Sovereign Risk and how it affects world economy
Determinants of the recent financial crisis: Evidence from the U.S and the EU.

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Declaration

Declaration

This work has not been previously published or accepted for any degree.

Signature……..

Date …..

Statement

This work is the result of my own investigation, using several information sources such as databases and related literature. All these information are cited.

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Date …..

Committee of inquiry

The present dissertation has been completed under the supervision of Professor Andreas Merikas and the committee appointed by the General Assembly of the Department of Marine Studies, University of Piraeus, in accordance with the regulations of the postgraduate program.

Committee members were:

- Professor Andreas Merikas
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The approval of this dissertation does not necessarily imply the acceptance of the opinions stated by the authors.

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SOVEREIGN RISK & HOW IT AFFECTS THE WORLD ECONOMY

Determinants of the recent financial crisis: Evidence from the U.S and the EU.

ABSTRACT

This paper provides a review of the empirical literature on the issue of the recent financial crisis. The analysis illustrates an overview of the U.S. financial crisis and the EU sovereign debt crisis and focuses on the drivers behind the recessions of these two economic regions. Both crises were highly interconnected and essentially, the collapse of the U.S. real estate market triggered a chain of failures that negatively affected the EU markets and revealed the weaknesses of the EU periphery. I further analyze the regulatory response to these crises as to conclude that the U.S. managed to recover at a faster pace in comparison with the rest developed economies and especially the EU. Lastly, the rise of Euroscepticism raises concerns regarding the future of the EU integration and stability.

JEL classification: G01, G18, G21

Keywords: *financial crisis, sovereign crisis, regulation, mortgage, credit default swaps.*

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1. Introduction

The 2000s was a decade characterized by strong economic growth around the globe, until the outskirt of the U.S. financial crisis in August 2007. Up until this point, expectations for the economy were encouraging, inflation was low, international trade was expanding and a buying spree was dominating the markets. These favorable views created over-optimism to the market participants that there would be no failure in the future resulting in huge cash flows towards both the developed and the emerging markets.

This dream scenario however was deemed to fail. Suddenly, by the end of 2007, expectations for the global economy changed and economic growth deteriorated. There were three major reasons that led to the burst of the financial bubble of the 2000s. First of all, real estate values were rising in an extremely rapid pace around the globe, that were far beyond the rational expectations. This phenomenon resulted in a severe bubble in the real estate market, followed by the collapse of the mortgage prices and major financial institutions as described in later sections of this thesis. Secondly, a number of countries, including U.S. and the EU periphery ones, were running high budget deficits, suggesting a vulnerability of addressing the forthcoming mortgage crisis. Lastly, sovereign and corporate debt had risen to increasingly high levels for the majority of the developed countries like U.S., UK, and most EU countries. All these factors combined suggest the major reasons for the outbreak of the financial crisis and the tsunami of bankruptcies that followed.

The global financial crisis shocked the markets to a degree unseen from the Great Depression of 1929. The continuous collapses and plummeting of stock values were initially observable in New York and London, albeit the crisis was transferred in the rest of the world as well (Orr, 2016). Collectively, this market collapse has resulted in a $25 trillion loss of stock values since 2008. It is quite worrisome that the majority of economic forecasters and analysts were completely unaware for the consequences of the 2000s bubble growth. In fact, this inability of market projection rose concerns to the public regarding the effectiveness of the markets, and many have called for a stricter regulation to return to a less "free-market" economy. Anecdotally, sales of Karl Marx's *Das Kapital* have been increased during the meltdown of the financial

markets reflecting the lack of trust for a substantial portion of the population towards the market efficiency theorem.[1]

Evidently, the equilibrium under which the financial markets operate was heavily distorted in the previous years. The aim of this paper therefore is to analyze the factors that led to the creation and burst of these bubbles in the U.S. and the EU. Based on a chronological order, the analysis begins with the U.S. financial crisis and is followed by the EU sovereign debt crisis. The conclusion suggests that despite the fact that both cases were different, they were highly interconnected, since these two markets are correlated. The U.S. crisis was mainly attributable to the burst of the mortgage bubble, but the immediate federal response has been proven effective up until this point. On the contrary, the EU case was more complex, since different countries were facing different solvency issues. For example, Greek DEBT to GDP ratio and public deficit were surprisingly high by the end of 2009, whereas Irish ratios were quite low, but the Irish banking industry had extreme exposures to the collapsing markets. Both countries faced a sovereign bond crisis but the way EU chose to address their problems is still quite debatable.

The remainder of the paper is organized as follows: Section 2 provides the analysis for the U.S. crisis. Section 3 illustrates the facts for the European sovereign Debt crisis. Section 4 incorporates a comparison between the U.S and the EU case, Section 5 outlines the potential future dangers for the global financial stability and Section 6 concludes the paper.

2. The U.S. financial crisis

The U.S. financial crisis was the cause for the most intense global economic downturn since the Great Depression of the 1930s.[2] This catastrophe was mainly caused by the financial distress of the so-call the "too big to fail" (TBTF) banks. Financial institutions designated as TBTF are the ones that their failure could pose a

[1] www.news.bbc.co.uk/1/hi/world/europe/7679758.stm.

[2] This argument was initially suggested by Larry Summers, Chief Economic advisor to President Obama. "*Over the past two years, the American people have experienced the worst financial and economic crisis since the Great Depression. From the time the recession began in December 2007, 7.6 million Americans have lost their jobs. During the last few months of 2008 alone, over $5 trillion of household wealth was destroyed".* See also: http://www.whitehouse.gov/blog/Why-American-Families-and-BusinessesNeed-Financial-Reform.

major threat to the stability of the U.S. (and not only) financial system. This threat comes from the inability of such institutions to repay their obligations to other institutions, triggering thus a chain of failures since the distress of the one becomes the distress of the other in the interconnected financial systems of our times. Consequently, massive failures could lead to a systemic failure. An alternative term for these large mega banks is the "systemically important financial institutions" (SIFI). This term is broadly used under the new financial regulation, the Dodd-Frank Act, which I will describe in detail on this chapter.

The operations of these large financial conglomerates were based on the notion that the markets will always function properly with no abnormalities in repayments and settlements of transactions. They were vulnerable though to any specific event that could trigger such abnormality. Their systemic factor however reduced awareness for such events, since these large SIFIs were operating under an implicit government guarantee, suggesting that the state will always subsidy their deficits since their continuous existence was vital to the whole financial system. As Avgouleas (2010) suggests, their "safety pillar" to engage in excessively risky activities in the global capital markets lies indirectly on the taxpayer money, whatever the circumstances of a failure are.

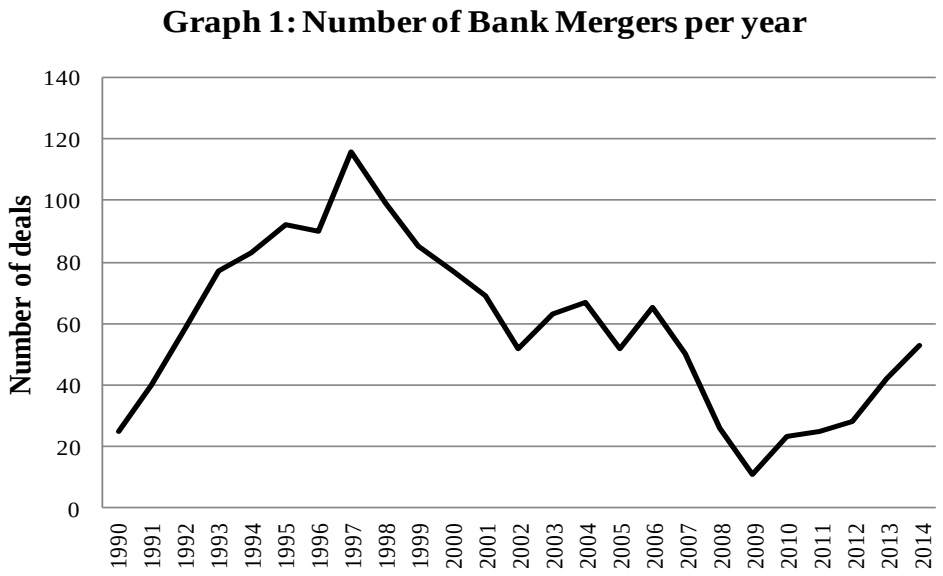
The creation of these mega-banks is attributed to several factors: financial innovation, deregulation, and financial globalization. All these factors, and especially deregulation triggered a wave of bank mergers and acquisitions (M&As) that resulted in the creation of large financial conglomerates.[3] As Aiello and Tarbert (2010) claim, every federal piece of legislation had produced a tsunami of bank mergers. The most prominent examples of banking deregulation were the Riegle-Neal Act of 1994 and the Gramm-Leach Bliley Act of 1999. Both pieces of legislation removed several takeover barriers imposed by the Glass- Steagal Act of 1933. More specifically, the Riegle-Neal Act removed the geographical restriction barriers that prohibited commercial banks and bank holding companies (BHC) from expanding intrastate. Calomiris (1999) has pointed out the importance of this regulation in determining the takeover activity of the U.S. banking industry during the 1990s. Additionally, the Gramm-Leach- Bliley Act of 1999 enabled commercial banks to merge with

[3] Other factors include financial innovation, globalization etc.

investment banks and insurance companies. The removal of this barrier was a match made from heaven (Avgouleas, 2010), since the resulting financial conglomerates could combine cheap deposit funding with high return investments. Scholars like Filson and Olfatti (2014) have supported the Act's effectiveness in the solidarity of the U.S. banking system. However, the majority of scholars and the public called for a repeal of this act, asking for a new separation of commercial and investment banking. See figures 1 and 2 for the evolution of U.S. bank mergers from 1990 until 2014, in terms of aggregate number of deals and deal values.

Graph 1. U.S bank M&As

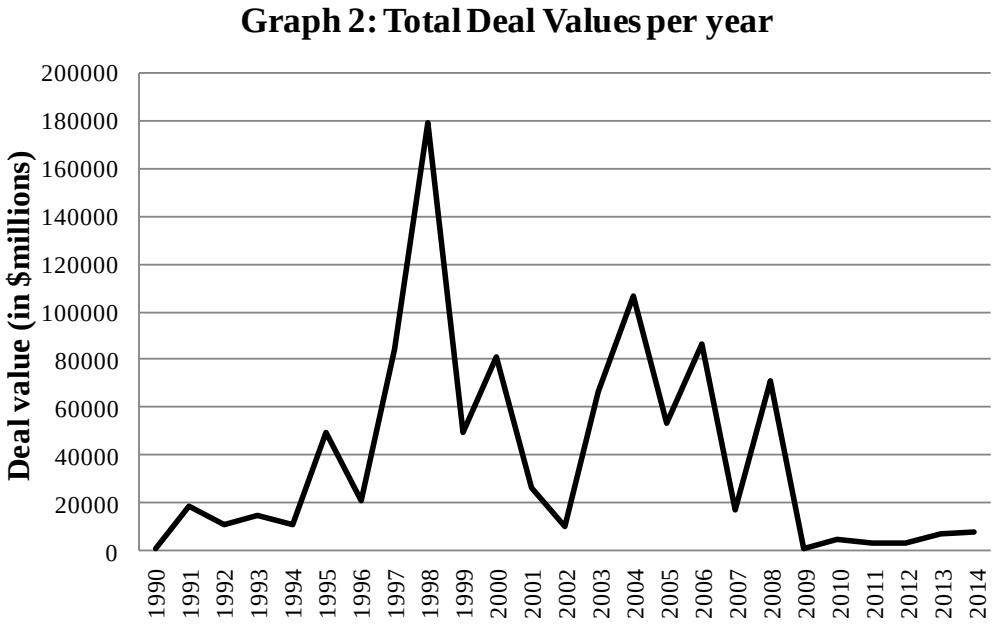
Graph 1 illustrates the annual quantity of U.S. bank mergers from the early 1990s till the end of 2014. The graph is comprised of all U.S. mergers between public banks in the NYSE, Amex and Nasdaq exchanges. All data are obtained from Thomson ONE database.



The supporters of the deregulation were claiming that large financial conglomerates were offering larger shareholder returns due to increased economies of scale and diversification opportunities, while the costs to consumers remained the same. Evidently, the recent financial crisis proved that all these beliefs were actually based on fictional arguments. Instead of becoming more stable, the financial system became more vulnerable to individual failures.

Graph 2. Value of U.S. bank M&As

Graph 2 presents the deal values of the bank M&A transactions per year from 1990 to 2014. The graph is comprised of all U.S. mergers between public banks in the NYSE, Amex and Nasdaq exchanges. All data are obtained from Thomson ONE database.



What was the reason for these failures? Which was the market abnormality that caused the massive collapse of U.S. financial institutions? The short-terminism culture of the large SIFIs was mainly concentrated on innovative financial products, promising to yield higher returns than contemporary investments. These products were unreasonable risky and almost impossible to value. Credit Default Obligations and Credit Default Swaps were traded mainly Over the Counter (OTC), generating extremely high executives' compensations. These products marked the beginning of a time bomb for the stability of the U.S. financial system since they were collateralized products or insurances, with a subject title that was almost destined to fail; mortgages of individuals with no substantial credibility.

These collateralized products were named mortgage-backed securities (MBS). These are types of asset-backed securities, secured by a mortgage or more usually o pool of mortgages. The procedure for the creation of such innovative investment product was the following: mortgage brokers were massively selling mortgages to

investment banks or government sponsored enterprises (GSEs).[4] These institutions then were pooling mortgages based on their risk criteria and were asking the Credit Rating Agencies (CRAs) to provide a rating for these products (a rating which was almost always "overoptimistic"). At last, this securitized product was ready to be sold to the investors.

