intensified. Many new instruments and concepts have been developed and enhanced in order to maximise profits and to exploit new market opportunities. Some have also been regarded as risk reducing instruments (hedging instruments), but reality now shows that not all of these new instruments were as sophisticated and sensible as anticipated.

One can argue that many of these instruments have been catalysts of the current financial crisis, often due to lack of transparency and a lack of true understanding of the implied risk and consequences of its use. They have been used to create an unsustainable level of leverage which has been critical, especially for the financial sector.¹

New instruments, processes and entities have been some of the significant catalysts to the crisis and they will be described below. They are: Easy monetary policies, derivatives, shadow banking entities, Research Orientated Model and Transactions Orientated Model, mortgage brokers, the monoline insurance industry, investment banks and commercial banks, rating agencies and macro imbalances.

4.1 *Easy monetary policies*

Easy monetary policies were conducted for a period before the current crisis evolved; the years from 2000 to 2003 were characterized by significantly falling leading interest rates from the American central bank, Federal Reserve (FED), and the same pattern was seen from the European Central Bank (ECB) and Bank of England (BOE) as well.

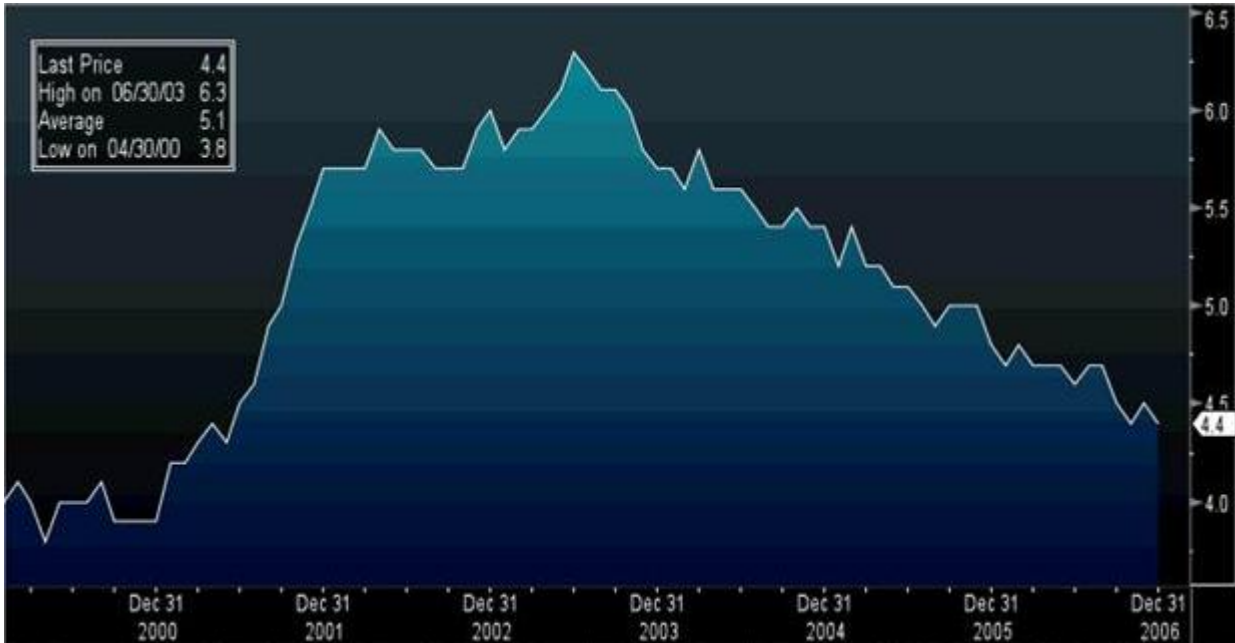
There were many reasons why the central banks conducted as easy monetary policies as they did.

The economies in the US, the UK and the EU were hit by several negative factors in the beginning of this decade. Firstly there was the burst of the IT bubble in 2000, which led to a large number defaults especially within the IT sector, and it had negative implications on the whole economy as well, i.e. rising unemployment and sharply falling stock markets. As illustrated in the first graph

¹ Buiter, Willem H. 2008: Lessons from the North Atlantic financial crisis, p. 2

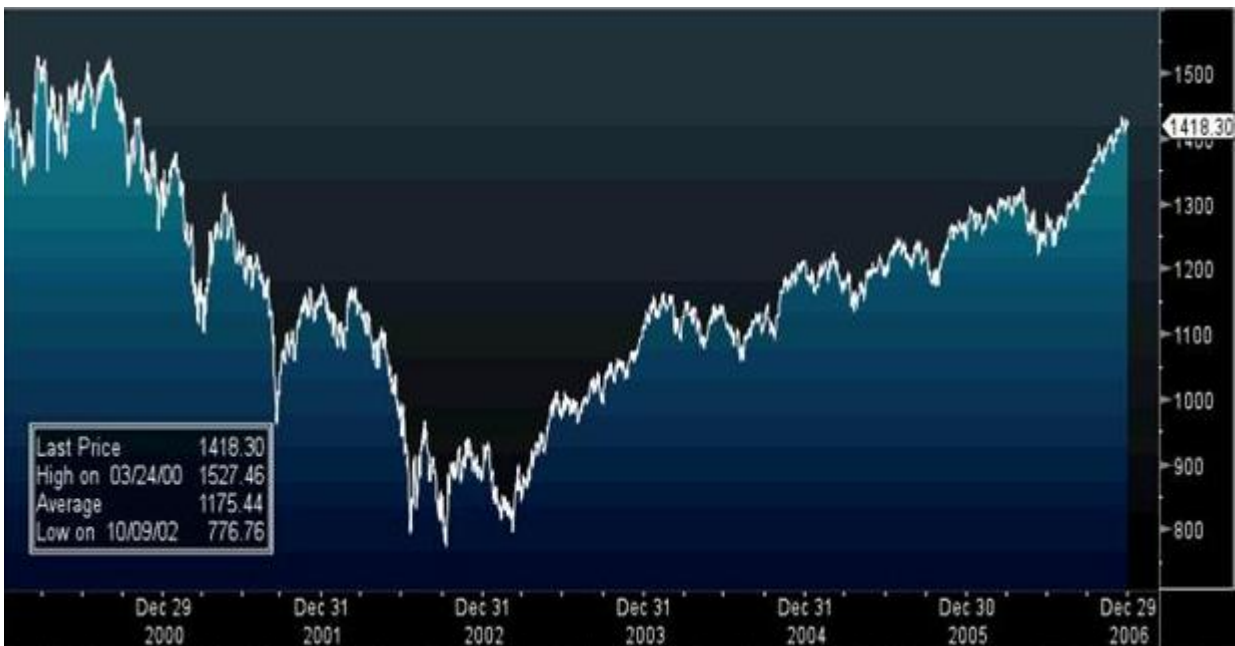
unemployment rises in the beginning of the decade as well as the stock prices fall in the same period as illustrated in the second graph.

Figure 4.1: US unemployment rate 2000 - 2006



Source: Bloomberg

Figure 4.2: S&P 500 stock index 2000 - 2006



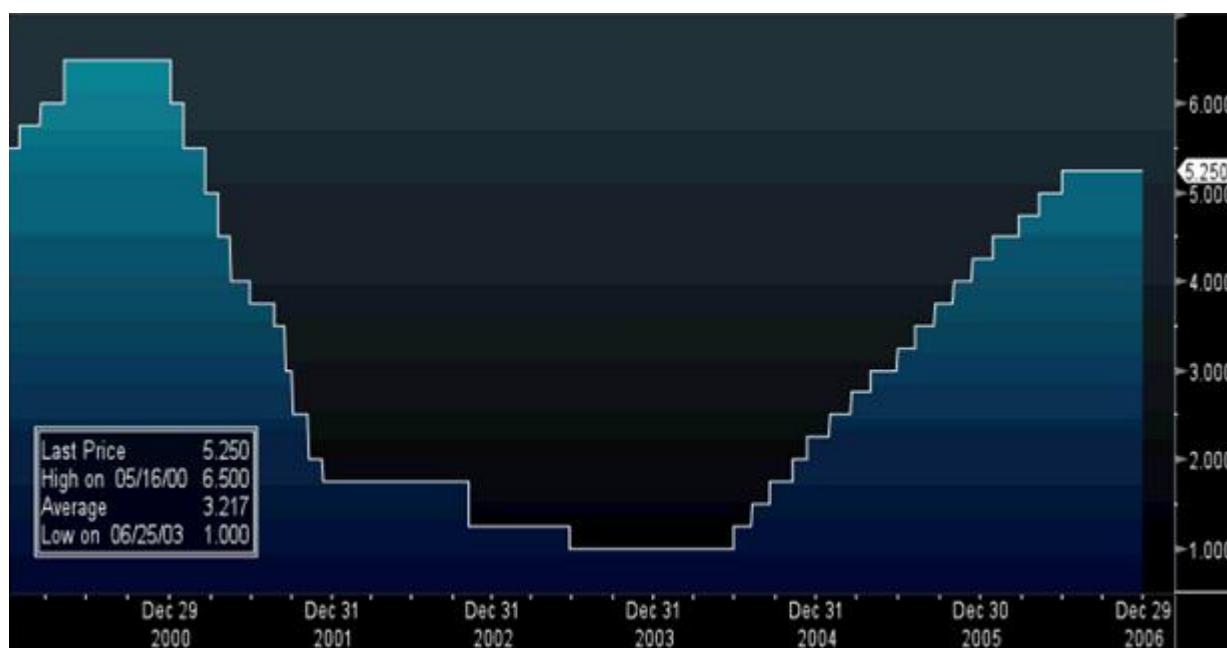
Source: Bloomberg

Secondly, US were hit by the serious terrorist attack on 11th September 2001 - an episode which besides causing a large number of casualties, also led to an increasing pessimistic economic sentiment. As a result of these incidents the US economy experienced three non-consecutive quarters with negative GDP growth². The FED took actions and reduced the official rates significantly in order to reduce the risk of recession.

The UK and the Euro economies also experienced slowdowns in 2000 and 2001, but managed to keep out of negative GDP growth³.

The responses from central banks were prompt, and the rates were cut significantly. The following graphs illustrates the movements from the central banks in the corresponding countries. They all reduce the official interest rates from 2000 to 2003.

Figure 4.3: FED Funds Target Rate 2000 – 2006



Source: Bloomberg

² www.stats.oecd.org

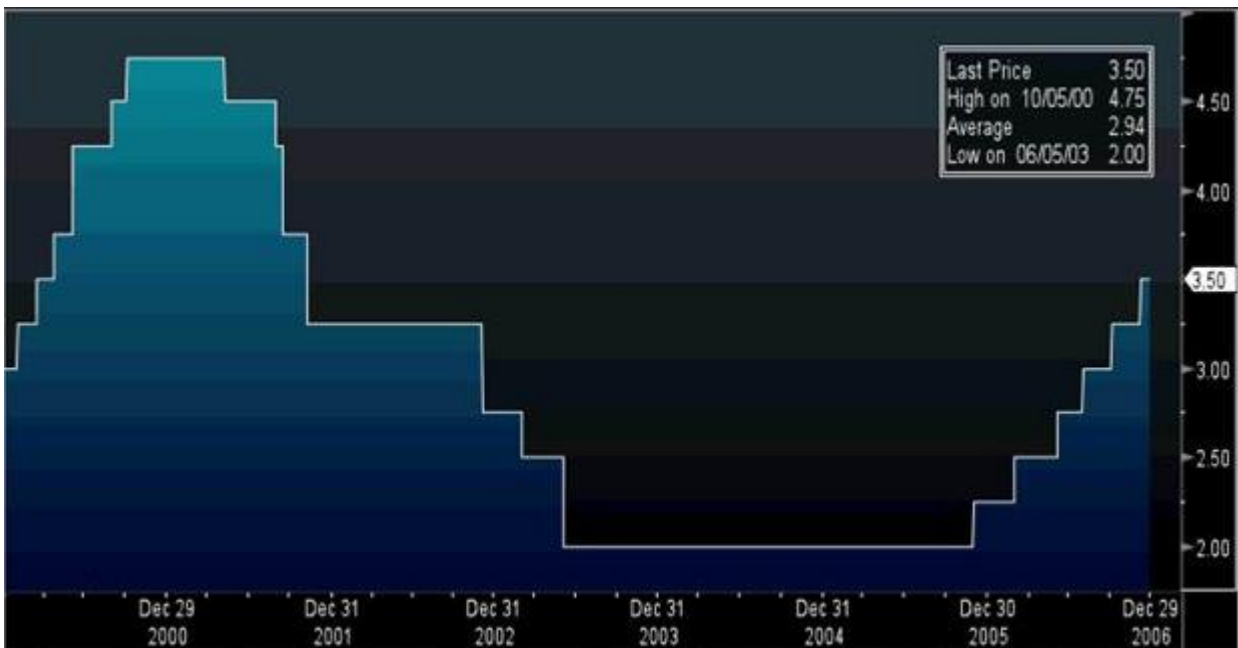
³ www.stats.oecd.org

Figure 4.4: BOE Official Bank Rate 2000 – 2006



Source: Bloomberg

Figure 4.5: ECB Main Refinancing Rate 2000 - 2006



Source: Bloomberg

However the falling official rates from the central banks induced a very optimistic sentiment in the financial markets, causing several asset classes to rise significantly. Some of the asset classes that experienced significant increases were the stock markets, housing market and commodities, e.g. oil.

As a consequence of the low official rates, the risk free rate went to historically low levels illustrated by interest rates on the two year as well as the ten year US government bonds⁴ – and the same direction was also seen within mortgage lending and commercial papers.

Concurrently with the risk free rates were falling, there was an increasing search for yield. It was easy to get liquidity, and as a consequence of demand of profit, risk premiums came to a low level. As a sign, the price on insuring an investor against defaults on commercial papers fell significantly which were illustrated by the prices of Credit Default Swaps (CDS) which went down, implying a low probability of defaults. All of this strengthened the overall optimism in the financial markets.

As a consequence of an awash with cash, an optimistic sentiment and an increasing search for yield, investors risk aversion were falling. Structural problems such as growing budget deficits and deficits on the balance of payment concerning the US economy were ignored⁵. The budget deficits were financed by primarily East Asian countries which were generating great surpluses because of booming economies driven by a large share of exports⁶. Further about this issue called the savings glut will be described in section 4.9.

4.2 Derivatives

Derivatives are a rather broad definition on a number of financial instruments. The definition covers i.e. put options, call options, futures, swaps and forward contracts. The value of the instrument is derived from the underlying asset. The underlying asset can be stocks, stock market indices, commodities, mortgages, credit default swaps, currency exchange rates, interest rates etc⁷.

