

## **The Dichotomy Between the Theoretical Approach and the Indicators of the US Banking Sector in the Last Financial Crisis**

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### **ABSTRACT**

In this paper, we mainly focus on the theoretical approach towards the banking management in US economy and compare the real economy macro-prudential with the US banking sector's indicators during the pre-crisis and post-crisis by analysing historical and fundamental data. We argue that, unlike the theoretical approach and teaching of economics discipline, the banking performance and its reflections into the US economy has followed different and unpredictable path. In other words, we state that many real side economy indicators which include different sorts of dynamics and perspective about the US economy contradicts the theoretical approach of economics teaching. Moreover, even if the regulators in US, especially FED, have taken offensive and aggressive policies for the banking sector, its soundness and effectiveness are questionable because of the fact that the transmission mechanism and profitable and confidential economic environment have not been activated. Therefore, the more unconventional and authentic policy recommendations should be taken into consideration in order to overcome complex and intricate financial environment problems.

**Key Words:** US financial crisis, banking management, regulations, transmission mechanism

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### **Introduction**

In this paper, we evaluate and analyze the general concept of global banking sector's asset-liability management and its implications and side-effects for the crisis since 2008. We mainly focus on the last 10 years that consist of the pre-crisis and post-crisis data and market sentiments. This turning period encourages us to discuss the dynamics and features of the US

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financial crisis' dimensions through considering the classical methodology for the general banking management and its real economy side implications. In the first part, to understand and investigate the recent developments in banking sector by using theoretical framework and concepts, we summarize depository and commercial institutions' balance sheets, its management and its main components. Without understanding the components and main transactions by theoretical way, the banking activity and its recent performance may not be evaluated in a consistent way. In addition, banking risks are one of the main parts of the banking management, so we briefly state many banking risks that are crucial indicators for measuring the uncertainty and risk appetite level in the market economy. In the second part, we study financial regulations and ongoing policies that directly affect and shape the banking management policy and its daily base transactions in the US economy. In terms of global economic conditions, we discuss Basel 2 and Basel 3 whose requirements and laws are mainly interconnected with banking performance and its balance sheets. In the third and last part, by looking the historical data and fundamental indicators, we mainly analyse the short and long run relations between regulators' policies and its effects on banking asset liability management. In other words, by using statistical and a little bit econometrics tools and their main concepts, we mainly show the short and long run dynamics between regulations and the banking sector performance in terms of the balance sheet indicators and some macroeconomics indicators. Moreover, showing the empirical finding, we discuss the quality and lags of the transmission mechanism in the banking sector after regulations have taken place. By doing this, we argue whether there are several deficiencies and failures in terms of the procedures and the structure of undergoing regulations and banking performance. Then, we would like to understand the pre-crisis and post-crisis (or during crisis) conditions and its main complications in terms of banks' asset liability management that is under the influence of the regulations. In the conclusion part, in the light of the empirical finding and theoretical framework that are given through the first three parts, we aim to present several limitations of the regulations that hinder banking profitable transaction. After that, we discuss and present policy recommendations for the exit way from undercapitalization and underperformance of the US banking sector.

### **Recent Developments in Banking Sector**

In this part, we firstly investigate the role and functions of depository institutions and financial intermediaries. Then, in order to understand and analyze the US banking sector performance and behavior during the financial crisis, we should do further investigation about the banking management toward the theoretical explanations. Then, we can easily understand their main concerns and transactions beyond their balance sheet performance.

Depository institutions' main role is to channel funds to borrowers. It also creates soundness and efficiency for the financial system. However, the main motivation for this intermediation is to make profits by earning interest on their asset holdings of securities and loans and borrow and get funds from short-term maturity instruments which have lower obliged interest and expenses relative to their assets. The spread between interest earned on assets and interest payment for the borrowing is called as a net interest margin and banks usually have an incentive to keep this margin as huge as possible. However, there would be an interest risk which creates main problem for the banking sector which is caused by the maturity mismatch. If the interest rate in the market raises their liabilities' value increases sharply, this would deteriorate its balance sheet and profit margin. It occurs due to the issue of maturity mismatch. At the following part, we will also study the regulations' role and functions to take preventive action against this kind of market risk.

Apart from their assets consisting of loans and securities, banks also keep reserves and cash account to absorb any kind of losses which can be experienced at any time. Some reserves which are called required reserves are held because of the reserve requirements obligation set by central banks. A certain fraction of checkable deposits must be held as reserves which likely inhibit starting riskier and profitable business. Second, banks hold additional reserves called excess reserves because they want to keep aside most liquid of all bank assets. In case of any probability of default or losses, banks can use them to meet its obligations. Depository institutions and financial intermediaries also hold many kinds of securities to make profits and expand its economic power and effectiveness. The U.S Treasury and agency securities are the most liquid and less risky ones because they can easily be traded and converted into cash with low transaction costs. However, state and local government and other securities are both less liquid and riskier than U.S government securities due to the default risk. Nowadays, the huge component of assets is loans that are less liquid than other assets because they cannot be turned into cash until the loan matures. Moreover, loans also have a higher probability of default than other assets which is the main dimension of the credit risk.

In general terms, banks make profits by selling liabilities with one set of characteristics and using the proceeds to buy assets with a different set of characteristics. This process is often referred to as asset transformation. Another way to describe asset transformation is that the bank borrows short and lends long because it makes long-term loans and funds them by issuing short-dated deposits.

### **General Principles of Bank Management**

The banking management has four main dimensions to be studied. First of all, to make sure the bank has enough ready cash to pay its obligations to depositors when there are deposit outflows. In this case, excess reserves can be thought as an insurance against the costs associated with deposit outflows. The higher the costs associated with deposits outflows, the more excess reserves banks want to hold.