Other types of MBS were the collateralized mortgage obligations (CMO) and the collateralized debt obligations (CDO). CDOs constituted a substantial portion of the MBS market. In essence, these products were promising a repayment to the buyer, analogous to the repayment order the CDO collects from the pooled mortgages. The CDO is classified into several tranches. Each ranch has a different risk appetite, expected return, and of course, probability of repayment. Consequently, if there were defaults on mortgages, then the CDO was not paying the more risky or lower tranches. What happened eventually was that the mortgage failures were so many that the CDO could not fully repay even the higher tranches.

Before the boom of the MBS market, these securitized products were well diversified in general. Short before the crisis however, the quality of the mortgages included in the securitization process has significantly declined for the sake of the greedy investment banks' executives. Remarkably, by year 2000, the market for CDOs was valued at around $6 billion. Yet, during the period 2004-2007, more than $1.4 trillion of CDOs were issued, reflecting an extremely rapid growth of this market, that could by no means be secured by safe and sound mortgages. The majority of financial institutions, especially investment banks, were holding long positions on such products. When the sudden depreciation of the MBS value took place, a sequence of banking failure began. One of these banks, Lehman Brothers Holdings Inc., is deemed to be the root of the U.S. financial crisis, since its failure triggered systemic losses around the globe. The root however was even deeper, and lies within the creation of the shady MBS market.

Ironically, despite the fact that the MBS market was the main cause for the recent financial crisis, the demand for such products is rising again. By 2012, the market for high-quality MBS has risen again, and has become a substantial source of profit for

[4] Fannie Mae and Freddie Mac were GSEs. Their purpose was to expand secondary mortgage and securitization market by promoting the market for mortgage-backed securities. In the wake of the crisis in 2008, both GSEs were in the verge of bankruptcy, putting in danger a $12 trillion mortgage market.

the U.S. banks. Citigroup has sold $2billion and $1 billion of synthetic CDOs in the years 2012 and 2013 respectively.[5] Collectively, the market for CDOs recovered and peaked at $384 billion in 2012 after its steep decline in 2008. While investment executives argue that this time is different and the products are safe for the stability of the U.S. financial system, there are raising fears that the MBS and CDO market could again become the gasoline of a new financial crisis.

Graph 3. U.S. mortgage backed securities

The graph presents the evolution of the MBS market for the post-crisis years (in $ billions). The data are collected from Datastream International.

2.1. The Lehman case

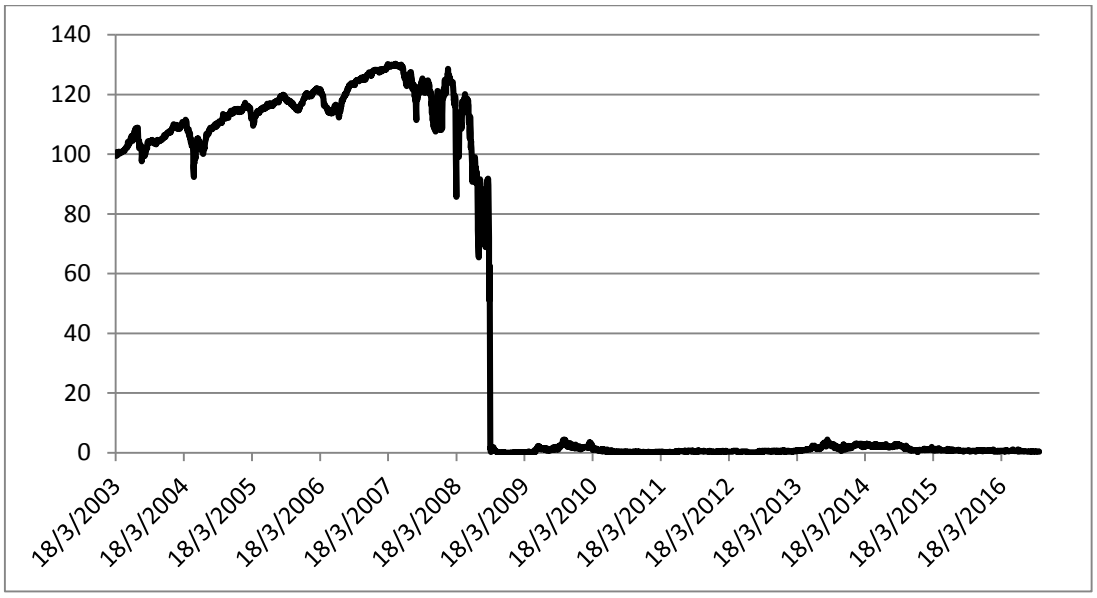
September 15, 2008, was a day that unleashed a collapse for the global capital markets. The intense panic conquered financial markets due to a free-fall of subprime mortgage prices. Too big to fail banks engaged in excessive risk taking while exploiting implicit government guarantees. One of these banks, the fourth largest U.S.

[5] Source: http://www.bloomberg.com/news/articles/2013-03-20/synthetic-cdos-making-comeback-as-yields-juiced

investment bank in particular, filed a Chapter 11 bankruptcy case at approximately 2:00 A.M. of that day. The bank was named Lehman Brothers Holdings Inc., and its collapse triggered a tsunami of bankruptcies in the financial sector while global markets were in the verge of destruction. Graph 4 presents the bank's stock price from the early 2000s until its collapse.

Graph 4. Lehman stock price

The graph presents the Lehman Brother's stock price during the period 2003 until its collapse. Data are collected from Datastream International and represent daily returns on Lehman's stock price.



Lehman was not the only financial institution that faced solvency problems that year. A smaller investment bank, Bear Stearns had also a high exposure in mortgage backed securities and was about to file for bankruptcy. Federal regulators bailed out the bank and arranged is sale to JPMorgan Chase in March of the same year. Six months later, one of the largest insurance companies of the nation, American International Group (AIG) was also bailed out by the government. Lehman was actually the only big exception of this federal bailout practice. The underlying motivation behind this exception is considered to be the regulatory intention to address the moral hazard issue of the too big to fail banks. These banks were aggressively speculating in the global financial markets assuming that in case of a misstep the taxpayers will bear the losses. On one hand, the bankruptcy of Lehman

signed that a federal bailout will not always be the case. On the other hand, this event had a major impact on the stability of the U.S. economy. In fact, this impact was not only limited in the U.S. but was also transferred to other economies around the globe, as I will discuss on a later chapter of this thesis.

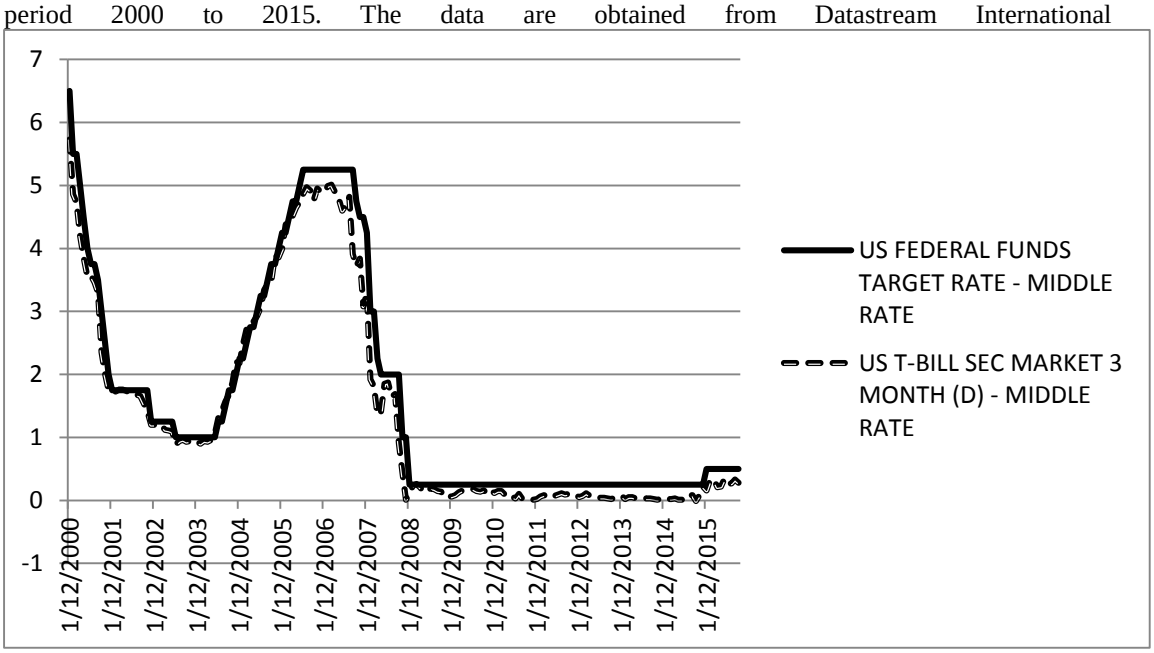
The consensus view regarding the U.S. financial crisis is that it was initially triggered by the Lehman collapse since at the time of its collapse; $639 billion of its book value in assets were practically vanished. This collapse however did not come as a complete surprise for the market participants given that the bailout of Bear Stearns six months earlier had sent a strong signal to the market that there are worrisome issues regarding the mortgage backed securities market but the government is willing to bail out any large nonbank financial institution. Remarkably, as Skeel (2011) points out, the market expectation for the Lehman case was that it would be saved by the government as well. The author, by looking Lehman credit default swap spreads, notified that the CDS spreads begin to rise very shortly before the day the bank filed for bankruptcy, despite the fact that there was an ongoing press discussion regarding the financial solvency issues of Lehman Brothers. This “market inefficiency" clearly suggests that investors were expecting another bailout.

2.2. The Federal Reserve's response

The Federal Reserve (Fed) provided an almost immediate response to the U.S. financial crisis by offering several programs designated to enhance liquidity in the financial sector and improve the functional ability of the markets. To begin with, in the fall of 2007, the Fed boosted liquidity for banks in the short-term funding since it allowed them to exchange their Treasury security holdings for cash, enabling them to meet the capital requirements criteria. Graph 5 presents the U.S. Federal funds rate and the 3-month Treasury bill rate over the period 2000 until 2016.

Graph 5. Federal funds rate

The graph presents the U.S. Federal Funds rate and the U.S. Treasure 3-month rate over the period 2000 to 2015. The data are obtained from Datastream International



Apparently, it seemed that the traditional central bank methods of intervening in the banking sector were not enough to ensure the stability of the system. Consequently, by the end of 2007 the Federal Reserve introduced several sets of innovative tools to address the ongoing crisis.[6] The first set of tools is related to the traditional central bank's role of being the lender of last resort. The first set of tools incorporates new lending practices in the form of the Term Auction Facility (TAF), Primary Dealer Credit Facility (PDCF) and Term Securities Lending Facility (TSLF). All these programs were made to provide liquidity for financial institutions in case of an emergency.

The second set of tools involves liquidity injections to investors in the major credit markets. These programs were the following: Commercial Paper Funding Facility (CPFF), Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility (AMLF), Money Market Investor Funding Facility (MMIFF), and the Term Asset-Backed Securities Loan Facility (TALF).

The last but not least set of tools is responsible for the open market operations of the Federal Reserve. Actually, the Fed expanded its operations in order to provide

[6] See: https://www.federalreserve.gov/monetarypolicy/bst_crisisresponse.htm.

direct liquidity and retain the proper function of the capital markets while keeping the funding rates at a relatively low level. Precisely, the Federal Open Market Committee (FOMP), decided to purchase a monthly value of MBS of $40 billion. Additionally, the FED engaged in purchases of Treasury securities of $45 billion per month in 2013. Lastly, in 2014, the FOMP started to reduce its monthly purchases in order to end this program by the end of the year. All these open market operations by the Federal Reserve were aimed to support the economic recovery and cover the lack of demand for the troublesome mortgage market.

Inevitably, all these interventions come at a cost. Cecchetti (2009) suggests that all these Federal efforts to retain the financial stability of the U.S baking system exposed the FED by substantially affecting its balance sheet. Notably, by the end of 2008, the FED had already consumed the 67% of its $900 billion in balance sheet funds to the above-mentioned programs. Only for TAF and TSLF the FED committed almost $350 billion while the amounts needed for the PDCF were comparable.

Despite the fact that the FED's response to the crisis was immediate indeed, its role on the crisis raises two major concerns. First, why the Central Bank could not ex-ante anticipate the financial crisis and regulate the MBS products more efficiently while increasing the Federal funds rate to reduce money supply? And secondly, what will happen if the FED's ability of engaging in open market operations and providing liquidity to both institutions and investors is limited in comparison with the need of a next crisis? It is therefore questionable whether federal regulators are capable of successfully identifying and addressing economic burst or they just act ex-post in an effort to retain financial stability at any cost.

2.3. The Dodd-Frank Act

The U.S. response to the crisis was not only limited to the Central Bank's programs. Federal regulators attempted to address the problem of the too big to fail banks and prevent future taxpayer funded bailouts. As a result, president Obama signed the Dodd-Frank Wall Street Reform and Consumer Protection Act (DFA) on July 21, 2010 in an effort limit the risk of contemporary finance and the damage caused by the potential failure of a large SIFI.