⁴ According to Bloomberg data

⁵ Danske Bank, 2005 – 2007: Series of publications “Awash with cash 1 – 8”

⁶ Buiter, Willem H. 2008: Lessons from the North Atlantic financial crisis, p. 2.

⁷ <http://www.investopedia.com/terms/d/derivative.asp>

The overall characteristic of derivatives is that it is derived from an underlying asset. Depending on the specific derivative the price changes according to the underlying asset, and it usually has a level of leverage incorporated in the price changes, compared to the price change of the underlying asset.

This characteristic makes it possible to use derivatives for two different strategies – either hedging or speculation.

The phenomenon hedging, incorporates sheltering an already obtained, but not realised gain on the underlying asset or sheltering the owner of the asset from experiencing losses in a given period. In other words it is used to reduce risk.

Speculation is an attempt to use derivatives to increase the profit from an expected movement in the underlying asset. Because of the leveraging effect in derivatives, it is possible to obtain a higher profit from a lower initial contribution than is possible by investing in the underlying asset, in case the underlying asset moves in the expected direction. Speculation is, as apposed to hedging, a risk increasing activity.

Throughout the current crisis, the possibility to speculate for large amounts through derivatives have been criticised from e.g. the authorities. Prohibition of naked short selling⁸ financial stocks e.g. via derivatives were even introduced to dampen the negative sentiments regarding the financial industry in fall 2008⁹.

Derivatives trading play a significant role in the overall leveraging process that has evolved especially during the last decade. Systematically important financial institutions have experienced great losses because of unsuccessful derivatives speculation. The most known examples from the crisis is the Societe Generale (French bank) which lost 72,2 billion USD in January 2008 and afterwards was forced in to a large issue of new shares in order to bolster their capital base. Another

⁸ Naked short selling is defined as when an investor does not own shares in a company, but speculates in the share should decrease in value. The investor can do that by lending shares and selling them in the market. Later, if the investor buys them back to a lower price, and return them to the original owner, he has earned a profit. These kinds of transactions created a massive sales pressure in several financial shares causing large decreases, and the US Security Exchange Commission (SEC) and the UK Financial Services Authority (FSA) wanted to stop that activity in order to calm the financial markets.

⁹ Bloomberg article, 23rd October 2008: SEC And FSA Announce New Laws In Relation To Short Selling

is the American International Group (AIG), which lost 18 billion USD and had to be recapitalized by the US government.

4.3 New entities

Structured Investment Vehicles (SIV) is one of the new inventions within the concept called “shadow banking”. Shadow banking has evolved dramatically since the beginning of this decade, and has played a significant role in the financing industry over the past years¹⁰.

SIV is typically characterised by being established by a financial institution as a separate off balance sheet vehicle, which conducts structured finance on an alternative basis compared to traditional banking. By establishing the SIV off the balance sheet, it is possible to obtain a higher level of leverage than in the traditional financial institution due to capital requirement restrictions¹¹. The entity was invented by Citigroup in 1988 and has been very popular until the recent crisis exploded.

The concept is to fund the vehicle by issuing short term securities at a lower interest rate and then lending the money by buying long term securities at a usually higher interest rate, in order to make profit from the spread between the short term interest rate and the long term interest rate. The securities that the SIV’s usually fund themselves by are the so called Asset Backed Commercial Papers (ABCP) and different corporate bonds.

ABCP is characterised by being a pool of different underlying assets. The underlying assets are often of low transparency as regards to cash flow, interest rates, debtors’ creditworthiness etc. and are often too illiquid to be traded separately. Therefore it is packed together (securitized) with different assets in order to diversify the risk and to make it more liquid¹². ABCP’s can be a rather complex composition, containing different tranches with e.g. senior debt, junior debt, mezzanine capital and equity - senior debt is the tranche with the best credit rating. Usually a SIV has 70 – 80% of its capital invested in high rated senior debt. ABCP’s are usually quite leveraged in order to

¹⁰ Geithner, Timothy. 2008: Expressed in a June 2008 speech

¹¹ <http://www.investopedia.com/terms/s/structured-investment-vehicle.asp>

¹² http://www.investopedia.com/terms/a/asset_backed_commercial_paper.asp

maximise profit opportunities for the equity holders, but because of the breakdown into tranches, losses hit uneven and the most risky tranche equity, is hit first.

Corporate bonds are separate papers issued by corporations who need funding. The conditions can vary a lot from bond to bond, e.g. floating rates and options to pre-redemption. Together with a typically rather illiquid market it is considered an advantage sometimes to securitize corporate bonds through ABCP's.

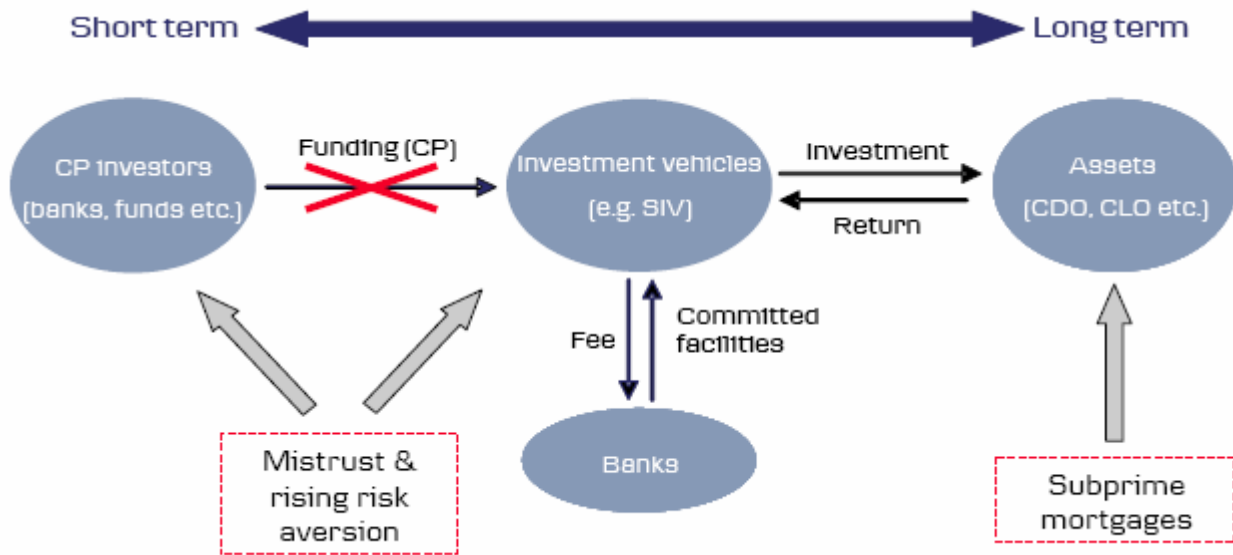
As mentioned above SIV's are most often established by financial institutions, and they are also provided with back up liquidity facilities from their "mother banks". What happened earlier in the crisis was that SIV's experienced losses because of inter alia subprime mortgage losses. Because of these losses, risk aversion in the funding market increased, and SIV's possibilities of refinancing decreased dramatically. They had to draw on their back up facilities in the banks which again increased the market participants' demand for liquidity in the interbank market.

What was considered as a credit crisis, because of low creditworthiness among some debtors was evolving into a liquidity crisis because of rising risk aversion due to dramatically increasing fear of certain financial institutions' credit obligations towards SIV's. This fear resulted in a meltdown in the interbank market and started to threaten the survival possibilities for many financial institutions¹³.

The above described process is illustrated in the figure below:

¹³ Grønkjær, Thomas Thøgersen, Danske Markets 2009: Presentation at CBS "Risk management in times of financial crisis"

Figure 4.6



Source: Danske Markets presentation at CBS, May 2009

4.4 Transaction-Oriented-Model vs. Research-Oriented-Model

Transactions-Oriented-Model (TOM) is a concept which has evolved together with SIV's, ABCP etc. They are all interconnected and can be considered as a product of structured finance.

Before, the Relationship-Oriented-Model (ROM) was the predominant concept when describing the relationship between lender and borrower. It is characterised by a closer and transparent relationship between the parties. Each loan's credit risk is assessed individually and the borrowers' creditworthiness is monitored closely throughout the whole loan period. This is done because the lender carries the credit risk during the whole period and is not selling the loan off after entering the agreement.

On the other hand there is TOM. TOM is characterized by the original lender's sale of the facilities after entering the agreement. This method leaves very little transparency to the "buyer" of the loan, because they will have a smaller insight into the borrower's creditworthiness. Instead of assessing the individual credit risk, a set of rather similar loans is bundled together and securitized as one asset.

It is practical not possible to conduct this securitizations without sacrificing transparency to some extent and the possibility of assessing credit risk on the individual loan.

The big problem is that the loan originators typically get paid better the more loans they can bundle together and sell. The non existing incentive for assessing credit risks and borrowers creditworthiness on a longer term creates huge moral hazard problems between the originator and the buyer, which will typically be SIV's and other financial institutions¹⁴.

4.5 Mortgage brokers

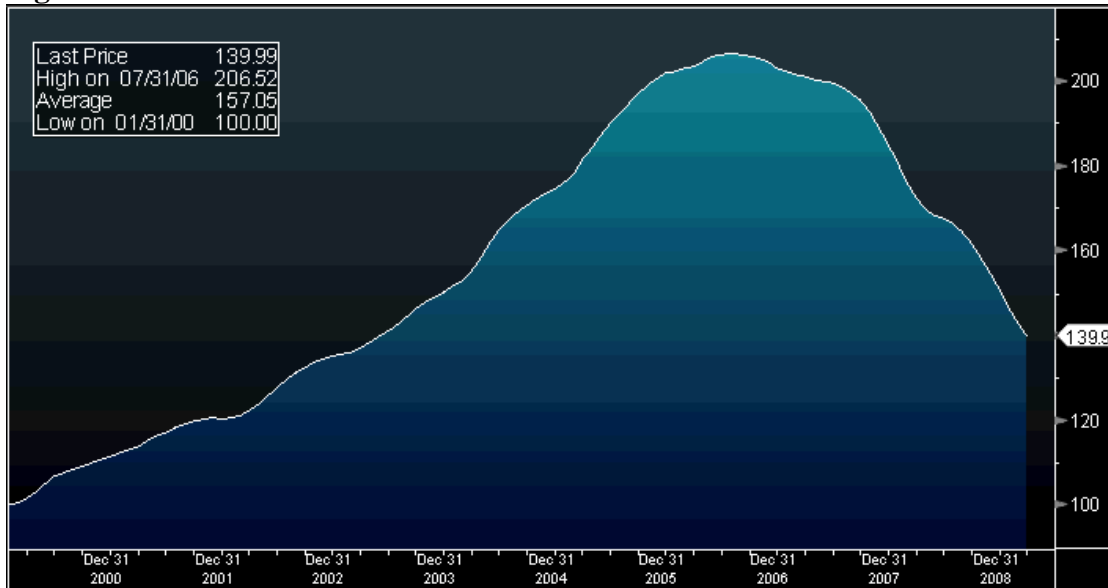
Mortgage brokers play a significant role in the financial system because they provide funding for real estate investments. Real estate is typically a large contributor to wealth for households, but it is also typically the most cash flow demanding investment a household obtains, and that makes it crucial for the micro as well as the macro economy.

For several years, especially the US and the UK experienced large price increases on real estates. These increases induced a great optimism, driving consumer growth and additional real estate price increases in the years before the crisis originated. The optimism was also driven by the low interest rate as described in section 4.1.

The graph below illustrates the house price movements in the 20 biggest cities in the US. The index is called S&P Case Shiller Home Price index and is an acknowledged instrument to track house price movements in the US.

¹⁴ Buiter, Willem H., 2008: Lessons from the North Atlantic financial crisis, p. 4 and p. 6

Figure 4.7: S&P Case Shiller Home Price Index 01.01.2000 – 31.03.2009



Source: Bloomberg

In the last ten years US mortgage brokers have played an important role as they bought home loans from different banks and bundled them together and afterwards sold them (securitization) to investors as mortgage backed securities (MBS)¹⁵.

The process was incentivised by the authorities in order to give the public easier access to real estate financing and the local banks to sell off their loans after entering the agreement. For the borrowers with superior creditworthiness, the securitization process was an advantage because it made the real estate financing more liquid and consequently lowered interest rates.

The disadvantage of the construction of the progress is that it is now obvious that the originators prior to the crisis have been too liberal in their granting of credit. Many households have been granted loans which their economy could not afford. This have been done in an over-optimistic environment where risks such as falling house prices, unemployment etc. have been underestimated. Many of the issued loans were so called bullet loans with a low teaser rate in the beginning, and it seems like there were little examining of the borrowers real creditworthiness.

Another factor contributing to making the above mentioned process viable for a while, is the increased risk willingness among investors. Seen from an investor's perspective, the low risk free

¹⁵ <http://www.investopedia.com/terms/m/mortgagebroker.asp>

interest rates enhanced the attractiveness of poorer creditworthiness. Together with a general over optimistic sentiment it lowered the perception of default risk dramatically which again made it possible for low rated debtors to obtain loans, because investors were searching for yield and were willing to lend them money.

The two biggest American mortgage lenders Fannie May and Freddie Mac as well as the large UK mortgage lender Northern Rock were victims of the crisis, e.g. they were either fully or partly overtaken by the corresponding authorities, because they were no longer able to survive on their own.

4.6 Rating agencies

Rating agencies have existed for several years and their ratings are used to classify e.g. debt issuers' creditworthiness in order to get a quick overview of the risks implied in a certain investment. The three most known and respected rating agencies are Moody's, Fitch and Standard & Poors.

They rate a wide range of companies, banks, institutions and municipalities around the world as well as SIV, ABS and Special Purpose Entities (SPE) which are subsidiaries of greater companies.

A rating agency has to make a thorough and serious investigation of a company's financial strength in order to be able to give a precise and true rating. The investigation includes examination of the income generating activities and the stability of these, the additional debt obligations and precise conditions of these. The capital structure of the company and an estimation of future risks and threats have to be involved as well.

Good financial strength gives a high rating while weak financial strength induces low ratings. With a high rating, it is possible for a company to attract capital on better and cheaper terms in the financial market, than a company with the low rating - and this implies that credit ratings have significant importance for companies that are in need, or may be in need, of attracting capital.

The last decade, rating agencies have been given a more formal regulatory role as ratings from the leading agencies are used in e.g. SEC regulations and the Basel II capital adequacy rules. (Basel II capital requirement rules will be described in this thesis, section 5). Therefore it is now of even

greater importance that the ratings are accurate since they have significant impact on the financial sectors estimation of risks on their assets¹⁶.