To keep enough cash on hand, the bank engages in liquidity management that is defined as the acquisition of sufficiently liquid assets to meet the bank's obligations to depositors. Secondly, banks management pursues an acceptably low level of risk by acquiring assets that have a low rate of default and by diversifying asset holding. In terms of liability management, banks' aim is to acquire cheap funds from the other resources. Lastly, according to Basel 2 and Basel 3 which we study at the following part, banks have to decide the amount of capital the bank should maintain and then acquire the needed capital. This process can be identified as a capital management.

*Asset Management:* For a bank, to maximize its profits, it tries to seek the highest returns on loans and securities by reducing and diversifying risk. Banks try to accomplish these goals in four basic ways. First of all, they try to find borrowers who can pay high interest rates and who are unlikely to default on their loans. In other words, they try to minimize the credit risk and make a profit as much as possible. Banks try to purchase securities with high returns and low risk. Moreover, the banks manages the liquidity of its assets so that it can meet deposit losses and collapses and adapt its reserve requirements. This requirements lead to hold liquid assets.

*Liability Management:* Banks manages to facilitate and ease the way of lending. It constitutes the management of money accepted from depositors. They can also hedge against huge increase or decrease in interest rates and they controls the spread amount.

*Capital Management:* Bank capital encourages the bank to prevent bank failure that is a situation of not satisfying certain obligations to pay its depositors and other creditors. Moreover, the amount of capital directly affects the returns and profits for the owners of the bank. The huge held capital brings fewer amounts of loans and profits as well. In other words, there is a trade-off between holding capitals and making loans. Besides the banking policy, they should keep aside a minimum amount of bank capital which is required by regulatory authorities like Basel 3. When they rate the quality of consumers' financial condition and its potential default risk regulators and banks generally consider the historical data and market sentiments.

### Several Banking Risks

*Credit Risk:* It is the probability of loss when borrowers fail to meet its obligations on time. It is the main anxious for the banks when they are going to lend to other agents. We study its potential effect during the US financial crisis at the last part.

*Market Risk:* It is the risk of the sharp change in market instruments conditions and its interest structure. It is mainly related to the securities accounts of the banks because the change in interest rate would bring more losses/gains in securities value. This is also correlated to the maturity mismatch case.

*Operational Risk:* It is the potential losses that might arise due to the operations of the banks such as the case of fraud, theft, casualty, systems failure, mispricing and IT systems.

*Liquidity Risk:* It is the probability that the bank will to pay back its short-term liabilities from selling its more liquid assets.

### Financial Regulations:

Regulation and related laws have direct and immediate effect on Asset Liability Management, thus we need to research on functions of regulatory actors and evaluate the current and predicted results of regulations with considering balance sheet of financial institutions.

Does financial market need for regulations? Financial crisis in 2008 clearly indicates the urgent need for regulations, even very strict ones. The need for regulation mainly stems from economics' most common problem which is **asymmetric information**. Asymmetric information is a problem that could be defined as all market participants do not have the same or equal information about what is happening, what was happened and the most importantly what would happen in market. Except from the former cliché and theoretical definition, market system wants a regulatory body, a government, due to the need for deposit insurance and government safety net. Governments establish financial agencies to provide deposit insurance to the banks. In the U.S. this agency is FDIC (Federal Deposit and Insurance Corporation). However, when the regulations are relaxed, not strict enough, as a part of adverse selection problem, risk lovers find banking attractive, which increases the default risk, and depositors have no incentive to monitor financial institutions, this was the main problem of the financial crisis. Researches clearly show that when regulation is not strong, financial

institutions intend to take greater risk, which they exactly happened between 2003 and 2008. These two reasons could be explained under the title of Moral Hazard.

After the crisis, when the finance guys wake up from their dream, governments gave them shelter in this crisis, and then it has started to think about the new and strict regulations. Some governments make an update to their old regulation system (Basel 1,2,3) and some governments implement very new and unconventional ones (Quantitative Easing 1,2,3). Basel 2 and Basel 3 are good examples to that updated regulations.

### **Basel 2**

Basel 2 is an updated version of Basel 1. Basel 2 was signed between 27 countries including US in 2004. However, due to the several lack responses, the implementation of Basel 2 began in 2007. Before explaining its implementation, it could be said that the key goal of Basel 2 is to determine how much capital that banks should have in place for the types of risks they face in their lending and investment activities. Basel 2 is designed with 3 pill; minimum capital requirement, supervisory review and market discipline.

Minimum capital requirement idea comes from these two nations of market; the riskiness of all investments made by bank is considered when determining capital requirement and the greater the risk, the greater the amount of capital required to support the bank's overall activities. Minimum capital requirement is set **8%** of Total Risk Weighted Assets (RWA). Total RWAs includes Credit RWAs, Market RWAs and Operational RWAs. Credit risk is the first distribution of risk into all assets. When calculating credit risk, the most important thing is to determine the risk according to **credit ratings**. Market risk is the risk that rises in the bank's buying and selling transactions. Operational Risk is the non-financial one such as break down of information technology, or natural disaster.

Supervisory review allows regulators the discretion to consider local conditions in their implementation of the Basel rules. In this section, there are same "should" s. First, Banks should have a process for assessing their overall capital adequacy based on their risk profile. Secondly, supervisors should review and evaluate bank's internal capital adequacy assessments and strategies. Third, they should expect the banks to operate above the minimum regulatory standards. Last and the most important, supervisors should intervene of an early stage to prevent capital falling below minimum levels. Market discipline is the kind of requirement which based upon the other requirements such that requires banks to fully disclosure their risk assessment procedures and capital adequacy and the design of risk management activities. With the impression of these three pillars, goals of Basel 2 could be summarized as following; making regulatory capital more risk sensitive, promoting enhanced risk management practices among large internationally active banks (i.e. too big to fail financial institutions), and improving the consistency of bank capital requirements internationally.