Particularly, the Dodd Frank Act is the most recent piece of legislation that attempts to re-regulate the US financial sector after the deregulation wave of the late 90s that resulted in the creation of the megabanks. The DFA comes a decade after the completion of a deregulation process that started in the mid-1990s. The Act is often characterized as the most influential set of regulations for the financial industry since the New Deal.[7] The DFA as a re-regulation effort tries to scale down the mega banks that are mainly responsible for the meltdown of the markets in 2007. The act faced major opposition in congress, since opponents of bank regulation were arguing that additional rules would diminish the profitability of the U.S. financial institutions. It took months until a reconciled version of the bill was presented. Table 1 provides the most significant events leading to the Act's passage.

Table 1. DFA passage

The table outlines the key events leading to the DFA passage through Congress (Turk and Swicewood, 2012).

Event number	Date	Description
1	6/17/2009	Obama administration proposes a comprehensive financial regulatory reform plan.
2	11/10/2009	Sen. Dodd introduces bill in the Senate.
3	12/2/2009	Rep. Frank introduces bill in the House of Representatives.
4	12/11/2009	House passes its version of the bill.
5	1/20/2010	Obama endorses Volcker rule. Significant resistance announced to portions of the Senate bill.
6	3/15/2010	Sen. Dodd introduces a revised version that includes compromises.
7	3/22/2010	Senate Banking Committee passes its version of the bill
8	4/15/2010	Sen. Lincoln proposes sweeping derivative market changes.
9	5/20/2010	Senate passes its version of the bill.
10	6/25/2010	Conference committee begins reconciliation.
11	6/30/2010	Conference version passes House.
12	7/15/2010 C	Conference version passes Senate. Promise of support by White House.

It is still questionable whether its application will effectively urge the large systemically important institutions to reduce their size. Skeel (2010) argues that the new legislation is unable to decrease the asset size of the too big to fail banks. On the

[7] See Omarova (2011)

contrary, it offers them special treatment and cheaper access to federal funds providing no serious motivation for divestures. So far it seems that the vast majority of the researchers are rather pessimistic regarding this previously mentioned issue. Wilmarth (2011), Bernand (2012) are both questioning the effectiveness on the Act to fulfill its main premises and address the moral hazard issue of the TBTF banks; these banks were offered implicit guarantees from the government in their deposits as to engage in risky activities in the capital markets. We will further discuss some of the Act's main provisions

Consistent with the notion that the Dodd Frank Act is a new edition of the Glass-Steagal Act, section 619, commonly known as the Volcker Rule, is the first attempt for a separation of commercial from investment banking since the 1930s. According to this rule, banks are prohibited from engaging in proprietary trading which is trading on their own accounts[8] and their exposures in hedge funds and private equity funds are substantially limited[9]. The Volcker Rule is a quite controversial part of the legislation mainly due to its blurred division between proprietary trading and market making or hedging.

One of the main issues that the DFA tries to address is the over the counter (OTC) derivatives and the counterparty risk externality emerging from these uncleared derivatives. Section 725 and 763 of the Act essentially requires certain swaps and security-based swaps to be cleared through clearing houses. Additionally, the Act requires information disclosure to the SEC or the Commodity and Futures Trading Commission (CFTC) for both cleared and uncleared swaps[10]. Acharya et al. (2011) conclude that the Act succeeds in enhancing the price and volume level transparency of these derivative positions.

In an effort to address the conflict of interest between the shareholders and directors, and reduce therefore the ability of the executives to undertake extremely risky investments with taxpayers' money, the DFA incorporates the "say on pay" provision. Under this rule, the shareholders are offered a non-binding vote regarding the approval of the executive compensation. Considering that executive compensation is a highly debated topic in corporate governance, this part of the legislation seems to

[8] See Whitehead (2011) for a detailed definition of proprietary trading and its exceptions
[9] Banks are allowed to invest up to 3% of their Tier 1 capital in hedge funds.
[10] See Brice (2010) for a detailed review of the derivatives reform under the DFA act.

move in the right direction when it comes to the shareholder protection against directors.

All in all, the Dodd-Frank Act tried to address the root of the crisis, by prohibiting proprietary trading, regulating OTC derivatives and provide counter-motives for bank CEOs. The 2,319 pages piece of federal legislation, along with the increased concentration limits and the newly established regulatory agencies, (Financial Stability Oversight Council and Consumer Financial Protection Bureau) constitutes the government response to the recent financial crisis. The outcome of this endeavor is debatable, since empirical research provides puzzling results. Notably, Balasubramnian and Cyree (2014) and Akhigbe et al. (2016) provide evidence that the TBTF privilege has been diminished, since bond spreads for these banks have been increased based on their fundamentals whereas their idiosyncratic volatility has been decreased after the enactment of the Act.

3. European Sovereign Debt Crisis

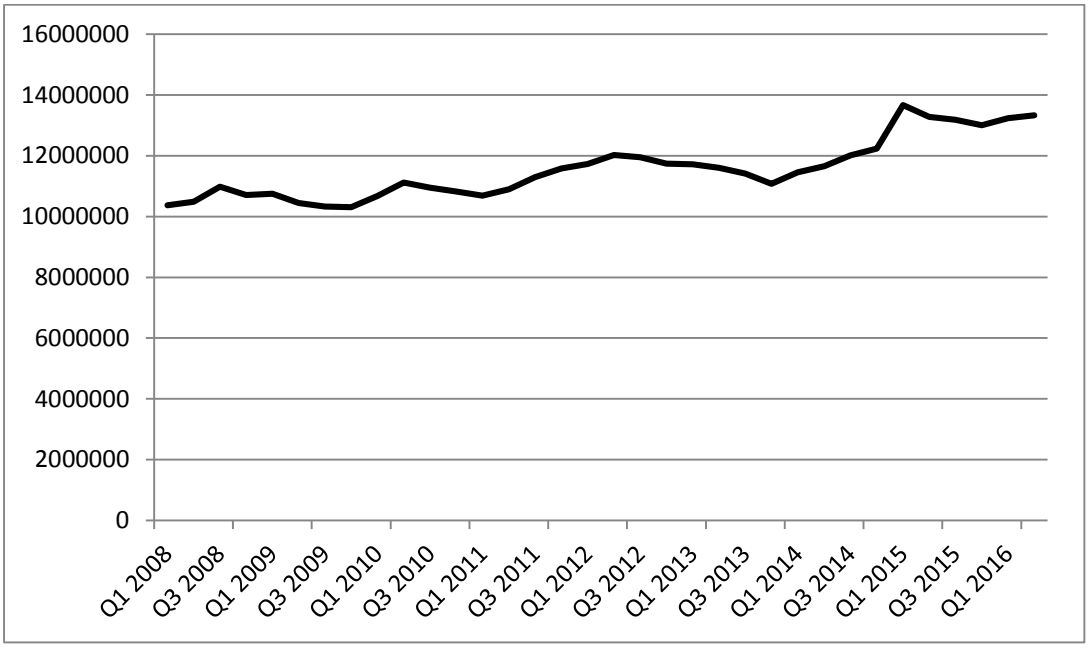
The past seven years the European countries, and particularly the ones that share the Euro as a common currency, faced an issue of major importance for the financial stability and growth: The sovereign debt crisis. Greece, Italy, Portugal, Spain and Ireland had the most notable exposures given that their public spending was producing government deficits in consequent years. These deficits created a non-viable ratio of debt to GDP in the aggregate level especially for Greece. However, the cause of this insolvency was not the same for each one of these countries since some of them have a relatively big, bureaucratic and unproductive public sector whereas others deal with insolvencies in their banking system. For example, as Panetta et al. (2009) point out, the total cost for the UK economy to support the troublesome banking system reached to 44% of the country's GDP.

Before the recent crisis of 2009, the picture in the EU was suggesting a convergence towards a monetary and banking union. The interest rates for the government bonds were following a parallel route keeping the spreads low, indicating that the market was anticipating that these countries that share the common currency were moving in the same direction. As mentioned above however, the fourth largest

U.S. investment bank collapsed in the fall of 2008, triggering the biggest crisis since the Great Depression. This dramatic fall in stock market valuations was transferred in the EU market via the contagion effect and revealed potential problems mainly for the Southern European countries given that they were found with deficits in the government budget and increased debt, raising doubts therefore for their stability in the ongoing crisis.

Graph 6. EU countries Debt

The graph presents the EU countries Debt (in EUR millions) over the period 2008 until 2016. The data are collected from DataStream International and are quarterly figures.



Lane (2012) points out that in the mid 2000s no one could anticipate that there could be a problem in the public debt sector for the EU countries in the foreseeable future. By looking at the macroeconomics, only Italy and Greece seemed to face potential problem regarding their public debt since their Debt to GDP ratios was above 90 percent in the late 1990s and never achieved the 60 percent imposed by the Maastricht treaty in 1992. On the other hand, Ireland, Portugal and Spain, all these countries that faced solvency problems in the previous years and experienced a boom in their credit default swap prices, managed to achieve major declines in their debt to GDP ratios, falling below the 60 percent threshold in the mid-1990s. Lastly, France and Germany had stable debt ratios throughout the whole decade.

It seems that, before the European sovereign crisis and the collapse of Lehman Brothers, there was no major risk for the European countries to face potential defaults, since only Greece and Italy had high scores of Debt to GDP. What was the contributing factor therefore, that led other economies of the common currency to adopt austerity measures and call the International Monetary Fund for help? It was the credit boom of the 2003-2007 period. The introduction of Euro that enabled banks to borrow funds from international markets in their own money, and the low interest rates led to a credit expansion environment without precedent. Notably, the loans to private sector from banks and domestic institutions were more than doubled in Ireland from 1998 to 2007, corresponding to almost two times the gross domestic product of the country[11]. The same pattern happened to all the problematic countries, Greece, Portugal, Spain and Italy, whereas Germany and France remained stable when it comes to credit expansion.

Ireland was one of the countries where the banking sector contributed the most to the country's solvency problems. As mentioned before, Ireland had an extremely low debt to GDP ratio before 2008. Notably in 2006 and 2007 this number was approximately 25 percent.[12] After 2009 however, its ratio began to rise exponentially due to the problems the country was facing in the financial sector and the real estate market. Kitchin et al. (2012), suggest that the contagion effect of the American crisis revealed the fragilities of the Celtic Tiger's economy. The small, Northern European economy, was so exposed to the variance and fluctuation of the international market due to its growing financial sector and real estate market. Inevitably, the financial sector of the Irish economy collapsed, leading to a dry inefficient market in need for bailout. Eventually, the government bailed out the failed institutions with a major loan of 85 billion Euros from both the IMF and EU. Apparently, this loan led the country's debt to GDP ratio in record high levels, increasing its solvency problems and as a consequence the price of its credit default swaps. In this case therefore, it is apparent that the banking sector had a substantial effect on the riskiness of the sovereign bond markets.

However, other countries were suffering from public sector problems instead of the banking system. The Irish example was the first incidence indicating that there

[11]See Lane (2012).
[12]Source: Bloomberg

were stability issues inside the EU. At a first glance, when the Irish government declared austerity measures in February 22 2009 the markets became less skeptical. The situation seemed to be under control until the fall of 2009 when the major deficit issues Greece was facing came into publicity. More specifically, in November 5 2009, the Greek government announced that the budget deficit was 12.7% of GDP, a number twice as large in comparison with the previous estimate.[13] Consequently, the spreads began to rise again in relation to the German Bund, expressing the increasing risk aversion of the investors towards the Southern EU sovereign bonds. Nevertheless, the increased Greek budget deficits were not caused by a problematic banking sector.

Although the credit growth was intense in Greece after the introduction of Euro, the ratio of banking loans to GDP was relatively low compared with other distressed European economies. On the other hand, the government was experiencing budget deficits in a consequent order, reflecting the inefficiency of the public sector and taxing system. At the aggregate level these deficits led to an unsustainable level of public debt to GDP and, combined with the revision of 2009 budget deficits, the spreads for the Greek bonds skyrocketed.

Santis (2012) claims that even Northern countries with strong financial and fiscal policy experienced a moderate increase in their bond spreads relative to the German Bund. On the other hand, countries such as Greece, Portugal, Ireland, Spain and Italy realized a major increase in their probabilities of default based on their credit ratings.

Notably, after the downgrading of Greece, the rest of these countries followed suit. In July 5 2011 Moody's downgraded the Portuguese bond by 4 notches from Baa1 to Ba2. Such downgrade was translated in an increase in the Portuguese spreads and Credit default swaps. It is apparent therefore, that apart from the idiosyncratic characteristics of each country, there is a contagion factor that spills over the distress from one problematic country to another. This spillover effect is expectable between countries that share a common currency since the fundamentals of the one are highly correlated with the ones of the other. The level of correlation between these countries could be thus a factor driving the pricing of bonds and credit defaults swaps.