The lack of accuracy in ratings was precisely one of the main catalysts of the crisis and a common mis-trust to rating agencies has evolved. Ratings were widely used during the last decade's expansion of structured finance. Models that are developed for more traditional finance activities were used to estimate risk on complex products, which only the originator of the product, if anyone, knew thoroughly enough to understand. Data were insufficient reliable and there were not enough data to estimate the incidents we have seen in the global financial markets since 2007. Because of the extreme incidents that have occurred during the crisis, it is argued that no statistical models would have been able to predict the significant price changes and spill-over effects that have taken place. However it is obvious that the rating agencies have not been conservative enough.

Another important detail is that rating agencies give ratings on the basis of the default risk. The general market perception may be another, e.g. that the ratings also took liquidity risks and disordered market conditions into account, and therefore many ratings may have been used incorrectly causing serious negative consequences.

Another aspect is conflicts of interests among rating agencies. The rating agencies are paid by the issuer of e.g. a bond – the same issuer wants a good rating in order to get better funding possibilities. The rating agencies often sell consulting services to the issuers of debt, which they will later have to examine in order to give rates. So they advise the clients how to structure their liabilities most efficiently in order to be able to receive a good rating later. The fact that the rating agencies work closely together with the issuers, increases the risk of rating agencies use the same models and future expectations which can result in biased ratings¹⁷.

4.7 Investment banks and commercial banks

After the great depression in the 1930's the American authorities required that commercial banks and investment banks were separated. Commercial banks were authorized to deal with deposits and

¹⁶ Buiters, Willem H., 2008: Lessons from the North Atlantic financial crisis, p. 8

¹⁷ Buiters, Willem H., 2008: Lessons from the North Atlantic financial crisis, p. 9

loans while investment banks were limited to have activities within capital markets and were not allowed to receive deposits.

Both groups of banks have suffered from the crisis because of losses, write downs on potential losses and significant lower earnings due to a halt in the overall cycle.

Both commercial banks and especially investment banks have a significant role in creating the crisis. As described in e.g. this thesis section 4.3, the financial sector have developed a series of new earnings-generating facilities, commonly known as structured finance. They have had a significant interest in pushing optimism as far as possible as regards to price developments within almost all kinds of assets and they have not shown sufficient incentives to assess the risks associated with the new inventions and their often low transparency.

The collapse of Lehmann Brothers and the rescue of other large financial institutions that were considered too big to fail has destabilised the industry and contributed to the severe consequences in the current crisis.

4.8 Monoline insurance companies

The Monoline insurance industry is a true focused insurance industry. Normal insurance companies e.g. life insurance, property- and casualty insurance companies can not offer insurances on financial products, but Monolines are authorized to do that.

Monolines insurance companies are insurance companies that offer guarantees of timely repayment of interests and bond principals, if an issuer is unable to service its obligations. They support issuers of bonds in three major categories: US Public Finance, US Structured Finance and international Public and Structured Finance.

The monoline insurance industry provides credit rating enhancements to issuers of debt in the financial market in order to increase liquidity and financing possibilities. In exchange for the higher

credit rating the issuer pays the monoline insurance company a fee, and as a result the price of funding for the issuer is typically reduced¹⁸.

For the monoline insurance company it is crucial to have a high rating among credit agencies such as Moody, Standard & Poors and Fitch. Without a superior credit rating they are more or less out of business.

During the current crisis the issued guarantees from the monoline insurance industry had a significant negative impact on the credit rating. Because of the rise in defaults and payment delays the sector was hit severely and risks of overtaken obligations from distressed issuers rose significantly. Because of a rather low capital base in the monoline insurance industry compared to the amount they insure, risks of downgrades within the industry and even possibility of defaults have risen as well.

Many investors had restraints on their portfolios' compositions as regards to assets' credit rating, and a down grade to a monoline insurance company would consequently mean a downgrade on the insured securities which again could lead to investors being forced to sell out of their assets in order to fulfil their respective restraints. When this potential snowball effect came to the market participants' awareness during the crisis, it was another step back for especially the mortgage backed bond market¹⁹.

The existence of the monoline insurance industry has been widely discussed since the crisis emerged. Before the crisis, there was little attention from the authorities on this kind of industry. An industry that lends out its superior credit rating to less creditworthy issuers in exchange for fees may have created problems that most market participants have not been aware of prior to the crisis.

4.9 Savings glut

During this decade a new agenda in international trade and finance has occurred. Several emerging markets which used to be dependent on e.g. US financing and foreign direct investments evolved so significant that the capital is now floating in the opposite direction. The US economy is borrowing

¹⁸ Association of Financial Guaranty Insurers (AFGI): www.afgi.org

¹⁹ Buiter, Willem H., 2008: Lessons from the North Atlantic financial crisis, p. 5

heavily on the international capital markets in order to finance its growing deficit on the balance of payments and the budget deficit. The deficits grow because US is importing more goods than it is exporting and because the country has conducted expansive fiscal policies for several years. The deficits are to a large extent financed by China, which generates excessive capital due to the country's large export and economic growth in general. This rather new phenomenon is called “the savings glut”²⁰.

For years the economic growth in US has been driven by a large part of consumption expenditures and a rather low savings rate. Several commentators (Bernanke, Greenspan, Martin Wolf) have expressed their concerns about this development, but the financial markets were not, until the crisis originated, willing to acknowledge the growing imbalances and the threats. It seems like the US, China and partly Japan had an “unholy trinity”, where the US previously delivered high economic growth and Asia in exchange financed the growth by buying US securities and government bonds²¹.

The mechanism behind this phenomenon is rather large and complex on both a political and economic level, but one can argue that the willingness to finance deficits, as well as the search for yield from the Asian countries and to some extent rich Arabian countries have incentivised the US to continue growing imbalances.

The worries of an increasingly highly leveraged US economy have grown, resulting in a worry upon the direction of USD currency, and this has consequently meant a sell off in US activities, a reluctance in investing in US activities and thus a further economic weakening and pessimistic sentiment, which fuelled the crisis.

²⁰ Bernanke, Ben S., 2005: Remarks by Governor Ben S. Bernanke at the Sandridge Lecture, Virginia Association of Economics, Richmond, Virginia

²¹ Danske Bank publication, 2005: Awash with cash 1: Chinese revaluation, p. 1

5.0 Basel II

5.1 *Historical approach*²²

The Bank of International Settlements (BIS) was established in 1930. BIS is an international banking organization which was originally founded with the purpose of managing international financial assignments such as loans and contributions to the reconstruction of Germany after World War I and to collect data information in order to make financial statistics. Another assignment was to support central banks when financial crises occur. Later assignments comprised to administration of the Bretton Woods system after World War II. In the 1970's and 80's, the oil crises and the subsequent financial crises became one of the organization's leading areas, and these crises were contributing to an increased attention on the international financial industry's solidity.

The first international rules for capital requirement in financial institutions were introduced in 1988 as Basel I accords. Basel I was composed by the Basel Committee under the direction of BIS. The committee's members are central bank governors pointed out by a number of countries. Among others it is the Basel committee's obligation to propose general guidelines for the financial industry.

The intention of Basel I was to secure financial stability as well as framework for global level playing field, which covers identical guidelines for financial institutions operating across borders. This shall be seen in the context of the financial industry's important role in society providing liquidity between lender and borrower as well as providing payment facilities between all interested parties within the society.

In the late 1990's, the Basel Committee considered an update of the original Basel I as necessary, e.g because of the development in financial products and because of increasing international financial transactions due to globalization. These updated recommendations were called Basel II and they have been implemented in many countries since 2007.

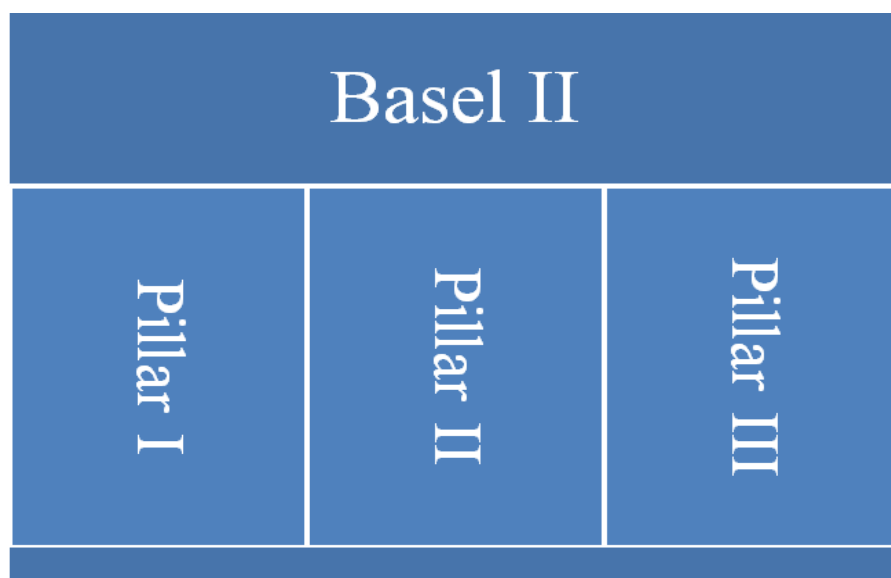
The overall purpose of Basel II was to create a more correct coherence between capital requirement rules and the actual risks in the individual institutions in order to get a more unique composition of

²² Information to this section is primary derived from Bank of International Settlements homepage: <http://www.bis.org/about/history.htm>

capital requirement and a more sophisticated risk management. Like Basel I the individual nations can choose to implement Basel II guidelines in its corresponding supervising legislation.

Basel II is structured by three mutual dependent pillars illustrated by the figure below.

Figure 5.1: Basel II



Source: Own illustration

The different pillars include:

- Pillar I: Minimum capital requirement to absorb credit risk, market risk and operational risk
- Pillar II: Strengthening of the authorities role as well as an estimation of the solvency required in the individual financial institution
- Pillar III: Enhanced market discipline and demands on further and more advanced information about solidity.

5.2 Pillar I

The first pillar of the Basel II accords deals with the minimum capital requirement in financial institutions. As a consequence of their business activities, financial institutions face several different risks. Some of these are measurable while others are of a more qualitative character. The minimum capital requirement covers the total measurable risks within the institution. These are categorized as credit risk, market risk and operational risk.

To calculate the minimum capital requirement, the regulatory capital and the risk weighted assets have to be known. The regulatory capital must not amount to less than 8% of the risk weighted assets according to Basel II as well as in Basel I²³.

Regulatory capital is divided into two sub categories; Tier 1 capital and Tier 2 capital. Tier 1 capital usually consists of shareholder equity, retained profits and subtracted accumulated losses, while Tier 2 capital consists of undisclosed reserves, revaluation reserves, general provisions, hybrid capital and sub-ordinated debt. When calculating the minimum capital requirement, Tier 2 capital must not exceed 100% of Tier 1 capital²⁴.

The assets are divided into three risk categories; credit risk, operational risk and market risk and these will be elaborated below.

5.2.1 Credit risk

The minimum capital requirement to cover credit risk is under Basel II (like previously) 8% of the risk weighted assets. The new feature with the implementation of Basel II is that it is now possible to differentiate the risk of the assets according to the counter part's credit rating.

The financial institution can choose between three different methods to estimate credit risk:

- The standardized approach
- The Internal Ratings-Based approach (foundation)

²³ Basel Committee on Banking Supervision, June 2006: International Convergence of Capital Measurement and Capital Standards, p. 12

²⁴ Basel Committee on Banking Supervision, June 2006: International Convergence of Capital Measurement and Capital Standards, p. 12

- The Internal Ratings-Based approach (advanced)

The standardized approach is the simplest model, and it is not much different from the previously used under Basel I, besides more ratings have been introduced. The credit weightings are fixed by the Basel committee on the basis of ratings from acknowledged rating agencies like Moodys, Fitch and Standard & Poors. Practically the weightings induce that some facilities that are considered as more secure, due to higher ratings, get a risk weight less than 100% and occupy thereby less capital than facilities with lower ratings.

The measurement of capital requirements using the internal approaches is divided into two different methods – the foundation and the advanced Internal Ratings-Based (IRB). The major difference of these two methods is the number of own estimates that the financial institutions may use for the calculation of the capital requirement.

The weighting of the individual facility is determined on the basis of the different estimates and thereby the capital requirement is calculated. It is the financial institution's own decision which of the IRB approaches it prefers to use. In both cases the financial institution must determine the probability of a loan to default (Probability of Default, PD). By the advanced IRB it is also the financial institution's obligation to estimate the expected loss by default (Loss Given Default, LGD) and the expected exposure at default time (Exposure At Default, EAD). By using the foundation approach, LGD and EAD is determined by the Basel committee.

The different IRB methods are illustrated in the figure below.

Figure 5.2: Overview of IRB methods

Data Input	Foundation IRB	Advanced IRB
Probability of default (PD)	Provided by bank on own estimates	Provided by bank on own estimates
Loss given default (LGD)	Supervisory values set by the committee	Provided by bank on own estimates
Exposure at default (EAD)	Supervisory values set by the committee	Provided by bank on own estimates
Maturity (M)	Supervisory values set by the committee Or At national discretion, provided by bank based on own estimates (with an allowance to exclude certain exposures)	Provided by bank on own estimates (with an allowance to exclude certain exposures)

Source: Basel Committee on Banking Supervision, 2003: Consultative Document, Overview of The New Basel Capital Accord

The IRB approaches were criticized because of the concern that the approaches are pro-cyclical. In a contracting economy, PD will rise, capital requirements will then rise, implying higher costs for the borrower, or lower credit volume from the institution which again will induce even lower economic activity and vice versa. This worry about pro-cyclical behaviour resulted in an attempt from the Basel committee to counteract with a flatter slope on the credit risk weightings.

Financial institutions can, regardless of the method used, lower their capital requirement by hedging their credit risk. Hedging can be done by collateral, guarantees or the use of credit default swaps (CDS). Especially by using the internal methods, institutions can lower capital requirements by using sophisticated models. This can be an advantage compared to institutions using less advanced methods. By that the incentive of implementing sophisticated risk management systems increase.

5.2.2 Market risk

Market risk is the risk associated with potential losses in on and off balance sheet positions as a consequence of market price movements. It can be market price movements at interest rate related instruments, equities, foreign exchange and commodities throughout the financial institution²⁵.

The importance of market risk differs from institution to institution according to their business profile and is therefore of great importance in the estimation of capital requirements to institutions with large trading books while institutions with little or no trading books have little market risk.

When estimating market risk, a prudent valuation of the institutions positions is significant. The institution must have sufficient and reliable systems to monitor price movements and respective risks and they must be approved by the supervising authorities.