### **Basel 3**

Basel 3 was published in 12 September 2012, which aims " a substantial strengthening of existing capital requirement". It was developed in response to the deficiencies in 2008 global financial crisis. It includes, in short, new global regulatory standards on bank capital adequacy and liquidity. Some of its new implementations are listed below.

Tier capital ratio is increased from 4% (Basel 2) to 6 %. There are very new implementations which are none in Basel 2 Committee implements a new mandatory capital conservation buffer, discretionary countercyclical capital buffer. Committee advises the banks to put aside more funds when credit growth is already high. There would be additional regulatory standards particularly for SIFIs (Systematically Important Financial Institutions) which are capital surcharges, contingent capital and bail-in debt.

One of the new requirements is the minimum leverage ratio of 3%. The other requirement also the distinction part of Basel 3 is its focus on liquidity issue. Liquidity problem is created by the issue of maturity mismatch. Committee set two important ratios to overcome the liquidity problem. First one is, Liquidity Coverage ratio which is to ensure that banks have sufficient high- quality liquid assets to cover total net cash flows over 30 days, this one will be effective in 2015. Second one is, Net Stable Funding Ratio which is to ensure that banks maintain sufficient long-term stable sources of funding to cover their long term assets.

### **Short and Long Run Relations Between Regulators' Policies:**

In this part, we mainly discuss the dynamics and relations between the US depository and commercial banks' balance sheet performance and the regulations led by FED before and during the financial crisis by analyzing several fundamental data. In order to investigate the effectiveness and soundness of regulations and its effects on banking sector and macroeconomics indicators, we select several data which have a huge potential to be good indicator for the development during the financial crisis. Moreover, from the given teachings and theories in the economics discipline, we expect that the main role and effect of the regulations is to provide soundness and effectiveness of the financial market. However, in this part, we would like to examine whether economic theories and its implications into the real economy do work or not. Before analyzing deeply, we suspect that the transmission mechanism and expected transformation have not been achieved after the crisis. If it is the case, we should discuss what the reasons and dynamics are behind this issue.

First of all, to recognize the divergence of regulations policies between pre-crisis and post-crisis, we should look at the FED balance sheet and target and effective FED Funds Rate.

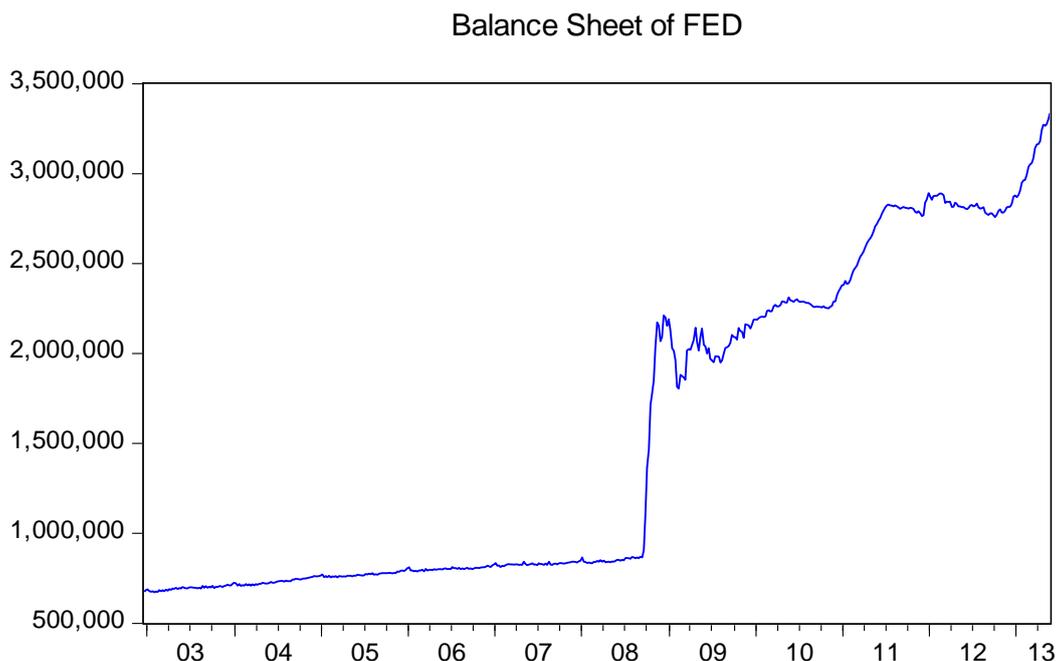


Figure 1: The Balance Sheet (\$) of the FED (Period: 2002-2013) Source: [http://www.federalreserve.gov/monetarypolicy/bst\\_fedsbalancesheet.htm](http://www.federalreserve.gov/monetarypolicy/bst_fedsbalancesheet.htm)

In Figure 1, we easily see that there is an increasing trend in the FED balance sheet after the mid-2008. Moreover, just after the beginning of the crisis, FED balance sheet had jumped hugely by approximately 120%. How do we evaluate this changes and trend? First of all, before the crisis, depository and commercial banks and many financial intermediaries' institutions had huge amount of risky assets that were mainly CDOs and Mortgage-backed securities. We can say that before the financial crisis, those were used as the alternative instrument of the US-Treasury bonds because those were easily traded and liquid assets. However, when the increasing trends in benchmark interest rate and several mortgage bankruptcies had existed, banks' asset liability balance deteriorated suddenly due to the collapse of asset values and increases in liabilities. In other words, banks experienced a liquidity problem and they tried to sell their 'liquid' assets which were CDOs and MBS. Moreover, a decreasing confidence and trust to the banks and its underlying securities lead that cash flows into these two instruments decreased. Therefore, to solve banks' liquidity problem, FED took aggressive and expansionary role by decreasing its Fed Funds Target Rate. By pursuing this way, FED's main aim was to decrease the effective Fed Funds rate.