[13]See Santis (2012)

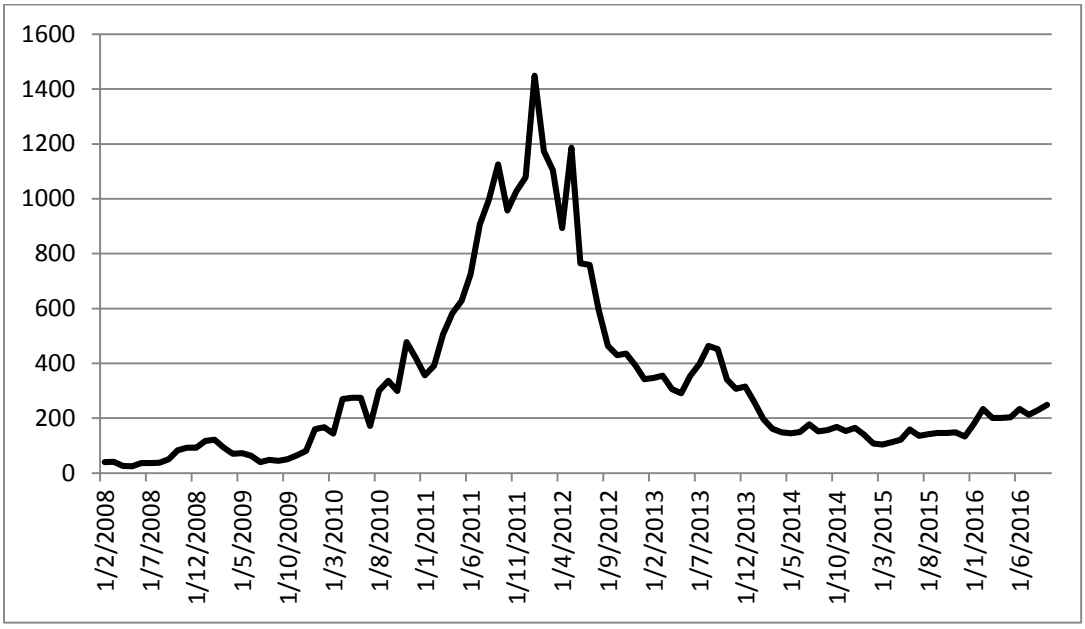
3.1. Credit Default Swaps in the EU market

Credit Default Swaps are in essence an insurance contract for a given investor that the issuer of the bond will not default on its obligation. In case that this default becomes reality, the issuer of the CDS, usually investment banks, is obliged to cover the investor by repaying the full value of the defaulted bond. Practically it's a method to transfer the credit risk exposure of the faced income products from the first investor to the issuing institution. Obviously, this service comes at a premium. This premium is a steady payment to the issuer until the bond matures and increases with the bond's interest rate. It is apparent therefore that the steep increases in the sovereign spreads of the EU countries were accompanied by increases in the CDS premiums. Remarkably, Fontana and Scheicher (2011) report that the Greek government bonds faced a massive sell-off in 2010, indicating the perception of the market that Greece will default on its obligations, leading its credit default swaps spreads to exceed the 1,000-basis points in. In an effort to "calm down" the markets, the European ministers of finance introduced the European Financial Stability Facility (EFSF) whereas the European Central Bank went to the secondary market to buy bonds to secure their liquidity and stop the intense selling. Despite these interventions, the investors remained quite nervous since the spreads on the problematic EU countries' CDS were high until the first half of 2013.

From the previously mentioned statements one should anticipate that the price of the Credit Default Swaps is perfectly correlated with the riskiness of the county is subject to. Apparently, during the EU sovereign debt crisis, the riskiness and the probabilities of default for many countries began to rise. Consequently, the spreads, or else the difference between the interest rate of a sovereign bond with the interest rate on a benchmark, started to fluctuate in an upward trend, suggesting that the price of money for these countries had gone up. Along with the bond rates apparently, the Credit Default Swaps (CDS) followed the same upward trend. The Graphs X1-X2 present the evolution of the sovereign CDS spreads for the five PIIGS countries respectively (different graphs are used due to the fact that Greek CDS spreads were so high that complicate the comparison across countries).

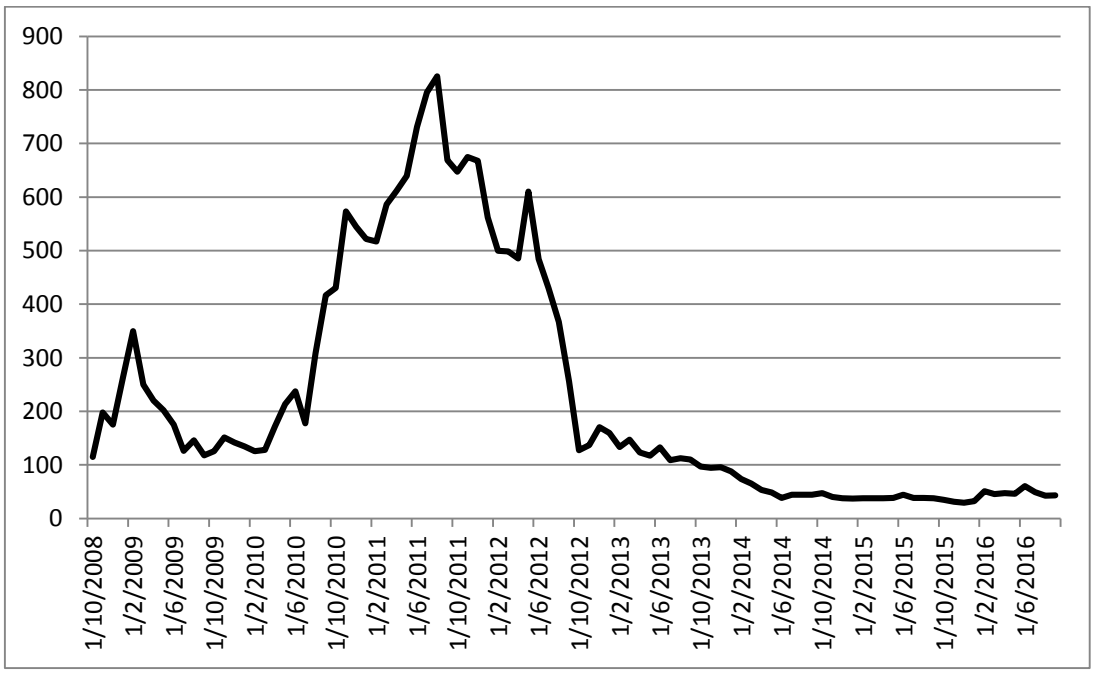
Graph 7. Portuguese CDS spreads

The graph plots the 5Y CDS spreads for Portugal over the period 2008 until 2016. The data are monthly and are collected from Datastream International.



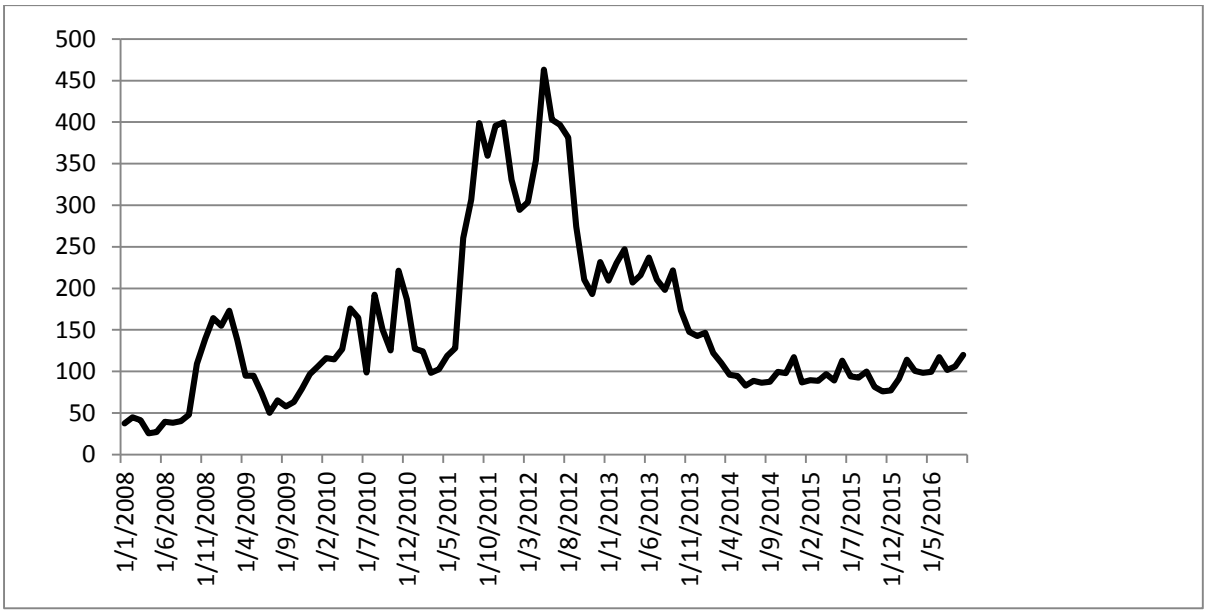
Graph 8. Irish CDS spreads

The graph plots the 5Y CDS spreads for Ireland over the period 2008 until 2016. The data are monthly and are collected from Datastream International.



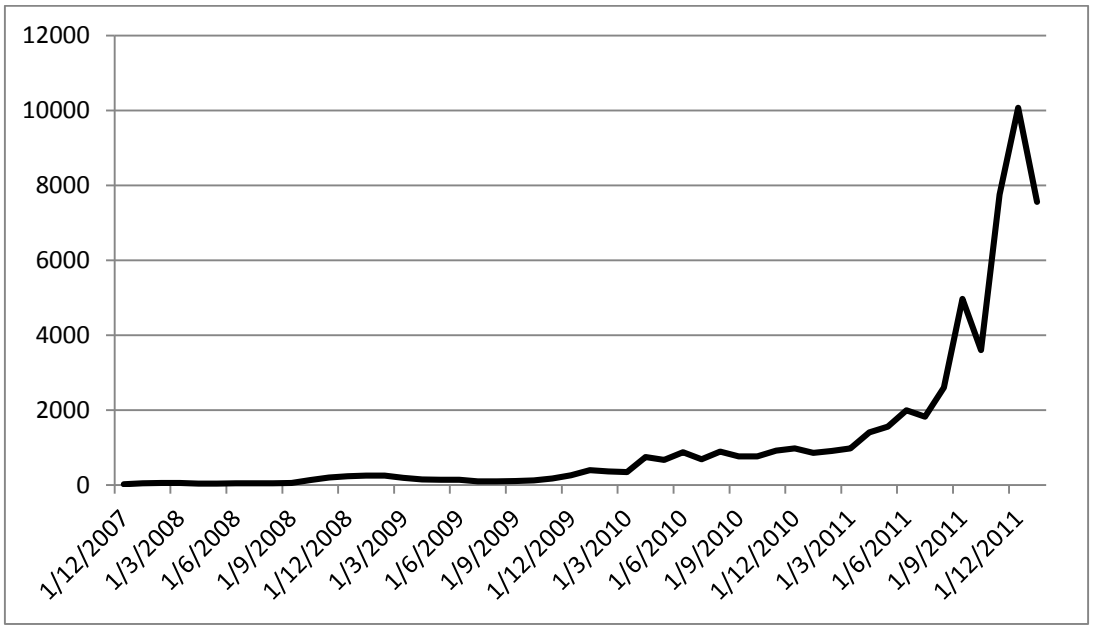
Graph 9. Italian CDS spreads

The graph plots the 5Y CDS spreads for Italy over the period 2008 until 2016. The data are monthly and are collected from Datastream International.



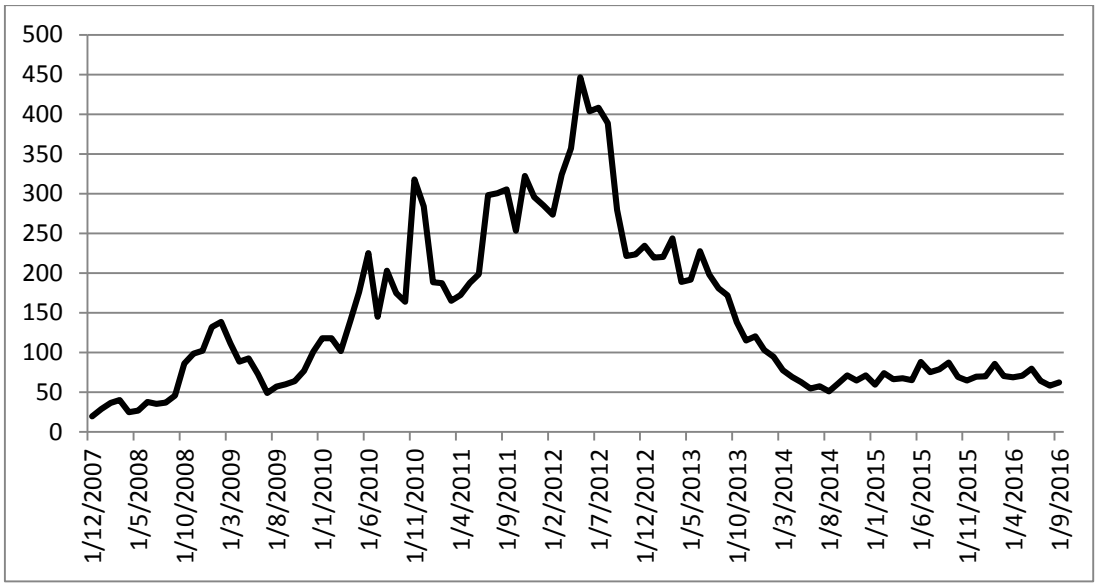
Graph 10. Greek CDS spreads

The graph plots the 5Y CDS spreads for Greece over the period 2008 until 2011. The data are monthly and are collected from Datastream International.



Graph 11. Spanish CDS spreads

The graph plots the 5Y CDS spreads for Spain over the period 2008 until 2016. The data are monthly and are collected from Datastream International.



3.2. EU Government bailouts

In the beginning of the recent financial crisis the EU countries underwent major changes in order to adapt to the new, financially distressed environment. The economic activity plummeted as a result of the contagion effect that transferred the systemic risk of the U.S. crisis in the Euro zone. Consequently, tax revenues were decreased for the majority of the EU countries since the economy was turning into a phase of recession. Additionally, the unemployment rate rose dramatically, urging the governments to increase their spending on state benefit plans and stimulus packages to support the most vulnerable groups of their societies. It is estimated that these packages consisted the 1.1% and the 0.9% of the Euro area GDP in 2009 and 2010 respectively. As expected such spending is all but certain to dramatically increase the government deficits.