Mark to market is the preferred valuation method of the positions and must be used whenever possible. Mark to market is characterized by at least daily valuation through an established market and from independent market participants. When there is no reliable market price available, it is allowed to use marking to model. Then the institution must estimate the positions value using benchmark, extrapolation or otherwise market inputs. It is expected that the institutions here use an extra conservative bias, because of the obvious insecurity of the positions market value.

5.2.3 Operational risk

Operational risk incorporates a wide range of risks that can result in losses for financial institutions like IT break downs, human failures, fraud etc. According to the Basel accords, operational risk has to be explicit identified as a part of the capital requirements.

There are three different methods to calculate operational risk, all with increasing sophistication and risk sensitivity: The Basic Indicator Approach, The Standardised Approach and Advanced Measurement Approach (AMA)²⁶

²⁵ Basel Committee on Banking Supervision, June 2006: International Convergence of Capital Measurement and Capital Standards, p. 157

²⁶ Basel Committee on Banking Supervision, June 2006: International Convergence of Capital Measurement and Capital Standards, p. 144

The basic indicator approach is the simplest model, where the banks must hold capital for operational risk at a fixed level relative to earlier year's positive gross income. The more sophisticated models leave room for more diversified methods of approaching the operational risk, typically with regards to different business lines within the institution. By that it is possible to distinguish between institutions with e.g. emerging markets exposure and the more regional focused institutions and by that estimate a capital requirement that is more precise and accurate in proportion to the actual operational risk

The financial institutions are therefore encouraged to develop and use more sophisticated models to measure operational risk than the basic indicator approach. Like when assessing the credit risk measurements, the financial institutions using other methods than the basic indicator approach have to be approved by the local supervising authorities in order to secure a proper and accurate estimation of operational risk.

5.3 Pillar II

The second pillar in the Basel standards deals with the roles of the supervising authorities. It is their role to secure that the approved methods entail an appropriate level of capital requirements in relation to the assumed risks and that the models are suitable to estimate and manage the risks. In addition the supervising authority can determine individual capital requirements for the individual financial institution.

5.3.1 Tighten regulations

The regulation is also supposed to urge the financial institutions to develop internal controls and risk management in preparation for obtaining a more sophisticated risk culture and thereby enhancing its risk estimation process. Furthermore the regulations and obligations for supervising authorities have been tightened in order to minimize risks of failures among managements in the financial sector.

Both the supervising authorities as well as the financial institutions do face a challenging assignment, which is why Basel II was considered as a good framework to enhance corporate

governance and implement sufficient risk management. The current crisis has, however exposed several lacks in the standards, which will be discussed in this thesis, section eight.

In pillar II it is possible to incorporate circumstances that are not included in the estimation of solvency demand under pillar I. This happens if the supervising authorities assess that there are circumstances in the financial institutions which are not included under pillar I. E.g. it is the individual financial institution's management's obligation to estimate the solvency required, taken several circumstances like business profile, risk concentration, larger clients, volume growth etc. into account. For securities dealers, it is important to have a solvency ratio that is sufficient enough to absorb the market price exposures from their trading book. Because of the obvious difference from institution to institution the solvency required differs.

The rather advanced and different methods to estimate risks in the different institutions presuppose a higher level of competence among the employees at the supervising authorities. They are not only obligated to secure the minimum capital requirement at 8%, but they are also obligated to take all the institutions risks into account and secure that the capital base is adequate. Thus the supervising authorities must have resources to analyze and scrutinise the models that the institutions want to use.

The supervising authorities must demand that the institutions have effective systems to identify, measure, monitor and control credit risk as a part of the overall approach to risk management. The authority must in every case conduct an individual examination of the institutions' strategies, policies, processes and procedures regarding their risk management and continue to control their lending portfolio. The fulfillment of this job will be discussed in section eight, in this thesis.

The supervising authorities are empowered to demand further capital reserves as well as they can demand qualitative improvements like better processes and procedures. The Basel committee has set up four principles to carry out effective supervising:

1. The credit institutions must have internal procedures for determination of the needed capital in relation to their risk profile and also a strategy to sustain the capital base.
2. The supervising authorities must evaluate the financial institutions internal procedures under pillar I and react on the results of these evaluations. Furthermore the supervising authorities

must evaluate whether the internal models that are used under pillar I, fulfill the supervising standards, plus assess whether the institutions comply with the demands of disclosing more details like described in pillar III. (pillar III will be described later in this thesis).

3. The financial institutions are expected to operate with an adequate buffer in addition to the minimum required capital base. The supervising authorities can impose additional capital demands, exceeding the 8% if it is considered necessary.
4. The supervising authorities must have the possibility to intervene on an early stage in order to secure whether an institutions capital base is sufficient²⁷.

5.3.2 Estimating required solvency

The committee does not elaborate on what can trigger extra capital demand, hence the interpretation of the regulations are the local supervising authorities' job. The committee, however, identify significant risks that, under some circumstances, can cause a rise in the capital demand – an example is the interest rate risk on fixed loans and securities. If the supervising authorities regard the capital base as unsustainable to absorb this risk, further capital demands can be imposed. Or the financial institution can be forced to bring down the certain exposure to meet the original capital demand.

The committee suggests that stress tests are used to evaluate whether an institution operates too close to the minimum capital demand. Stress tests are also mandatory, for the institutions using internal methods under pillar I, to assess the credit risk. The supervising authorities can choose to apply the institutions own stress tests if they need to examine if it is necessary for an institution to reduce risk or increase demand of capital. For the sake of transparency and credibility of the whole supervising procedure, supervising authorities ought to publish the criteria used for the institutions' calculations.

The guidelines in pillar II are very broad formulated leaving room for the local supervising authorities to determine the practice for imposing individual capital demands. The loose

²⁷ Basel Committee on Banking Supervision, June 2006: International Convergence of Capital Measurement and Capital Standards

formulation in pillar II is due to the fact, that there are many different local circumstances that influence the interaction between the institutions and the supervising authorities in the corresponding countries. This gives the authorities the possibility to take e.g. tax and accounting standards into account when a proper level of capital requirement has to be determined.

5.4 Pillar III

5.4.1 Enhanced market discipline

Pillar III in the Basel accords deals with market discipline and the whole aim of pillar III is to secure sound financial management. The objective is that the financial institutions should disclose a number of important key figures when they present their annual, semi annual and quarterly reports. The information comprises details regarding risks, capital structure, capital base and risk management. By this, Basel II braces the aim of higher level of transparency in the financial industry.

By enhancing the role regarding market discipline, investors and rating agencies will have a better possibility to distinguish the financial institutions from each other, given that the individual risk profile and capital base is disclosed regularly.

The guidelines in pillar III are, like the guidelines in pillar II, very broadly formulated. Again this is partly done to enable the local authorities to adapt the guidelines in their legislation with respect for the differences between the countries. The flexibility also secures that the Basel accords do not conflict with the international accounting standards (IAS) by allowing the local supervising authorities to decide which information should be disclosed publically and which should be disclosed only to the authorities. However there are higher standards for the institutions using the complex models regarding market discipline as for those using the standardised method.

5.5 Subconclusion

The work with preparation of the Basel II accords started long before the current crisis evolved. The aim of Basel II accords was to make a smoother and more accurate measurement of adequate capital in financial institutions. The creditworthiness among debtors is very different and therefore it would

be desirable to have minimum capital rules that correspond to the diversity of the debtors, and Basel II takes this into account.

Furthermore the financial industry developed greatly since the first Basel accords, e.g. due to globalization. Consequently it was time to take other criteria than only credit losses into account, when measuring the adequate capital base. This is where operational risk is introduced to cover losses that occur from e.g. IT breakdowns.

More openness and transparency to the individual financial institutions' risk exposure were also introduced with the Basel II accords and were supposed to be an instrument to enable diversity of financial institutions to a larger extent than earlier. The regulators were given more flexibility to conduct inspections and to command further capital requirements when necessary.

All in all the Basel II accords were considered as a comprehensive set of rules that should reduce the risk of financial instability. However it is now obvious that the Basel II accords could not sufficiently reduce the risk since the world has experienced a serious financial and economic crisis since the fall 2007. The external credit ratings that, to a large extent, are used to assess credit risk in Basel II have shown to be more or less inaccurate (as described in section 4.6).

Basel II is also blamed for being pro cyclical; the use of mark to market valuation, which regulators increasingly require, is a threat as oppose to passive balance sheets. When valuations rise the institutions have incentives to increase their leverage and vice versa when asset prices decreases. This means that the risk of Basel II inducing pro cyclicity, exists.

Furthermore Basel II has been criticised for making the use of complicated models possible – models that were developed by the separate financial institutions and could be too difficult for the supervising authorities to find out. It is one of the key changes to the first Basel accords. In a positive view, it is regarded as an improvement because it makes sophisticated diversification between debtors possible, but in a criticising view it also makes the regulators role as supervisors almost impossible because of the numerous assessments. Therefore, one can also argue that the regulators have not had the possibility to conduct their inspection as requested in the Basel II accords.

It is therefore questionable whether the Basel II accords have improved the financial stability, but it is certain that it has not been sufficient enough to prevent the crisis, and to a certain extent one can argue that parts of the accords have contributed negatively to the crisis.

6.0 Hedgefunds

Hedgefunds play a significant role in the highly leveraged financial industry that has led to the crisis. The hedgefund industry is also considered as one of the main catalysts to excessive leverage, and the industry will be described in its own section below.

6.1 Historical approach

The history of hedgefunds goes back to the middle of the previous century where Alfred W. Jones, who is regarded as the founder of hedgefunds, created the first fund. Alfred W. Jones was a sociologist, author and financial analyst and believed that it was possible to neutralise market movements by going long in assets he believed were undervalued and going short in assets he believed were overvalued. The aim of neutralising market movements is risk minimizing which is the core essence of hedging²⁸.

Today, hedgefunds are commonly regarded as funds with higher risks than traditional investments and mutual funds because they are able to use advanced investment strategies in order to maximise their profits. These strategies can include long and short positions within almost all asset classes e.g. stocks, bonds, currency, commodities and derivatives corresponding to these assets. Because of the hedgefunds' rather flexible structure they can also be highly leveraged and therefore the risks can be substantial.

For that reason hedgefunds are considered very sophisticated and advanced and therefore they are also, by legislation, subject to limited sales promotion to certain categories of investors in many countries. Hedgefunds are usually not listed on any market place because of their characteristics as more or less private investment vehicles. However hedge funds play an interesting role in the prelude of the current crisis²⁹.

6.2 Description of the hedgefund industry

Hedgefunds are typically characterized by some of the following characteristics which are more or less interconnected:

²⁸ <http://www.investopedia.com/articles/mutualfund/05/HedgeFundHist.asp?&viewed=1>

²⁹ <http://www.investopedia.com/terms/h/hedgefund.asp>

- Leveraged investments. The initial investment is supplemented by borrowed capital in order to increase the profit possibilities. In some cases the leveraging is quite substantial compared to the equity which makes the hedgefund highly risky.
- Ability to short sell which makes it possible for the fund to earn profits when an asset's price decreases. This can be used as a hedge to an already existing position, but it can also be used as a risk increasing instrument.
- Low risk aversion.
- Little transparency is to a certain extent a condition to enable the hedgefund to profit from the fund's strategies.
- Soft regulation gives more flexibility to make strategies and keep them undisclosed to the public and to the regulators.

The “search for yield” is one of the main reasons for the hedgefund industry's significant growth during the last twenty years. Investors want to maximise their profit and over time many new financial instruments and strategies have been developed (like described in section 4), which has fuelled the desire to gain returns on the financial markets.

The exact number of hedgefunds in the world is unknown and estimations vary due to two reasons; first, one single definition of hedgefunds does not exist and second, the industry develops rapidly. However several institutions try to cover the industry as good as possible. The institution with the highest number of funds covered is Morningstar Alvest which covers around 8.500 funds throughout the world³⁰.

For some large investors, hedgefunds have been a way to allocate a part of their resources to specified asset classes, usually with a higher risk implied, where a professional manager oversees the investments and tries to gain a higher return than possible in traditional asset classes. There are several reasons for doing that e.g. risk diversification seen from a theoretical portfolio perspective and professional management by specialists within specific asset classes.

³⁰ www.altvest.com

Some asset classes have very low correlation to common asset classes like stocks and bonds, and therefore it can be risk reducing for the whole portfolio to diversify the investments over different asset classes. However this argument does not necessarily hold when the leverage effect is taken into account, and therefore one has to regard hedgefunds primary as a risk increasing instrument which is also the perspective in this thesis.

The hedgefund industry is known for having very little transparency as regards to positions, prices and conditions. The industry is regulated only to a little extent compared to usual investments and mutual funds and this is one of the main reasons to why it can obtain a high degree of secrecy.

Fees are widely used in the industry. Typically the manager charges a management fee of around 2% of the net asset value (NAV) per year. Additionally, there is typically also a performance fee (also called incentive fee) which is calculated from the funds realized and unrealized profits on an annual basis. This is often around 20% of the profit, but higher performance fees are also seen in the industry. The performance fee serves to align the manager's interests to the investor's as both parties have an interest in obtaining high returns. However the manager does not have the same downside risk as the investor which can lead to moral hazard, because the manager can be tempted to take excessive risk in order to achieve higher profits if the investment succeed.

Therefore it is crucial for the investors' safety that the manager has a true interest in managing the fund after the agreed procedures, and this can be achieved by constructing a fee structure that infuses credibility between the manager and the investor.

One attempt to avoid moral hazard is high water marks which are widely used in the industry. It means that the manager is only being paid performance fee when the NAV exceeds previously achieved NAV's. By this the investor is secured from paying performance fee for the "same" profit more than once, e.g. if net asset value one year decreases and the next year increases to the previous top.

Hurdle rates are also widely used in the industry when investment managers want to send a sign of higher ambitions. Hurdle rates mean that the hedgefund has a benchmark e.g. LIBOR rate or fixed yield and that the performance fee will be calculated from only the part of the profit that exceeds the

hurdle rate. By this the investor is secured not to pay performance fee for a tolerable profit, but only when the profit exceeds the hurdle rate.

Because of the rather complex and illiquid investment strategies, redemption fees are widely used. This prevents the investors from being short termed because they are punished by high redemption fees in case they want to withdraw their money from the funds. By doing this, the manager gets room to pursue the investment strategies without interruption from the investors.

Hedgefunds use a high number of different strategies and there is no standard definition. Some use one single strategy while others use multi strategies. However hedgefunds are usually divided into three main strategy groups³¹:

- Arbitrage strategies/Relative value
- Event driven strategies
- Directional or Tactical strategies

Arbitrage exploits obvious price inefficiencies e.g. between derivatives and the same underlying asset. Event driven exploits pricing inefficiencies caused by anticipated specific corporate events. Directional and tactical strategies e.g. include long short strategies, market neutral or dedicated short strategies. Furthermore there are funds that use different multi strategies e.g. fund of funds in order to exploit different risk reducing strategies.