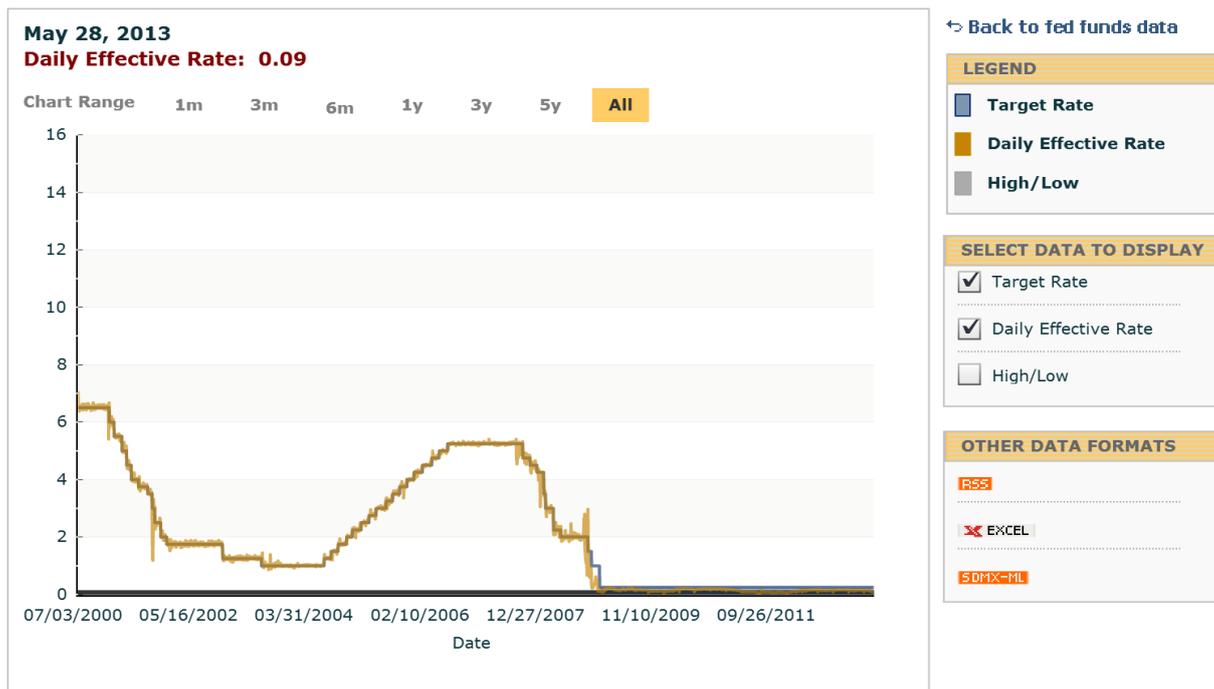


Figure 2: Daily Effective Rate in the US (Period: 2000-2012)

Source: <http://www.newyorkfed.org/charts/ff/>

Figure 2 indicates the trends and interrelated relation between effective and target Fed Funds Rate. We can say that during the crisis the effective Fed Fund Rate was bigger than the target because banks needed more cash and reserves that could not give from the FED. Due to the huge demand on borrowing and liquid instrument, effective rate was dominated in the market. However, as FED introduced an expansionary monetary policy and then gives a huge amount of liquidity and cash to the depository institutions, banks do not require more reserves and liquid assets as before and their demand on borrowing from other resources has decreased. It causes that target rate have exceeded the effective rate after the certain time of financial crisis.

This policy's aim is to raise the asset values and lower liability values which could strengthen banks' asset liability management. Then, through the transmission mechanism suggested by the economic theory, banks' loans could have increased and macroeconomic indicators and performance could have been improved via the spill over effect and increasing scale of economies. To summarize, the main target of FED is to give enough liquidity and cash to improve banks' balance sheet which could have positively affected other fundamental data by providing controlled confidence.

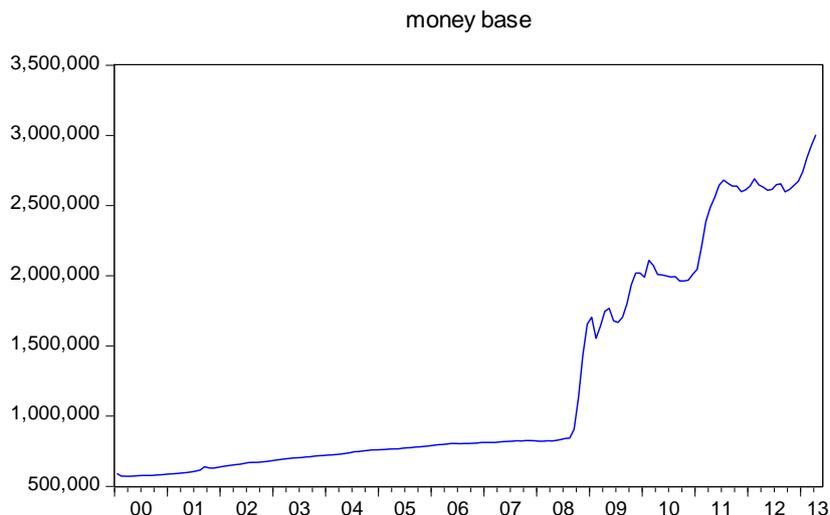


Figure 3: Money Base (\$) of the FED (Period: 2000-2013)  
 Source: <http://www.federalreserve.gov/releases/h3/current/>

Figure 3 presents the total money base in the US economy. We again see that after the crisis in 2008, there has been an increasing trend in liquidity and cash in banks which was the main result and mission of the Fed monetary policy.