Notably, the public spending for the social welfare was not the most important burden on the governments' budgets. The recent crisis was triggered by the collapse of the financial system. Inevitably, the financial institutions such as commercial banks, insurance companies etc were the most exposed institutions to the tsunami of defaults that emerged in the late 2000s. To sustain the operation of the system, the EU governments were obliged to bail out the insolvent institutions, transferring the burdens on the taxpayers. Most EU countries used their public balance sheets to back their domestic financial institutions. The bailout practice was not limited only to the weakest countries of the Euro zone like Greece and Ireland. Netherlands as well subsidized the Dutch financial system with capital injections and assets purchases in the scale of 8% of the country's 2008 GDP.

It is worth mentioning that despite the fact that these bailouts were aiming to promote the stability of the EU financial system, a co-movement is observed between the Expected Default Frequency (EDF) of the median financial institution with the sovereign bond's spreads. In other words, the bailouts of the European financial institutions created a close relationship with the credibility of the European governments. When EDFs are rising, which means that the possibility of a bankruptcy, thus a bailout, is increasing, the market responds negatively to the sovereign bonds since it anticipates that bailouts with public money will definitely increase the debt to GDP ratio. Such increases are closely associated with the possibility that a government defaults on its bonds. As a consequence, EDFs increases of EU financial institutions translate to increased sovereign risk. A notable example is Ireland. After the government guarantees to the troubled financial institutions in September 2008, the 5-year credit defaults swaps spreads increased from less than 50 base points to more than 200.

One may judge the decision of the EU countries to bail out their systemic financial institutions. In fact, this decision was vital to prevent the collapse of other institutions and promote the stability in the system but it severely deteriorated the financial position of the EU countries. What is certain is that investors require larger premiums on the sovereign bonds and that these premiums are correlated with the instability of the EU banking system. Therefore, in order for the sovereign risk to deteriorate the banking system should prove its sustainability on the foreseeable future.

It is evident from the above-mentioned arguments, that all these government interventions on the financial markets became a major determinant on the sovereign credit default swaps spreads. One could say that the stability of the EU financial system is a common factor in determining the EU sovereign risk. I would therefore posit that investors would price a sovereign bond or a credit defaults swap based on the stability of the domestic banking sector. Sgherri and Zolli (2009) outline the importance of the financial market policies in explaining the future government liabilities. They conclude that EU governments are facing increasing market discipline while they are being charged with increased funding costs. It is of major importance therefore for the EU countries to retain the market confidence in order to secure their long-term access to funds in relatively low interest rates.

3.3. The vicious circle of the EU financial crisis

The EU crisis constitutes a prominent example of a vicious circle. The asymmetry of macroeconomic, monetary and fiscal policy in addressing the ongoing crisis was intense in the EU. Sovereign risk influenced bank and corporate risk and vice versa. Financial markets were characterized by panic during the crisis period, and credit supply was substantially decreased, leading to a steeper drop in economic activity. For the remainder of this section I briefly describe the dynamics of the crisis' vicious circle between governments, banks and corporate firms.

3.4. Spillover-Effect and credit rating agencies

One determinant factor of the EU sovereign risk is the credit rating agencies. There is an ongoing debate on whether the credit rating agencies are precise in their ratings, especially after the Lehman Brothers collapse. Inevitably, these agencies play an important role in the relation between the financial markets and the sovereign risk. At the wake of the EU sovereign crisis, the credit rating agencies moved to consecutive downgrades of the Europeans countries' credit ratings. The downgrades were mainly concentrated to the problematic countries, Greece, Ireland, Portugal and Spain. The pricing of the sovereign bonds is particularly sensible to these ratings. As a result, we observed a widening on the sovereign bonds' and credit default swaps' spreads following these downgrades. Hull et al. (2004) outline the importance of the credit rating agencies' announcements on the sovereign bonds' spreads and find

evidence supportive of the above-mentioned arguments. The findings indicate that the market anticipates bad and good news emanating from the credit ranting agencies' announcements, and adjusts the prices of the sovereign bond and credit default swaps accordingly. As a matter of fact, these announcements contribute substantially in the explanation of the sovereign risk spreads.[14]

In fact, financial integration in Europe offers a unique opportunity to study the spillover effects of the credit rating agencies on the sovereign risk. The spillover effect is prevailing throughout the recent crisis. Imagine for example that a domestic bank holds a sovereign bond. If a credit rating agency downgrades the bond then its value is going to decrease, producing deficits in the balance sheet of the bank. In such case, the solvency of the bank is being questioned, especially if the exposure on the sovereign bond was substantial. If the bank is systemic and faces solvency issues then its risk is likely to be transferred to the other systemic financial institutions as well. In this scenario, as mentioned before, the government is all but certain to subsidize the deficits of these banks to prevent the collapse of the domestic financial sector. The bailout procedure therefore will increase the government debt, since such endeavors are usually financed with public debt. Ironically, the downgrade of a sovereign bond indirectly urges the government to raise more debt and eventually face an additional downgrade on its sovereign debt. We can anticipate thus through this example the effect the credit rating agencies have on the sovereign risk.

3.5. Spillover-Effect and EU banks

Apparently, the previously-mentioned example was a common phenomenon in the EU banking sector. In the case of Europe, many domestic banks were holding substantial amounts of sovereign debt. They were therefore highly exposed to potential downgrades on the credibility of these bonds (see Blundell-Wingal and Slovik 2010).

The spillover effect was not noticeable only to banks holding domestic sovereign bonds. In the EU, many banks were holding bonds of cross-border EU countries. Subsequently, when the issuer country of the bond faced insolvency issues the increased sovereign risk spilled over across these two countries. A characteristic

[14] See also Norden and Weber (2004).

example is the Greek sovereign bonds since German and French banks were holding substantial amounts of such government claims. When Greek credit rating was dramatically downgraded, these banks were severely affected. Sy (2010) illustrates a detailed analysis of how risk was channeled across EU countries in the recent financial crisis.

Arezki et al. (2011) examine the influence of the credit rating announcements on the stability of financial markets. Their findings indicate that these announcements have statistically and economically a spillover effect on the pricing of sovereign bonds and credit defaults swaps. They report increased sensibility of these financial instruments in relation to the credit ratings announcements. The magnitude of this sensibility depends on the nature of the announcement, the occurrence of a credit rating downgrade and the country of interest. Notably, the authors found that downgrades in ratings below the investment grade, such in the case of Greece, have a disproportionate spillover effect on the stability of the EU financial system. Additionally, the spillover effect is even evident on the stock markets.

It seems that the explanation of the EU sovereign crisis in not a simple phenomenon that stems only from one factor. I could say that a vicious circle is observed in the way the solvency issues are handled from the financial system. As we described above, it is likely that sovereign risk could increase the risk of a domestic or cross-border banking system and vice versa. Additionally, a credit rating downgrade can trigger one of the situations and indirectly fuel a spillover effect. Throughout the remainder of this paper I would attempt to explain the complexity of these relations and conclude to some suggestions for the future.

Acharya et al. (2015) investigated the relation between the sovereign debt crisis and the European firms' solvency issues. They report that the increased banks' exposure on the EU sovereign debt was a contributing factor to the negative performance European firms experienced during the previous years. The EU banks operate pro cyclically, which practically means that in the distressed times of the financial crisis their lending behavior was passive, reducing the amount of credit offered in the real economy. Of course, the reduction of credit resulted in a corresponding reduction in investments, employment rates, firms' sales and national GDPs. This argument contributes to the vicious circle hypothesis since the sovereign

crisis affects negatively the banks, and therefore the banks' lending behavior affects negatively the real economy which in turn increases the sovereign risk.

The sovereign crisis in Euro zone was triggered in 2009. Until this point the market was defensive for fear of a spillover effect from the U.S. financial crisis. Major concerns thus for countries like Ireland, Greece and the EU periphery in general raised doubts regarding the credibility of the sovereign bonds. These doubts were translated into increased spreads on sovereign bonds and credit default swaps making it increasingly difficult for these countries to refinance their debt through the secondary markets. A direct consequence of this instability was that the bank's lending on the real economy deteriorated substantially. Precisely, lending volume in Ireland, Spain and Portugal fell by 82%, 66% and 45% respectively over the period 2008 to 2013. This sharp reduction in lending volume raised additional concerns for the viability of the private sector, since it became increasingly difficult for manufacturing and other firms to have access to funds. It is therefore expectable that this plummet in the real economy would negatively influence both the banking sector and the EU sovereign risk. In fact, Acharya et al. (2015) estimate that this banking credit crunch negative is responsible for the one fifth to half of the negative real effects of the firms on their sample.

Related literature on the issue of the correlation between banking solvency and the sovereign risk is consistent with the majority of the above-mentioned statements. For example, Bocola (2014) claims that high sovereign risk is associated with tighter funding capabilities for the domestic banks, increasing the country and industry specific risk, leading to lower credit supply. The consequences of the credit crunch were described above. Additionally, Uhlig (2014) documents that the governments are motivated to borrow money from the commercial banks through sovereign debt especially if these bonds could be beneficial in negotiating a repurchase agreement with a central bank. In the EU however, the governments do not have the absolute flexibility to issue bonds and "sell" them to the commercial banks. Greece for example, in 2016, could not raise additional debt with commercial papers through its banking system. The European Central Bank claimed that there is a limit on the amount of commercial paper and domestic sovereign bonds that each country's banks are allowed to hold. Furthermore, Acharya et al. (2014), refer to the motivation of the governments to bail out weak distressed banks as long as to the influence on the

sovereign risk. They support that bailouts increase sovereign risk and lowers government guarantees in such an extent where banks' bond holdings are losing value, calling for an additional bailout. In relation to the credit crunch, De Marco (2014) suggest that banks in less problematic EU countries faced insolvency issues emerging from their exposures on sovereign debt of Greece, Ireland, Portugal and Spain. These banks were forced to reduce their lending activities in the wake of the European sovereign debt crisis.

In terms of the relation between the banking sector and the sovereign credit risk, I should briefly describe the mechanism via which the banking sectors' risk is transferred to the public. If a financial institution experiences credit or liquidity inefficiencies then its default risk is about to rise. This risk may trigger a spillover effect to the sovereign risk. Firstly, the bank with the solvency issues might be unable to repay its obligation to another institution. As a result, the second institution is likely to experience funding problems as well. This is what we call, the "domino" effect. Additionally, the government might intervene at some point to prevent this effect and in essence the collapse of the entire domestic banking system and an inevitable bank run. In this event the bank risk is indirectly transferred to the public finances. Several studies examine the relation between the banking and the sovereign risk. Alter and Shuler (2012) have analyzed the relationship between the joint dynamics of sovereign and bank credit default swaps markets. More precisely, the authors focus on 7 European countries and quantify the co-movement relationship between the banks' and the governments' CDS. Their findings provide quite an insight on this relationship. Essentially, they prove that before any government intervention, the banking credit default swaps are the ones to negatively influence the sovereign CDS spreads. On the other hand, they outline that after a government intervention in the banking system, the sovereign credit defaults swaps spillover credit risk to the EU banks. As a result, they conclude that government CDS became a determinant factor in explaining the bank CDS spreads. In the same logic, Dieckman and Plank (2010) document a private to public transfer of risk via bailouts of financial institutions. They employ panel regressions to quantify the determinants of the sovereign credit default swaps prices. They found evidence supporting the notion that bailouts of distressed financial institutions were positively correlated with increases in sovereign risk, thus with increased CDS spreads. By employing also a cross-country comparison they

found that the countries within the European Monetary Union (EMU) were more sensible in terms of the stability of their financial systems and their relation to the sovereign risk, in comparison with non EMU countries like the UK and the U.S. Gerlach et al. (2010) focus on the driving factors of the European sovereign bonds' spreads. Their conclusion is in line with the previous findings. They suggest that the size of the banking sector explains a significant portion of the variation of the EU sovereign bonds. They base this argument on the notion that the financial markets anticipate countries with big banks to be more vulnerable in times of distress since the governments are almost always going to save the "too big to fail" banks. Actually, Schweikhard and Tsesmelidakis (2009) find support for the "too big to fail" hypothesis and its relation to the European sovereign risk. They claim that bondholders of the "too big to fail" firms are benefitted from government bailouts since they were able to transfer their own credit and liquidity risk to the taxpayers. This conclusion is consistent with the moral hazard theory, suggesting that these mega-banks were engaging in excessively risky activities under the belief that in case of a misstep the taxpayers will bear the losses. By using more complicate econometric approaches, Ejsing and Lemke (2011) analyze the co-movement between the EU Sovereign credit default swaps' spreads and the domestic banks. The results suggest an opposite direction between bank risk and sovereign CDS in the event of a bailout. More precisely, when the government decides to bailout a bank or offer guarantees to its domestic financial system, the credit risk of the banking sector, measured by its corresponding CDS, is reduced. On the other hand, sovereign risk increases in such events. One might interpret these results as follows: The fact that the government bails out a bank creates the perception to the financial markets that it is willing to bail out other systemic institutions as well in case of financial distress. Consequently, the overall risk of the banking sector diminishes since it is transferred to the public budget. Accordingly, this transfer increases the sovereign debt which brings and analogous increase on the sovereign risk. However, Demirgüç-Kunt and Huizinga (2010) indicate contradictory findings. They suggest that as the financial condition of the government worsens, its ability to bail out the domestic banking system is worsened as well. Apparently, a high Debt to GDP ratio puts barriers on the ability of a country to support its domestic banking sector. And if this is the case, then the banking sector is destined to experience the vicious cycle I described above. The

authors notably claim: Bad public finance conditions may transform a bank from a "too big to fail" to a "too big to save" one.