Hedgefunds use different service providers to take care of different functions. Besides the investment manager there is typically also a prime broker involved who provides lending facilities, cash and securities aimed for shortselling, derivatives trading counterpart and trade execution in general. Furthermore there is typically outside the US an outside administrator involved whose assignments are of administrative character like calculating the NAV, dealing with redemption of interests and taking care of other back office functions. In the US it is also seen that these functions are conducted by the investment management firm, which can lead to conflicts of interest because of the bi-party function of determining NAV as well as being paid performance fee relative to the this value. Sometimes hedgefunds also use distributors to market the funds to potential investors.

³¹ <http://www.investopedia.com/articles/03/112603.asp>

The funds domicile country and legal entity is typically determined from tax legislation. Most hedgefunds are established in off shore domiciles 47%, while 23% are established in the US and 23% in Europe. Off shore destinations are often very keen to attract hedgefunds because of their closed banking and taxation system which leaves room for secrecy within the fund. Most popular off shore destinations are Cayman Islands, British Virgin Islands and Bermuda³².

6.3 Hedgefunds role in leveraging

Leverage is one of the main characteristics of hedgefunds today – the increase in number and volume of hedgefunds in the last two decades has been highly driven by the will to leverage, the falling risk aversion and the search for yield among investors on a global scale.

Many bankers have seen good earnings opportunities in creating hedgefunds which often derive from large financial institutions, partly because these institutions assumed an increase in lending volume as well as a higher trading income as a consequence of the creation of hedgefunds.

Hedgefunds are a part of the shadow banking industry and have been an important driver for the current financial crisis. The excessive leveraging has caused losses to many financial institutions which provided loans to the shadow banking industry and thereby contributed to the crisis in the financial industry.

The financial institutions were not able to assess the exact risk linked to the extreme level of leveraging prior to the crisis, and the shock of realising the true risk had enormous consequences for the financial stability. One of the reasons to why it was difficult to assess the correct risk is that hedgefunds, as mentioned earlier, often invest in illiquid instruments in order to get high returns, and the price mechanisms of these illiquid investments were even more unpredictable than with liquid investments.

When a hedgefund's NAV falls sharply, the liabilities become threatened forcing the creditor to conduct serious initiatives to secure his capital. These initiatives may be forcing a closedown of the hedgefund causing the hedgefund to sell assets in a stressful market with low prices. Again, this

³² <http://hedgefunds.datamanager.morningstar.com/hfsecure/>

push asset prices even further down and threaten other hedgefunds or leveraged entities to sell off assets in order to fulfil demands from their lender.

This phenomenon is called unwinding. In the first part of the crisis when e.g. the stock markets fell from their peaks, many market participants talked about unwinding trades as the reason for the decreasing asset prices. The unwinding process was not regarded as serious as it should be, because it was regarded as an isolated phenomenon involving only few market participants. The problem later occurred when more market participants began to realise that maybe the old price peaks were not sustainable, but rather created by excessive leverage. This realisation process fuelled the downturn because investors began to acknowledge that unwinding was not a small mechanism in the crisis, but that it could threaten the stability of high regarded financial institutions that had close relations to the shadow banking industry.

7.0 Market participants' behaviour

During this thesis, several catalysts to the financial crisis have been addressed – more of them are interconnected and therefore it is convenient to describe them in coherence. Additionally more of them originate from joint incidents and joint underlying behaviours. Below this behaviour will be addressed.

7.1 Moral Hazard

One can argue that moral hazard has a large “role” in the financial crisis. Moral hazard includes two parties – the principal and the agent – and it describes the possible conflicts of interest between those arising from information asymmetry and from different risk aversions (Akerlof, 2001).

The agent acts on behalf of the principal and the agent does not necessarily have the same incentives and long term interests as the principal. The relationship between management and owners of a firm is an old school example of potential principal/agent issue. The principal (the owners) either serve as board members or points out the board members to take care of their interests while the daily management of the firm is conducted by the board of the agents (the directors with the CEO as the head). These two parties do not fundamentally share the same interests. While the owners of the company want to maximise their profit and keep the company going for a long period, the director which are hired, are acting like agents and may be more focussed on short term results that can maximise their opportunities of getting a higher salary, prestige, better career opportunities, bonuses, stock options etc. The directors' possible different approach to leading the company can lead to excessive risk taking on behalf of the company, because they do not share the same downside risks as the owners, if it fails.

Every time two or more parties work together there is a potential principal/agent problem and the risk of moral hazard arises if the parties do not share incentives and risks.

The financial crisis has revealed several issues where one can argue that moral hazard has played a significant role; several large financial institutions in the North Atlantic region were subject to government bailouts when they were at the brink of bankruptcy earlier in the crisis. The managements of these firms are, by some critics, blamed for having conducted moral hazard because of the fact that they were “saved” by the public after years of booming profit and managing

businesses that have proven to be excessive leveraged and risky. Moreover it is commonly feared that these government bailouts may lead to moral hazard in the future because some market participants may be incentivised to take higher risks than they would do otherwise, due to reliance in government bailouts³³. This issue arise a large and very interesting debate which will be elaborated in section 8 in this thesis.

Like earlier mentioned, the shadow banking industry grew significantly prior to the crisis and the phenomenon about pooling risky assets and securitizing have been described. This process is also subject to moral hazard because of asymmetric information. Especially the process of mortgage lending in the US has revealed asymmetric information between the originator of a loan and the investor that ends up in investing in the pooled, securitized and highly opaque investment product³⁴. This is a clear principal/agent problem because the originator receives provision proportional to the lending volume he can “produce” and he thereafter pools the loans and securitizes them so that the risk is highly difficult to estimate. This problem was also described in section 4.4.

The moral hazard issue also arises with the monoline insurance industry and rating agencies. It shows that several of the catalysts to the crisis that is described in this thesis, include moral hazard as a joint fundamental.

7.2 Corporate governance

The corporate governance term covers e.g the relationship between several groups of stakeholders in a corporation and describes the processes, procedures and policies a corporation ought to be governed by. Corporate governance is closely related to moral hazard, because corporate governance addresses the principal/agent problems that may occur in a corporation and tries to solve the issues related to moral hazard by directing and advising the stakeholders. The aim is to secure a high level of integrity and confidence throughout the organisation.

Corporate governance can be achieved by having a professional separation of the board and the board of directors. Furthermore the board members have to be somehow independent to secure true

³³ Summers, Lawrence. 2007: <http://blogs.ft.com/economistsforum/2007/09/beware-the-mora.html/>

³⁴ Lewis, Holden. 2007: http://www.bankrate.com/brm/news/mortgages/20070418_subprime_mortgage_morality_a1.asp

objectivity and to secure that they act in the best interests of the owners of the corporation. It is also important that the board of directors' interests are aligned with the interests of the owners as well as of the boards. To increase this alignment several factors can be used, e.g. stock options, partnerships and bonuses. However it is crucial to have formulated clear and unambiguous success criteria to secure that the incentives of the directors are in true alignment with the board.

Often it is sensible to use long term goals within profitability, return on invested capital, capital structure, volume etc. rather than just using short term goals like sales numbers. By doing so it is more likely that the directors manage the corporation from a long term and sound perspective aligning the owners' perspective.

Corporate governance also deals with less measurable factors like openness of a corporation's activities and results. Especially if it is a listed company, it is important that minority shareholders are well informed of the corporation's state in order to keep them from being trapped by ignorance. Reputation can also be an important mechanism within corporate governance – there is a true interest in corporations from the public and the press, and to secure that the stakeholders of the corporation get the right impression, the focus is often at the reputation. The corporation is interested in correct branding and in maximum benefit of the messages it sends out. In order to achieve that, many large corporations have press and marketing staff as well as corporate social responsibility (CSR) departments, which concentrate on communicating the corporation's incentives within CSR.

The international corporate community has undoubtedly witnessed cases of missing corporate governance during the current financial crisis. Corporate governance is one of several factors that are supposed to help avoidance of poor management. In times of crises, a corporation that on the surface looks well managed can in fact be poorly managed and thereby show significant corporate governance failures.

It is widely recognized that the financial industry has had several institutions with those problems because of the defaults in the corresponding corporations, and subsequent great implications to the society. Because of the financial industry's important role in the society, the rather large amount of

money being lost in the industry and the great media interest, it is a quick and easy diagnosis to claim that the occurred defaults are due to missing corporate governance.

One of the most common perceptions is that the executive compensations in financial firms have been extravagant and without comparison to other industries. It is argued that the composition of the executives' compensation have been damaging to the financial stability e.g., if a large part of the compensation has been stock options, the executives main interest have been to refine the numbers in order to get a higher profit from the options. That is not necessarily done by fraud, but it could incentivise excessive risk taking from the managements which will have a negative long term impact. It's a clear example of the principal/agent issue and at the same time an issue that is regarded as highly related to corporate governance.

Some executives in the financial sector have probably received compensations that can seem extravagant and with the benefit of hindsight, also not acceptable compared to the results achieved, but the perception is somewhat more varied. Adams (2009) argues that CEO's of financial institutions generally did not receive higher compensations than executives in comparable non financial firms prior to the crisis³⁵. If certain compensations have been excessive, the responsibility lays within the board, which has been weak in certain cases (Welch and Welch, 2006)³⁶.

³⁵ Thomsen, Steen Casper Rose and Ole Risager (2009): Understanding the financial crisis: Investment, Risk and Governance, p. 101.

³⁶ Thomsen, Steen Casper Rose and Ole Risager (2009): Understanding the financial crisis: Investment, Risk and Governance, p. 101.

8.0 Implications

8.1 Central banks

Central banks play a significant role in the financial system in the shape of regulating monetary policy and thereby the amount of money in circulation, liquidity funding for financial institutions and as a treasurer for the state.

The central banks in the US, the UK and the EU reacted rather early to the crisis as apposed to the respective governments – when the sub prime crisis began to evolve into a credit crisis for the financial institutions because of the rising concern of survival ability amongst market participants, the central banks imposed extensive liquidity facilities in order to try to ease the liquidity market and thereby avoiding financial institutions to default because of liquidity scarcity. These activities are known as open market operations. The characteristics of the extensive open market operations differ from country to country, especially because of the difference between US and EU corporate funding.

In the EU area 70% of non financial companies' is obtained through financial institutions, while in the US it is the opposite with 80% funding through open market activities e.g. issue of corporate bonds³⁷. Due to this significant difference the ECB's actions were almost exclusively focused on easement of the interbank market and providing liquidity for the financial industry, while the FED's actions were more diversified. FED provided, besides extensive liquidity facilities to the interbank market, also extensive measures towards helping the corporate bonds market by securing companies funding by buying commercial papers.

Since the emerge of the credit crisis all of the three mentioned regions' central banks have also reacted obviously by significant reductions of the official interest rates in order to comply with the intensified need of cheaper liquidity and to dampen the severe negative macroeconomic outlooks. The Federal Reserve has lowered its target rate from 5,25% to 0,25% since September 2007 while

³⁷ Trichet, Jean-Claude. 13th July 2009: Speech at University of Munich.
www.ecb.int/press/key/date/2009/html/sp090713.en.html

Bank of England and the European Central Bank has lowered their rates from respectively 5% to 0,5% and 4,25% to 1% since October 2008³⁸.

These actions indicate that the central banks were the first institutions to react to what seemed to be “just” an isolated liquidity crisis in the financial system, but was the beginning of a steep decline in GDP and a significant increase in unemployment in especially the North Atlantic Region.

Central banks are for such independent from the state. The governor is chosen by the political regime, and they are obliged to conduct a monetary policy that corresponds to their country’s political agenda. However the details of open market operations, protection of their currencies valuations, macroeconomic estimations et cetera are independent from the law makers and can therefore obviously differ from the respective government’s predictions of an economic trend.

At this point of the crisis (medio September 2009) the agenda now includes discussions about exit strategies regarding the many stimulus packages that have been conducted by the central banks and the politicians. The worst economic contraction seems to be behind us and therefore it is evident to start thinking about the future on a longer term³⁹.

All of the three mentioned central banks do still regard stimulus as important, and there are no signs in their actions as well as in their comments of a near withdrawal of the existing facilities. Actually i.e. the ECB has, during this summer, extended their repo facilities so that maturities up to one year are now possible as well as they have introduced new programs that include buying covered bonds⁴⁰. Similar incentives have been taken by BOE and FED and the different schemes are running for a multiyear period⁴¹.

8.2 Political incentives

No doubt that the central banks were the first institutions to realise that the credit crunch and the crisis in the financial system could have a serious impact on the overall economy. Many politicians did not acknowledge the threat until mid 2008 and therefore it took a while before the crisis really

³⁸ www.federalreserve.gov , www.ecb.int , www.bankofengland.co.uk

³⁹ IMF, July 2009: World Economic Outlook, p. 1. <http://www.imf.org/external/pubs/ft/weo/2009/update/02/index.htm>

⁴⁰ <http://www.ecb.int/mopo/implement/omo/html/index.en.htm>

⁴¹ <http://www.bankofengland.co.uk/markets/sls/index.htm>

entered the political agenda. The US, which one can argue is the country of the crisis origin, was the first to experience decreasing economic growth and overall concern about the economy⁴², but the UK and the EU followed rather fast.

In September 2008 when Lehman Brothers collapsed the fear of a systematic collapse in the financial system with severe consequences, increased dramatically. Politicians started to discuss the needs of rescue packages aiming to secure the survival of the financial system, and to bring back financial stability. Before big institutions like Lehman Brothers were considered too big to fail, but the financial authorities did send another and chocking signal to the world when they let Lehman Brothers collapse. Rescue packages towards other industries have been introduced since fall 2008 as well as different economic growth incentives and expansive fiscal policies have been introduced.

The number and volume of all the economic stimulus packages are on an unsustainable high level at the time being. The free market mechanisms are to a certain extent put on a halt and the long term prospects of a market economy does not correspond with the present actions. The budget deficits are, as a consequence of the loose fiscal policies, at such a volume that it is crucial to have a plan on how to phase out the incentives. However the economic stimulus packages were necessary to prevent a complete meltdown of the financial system and to prevent a following long and deep worldwide recession larger than the Great Depression in the 1930's. They were introduced at the right time and they have helped restoring confidence in the economy (Rogoff, 2009)⁴³.