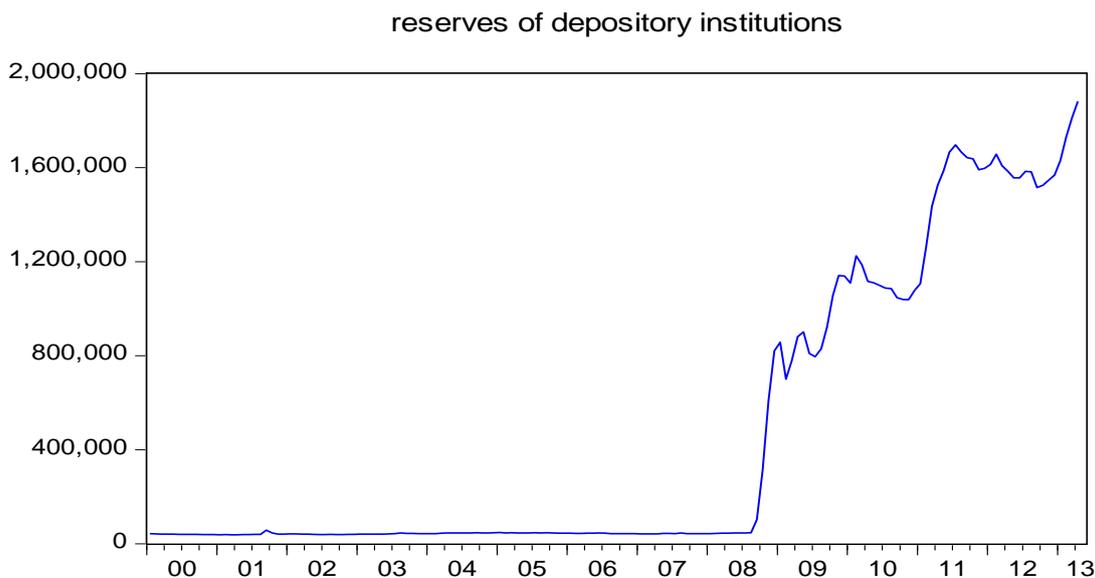


Figure 4: The Total Reserves (\$) of Depository Institutions (Period: 2000-2013)  
 Source: <http://www.federalreserve.gov/releases/h3/current/>

As we recognize in Figure 4, before the crisis, depository institutions did not hold much cash and reserves in their balance sheet. On the contrary, in order to make huge profit and take risky positions, they mainly hold CDOs and Mortgage backed securities that were more liquid and easily traded assets. However, after the crisis, these institutions and many economic actors tried to drop these risky assets from the balance sheet.

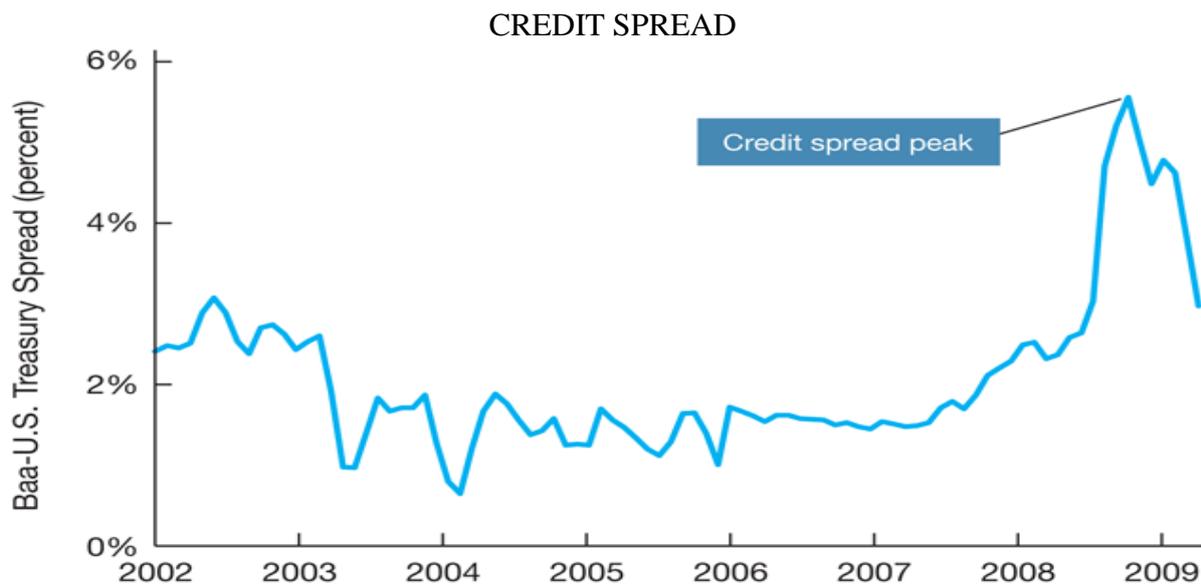


Figure 5: Credit Spread in the US (Period: 2002-2010)

Source: Lecture Slide

Figure 5 shows the difference in yield between Treasury securities and non-Treasury securities like CDOs and Mortgage-Backed Securities. Before the crisis, during 2006-2008 that were the peak years of these two instruments' huge volume in the US economy, spread was at the minimum historical level. It signals that these risky instruments could be considered as an alternative of Treasury risk-free instruments, which summarizes the environment of the US economy before the financial crisis. However, just after the crisis, the spread has started to increase again because, as we emphasised before, banks lost their trust on risky assets and started to drop them and buy and hold Treasury securities as well. Moreover, this term is the main indicator of the credit risk which we studied at previous part.

Then, through the expansionary and aggressive policy of the FED, their reserve and cash components of the balance sheet have dramatically surged. Moreover, since banks did not take risky positions and have a tendency to hold cash and reserves to overcome liquidity problem, they primarily tried to strengthen their problematic balance sheet. Did these regulations and FED aggressive policy work by the means of improving balance sheets and overcoming the confidence problem in the financial market?