3.6. Sovereign risk and corporate risk

The influence of the sovereign risk is not only limited to the financial firms. As I mentioned before, the credit crunch negatively affects the operation of other corporate firms as well. The evidence of the sovereign risk spillover effect is apparent in corporate credit defaults swaps. Belendo and Colla (2015) exploit the European Sovereign Debt crisis to measure the relation between sovereign credit default swaps and corporate ones. They investigate 118 non-financial companies headquartered in eight Eurozone countries. They argue that the sovereign crisis questioned the widespread belief that Euro zone is a risk free sovereign area. Consequently, they estimate the transfer of the country risk to the domestic corporate sectors. Their findings suggest that a 10% increase in sovereign credit defaults swaps is associated with a 0.5%-0.8% increase in corporate CDS spreads. Interestingly, the sovereign to corporate spillover is more evident to firms with close relation to the governments and more concentrated domestic operations (less geographic diversification). Longstaff et al. (2005) suggest that the credit default swaps are the most accurate measure of credit risk since bond spreads are correlated with a vector of multiple factors. It is apparent thus that the European sovereign crisis had a major negative influence on financial and non-financial firms, given that the credit defaults swaps of both categories were dramatically influenced.

3.7. Cross-country contagion effect

So far, I have concentrated on the issue of the spillover effect, from the sovereign bonds to the domestic corporate CDS. Unfortunately, the recent crisis was characterized by one additional term, the "contagion effect". Contagion is practically the transfer of a country's risk to other countries. Inevitably, given that the countries in the Euro zone were in the phase of convergence in the past decades, it is logical to expect that the credit risk transfer would be intense. This happened due to the fact that the Euro zone countries were too interconnected to be independently treated by the markets when the crisis began. Kalbaska and Gatwoski (2012) in their relevant study examine the dynamics and relations of the credit default swaps between the weak

economies of the EU periphery and the stronger countries like Germany, France and the UK over the period 2005-2010. Their sample consists of 5-year CDS prices for nine European countries: Ireland, Spain, Portugal, Greece, Italy, France, Germany, UK, and the U.S. The results suggest that the sovereign crisis was transferred and concentrated among the Euro zone countries since the cross-country correlations were increased even since the fall of the 2007. Actually, 2007 was the year that triggered the recent financial crisis and led to subsequent collapses of financial institutions for at least two years after in the U.S. The EU faced these issues with latency. In fact, it was the 2010 that marked the beginning of the European sovereign crisis, when Greece, being unable to repay its debt obligations, agreed to a bailout package with the EU and the IMF. That incident fostered major concerns of the financial markets regarding the credibility of the EU countries, resulting to a skyrocketing of the credit default swap spreads for the weakest economies.

There are several ways in which the sovereign risk could spread cross-country and induce the contagion effect. I am going to briefly analyze the basics channels through which the crisis was spread in the Euro zone. Firstly, in the case a country faces insolvency problems, its distress may be transferred to other countries of the Union that are increasingly interconnected through bilateral trade, or having comparable problems such us similar trade deficits, excessive need for funds, distressed banking system etc. The second channel is through the banking sector. More specifically, a distressed country may transfer its risk to banks of other EU countries since the market value of its government bonds decreases, causing major deficits in these banks' balance sheets. Additionally, in case that the government does not intervene to bail out the problematic banks, these distressed banks incorporate a systemic factor that could transfer the risk to other institutions as described before. If there is such perception by the market, then the governments' credit risk will also rise as a consequence of the interconnection between sovereign and banking risk.

3.8. Herding behavior in EU market

In the wake of the crisis, many researchers suggested that the rise of the sovereign risk was mainly attributable to the herding behavior. Herding behavior, in essence, is a behavioral issue that translates to lack of individual decision making for the average investor. It therefore assumes that an investor bases its reaction on the

market's reaction and not on its own estimations. In distressed times, herding behavior leads to overreaction since investors are massive selling their positions for fear that other investors will sell first and they will have bear bigger losses. This behavioral bias is actually a panic among investors that induces irrational investment strategies and fuels the ongoing crisis.

Empirical findings on the issue of herding behavior on the EU bond market and its impact during the financial crisis is puzzling. Beirne and Fratzscher (2013) analyze the sovereign risk during the recent crisis for 31 countries and provide evidence of herding behavior, albeit this evidence is concentrated on specific countries and time periods', leading to sharp increases in sovereign yield spreads. The authors point out that the panic effect of the herding contagion was mostly apparent in the 2008 period for the EU countries and not during 2010 and 2011 where 70% of the EU countries experienced dramatic increases in their sovereign risk, suggesting that herding contagion is not paramount in explaining the European sovereign debt crisis. Additionally, their findings suggest that the deterioration in the distressed countries fundamentals is the most crucial factor that explains the increases in sovereign risk and credit default swaps prices. Galariotis et al. (2015) examined also the issue of herding behavior in the EU bond markets. They test for herding behavior in European government bond prices and find no significant evidence of such behavior in the EU market in the pre- or post-crisis periods. However, during the crisis period, they find a strong relation between macroeconomic announcements and bond market herding behavior. These findings indicate that during normal times investors base their strategies on their own expectations. In distressed times however they overreact, pressing the bond prices downwards. Consequently, we again observe that a crisis is not an isolated event. It is affected by several exogenous variables that amplify its magnitude. Herding behavior in crisis times is consistent with the vicious circle hypothesis; during a crisis, investors overreact to bad news, this overreaction presses bond prices downwards, the plummeted bond prices increase the sovereign risk and credit default swaps prices, the vicious circle begins.

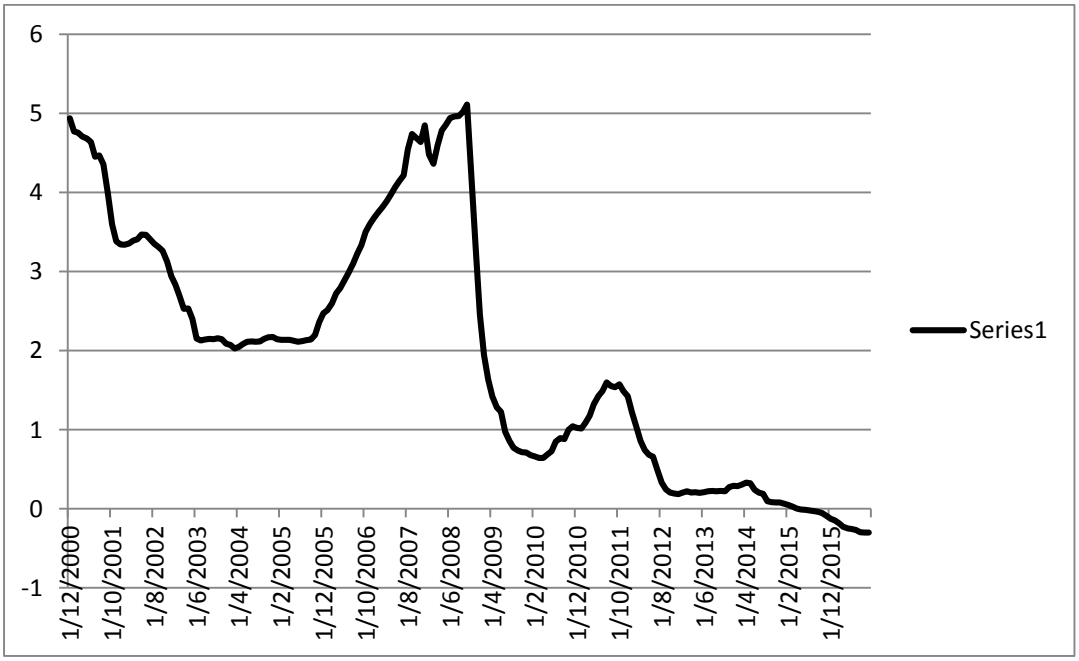
3.9. The role of the ECB.

The European Central Bank (ECB), in contrast with the Federal Reserve, does not buy government bonds outright to support EU countries and increase money supply.

The typical procedure of the ECB to manipulate the money supply was via the refinancing facilities; these facilities consist of collateralized loans and repurchasing agreements. Undeniably, the recent crisis changed the way the ECB intervenes to the money supply of the Eurozone countries. Apparently, the European Central Bank played a key role in the effort to address the EU sovereign debt crisis. The ECB, after the gigantic rescue packages offered by the governments of Greece and Ireland, proceeded to the announcement of the Securities Market Programme (SPM) in May, 2010. The purpose of this procedure was to retain the stability of the "orderly monetary policy transmission mechanism" (Belke, 2010). In other words, the ECB aimed to boost the failing bond markets of the EU countries buy purchasing EU government bonds on the secondary market. Additionally, among the core objectives of this program was to provide EU commercial banks with cash in order to enhance the credit supply. The magnitude of these purchases was huge. ECB bought EUR 16.3 billion in the first week of the program while this amount rose to the EUR 40 billion three weeks after it enactment.

Graph 12. ECB fund rate

The graph plots the ECB fund rate over the period 2000 to 2015. Data are collected from Datastream International.



The SMP triggered ongoing press concern regarding the political effects of this ECB endeavor, and thoughts that national fiscal policies and deficits could be of major importance in determining the Central Bank's policy. There was also uncertainty regarding the composition of these EUR billion purchases. Anecdotically, scholars and market makers suggest that 75% of these purchases were consisted of Greek government bonds. Apparently, Portugal and Ireland followed suit, given that there were the most problematic countries after Greece. The motivation behind this move by ECB was probably to keep the bond and CDS spreads low, in order to avoid additional distress for the countries of the EU periphery. One might also argue that these purchases lowered the EU banking spillover effect since a substantial portion of these problematic bonds was in the EU banks' balance sheets. Hence, by buying such bonds the ECB reduced the probability of financial distress for the EU banks, and, as a result, it reduced the probability of the aforementioned spillover effect from the banks to the governments.

The ECB continued the purchases throughout the crisis period. Actually, up until 2012, the Central Bank had spent almost EUR 212 billion for bond purchases, figure that equals the 2.2% of the Eurozone GDP. At this point, and precisely on September 6, 2012, Mario Draghi, the president of the ECB, announced a new program, designated to buy bonds from Eurozone countries. The press coverage was skeptic regarding this move, since several analysts argued that the ECB is moving faster than the EU governments.[15]

The SMP program could influence EU sovereign risk (and thus the banking and corporate risk) on several ways. In fact, there were three major channels under which the SMP could influence EU bond prices: signaling, flow, and reduced supply. The signaling effect is the apparent effect of such an announcement could have on bond markets. The bond yields dropped immediately after the announcement, since increased demand for such bonds increases their prices and decreases their yield rates. Secondly, as SMP purchases sovereign bonds excessively, and the market for certain bonds becomes one-sided, it is likely that the buy orders will absorb the sell ones, pushing bond prices to an upward trend. Lastly, since the amount of sovereign bond is certain, the SMP results in a reduced supply for such bonds. Therefore, reduced

[15]See: http://www.nytimes.com/2012/09/07/business/global/european-central-bank-leaves-interest-rates-unchanged-at-0-75-percent.html?pagewanted=all&_r=0.

supply is all but certain to lead in increased prices for these bonds (European Central Bank, Working Paper No 1642).

In general, empirical literature was supportive of the Securities Market Programme. Beirne et al (2011) have investigated the impact of the SMP on the primary and secondary markets. The authors point out four major findings supporting the effectiveness of this ECB endeavor. The found: (1) a substantial decline in money market term rates, (2) easier access to funds for depository institutions, (3) enhanced credit growth via commercial banks and depository institutions, and (4) liquidity in private debt securities markets was considerably increased. Additionally, Ghysels et al. (2014) provide evidence consistent with the success of the ECB interventions on the EU capital markets. Actually, by using a sophisticated econometric model and high frequency data, they are able to address possible endogeneity problems often reported in simple regressions of daily changes in yield spreads. Their findings indicate that the SMP succeeded in reducing government bonds' spreads and the volatility of their prices.

However, it seems like the SMP was not enough to restore a state of economic functionality in the Eurozone. Beginning in January 22, 2015, Mario Draghi announced a change in policy, the well-known "quantitative easing" (QE). Practically, the ECB's QE was an expansion of the asset purchase program. This intervention would include EUR 60 billion per month in sovereign bond purchases from Eurozone countries and depository institutions. This program was initially planned to last until September of 2016. The president of the ECB later announced that the QE will continue further, aiming to boost the declining EU economy and address the deflation problem. Monthly purchases were also increased from EUR 60 to EUR 80 billion, and corporate bonds were also included to the program.

QE is a monetary policy employed by Central Banks in an effort to stimulate the economy, enhance economic growth and boost demand. Empirical literature on this ECB monetary policy suggests that the quantitative easing was quite influential to the EU financial markets. Saraceno and Tamporini (2016), claim that the QE could be proven quite efficient if it becomes large enough. In particular, their model predicted that QE successfully addresses deflation issues and output gaps while the bond-interest rates were negatively affected. Sahuc (2016) suggests that such monetary

policies and economic interventions could be important when accompanied with the proper interest-rate guidance.