Exit strategies are on the political agenda at the moment and the big question is how to deal with the aftermath of the crisis and how to phase out the political rescue packages. Many politicians, economists and central bank governors agree that it is evident not to draw back economic stimulus yet. Different macroeconomic indicators and sentiment polls (see figure 8.1 below) show that growth has just come back to e.g. the US economy and it is not feasible to call off the recession and the severe economic downturn yet. It is advisable to look for a turn in unemployment as well, before changing of economic policies will have a positive impact on the economy. The unemployment is usually lagging other macroeconomic measures, and it is therefore a good indicator of how corporate sentiment actually develops. Furthermore it is important for an economy

⁴² According to OECD stat the US experienced -0,04% GDP growth in Q4 2007

⁴³ Rogoff, Kenneth. 2nd June 2009: Stimulus packages help strenghten confidence, says ex-IMF economist

that needs to expand to have rising consumer spending - a phenomenon that rarely takes place when unemployment is still rising.

Below ISM Manufacturing PMI is shown, which is an index composed by the Institute of Supply Management in the US. It is published once a month and indicates the changes in various business areas. Numbers below 50 indicates contraction and numbers above 50 indicates growth. It is a highly regarded sentiment poll used in financial markets⁴⁴.

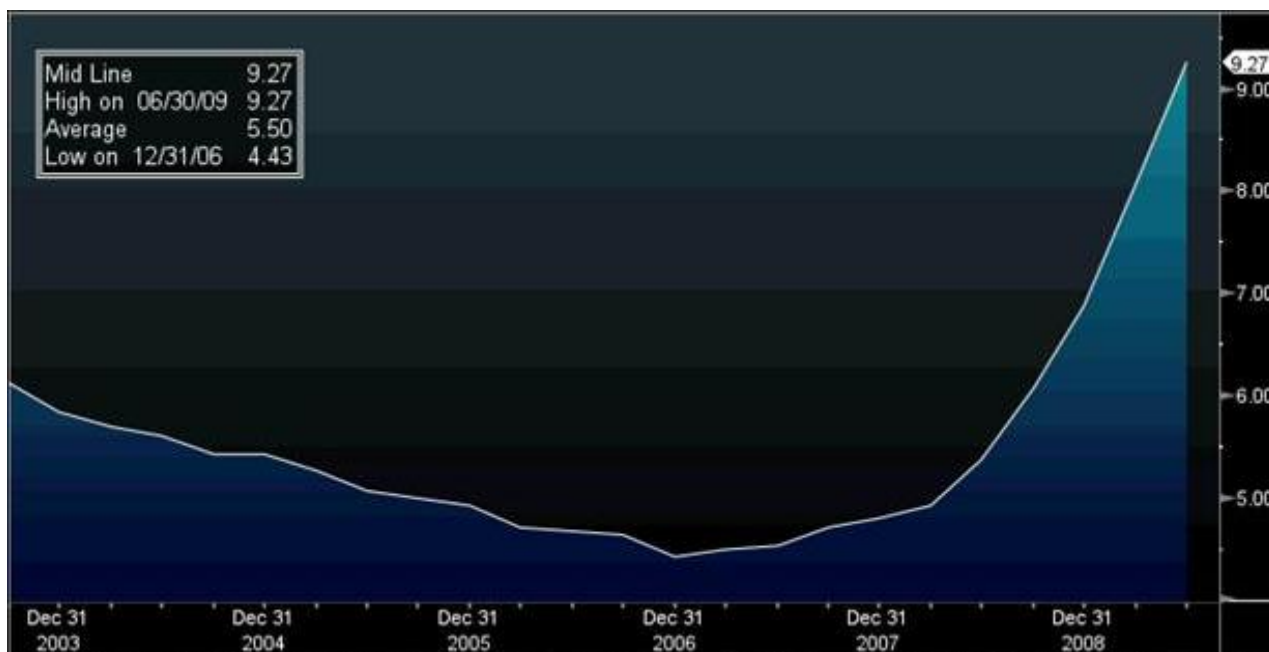
Figure 8.1: ISM Manufacturing PMI



Source: Bloomberg

⁴⁴ <http://www.ism.ws/>

Figure 8.2: Unemployment rate in the US (quarterly)



Source: Bloomberg

At the beginning of September 2009 finance ministers and central bank governors from the G20 countries met in London to discuss exit strategies prior to the official G20 meeting taking place. They all agreed on working towards transparent and credible processes of withdrawing the extraordinary stimulus packages that are still functioning. They also shared the perception that it is not yet time to start withdrawing the stimulus packages despite the more optimistic general outlook at this point of time⁴⁵.

8.3 Regulatory changes and deleveraging

“There is growing recognition that the dispersion of credit risk by banks to a broader and more diverse group of investors, rather than warehousing such risk on their balance sheets, has helped to make the banking and overall financial system more resilient.”

“The improved resilience may be seen in fewer bank failures and more consistent credit provision.

⁴⁵ IMF Survey Magazine: Rising unemployment marks crisis third wave, says IMF chief
<http://www.imf.org/external/pubs/ft/survey/so/2009/NEW090509A.htm>

Consequently, the commercial banks, a core segment of the financial system, may be less vulnerable today to credit or economic shocks.” (IMF, 2006)⁴⁶

The above statements have later proven to be very misleading. The large prevalence of securitization in the financial industry is blamed to be one of the main catalysts of the crisis (described in section 4.3). Financial institutions in general have been very vulnerable to shocks like the credit crisis resulting in non functioning money market and the economic crisis which has resulted in increasing credit losses to many banks.

The Basel II accords had several positive contributions to capital adequacy regulations; it captured more risk than just credit risk compared to Basel I, it introduced improved risk differentiation, it increased the incentive to improve risk management systems in the larger institutions and it increased disclosure to the market and provided higher transparency.

However Basel II is criticised for being too pro-cyclical – in good times the internal as well as external ratings will have a tendency to be over optimistic because of the optimism incorporated in the rating systems and in the behaviour of the employees. This induces the willingness to take risks in the financial institutions to increase and thereby providing customers with too large credits or to demand insufficient little collateral/too optimistic estimation of the collaterals value, and vice versa. Basel II is subject to many national interpretations which make it difficult to compare ratios between different institutions across borders and over time. The decade long transition time across different countries contributes to the above mentioned problems of comparing ratios. The reliability on external ratings from former acknowledged rating agencies like Moodys, Fitch and Standard & Poors have also shown to be rather difficult to rely on. It is obvious that the ratings on the financial institutions assets have been incorrect to a certain extent. Combined with the (in section 4.6 and 4.8) issues regarding ratings credibility and the rating agencies independence, it is evident to question the extensive use of ratings in the Basel II accords.

To prevent a similar crisis to happen to the financial industry and the global economy in general, it is evident to look at the regulations in the industry. When Basel II was introduced, one of the main

⁴⁶ IMF, April 2006: Global Financial Stability report, p. 51:
<http://www.imf.org/External/Pubs/FT/GFSR/2006/01/pdf/chp2.pdf>

purposes was to make the industry able to diversify risk estimation across financial institutions with different business profiles and thereby make the industry more dynamic and cost efficient. Basel II was also expected to provide adequate capital reserves in order to make the industry more resistant to operational failures, market risks and credit defaults and by that securing financial stability despite a more complex structured industry.

In the current crisis these attempts have proven to be inadequate, and now the regulators are discussing how to secure financial stability in the coming years. An obvious way to achieve that goal is by tightening the regulations in the financial industry so that financial institutions must allocate more capital to their capital base in order to be able to absorb higher losses in the future. The size of the financial institutions is also addressed in the discussion of new regulations – some institutions are still too big to fail and they pose a systematic threat to the economy and the society because of the severe potential consequences of a default. The paradoxical is that is argued that today, this threat is bigger than before Lehman Brothers collapsed (Stiglitz, 2009)⁴⁷ because of several large institutions have taken over activities from defaulted competitors.

In the North Atlantic region attempts of tighter regulations have already been introduced - the corresponding deposit insurance funds have demanded higher fees from the financial institutions and it is most likely that they will continue doing that for a while. For example the American deposit insurance fund, FDIC, which has already raised 5.6 billion USD earlier this year has the authority to “levy two more before the end of this year”⁴⁸.

These attempts to restore credibility to the financial institutions as well as the respective governments’ rescue packages are temporary and can not stand alone. A revision of the regulations is needed and this issue is high on the political agenda at the moment. The G20 summit which is taking place ultimo September 2009 in Pittsburgh, USA will, among other issues, discuss new financial regulations globally. President Obama also launched a new plan in June 2009 which features a proposal of establishing a Consumer Financial Protection Agency in the US. The proposal should enhance transparency over the systematic risks the large financial institutions pose

⁴⁷ Stiglitz, Joseph. Bloomberg article, 13th September 2009: Stiglitz Says Banking Problems Are Now Bigger Than Pre-Lehman

⁴⁸ Bair, Sheila. FDIC Chairman, August 2009:

<http://www.bloomberg.com/apps/news?pid=20601087&sid=aSdMMGzkt1do>

to the economy. It should move large parts of “over the counter” (OTC) derivatives trading market in to regulated exchanges as well as it increases capital requirements⁴⁹.

The financial industry is considered a highly leveraged industry with leverage ratios of up to 30 (Martin Wolf, 2009)⁵⁰. The high leverage level has contributed positively to the earnings in the good years prior to 2007, but the leveraging has clearly been a disadvantage when the crisis erupted from mid 2007, causing several severe defaults in the North Atlantic region.

Besides proposals of tighter regulations in financial institutions in order to deleverage the industry and secure financial stability, the issue of rating agencies is also being addressed by the authorities. The issue is being recognized as a significant contributor to the crisis and the Securities and Exchange Commission in the US (SEC) has proposed to implement higher transparency and accountability in order to restore credibility to the rating agencies. Their controversial double role as a rating provider to issuers of debt and a recipient of fees from the same issuer raises the need for increased openness in the industry. Also proposals regarding the fee structure have been addressed – e.g. that it ought to be the potential buyer of debt that pays the rating agency as opposed to the issuer.⁵¹

8.4 Nationalization

Partly nationalization of distressed financial institutions has been one of the instruments used to comply with the crisis in the hope of re-establishing confidence in the financial industry and to obtain financial stability. As described in section 3 many large institutions have been taken over by the authorities in the North Atlantic region. By the end of August 2009 the number of financial institutions in e.g. the US that were overtaken by the authorities since the beginning of 2009 reached 84⁵². These rather late incidents of distressed financial institutions that are not able to survive are the results of the financial crisis, which has induced a large increase in loan losses and inadequate capital reserves throughout the financial industry.

⁴⁹ Bloomberg article, 16th September 2009: Treasury Appeals to Main Street for Wall Street Rules Overhaul

⁵⁰ Wolf, Martin: Financial Times article; Reform of regulation has to start by altering incentives
<http://www.ft.com/cms/s/0/095722f6-6028-11de-a09b-00144feabdc0.html>

⁵¹ Bloomberg article, 15th September 2009: Moody's, S&P May Face More Disclosure, Liability in SEC Rules.

⁵² <http://www.bloomberg.com/apps/news?pid=20601087&sid=aSdMMGzkt1do>

The volume of loan losses have exploded and the consequences of this are simple – either the institution raises capital to increase its capital base and thereby enhances its solvency ratio, or it is closed down and overtaken by the authorities. In April 2009 IMF estimated that the financial institutions in the US, the UK and the EU needed to raise equity at an amount of approximately 1,475 billions USD to re-establish a leverage ratio⁵³ of 6%, which were the level at US financial institutions in the mid 1990's prior to the leverage build-up that led to the current crisis⁵⁴. These estimates are made on the basis of year end 2008 numbers. Taken into consideration that many financial institutions have disclosed even higher loan losses in 2009 than earlier anticipated, the actual needed equity is most likely higher than 1,475 billions USD.

Many institutions have succeeded in raising capital – some have been able to raise capital through the financial markets and some have raised capital through their respective governments or by a combination of privates and authorities. The total value of money allocated from governments and central banks to restore the solvency in the financial industry in the corresponding countries amount to 9,000 billions USD⁵⁵.

The incentives for saving these large financial institutions are rather clear. Financial stability is crucial for a well functioning economy. Financial institutions receive deposits, provide credits and liquidity as well as they provide payment facilities. They play a core role in the society every day through these transactions, and therefore it is in the society's interest that the industry survives. The global economy has experienced large shocks from the financial industry's distress during this crisis e.g. the liquidity crisis, which resulted in a meltdown of the interbank market and the collapse of Lehman Brothers. These shocks could have paralysed the economy to a larger extent causing defaults in even more companies, if the authorities had not reacted.

The psychological consequence of letting Lehman Brothers collapse was most likely the biggest shock. The faith in the financial system disappeared almost completely and was devastating for the

⁵³ Leverage ratio is calculated by IMF as: Tangible Assets (TA)/Tangible Common Equity (TCE). IMF does not disclose equity requirement estimates based on the Basel II accords using Regulatory Capital and Risk Weighted Assets like it is described in section five.

⁵⁴ IMF, April 2009: Global Financial Stability Report p. 36:
<http://www.imf.org/external/pubs/ft/gfsr/2009/01/pdf/text.pdf>

⁵⁵ IMF, April 2009: Global Financial Stability Report p. 41:
<http://www.imf.org/external/pubs/ft/gfsr/2009/01/pdf/text.pdf>

economy. It was a clear sign of financial instability and the authorities have tried to repair the lost confidence by initiatives like nationalization. The large institutions that were saved by nationalization, have been regarded as being too big to fail because it would cause a systematic threat to the economy. These large institutions include for example Bear Stearns, Merrill Lynch and Citigroup. The governments have allocated money and guarantees to the financial industry in order to try to restore credibility and financial stability - not to save the industry and its employees, but to secure the economy as a whole.

The capital injections have been done through a combination of buying toxic assets in return of preferred shares in the institutions, by providing hybrid capital through bond issues or by providing guarantees of liquidity if the institution should need it (e.g. when Merrill Lynch were overtaken by Bank of America). In US most of the capital came from the Troubled Asset Relief Programme (TARP). The financial institutions that received TARP capital were in return obliged to inter alia hold back dividend payments to shareholders and to cut down bonuses to their executive employees.

As described in section 3 many large institutions that prior to the crisis were regarded as immortal financial giants have been on the brink of bankruptcy. And they have been saved by governmental intervention. Some of these are Merrill Lynch, Citigroup, AIG, Fortis and HBOS. The nationalization process of these financial institutions has been massive and the opinions regarding this are many. The cardinal point of this discussion is the dysfunctional event that governments interfere in an industry and disturbs the market economy mechanisms. The relationship between downside risk and upside potential is interfered by the bailouts we have seen in this crisis. Today several commentators e.g. Willem Buiter and Joseph Stiglitz claim that there is no true default risk in the financial system and that some financial institutions are still too big to fail. The downside risk is carried by the authorities and the taxpayers while the upside potential belongs to the shareholders. This creates adverse selection and can result in moral hazard, which may increase the costs to the society even more⁵⁶.