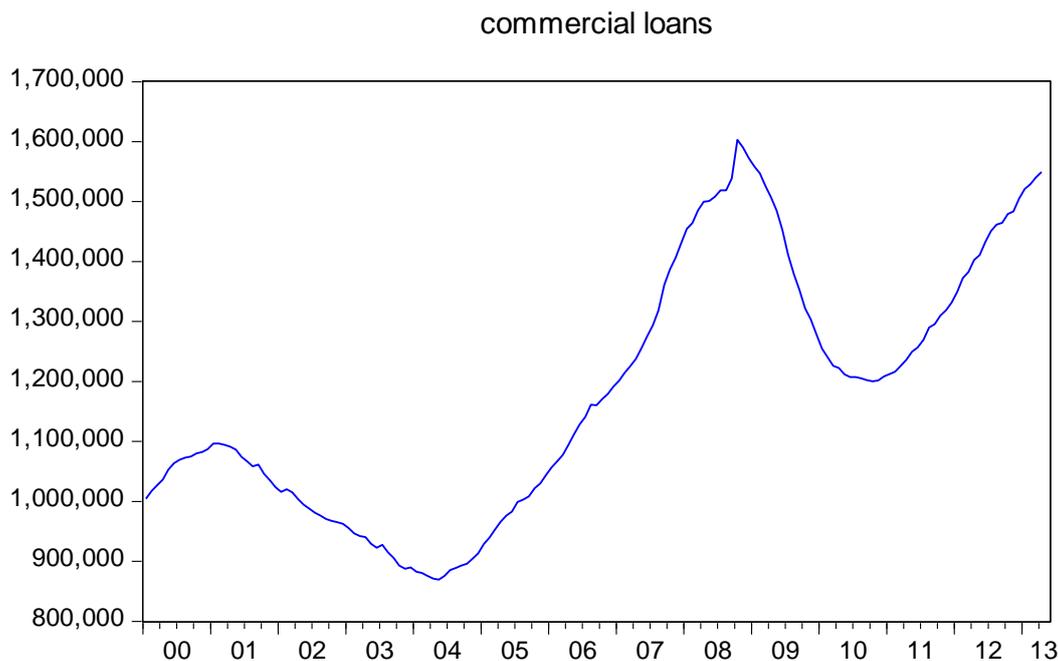


Figure 6: Commercial Loans (\$) in the US (Period: 1999-2013)

Source: <http://www.federalreserve.gov/releases/h8/current/>

Even if FED has pursued expansionary monetary policy by the means of decreasing benchmark interest rate and provide huge amount of cash into the banks' balance sheet, we see that transmission mechanism have not worked yet after the crisis. For instance, when we deeply analyze the above graph (Figure 6), we can comment that interbank borrowing and lending volume has decreased sharply after the crisis and it has not been improved yet. It indicates that banks were really anxious about involving in risky business and lending which directly affects their balance sheets' components and banking performance. For example, the following graph (Graph 7) shows that, instead of making more profit through buying more securities or making huge amount of loans, they have an incentive to keep more cash assets in their balance sheet. Moreover, as we noticed at the previous part, BASEL 3 introduced the liquidity risk as a new dynamic risk for calculating the risk-weighted assets. In order to adapt this new rule, banks have an incentive to hold more cash, which prevents the calculated liquidity risk by Basel 3 Accord. These set of obligations and taken positions inhibit the dynamics of the transmission mechanism that have been the main subjective role of FED toward the regulations and financial intermediaries.

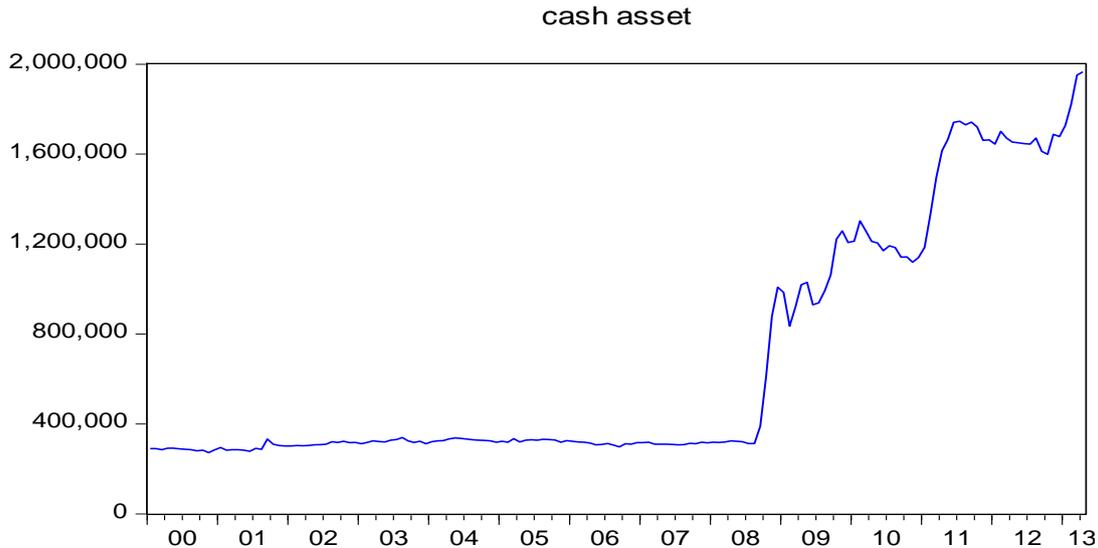


Figure 7: Cash Assets (\$) in the US (Period: 1999-2013)

Source: <http://www.federalreserve.gov/releases/h41/current/>

The other important indicator for our main argument is the housing price in the US economy. As we stated before, as interest rate had increased until 2008, many borrowers who took mortgage loans from the depository institutions failed to make payment which it was obliged to do, i.e. they defaulted on the this type of loans. Then, through the nature of the CDO and Mortgage-backed securities and less demand on housing sector, the housing prices declined sharply during the beginning of the crisis according to Schiller index. This was the dynamics of the burst of the asset and housing bubble which was experienced before the crisis via financial innovations and its main supplied complex financial instruments into the market.