All in all, the quantitative easing was welcome given the steep downward trend of the EU economy. However, it is evident that such practices are extremely complex in the EU, since the purchase program incorporates purchases of several different sovereign bonds. Despite the original planning regarding the magnitude and the duration of the purchases, it is highly likely that the QE will be continued in 2017 also, and its size will be bigger than the originally estimated. Actually, Mario Draghi said that" the program will last "until we see a sustained convergence towards our objective of a rate of inflation which is below but close to 2 percent". The extension of such program therefore would inevitably increase the benefits of increased money supply and liquidity in the banking system but it might raise doubts regarding its potential adverse consequences. We should therefore highlight the importance of possible side-effects of Central Banks' interventions in the sovereign markets. It remains to be seen thus if this endeavor aimed to achieve the goals of financial stability, increased growth and suppressed deflation on the long-run. The aforementioned aim of the ECB president however is far from being fulfilled since year on year inflation in the Euro area was about 0.2 percent by the end of 2015 (Bruegel Policy Contribution, Issue 4,2016).

4. Comparison between the U.S. and the EU

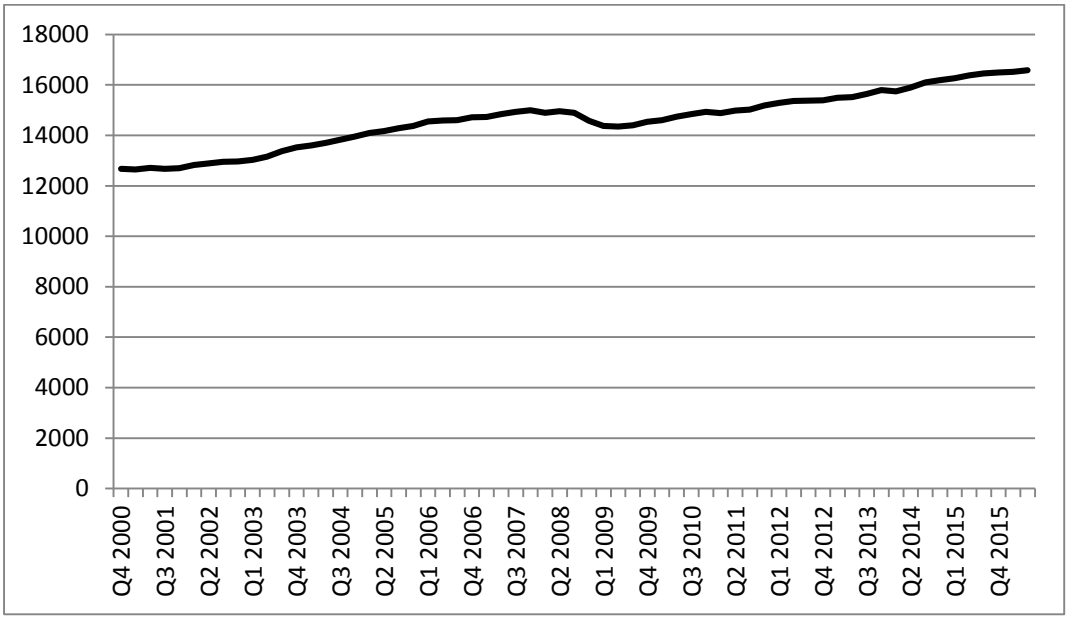
By examining the comparison of the U.S. and the EU crisis I was able to identify both similarities and differences. The main similarity lies to the importance of the financial sector on the sovereign risk in both economies. The EU case however is more complicated since the banking system is not fully integrated and investment strategies vary across countries (for example Greek banks were significantly less aggressive in global capital markets in comparison with the Irish banks). On the contrary, I posit that the most apparent difference is the way the crisis was addressed by regulators and central bankers.

As mentioned before, the U.S. response to the crisis was immediate and effective in general. The large Federal Reserve's programs to retain market liquidity, along with

the enactment of the Dodd-Frank Act, create a more stable base for the largest economy of the world in relation to its counterparts. In fact, the recovery from the financial crisis of 2008-09 was slow, albeit stable. Bernanke (2015) emphasizes that the U.S. economy had recovered in a faster pace compared to the Great Depression emanating from the government bailouts, the strong monetary policy and the fiscal stimulus. In addition, Furman (2015) illustrates that the U.S. economy had recovered faster than the rest developed economies and mainly EU. Particularly, the author suggests that employment and domestic consumption had exceeded the pre-crisis levels at a period of 78 months after the crisis began. Notably, the U.S. GDP followed an upward trend short after the crisis while unemployment fell from 9.9% in 2010 to 5.5% in May, 2015.[16]

Graph 13. U.S. GDP growth

The graph plots the U.S. GDP over the period 2000 until 2015 (in $ billions). Data are collected from Datastream International.

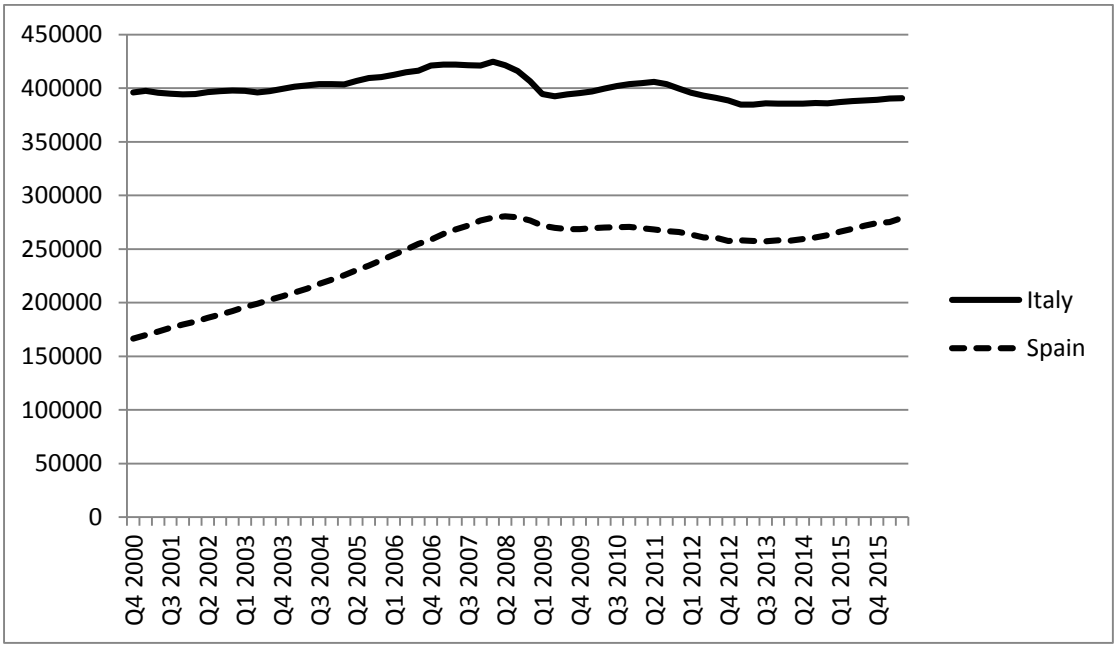


[16] Source: Bloomberg.

The picture for the EU economy is mixed. The EU, a project of combining a single market with a common currency, was not proven effective in addressing the European sovereign debt crisis. Actually, the EU GPD in 2015 was less that the 2008 equivalent figure (EUR 19.029 trillion and EUR 16.229 trillion respectively).[17] Furthermore, the EU unemployment rate remains almost stable throughout the crisis and until the end of 2015, averaging at about 9.6%.

Graph 14. EU periphery GDP growth

The graph plots the EU periphery. GDP over the period 2000 until 2015 (in EUR millions). Data are collected from Datastream International (two tables are presented to account for the big differences in absolute numbers,



Jones et al. (2016) argue that the main driver behind this ineffective EU policy is the lack of integration among member states. Even Mario Draghi, has declared his concerns about this phenomenon, by calling the incompleteness of EU integration the "Achilles Heel" of the EU (Draghi, 2014). In particular, there were substantial gaps in European market structure and governance mechanisms that limited the ability of the EU to address the ongoing crisis, and exposed governments in successive bailouts of financial institutions. The collapse of Lehman and the burst of the U.S. mortgage bubble was enough to reveal the insufficiencies of the European market. The increased deficits of the periphery led all the European capital flows to the core,

[17] Source: World Bank.

weakening the financial position of countries like Greece and Spain. We therefore observe intense imbalances throughout the EU, since Germany had recently issues bonds with negative yield to maturity whereas Greece is unable to borrow from the markets since its yield spreads are extremely high. These differences stem from lack of integration, since the EU was focused only on the single market and currency, but the individual countries were following strategies far from being federal. The crisis therefore unveiled the strengths and weaknesses of each EU country. Unfortunately, the continuous cyclical situation of moving the capital flows from the periphery to the core widens the gap between these countries and makes EU integration look like an impossible scenario.

It seems like the problems for Europe are not only financial. There are growing political concerns since Euroscepticism is gaining ground in almost every European country. In June, 2016, the UK voted for the BREXIT, which practically means that the majority of the UK citizens want to leave the EU and the single market. This political movement is expected to have tremendous impact in both the economics and politics of the EU. Inevitably, the success of Euroscepticism in UK gave rise to extremist voices around the EU. The political base of Euroscepticism in EU has moved from left to right; extreme right.[18] Proponents of such ideology have called for referendums in other EU countries like France, Austria and the Netherlands. The popularity of their arguments suggests the lack of confidence for the EU economy and single market. Taking into consideration that in basic macroeconomics, consumer confidence on the system is a variable of major importance for economic prosperity and growth, Euroscepticism constitutes a significant threat for the EU recovery. Furthermore, rising concerns for the banking sectors of individual EU countries are likely to trigger again the vicious cycle of the European sovereign debt crisis. Recently, Italy is in intense discussions with the European Commission for a recapitalization of its domestic banks before the ECB's stress tests.[19] This recapitalization will actually by the first to take place under the new EU direction, Bank Recovery and Resolution Directive (BRRD). BRRD sets the framework for EU banks' resolution in case of financial distress. The directive is enacted from the beginning of 2015, and it requires that a distressed bank proceeds into a bail in

[18] Source: http://www.economist.com/news/britain/21694557-why-britons-are-warier-other-europeans-eu-roots-euroscepticism
[19] Source: http://www.reuters.com/article/us-italy-banks-eu-idUSKCN0ZJ0QT

strategy before it receives any government subsidy. This regulation is aimed to address the moral hazard of the EU TBTF banks. It remains to be seen thus whether its enactment will enhance the stability of the EU banking system.

5. Future concerns: A new crisis on the way?

By the time this thesis is being written, two major threats are emerging in the EU economy, threats that are likely to affect the stability of the global financial system. As we mentioned above, Italian banks are considered a major risk to the EU stability. Quite recently, the case of Deutsche Bank has also raised concerns for a European Lehman Brothers. Though the remainder of this chapter, both cases will be described separately, in an effort to gauge the potential dangers of these systemic threats.

5.1. Italian banks: A time bomb for the EU economy?

At the 30th of July, 2016, the European Banking Authority (EBA) presented the results of the stress tests for the EU Banks. In a nutshell, the results showed that the European banks appear to be more or less stable. Indicatively, Reint E. Gropp, president of the Halle Institute for Economic Research (IWH), claimed that both the Italian banks and the large German commercial banks look particularly worrisome. Additionally, the stress tests did not take into account the long lasting low interest rate environment that harms the commercial banks' profitability and the increased likelihood for small bank failures. However, the most important aspect of the tests was the urgent necessity to solve the Italian case.

Apparently, Italian banks looked quite bad in the recent stress tests. In fact, the most problematic bank seems to be the Banca Monte dei Paschi di Siena. The Italian banks cross the tests with the marginal CET1 ratios of 7% on average, which is the minimum requirement under the Basel III (this requirement will be effective from 2019 and onward). This finding is consistent with the ongoing concerns regarding the stability of the Italian banking industry. Given that these stress tests were considered particularly "mild" in terms of evaluation the solvency issues, a recapitalization of the

Italian banks might be advisable to avoid potential systemic issues. [20] The recapitalization necessity is even more urgent to the smallest banks, since the low interest rate environment is more influential to the smallest institutions, where traditional banking is their main source of income, and the compliance costs of the new regulations are unduly burdensome to their profitability.

The stress tests also revealed the intense problem of bad loans that Italian banks need to face. For Italy therefore, it is high time that these bad, non-performing loans are removed from the domestic banks' balance sheets to facilitate new lending and stimulate the country's economy. In order for this to happen, the actual losses of these non-performing loans should be finally realized, and proceed to an "evacuation" of these assets, while raising additional capital to secure their future positions and stability. Lastly, a bail-in of the large banks' stakeholders is desirable, as to reduce the moral hazard issues associated with the government intervention on failed banks. Minority stakeholders of subordinated debt instruments are likely to be unaffected from the bail-in, which is a common practice in Italy, fact that is possible not to violate the new BRRD instructions.

Unlike the U.S. case, the source of problem for the Italian banks does not stem from large exposures in exotic financial instruments. In fact, the main problem lies to the rise of the non-performing loans (NPL) ratio in the past years.