Owners of financial institutions backed with state guarantees “enjoy” a sort of immunity. The creditors (depositors) have no risk of losing their deposits because of the deposit guarantees, and

⁵⁶ Stiglitz, Joseph. 21st April 2009: Testimony to the joint economic committee

the shareholders have only limited liability because they can not lose more than their equity. This induces the shareholders and the management, which interests are aligned with the shareholders through i.e. stock options, to take excessive risks in order to try to maximise their profits. If they fail it is the government that carries the downside risk because of the state guarantee. Some of the losses can be absorbed by the respective deposit insurance funds, but these funds are not necessarily large enough to cover all losses. In a “normal” world without extensive governmental interference, depositors would demand higher premiums for lending capital to riskier financial institutions because they would then carry the downside risk⁵⁷.

The present situation with imbalances between potential losses and profits is unsustainable. During the crisis the financial industry has been consolidated, resulting in even bigger institutions that are too complex to manage and too big to fail. This poses a big threat to the economy on a longer term. It is evident to restore market economy by re-introducing default risk. This will most likely result in a market driven reduction of over-sized financial institutions⁵⁸ as well as a change in incentives from managements.

However it is not viable to do this transition over night. It will cause another shock and will probably push the financial markets back in a significantly more negative state of sentiment than it was a year ago. The de-nationalization process must be done simultaneously with the regulatory changes to secure a smooth way back to market economy. Too big to fail institutions may be forced to respect even tighter regulations as regards to capital requirements, regularly inspections, selling off non core activities as long as they are supported by the states etc. Buitter also suggests that unsecured creditors should be entitled to convert into shareholders at any time through a “special resolution regime”⁵⁹ in order to secure a potential upside.

⁵⁷ Wolf, Martin: Financial Times article: Reform of regulation has to start by altering incentives
<http://www.ft.com/cms/s/0/095722f6-6028-11de-a09b-00144feabdc0.html>

⁵⁸ Buitter, Willem. 1st September 2009: Forget Tobin tax: there is a better way to curb finance:
<http://www.ft.com/cms/s/0/76e13a4e-9725-11de-83c5-00144feabdc0.html?catid=9&SID=google>

⁵⁹ Buitter, Willem. 1st September 2009: Forget Tobin tax: there is a better way to curb finance:
<http://www.ft.com/cms/s/0/76e13a4e-9725-11de-83c5-00144feabdc0.html?catid=9&SID=google>

8.5 Supervising authorities' role

The financial industry is a traditionally highly regulated industry because of the fundamental role in the society and the wish of sustainability and financial stability.

When Basel II was introduced the level of regulations rose. New measurements other than only credit risk were introduced under pillar I (market risk and operational risk), like higher standards regarding disclosure of risks and enhanced market discipline were elements (as described in section 5) Common to all these initiatives is that it entail even more demanding supervision from the authorities. The sophisticated new opportunities to assess risks in especially the larger institutions also required even more resources from the supervising authorities to oversee and to conduct an accurate supervision.

With the benefit of hindsight there is no doubt that the authorities have not reacted in time to prevent the crisis from growing into a serious global crisis. They have simply not been able to assess the true risks in the financial industry better than the institutions, and the capital reserves have not been adequate to absorb the large credit losses. One can discuss whether it is due to missing personal capacities in the corresponding supervising authorities or whether it is due to missing regulations. However one thing is clear and that is that in the future the authorities will have a greater and more visible role towards securing financial stability. The attention on and the proposals of tighter regulations will induce that (as described in section 8.3)

The chairman of Financial Service Authority (FSA) in the UK, Adair Turner, recently proposed to introduce a Tobin tax⁶⁰ to decrease the number of speculators. A Tobin tax is a global tax on all financial transactions and could be used to build up a reserve to absorb future losses from capital markets. A Tobin tax will not solve the problems we see today and will not necessarily prevent similar problems to evolve in the future. Moreover it can result in increasing instability to asset classes when taxes are imposed (Buiter, 2009). Furthermore a Tobin tax could hinder the political wish of moving more derivatives trading to established exchanges. In several countries you already have a transaction tax on real estates. Since real estate speculation and the following burst of the

⁶⁰ Buiter, Willem. 1st September 2009: Forget Tobin tax: there is a better way to curb finance:
<http://www.ft.com/cms/s/0/76e13a4e-9725-11de-83c5-00144feabdc0.html?catid=9&SID=google>

real estate bubble have contributed to the crisis, introduction of Tobin tax is not necessarily the right regulatory instrument to use⁶¹.

In the spring 2009 the supervising authorities in the North Atlantic region conducted stress tests on the financial institutions in order to quantify the fragility of the industry. For example the US supervising authorities made stress tests on larger financial institutions with assets over 100 billions USD. The results were better than feared with only ten out the 19 examined banks needing more capital. Combined they needed to raise 74,6 billions USD⁶². The better than expected results from the US stress test helped to regain confidence in the industry, and has most likely contributed positively to the opportunities of raising capital for the American financial institutions that needed. The UK and EU stress test results were not published by the supervising authorities even though that was widely criticised⁶³.

The quality of the stress tests have been criticised; the US stress tests' purpose was to clarify whether the large financial institutions over a two year period of down cycle had enough capital and estimated earnings to withstand a 9% loan loss. Critics claim that some institutions have already reached that level of loan losses⁶⁴. The continuing defaults among smaller financial institutions, as described above, confirms this.

Together with tighter capital requirements, stress tests will definitely be used to conduct closer monitoring of the financial institutions going forward. It is a valuable tool to assess the fragility in the institutions, of course depending of how conservative scenarios that are used to estimate loan losses, earnings growth, quality of other assets etc.

8.6 Risk aversion

Risk aversion within the financial industry rose dramatically in the beginning of the crisis, causing sharp increases in funding costs for financial institutions and almost a complete meltdown of the interbank market. The market participants did not have the courage to lend to each other, which caused liquidity scarcity and even defaults for some financial institutions as described in section 3.

⁶¹ The Economist, 17th September 2009: Tobin tax: the wrong tool for the job

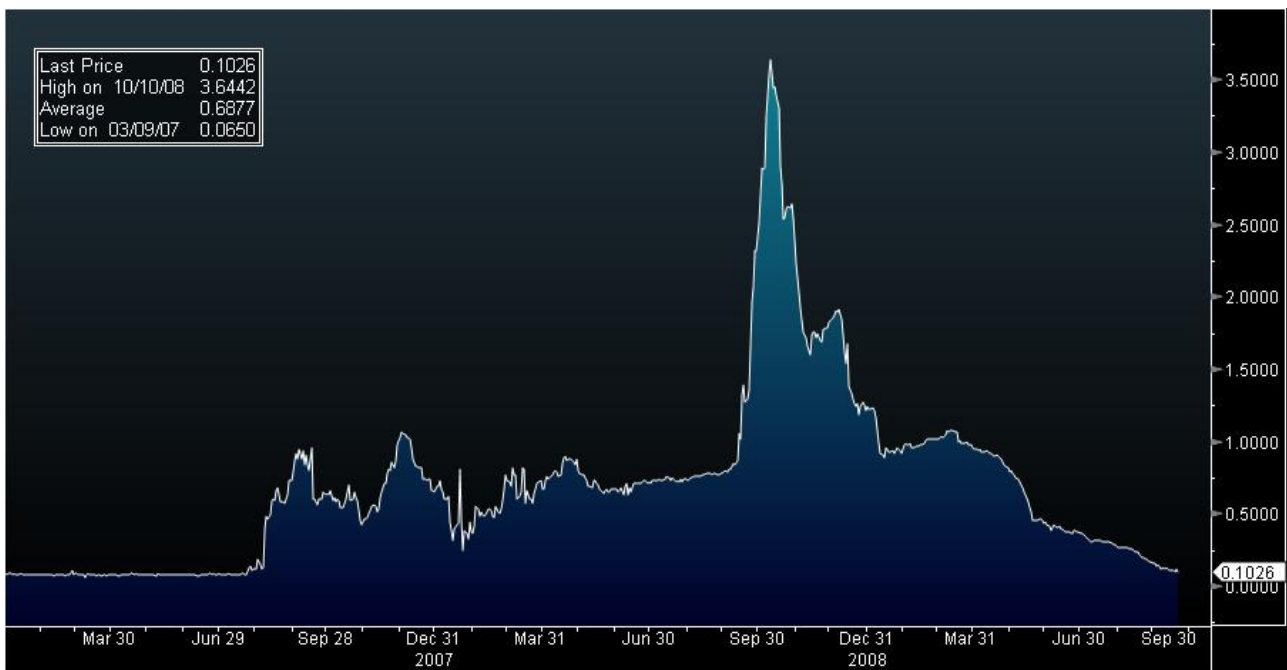
⁶² Bloomberg article, 8th May 2009: US reveals "stress test" results of 19 banks

⁶³ Financial Times, 2nd June 2009: Europe's secretive stance criticised

⁶⁴ New York Times, 23rd August 2009: What the Stress Tests Didn't Predict

One way to define the risk aversion is by looking at the 3 Months USD Libor OIS spread. The OIS spread is a widely used indicator of liquidity and risk for unsecured lending to other large institutions in the interbank market. If the spread is low it indicates that market participants' perception of each others creditworthiness is positive and the opposite when the spread is high. As the graph below indicates, the OIS spread has been very volatile during the financial crisis. It came from a low level in the beginning of 2007 and rose to a higher level when the subprime crisis started to evolve. In September 2008 when Lehmann Brothers collapsed the fear of more defaults exploded and the OIS spread rose significantly. Concurrently with the entry of financial stimulus packages the fear of defaults eased off and the OIS spread fell significantly and is now almost back at the previous low level.

Figure 8.3: 3 Months USD Libor OIS Spread



Source: Bloomberg

There are several reasons to why the OIS spread has fallen back to this level, and the stimulus packages are most likely some of the most important reasons. The extensive aid to the financial industry as well as the economy as a whole has contributed to renewed confidence among interbank

market participants. The macro economic progresses⁶⁵ and improved sentiment polls like ISM are interconnected and are also some of the explaining factors to the large decrease in risk aversion during the last year. However the risk aversion is largely dependent on the economic stimulus and it will most likely react negatively to too quick withdrawal of stimulus packages. Financial stability has a high priority and therefore will the authorities be forced to make a slow reduction of the packages.

Decreased risk aversion has also materialised from investors' side towards the financial industry. During spring and the summer financial institutions in the US have successfully raised new capital through the stock market, for example JP Morgan Chase and Goldman Sachs which raised each 5 billion USD in new share issue programmes⁶⁶. Also other large financial institutions like Royal Bank of Scotland in UK have raised capital through new share issues. Some of the involved institutions have used the new capital to pay back government funds from the Troubled Asset Relief Programme in order to escape from the restrictions in the programme⁶⁷.

The optimism regarding the financial industry can also be illustrated by looking at the share price rally that has taken place. Financial share prices have made significant increases since the bottom of the stock markets in March 2009. Below two graphs illustrate the severe price changes financial shares have experienced since 2007 – at the beginning sharp decreases as the financial crisis evolves and then a relatively significant increase during the last six months. First graph illustrates US financial shares, while second graph illustrates European financial shares.

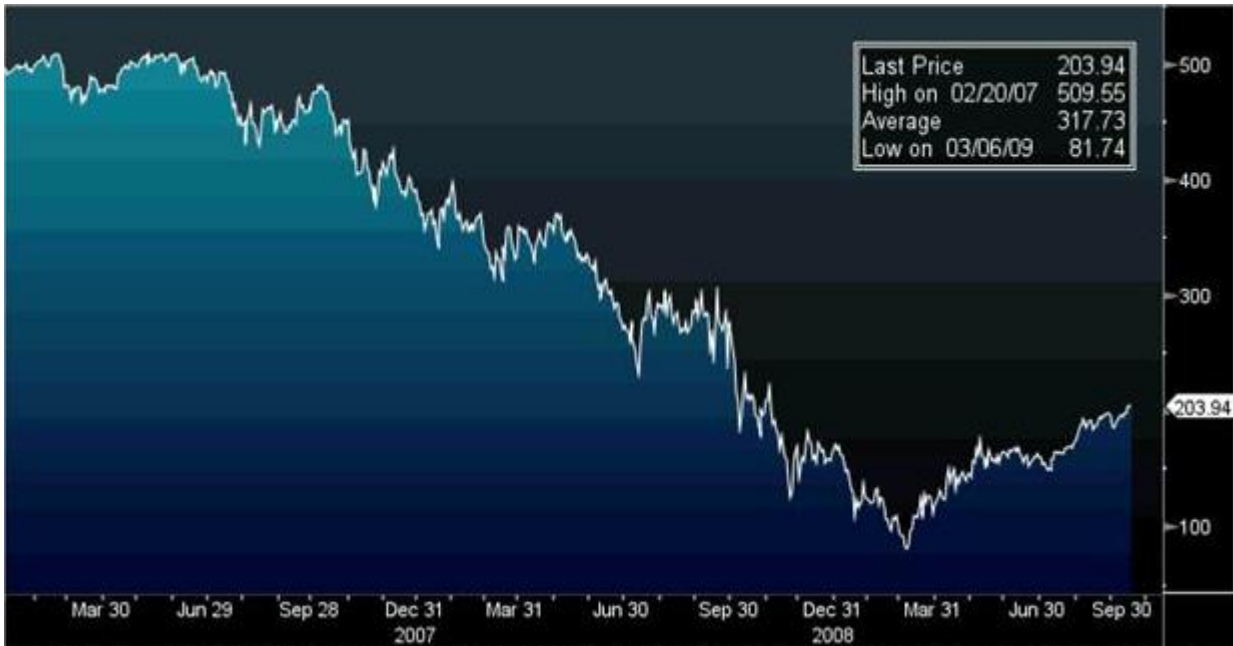
⁶⁵ Bloomberg article, 20th September 2009: According to FED Chairman, Ben Bernanke whom in a speech to Brookings Institute in mid September 2009 stated that the US recession is “most likely over”

⁶⁶ According to Bloomberg data JP Morgan Chase issued new shares the 1st June 2009 and Goldman Sachs the 13th April 2009.

⁶⁷ CNN Money, 1st September 2009: Raising capital still a breeze for banks.