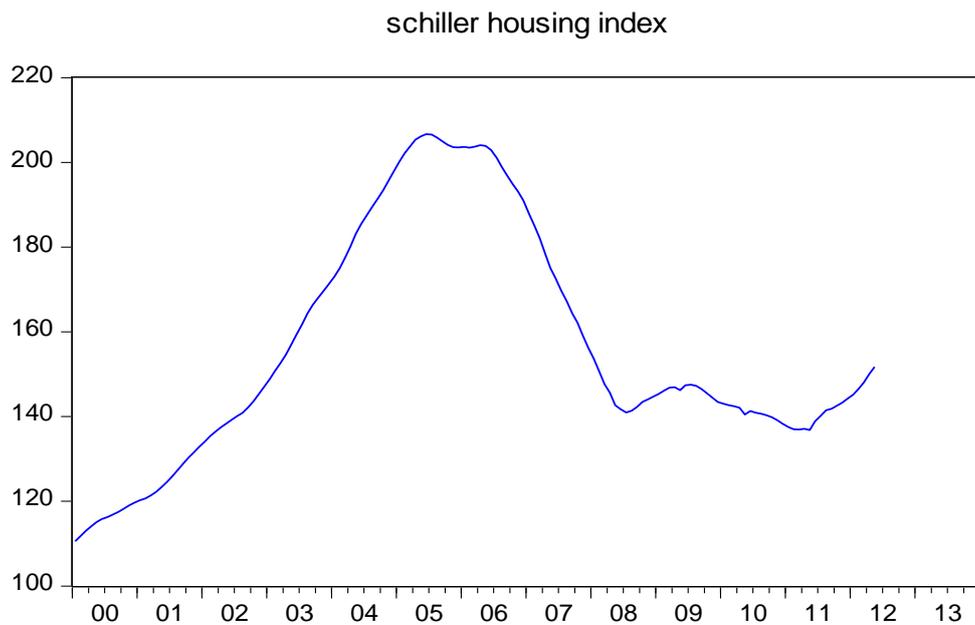


Figure 8: Schiller Housing Index (Period: 1999-2013)

Source: <http://research.stlouisfed.org/fred2/release?rid=199>

Since the target rate hit the lowest bound and stagnation of housing price around the lowest prices remained after the FED expansionary policy, it was understood that the conventional monetary policy had lost their effectiveness to affect main macroeconomics indicators and activate the transmission mechanism that did not work after the crisis. FED introduced a new policy design which is called as quantitative easing (QE). By this policy design, in addition to the short-term maturity securities, FED started to buy longer term securities and risky assets such as corporate bonds and MBS.

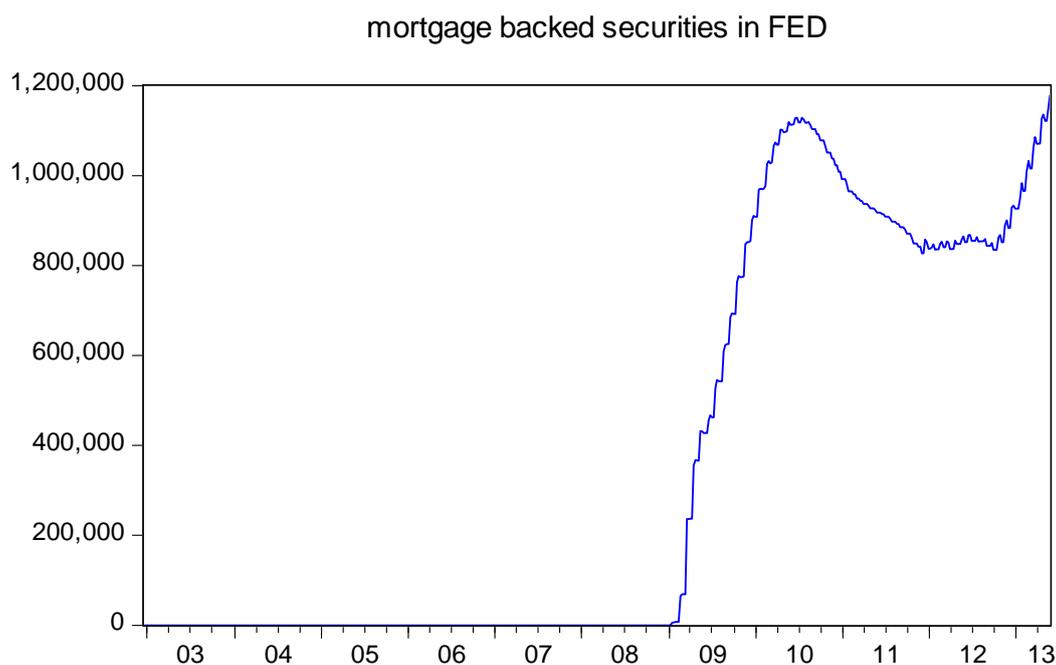


Figure 9: Mortgage Backed Securities (\$) in the FED (Period: 2008/2- 2013)

Source: [http://www.newyorkfed.org/markets/ams/ams\\_faq.html](http://www.newyorkfed.org/markets/ams/ams_faq.html)

By doing this, FED's main subjective is to lower the longer term securities' interest rates and therefore, FED would like to ease the mortgage payments which may lead the increase in housing price as well. Hence, we can argue that FED's main aim behind QE is to revive housing and real estate sector in the US and activate the transmission mechanism by this way. However, as we see from the Schiller index, the housing prices have not reached the peak level that was experienced before the crisis. We can conclude that, even if FED has increased its aggressiveness toward QE, the transmission mechanism have not started to work and play a huge role in the US economy.

Besides the deliberate and cautious position of financial intermediaries and depository institutions, households' and consumers' behaviour is also very important factor to understand the dynamics of the financial crisis dimensions. The overconfidence of consumers and investors which brought huge demand on consumption and investment got lost during the crisis. Because of the low risk appetite and low expectations about the future, households have an incentive to save more and consume and invest less. It freezes the economic activity and performance of the US economy.