Italian banks are deeply necked into non-performing loans. The total amount of NPLs for the country's banking system is estimated to a approximate figure of EUR 200 billion ($220.5 billion).[21] This figure equals the 8% of the total amount of loans the Italian banks have on their balance sheets. Some Wells Fargo analysts also claim that there is an additional amount of EUR 150 billion, in the verge to jump into the NPL status. In such case, the NPL ratio for the banking industry will be pushed to the astonishingly high amount of 15%. [22]

Inevitably, this insolvent financial situation is mirrored in the Italian stock market. The share prices of the Italian banks are following a downward trend in the past months. For example, the most problematic Sienna-based bank, Banca Monte dei

[20] Source: Halle Institute for Economic Research: http://www.iwh-halle.de/e/publik/presse/34-16.pdf
[21] Data source: Bloomberg NPL ratio in Italy.
[22] See: http://www.marketwatch.com/story/why-italys-bank-crisis-could-be-ticking-time-bomb-2016-07-21

Paschi di Siena, has lost a substantial portion in its market capitalization in the past months, since its stock price fell from above EUR 0.30 to less than EUR 0.20 until August 2016.

The exposure of Banca Monte dei Paschi di Siena in non-performing loans reaches the 25% of the total NPLs in the country. In August 2016, the European Central Bank asked the bank to cut its exposures in NPLs from EUR 49.6 billion to EUR 14.6 billion by 2018. Of course, such endeavor is quite optimistic and raises additional concerns regarding the probability of its success. These amplified worries regarding the bank's solvency accompanied with the possibility of a political showdown between the Italian prime minister, Matteo Renzi and the European Commission (for issues regarding the recapitalization of the Italian banks) are far from a friendly environment that enables the banks to retain their credibility in the capital markets. The NPLs therefore, are morphing into a political crisis that is likely to bring down the Italy's government. In the last period we observe an intense conflict between Rome, which want to protect bondholders, and the European Union, which wants to enforce the new rules.

One might wonder: Weren't the Italian banks restructured after the recent financial crisis? The answer to this question is unfortunately no. Reforms in the Italian banking industry were quite slow and inadequate, in contrast with other European countries such as the UK, Ireland and Spain. In fact, Italy failed to restructure its banks in a meaningful way. This happened for two major reasons. Firstly, when a bank needs to be restructured somebody has to pay the losses, usually the banks' investors and bondholders that are willing to take the risks for the sake of increased profits. Unfortunately, the situation in Italy differs from other countries, since the small bondholders of bank bonds are the Italian households.[23] Hence, in case of a bail-in that will affect all the banks' stakeholders, Italian households will be badly burned. Of course, such a phenomenon would have a negative effect on the Italian consumption, GDP and most macroeconomic indices. The second reason was the low yields on Italian sovereign bonds, where Italian banks were investing the depositors' money. On the asset-size of the balance sheet therefore we have low returns on fixed income, and dramatic increases in NPLs; a recipe for disaster.

[23] Households hold almost EUR 235 billion in bank bonds, which represents the 14.6% of their wealth (Source: Bank of America Merrill Lynch)

Apparently, the situation in Italy is quite complicated. Matteo Renzi is on a strong dilemma, since a government bailout will intimidate taxpayers, while a bail-in will also intimidate bondholders, which happen to be the Italian households at a large portion. On the top, the EU seems to be reluctant in backing off on the new BRRD instructions, causing additional problems to the resolution of the Italian problem.

The cost of the Italian recapitulation reaches the EUR 40 billion, a significant but not tremendously high amount. At the aggregate level, the Greek recapitalizations were more costly to the taxpayers. There is a tradeoff therefore, between the costs of recapitalization and the costs of failure of the Italian banking sector. Despite the fact that the exposure to Italian banks is mostly domestic, a collapse of such institutions would likely trigger a new crisis in the EU. Regulators, governors and EU officials should weight the costs and benefits and proceed with the solution that ensures the stability of the European system.

5.2. The Deutsche bank case: The EU Lehman?

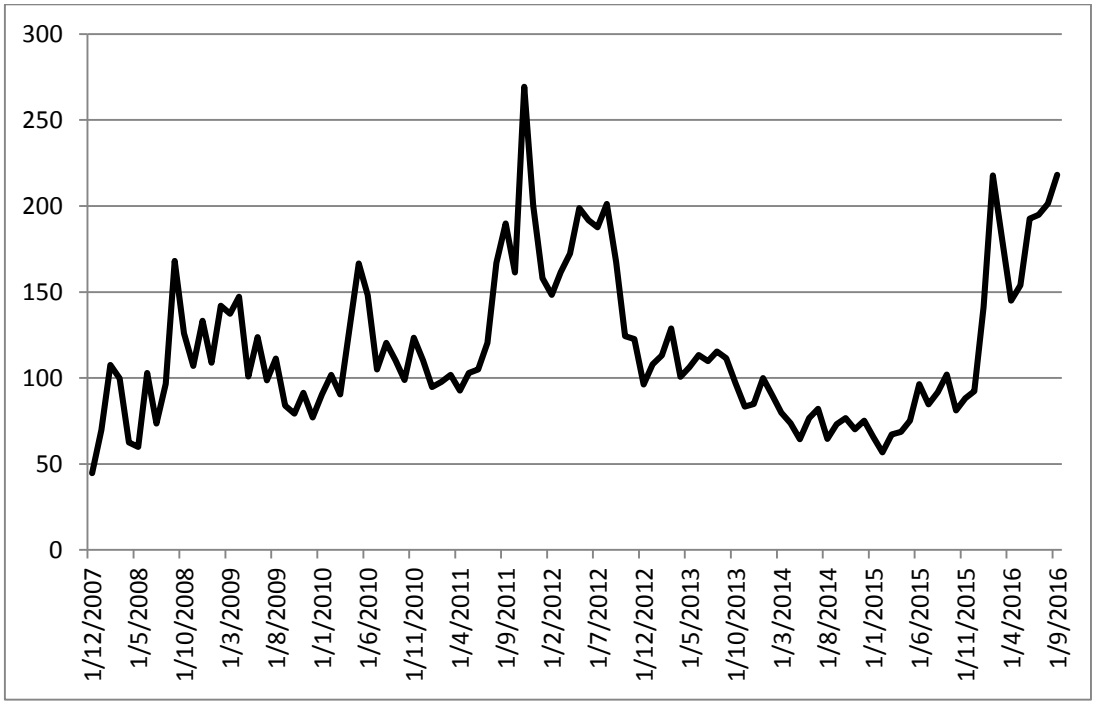
Lehman Brothers went bankrupt in 2008, causing the largest financial crisis since the Great Depression. Less than 10 years later, one other huge financial conglomerate is on the verge of failure, putting in danger the stability of the global financial system. Deutsche bank is one of the largest financial institutions around the globe, with almost $2 trillion in total assets as of the end of 2015. In 2016, fears of another major collapse have risen across analysts and investors are speculating on whether the German government will bail out the bank. Unfortunately, this question has not been answered yet. Deutsche bank is again in danger and the sad thing is that this predicament could have been avoided.

The recent case of Deutsche bank could be characterized as an idiosyncratic event since its solvency issues do not emerge from a market meltdown or consecutive bank runs. In fact, the bank's main problem lies on legal issues. Anecdotally, Deutsche bank is notorious for such issues. The U.S. justice department threatened to fine the firm $14 billion for decade old transgressions involving U.S. mortgage backed securities. The fine is more than doubled of what the firms had set aside for legal issues. Hence, the imposition of such fine could severely challenge the bank's liquidity and capital structure. Inevitably, the stock market has reacted negatively to

this announcement, since the Deutsche bank's stock price is traded on record lows. The German government has not announced any official intention for help, suggesting that there are potentials for further plummeting in the bank's stock. The annual return on the bank's stock is less than -60% since the stock was traded above EUR 30 in mid-2015 and its price now is approximately EUR 12.16.[24] It is interesting to investigate the bank's stock and CDS reaction to the previous mentioned facts.

Graph 15. Deutsche bank CDS

The graph presents the Deutsche bank's 5Y credit default swaps spreads over the period 2007 until 2016. The data are collected from Datastream International and are monthly CDS spreads.



Remarkably, we observe a decline in Deutsche bank's CDS spreads in 2012, after the famous Draghi's quote" Whatever it takes". We observe resurgence in CDS prices in 2016 reflecting the solvency issues the bank faces. This episode reveals the lack of efficiency in the European response to address the too-big-to-fail problem. As such, the EU seems not to have learned a lesson from the recent crisis; the large banks must have additional capital and liquidity pillars in order to absorb potential losses that could trigger a vicious cycle of collapses and failures. Otherwise, governments find

[24] Source: Datastream International.

themselves in the difficult situation to bailout the banks with taxpayers' money or let a systemically important financial institution to fail and hope that the contagion effect will not be triggered.

The EU banks had a chance to build strong balance sheets in the post-crisis periods, where government subsidies, ECB's quantitative easing programs and recapitalizations took place in a massive scale. The EU should have also introduced a stringent regulatory framework calling for increases in capital and liquidity pillars, like the U.S. did with the Dodd-Frank Act (see chapter 2). However, instead of building irreproachable equity buffers with this chunk of money, the EU banks distributed hundreds of EUR billions in the forms of dividends to their shareholders. During the period 2009 to 2015, Deutsche bank paid approximately EUR 5 billion in dividends. This is a significant portion of the EUR 19 billion it raised for recapitalization reasons.[25] As a consequence, the German financial giant is one of the most weakly capitalized banks, with a rough 3% of tangible equity as a proportion to its risk weighted assets.

Apparently, the BRRD instructions are applicable to the case of Deutsche bank as well. A potential bail-in however could trigger a contagion effect given the huge number of private stakeholders (shareholders, bondholders etc) involved with the bank. For this reason, EU officials and policy makers try to convince the press that the EU banking system is stabilized and solvent. Remarkably, Valdis Dombrovoskis, the current European Commissioner for the Euro and Social Dialogue, stated that "the European financial system is more robust that the pre-2008 crisis", in an effort to retain the markets trust in the EU banks.[26] Additionally, John Cryan Deutsche Bank's chief executive Deutsche Bank's chief executive officer, claimed that raising capital "is currently not an issue," and accepting government support is "out of the question for us."[27] Furthermore, Vitas Vasiliauskas, member of the ECB board, claimed that the Deutsche bank case is not a systemic threat and that the EU Stability is not in danger.

[25] See: https://www.bloomberg.com/view/articles/2016-09-30/deutsche-bank-exposes-europe-s-capital-shortfall

[26] http://www.cnbc.com/2016/10/05/european-financial-system-more-robust-than-pre-2008-crisis-commission-vp.html

[27] http://www.bild.de/wa/ll/bild-de/unangemeldet-42925516.bild.html

The reality however is probably a little bit more worrisome than the aforementioned statements. The bank faces severe solvency issues similar to the Lehman case, which led to the market meltdown 8 years ago. For this reason, the German government attempts to pursue direct talks with the U.S. authorities for a settlement of the $14 billion fine regarding the sale of the toxic mortgage securities. German government officials are realizing the potential threats of the Deutsche bank's case, and try to facilitate a deal that will enable the bank to get back on its feet. Actually it seems that these attempts may be proven quite beneficial for the German financial giant, if we consider the recent S&P Global ratings report. According to this report, the bank's credit rating will be settled at BBB+, while the credit rating agency estimates that the U.S. justice department claim on Deutsche bank will be shaped with a substantial discount on the $14 billion. The report also claims that Deutsche bank will be able to absorb the losses of the fine. Consistent with the IMF suggestions, the credit rating agency persists that the basic necessity for the bank is to restructure its business model in order to persuade the markets for its long-term viability.

It remains to be seen therefore, if the EU response will be effective enough to hamper a future crisis within the Union. The consensus view so far is that the EU officials and regulators follow an ex-post approach; they wait for the collapse and then they proceed with bailouts. We have seen this practices in quite a large scale in Greece and Ireland, and the periphery countries in general. At this point however, we observe that the banking systems of two of the biggest EU countries face solvency issues for different reasons. In the case of Italy, we could say that the continuous recession led to a rise in the NPLs, and to recapitalization needs. In the case of Germany, Deutsche bank is a stand-alone case, whose practices may endanger the stability of the whole EU system. Thus, the resolution of these issues is of major importance for the future of the EU. In the foreseeable future we hope to see a "prevent and do address" regulatory framework. The European region needs better capitalized and managed banks, not only to avoid taxpayer bailouts but also to facilitate its static economy. Unfortunately, academic studies and empirical findings are elusive in the cases of Italian and German banks, since these incidents are quite recent. We acknowledge that these issues need detailed research in order to evaluate the roots of the insolvency issues and quantify the potential implications in the EU and global economy.

6. Conclusion

The aim of this paper was to summarize the literature related to the recent financial crisis of the U.S. and EU. The analysis revealed that these two crises were interconnected but also different. The U.S. crisis was mainly fueled by the collapse of the real estate market that diminished prices of the mortgages and their related securities, leaving large financial institutions in the verge of bankruptcy. Systemic collapses led to a downturn of the U.S. economy and also triggered the European sovereign debt crisis. EU banks were also exposed to such products, but the main problem of the Union was the sovereign debt of its periphery.

The U.S. was also more effective in addressing its crisis, since the macroeconomic figures suggest a full recovery for the world's largest economy. On the contrary, the EU is still struggling with both political and financial markets to adopt a common policy that will effectively address the recession and promote growth perspectives in the EU market. Unfortunately, the signs are far from positive towards this direction since the rise of Euroscepticism in many EU countries takes away the possibility of the EU integration and moves the Union from the initially-planned federal government to individually-defensive countries. As a result, it is questionable, whether the EU will manage to operate under its founding principles. On the top, there are rising fears regarding the stability of the EU system, emanating from the solvency issues of Italian and German banks. Evidently, the crisis is still on the way for the EU countries, since the inadequate regulatory response did not cover the potential dangers of a possible failure. It remains to be seen therefore, if history repeats itself, and we are about to observe a new financial meltdown in the foreseeable future.

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