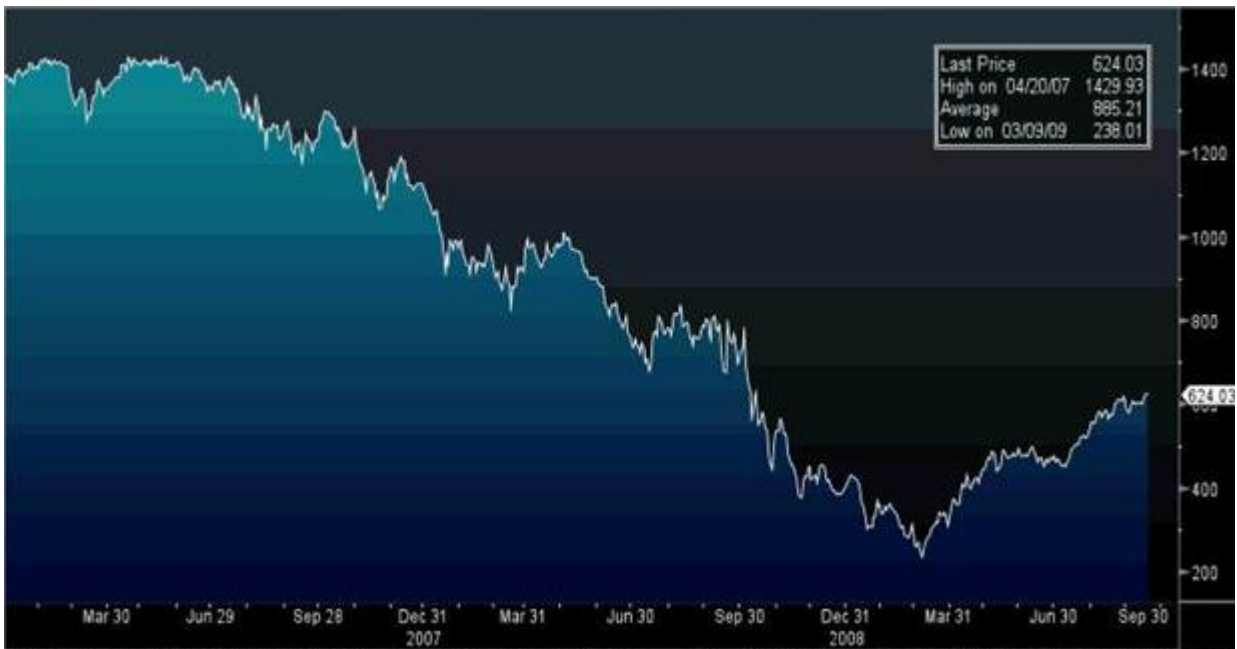
http://money.cnn.com/2009/09/01/news/companies/banks_capital/index.htm?postversion=2009090111

Figure 8.4: S&P 500 Financials Index



Source: Bloomberg

Figure 8.5: FTSE Eurofirst 300 Financials Index



Source: Bloomberg

When prices on financial shares, as well as the stock markets in general increase as dramatic as we have seen during the past six months, one have to be cautious about the sustainability of the uptrend. Together with the low OIS spread as illustrated above, it indicates that risk aversion has

fallen dramatically since the peak one year ago. Many incentives from different authorities have been made to dampen the serious consequences of the crisis, which is good. However one has to remember that the losses from the burst of the housing bubble, have not vanished, the unemployment ratio is still rising, the increasing number of foreclosure auctions and corporate defaults will probably continue for a while causing higher loan losses to financial institutions (Stiglitz, 2009)⁶⁸.

The fear of an unsustainable and “bubble like” situation is already evolving again, is rising. The extremely low interest rates and the vast amount of money poured into the economies could look like a repetition of the circumstances in the years prior to this crisis. Asset prices like shares and commodities have risen significantly even though there are still fundamental risks like described above.

⁶⁸ Stiglitz, Joseph. 21st April 2009: Testimony to the joint economic committee

9.0 Conclusion

RQ 1:

What catalysts can explain the financial crisis - how are their characteristics and how did they contribute to the excessive level of leverage seen in the financial industry prior to the crisis?

In this thesis I have wanted to create an overview of the current financial crisis seen from the financial industry's perspective. To create an overview it is necessary to understand what has created the crisis. There are many reasons, and it is evident to examine the individual catalysts and behaviours that have led to the crisis. Some of these have roots back many years prior to the crisis and some have even been regarded as good contents in the financial industry and economy as a whole. Later they have shown to be a contributing factor to the crisis through their interconnectivity with other catalysts. There are definitely more catalysts than those examined in this thesis, but I believe that the chosen catalysts do explain what has happened in order to give an understanding of the circumstances regarding the financial crisis.

The loose monetary policy that the central banks in the North Atlantic region conducted in the beginning of this decade, created easy and cheap access to liquidity. Looking back, this created two scenarios that were interconnected; easy access to liquidity for investment purposes which contributed to creating asset bubbles like the housing market, stock market and commodities market. From investors perspective the extreme low risk free interest rates incentivised the increasing search for yield. Investors demanded higher returns than the low risk free interest rate, which induced them to take more risks than previously. The implicit risk aversion fell and increased the demand for riskier assets. The growing subprime segment was a result of the decreasing risk aversion and it did contribute to the housing bubble.

The savings glut played an important role in building up massive imbalances in the world economy. For several years, the Asian countries, especially China, experienced high economic growth rates and high export earnings. They built up large reserves of liquidity which they used to finance the large deficits on the US balance of payments and the budget deficits. This enabled the US to continue its economic growth despite increasing structural imbalances and thereby contributed to the crisis.

The growing shadow banking industry with several highly leveraged off balance sheet entities posed a big threat to the financial industry and contributed to the excessive level of leverage. Structures Investment Vehicles (SIV) were one of the rather new inventions in the shadow banking industry. For capital requirement reasons, they were usually established as off balance sheet entities by large financial institutions, enabling the SIV's to obtain a higher level of leverage. Hedgefunds were another group of entities within shadow banking that increased dramatically during the last two decades. Most of them were more separated from "mother banks" than SIV's, but since hedgefunds are highly leveraged entities, they had large liquidity facilities in the traditional financial institutions. The hedgefunds contributed to the over optimistic sentiment prior to the crisis as well as they have played an important role during the crisis by creating large credit losses and disturbing financial markets by massive securities unwinding transactions.

The extensive use of securitization in the shadow banking industry was a catalyst to the crisis. The pooling of assets into e.g. asset backed commercial papers contributed to a lower transparency and made accurate assessment of the risks almost impossible. The relationship between lender and borrower was previously characterised by an exhaustive examination by the lender of the borrowers' creditworthiness. As a consequence of securitization in the shadow banking industry the Research-Oriented-Model (ROM) was pushed into the background and instead the use of Transaction-Oriented-Model (TOM) was intensified. TOM describes the concept where an originator bundles a series of loans and sells them to an investor in exchange for a fee proportional to the volume of the loans. The originator has no true incentive of assessing risks accurately because of the structure, and the final investor has no or little chance of assessing the risk, because his investment is pooled together with several assets and sold in different tranches.

Derivatives trading increased dramatically during the last decade. The characteristics of derivatives invite the investor to speculate - the price of a derivative derives from an underlying asset, but the initial amount the investor has to allocate is usually a fraction of the value of the underlying asset. Therefore derivatives are highly leveraged and they are considered as a destabilising instrument and they were one of the catalysts to excessive leveraging in the financial industry.

The existence of a monoline insurance industry was highly disturbing to the economy and is, in my perspective, one of the most credibility destroying factors in the financial industry. The monoline

insurance industry provides issuers of commercial papers with a higher rating than the issuer can obtain from a credit rating agency. The monoline insurance company received a fee for insuring the creditworthiness of the issuer, and the issuer got a licence to use the monoline insurance company's credit rating. The higher credit rating enabled the issuer to achieve a lower interest rate in the financial market. The monoline insurance industry issued these licenses on the basis of an insufficient capital base and was not able to fulfil their obligations in case of a large number of defaults. As oppose to casualty insurance companies, events in the financial markets are highly interconnected which will hit the monoline insurance industry hard in case of distress. However in an efficient market this industry would have no reason for existing; if the monoline insurance company charged a sufficient fee for its license corresponding to the actual credit risk, this fee would offset the cost saving that the issuer achieved in the market. But by “washing” the credit risks into a monoline insurance company the risk seemed almost gone and investors were happy. This induced moral hazard by investors as they had no incentives to assess credit risks and was a significant catalyst to the crisis.

Rating agencies played a significant role to the crisis. They provided the financial markets with credit ratings on several thousands of corporations that use the financial markets to fund themselves in order to give a potential equity or commercial paper investor a quick overview of the creditworthiness of the issuer. By the implementation of Basel II capital requirements, ratings from Standard & Poors, Moodys and Fitch were also introduced as an instrument for regulatory purposes. Rating agencies' double role has been discussed heavily during the crisis and it is highly criticisable as it destroys the credibility of their ratings. Rating agencies are typically paid by the issuers to provide their e.g. commercial paper issues with a rating, and they are also offering consulting jobs to issuers that want to know how to enhance their capital structure. This bi-party role as consultant/rating provider and receiver of fees on one side, and on the other side a highly regarded and serious risk assessment agency used by the investors, does result in lower credibility to the rating agency industry. Their reluctance to downgrade distressed issuers as the crisis evolved also damaged their credibility and were a catalyst when they turned from being over optimistic to negative.

The Basel II accords are rather new to the financial industry and they are still being implemented in several countries' financial legislation. By updating Basel I to Basel II the purpose was to make a modern approach to capital requirements in the financial industry. The industry had evolved

significantly since Basel I and it was time to enhance the capital requirements by making them more individual and dynamic. Many large institutions using the advanced internal ratings based models in Basel II were expected to achieve capital requirement reductions because of their sophisticated risk management models. Before introduction of Basel II in 2007, the accords were already blamed for being pro-cyclical, and I believe that exactly this point became reality. After years of prosperity, the risk weightings of the assets were too optimistic, the statistical models were insufficient because of the non existing historical data on a crisis like this, and the rating agencies' optimistic ratings which are also used in some parts of the Basel II have all contributed to the crisis. The good incentive regarding dynamic risk weightings has, despite it is newly invented, shown to be insufficient and unreliable in the current crisis. More conservatism and deleveraging incentives in the financial industry, than Basel II suggested, are obviously needed are being discussed at the moment.

RQ 2:

What are the implications of the crisis – how will central banks and governments react to restore credibility to the financial industry and what regulatory changes must be made to restore financial stability?

The implications of the crisis are already numerous and will continue to grow as we are only at the beginning of the end of the crisis, according to central bank governors, politicians and some economists. Since the crisis originated in mid 2007 many incentives have been taken to dampen the negative consequences and to restore financial stability.

The central banks were the first to react to the consequences of the subprime crisis. The interbank market was destabilized and threatened financial institutions' ability to survive. The fear of defaults among the market participants had risen significantly and some institutions could not achieve liquidity funding. The central banks reacted with open market operations by imposing extensive liquidity facilities to the interbank market in an attempt to secure liquidity for all institutions. The central banks lowered their leading interest rates significantly in order give easy and cheap access to liquidity as well as they introduced several quantitative easements. These easements include facilities to buy toxic assets from financial institutions' balance sheets, buying commercial papers, providing backup credit facilities to financial institutions that were saved by other player in the industry etc.

The crisis did not get much political attention until the summer 2008. In the first year from the sub prime crisis evolved, the struggles in the financial industry were regarded as isolated problems to a few institutions. In the summer 2008 politicians started to acknowledge the threat of decreasing economic growth, rising unemployment and even recession. When Lehman Brothers collapsed in September 2008 the severity of the crisis was acknowledged and the politicians started to discuss political actions to prevent the crisis from growing larger. Many political rescue packages were introduced to the financial industry as well as other industries. Growth packages aiming at accelerating public expenses and tax cuts have also been launched. The rescue packages towards the financial industry have been administrated by e.g. the central banks and they are therefore highly interconnected.

In the US the Troubled Asset Relief Program (TARP) was introduced as one of the most ambitious packages aiming at injecting money into the financial industry. This was done by e.g. buying preferred shares and commercial papers in the largest financial institutions. Similar packages were launched in the UK and the EU. The result of doing this is a partly nationalised financial industry – a condition that is widely disputed by stakeholders as politicians and economists.

The nationalization process has been massive, it has wiped out the line between government ownership and private ownership and this raises some interesting fundamental issues: what are the incentives of nationalizing institutions that are not able to survive on their own. Where is the line between government supported industries and those that are not. How does it affect moral hazard and risk aversion, and what are the plans on a longer term.

Politicians, central bank governors and economists are discussing exit strategies for the rescue packages. It is their goal to return to market economy with no or little governmental subsidies as soon as possible. It is an unsustainable condition for the governments to be as involved as they are, because the states are taking risks that ought to be taken by the financial markets and the original share and bond holders. The governmental interference disturbs the market mechanisms and it increases moral hazard because the shareholders and management do not share the same upside potential and downside risk as the state does. The shareholders and management can still take excessive risks because they only bet their equity while the state has guaranteed a bailout if necessary. Because of the construction of the financial industry with deposit insurance funds,

downside risk and upside potential will never be equal divided, but the massive governmental interference disturbs this structure even more. The incentives for rescuing the financial industry is, however, rather apparent. The industry serves as liquidity provider, deposit receiver and secures payment facilities for the whole economy. It is therefore crucial for the entire society to have a well functioning financial institution. Because of most transactions rest on a fundament of trust, it is also crucial to have financial stability, because instability also influence institutions that may not be in trouble. The rescue of the financial industry was an attempt to restore financial stability.

Many sub subjects of the aftermath of the crisis are discussed at the moment. Everyone agrees that the massive political rescue packages and the extensive quantitative easements from central banks have to be slowly withdrawn on order to avoid giving the financial industry and financial markets new shocks. Optimism has returned, but the solidity of the optimism is questionable. It is also discussed how to avoid a similar crisis to emerge in the future. To solve that it is evident to look at the regulatory incentives and the supervising authorities' role.

Leverage is one of the main reasons for the severity of the crisis. The financial institutions did not have adequate capital bases to absorb the large losses that materialised. The only way to prevent this from repeating is by reducing the level of leverage. Leverage levels are determined by legislation, therefore it is crucial to strengthen capital requirement rules. The existence of financial institutions that are systematically important and therefore too big to fail is a threat to the financial stability and to the economic recovery. In order to change this, authorities must be enabled to prevent financial institutions from growing too large, e.g. by compulsory spin offs. The systematically important institutions must also be monitored even closer by the supervising authorities. The incentives for moral hazard must be minimised. The market participants must not expect that bailouts and nationalizations are a rather pleasant exit after failure. It is crucial to have more state of equilibrium between the upside potential and the downside risk for the shareholders. Removal of government guarantees on deposits combined with even stricter regulations regarding risk disclosure from the institutions as well as from the supervising authorities will increase transparency. Thereby depositors will have a better overview of the risks, and they will be able to demand risk premiums when necessary.

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