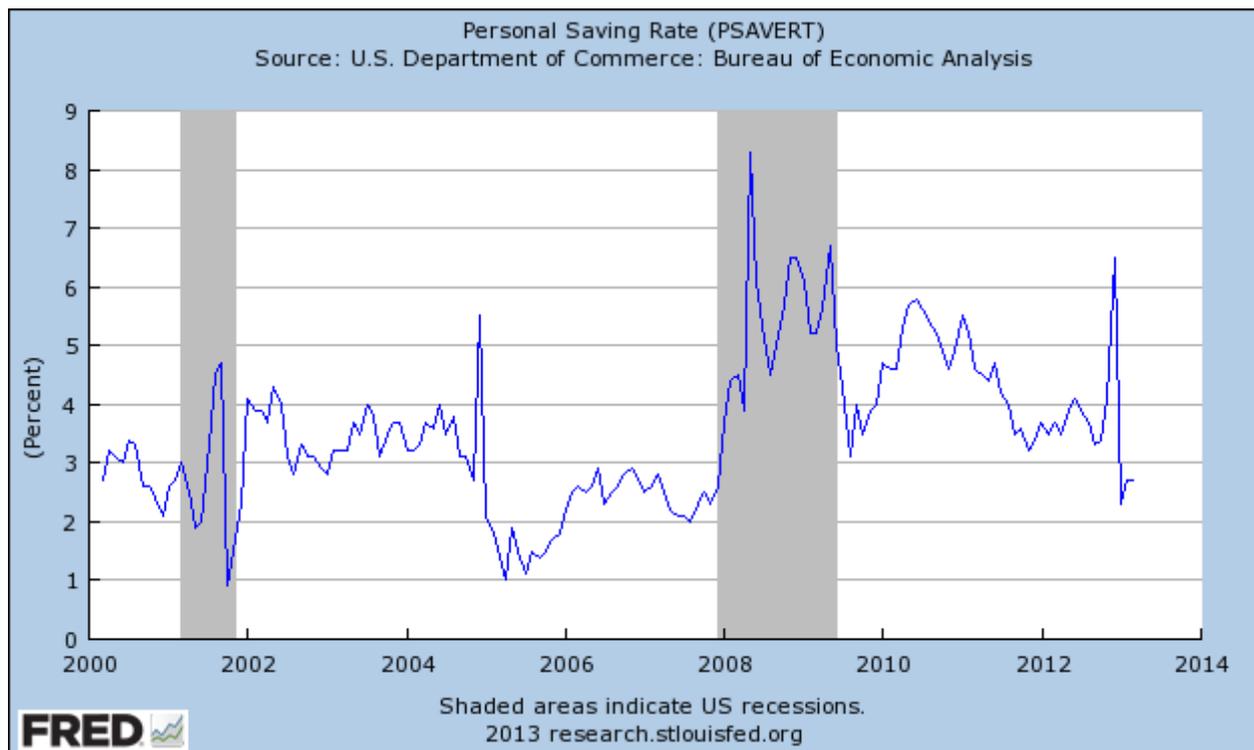


Figure 10: Personal Saving Rate in the US (Period: 2000-2013)

Source: <http://research.stlouisfed.org/fred2/series/PSAVERT/>

Figure 10 also proves our argument behind the households and economic actors' behaviour in the market. During the crisis in 2008, the saving rate reached the peak level, however it was very low before the crisis when they had better future expectations about the economy. Although FED encourages households to consume and invest more through its unconventional expansionary policy, people in the streets do not want to take risky positions, so they have incentive to save more by considering the uncertain future economic situations.

## Conclusion

As we conclude from different kinds of historical statistical data, financial markets have stopped and lost its effectiveness after the financial crisis in 2008. There are many dimensions to explain the reasons of these deep and complex issues. However, we can summarize that banking management have deteriorated and started to collapse which created spill over effect on the US economy' market sentiments. Asset prices bust, the crash of stock market, government fiscal deficits, and collapse in real estate sector are all about the banking crisis in US. Since main regulators and FED know this situation very well, they immediately tried to bail out the suffering banks and then overall economy as well. However, even if FED has introduced unconventional expansionary policy and BASEL 3 sets new obligations to strengthen banks' balance sheets, the financial and macroeconomics data have not follow this direction which is set by the two main regulators. There are many dimensions which are studied throughout the article why banking sector and households do not have incentive to be together with regulations and obligations' direction. First of all, financial innovations and engineering should consider the effectiveness and soundness of the banking sector and real economy, instead of just making more money by the means of taking more risks. For instance, there is a need to set the distinguished global standards for the off-balance sheet components, especially toxic assets. Moreover, the financial regulations actors and institutions should solve

the coordination problem and then collective actions to overcome the complex structure of the financial sector. In order to solve the asymmetric information problem, regulators should take more proactive policies to monitor and penetrate into the financial intermediaries. Moreover, regulations and new kinds of policies need to focus on the principal-agent and commitment problem that are critical issues for the quality of banking activities. The conflict between national and international supervisors stemmed from setting accounting standards or the way of using technical analysis should be seen the major problem of the financial crisis, i.e. regulations should be consistent with each other to set global banking standards, coordinate the financial sector effectively and provide harmonization. This would prevent the bad governance and mismanagement of the banking sector. Economic explanations for the market sentiments should not stuck with the rational expectations theory and the conditions of the market inefficiency and 'irrational exuberance' should be taken into consideration. Then, through coordinated and systematic policies, efficient allocation of financial resources and services should be achieved. Even though the financial engineering-led products like securities and derivatives are useful to start profitable business, it would be directed to more lasting industrial or financial investments which lead the sustainable growth and development of the banking sector and the US economy. Besides banking and financial market based regulations, fiscal policies and management to reach sustainable debt/GDP ratio is key factor to construct strong market structure.

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