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The relation between firm's performance and the unconventional monetary policies for the GIIPS countries

Master Thesis Financial Economics
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Abstract

This paper aims to investigate the relationship between public firm's performance and ECB's unconventional monetary policy measures for the period 2008-2015 and only for the GIIPS countries. The ECB decided to implement four different programs; OMT, SMP, LTRO, and APP, as a reaction to the financial debt crisis which was on its peak on 2010. In addition, through these measures the ECB was aiming to stabilize and increase the growth of the economy, as well as, to restore trust in the viability of the Eurozone. This research shows mixed results.

Keywords:

Firm profitability, Outright Monetary Transactions, Long Term Operations, Security Market Program, Asset Purchasing Program, unconventional monetary policies, stock prices, event study

Preface and Acknowledgements

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Chapter 1: Introduction

At the peak of the European financial crisis in 2010, which causes many and different problems at the Europe's economy, such as; the low inflation and the weak economic growth, the European Central Bank began to restore a number of temporary so-called unconventional monetary policy measures. The main aim of these measures was to stabilize the economy, boost the growth and restore trust in the viability of the Eurozone.

The first unconventional monetary policy measure that the ECB introduces is the Securities Market Program (SMP) (2010), this program includes the purchasing of government bonds of distressed Eurozone countries with the aim of reducing the default risk of these governments by decreasing yields on their sovereign bonds. One year later (on 2011), ECB introduces the Long-Term Refinancing Operations (LTRO) program as, it determined to reform the maturity structure of its liquidity-providing operations by giving collateralized loans over longer than usual time horizons, setting out to face the illiquidity problem in Eurozone's money markets and especially the taut financing conditions at long maturities.

Furthermore, the ECB launched the Outright Monetary Transactions (OMT) program, which is especially important in order to help the Eurozone to restore the trust. The OMT program was announced by Mario Draghi on 2012 with his famous speech; "The ECB is ready to do whatever it takes to preserve the euro. And believe me, it will be enough". Finally, on 2015 the presentation of a new asset buying program, the so-called Expanded Assets Purchase(APP) program took place, it is a program similar to the Federal Reserve's Quantitative Easing. The mail target of this program was the revitalization of the euro area economy.

Although the main intention of the ECB was to introduce these measures in order to face the debt sovereign crisis in Europe, there is an argument about whether these unconventional monetary policies were effective or not. On the one hand, many support that these policies were successful as the risk of a break up or the risk of the exit of individual countries was decreased and the financial markets in general show to be more calmed and perform better. On the contrary, others argue that the OMT has had conflicting effects on the

Eurozone since, it could create many kinds of moral hazard problems and could probably lead to inflation or another asset bubble. (Belke, 2013)

Regarding to the OMT program, there is a significant empirical evidence which shows that the announcement of it has been successful in terms of lowering spreads of sovereign bonds issued by distressed European countries (Krishnamurthy, Nagel, and Vissing-Jorgensen, 2014). Furthermore, they proved that the resulting value increased of these bonds has as consequence an indirect bank recapitalization since, banks with a large number of holdings of these bonds shown substantial windfall gains, which helped to restore the stability of the European banking system. However, the impact of the OMT program was not reflected in the real economy, this fact was also admitted by Mario Draghi in November 2014, where he highlighted during his speech that "[...] these positive developments in the financial sphere have not transferred completely into the economic sphere".

Furthermore, Krishnamurthy et al (2014) employ an event study in order to investigate the impact of the first three programs on yields of distressed sovereign bonds in the Eurozone. Their results reveal a rough decline in yields around SMP and OMT announcement dates for all counties included in their research. Simultaneously, regarding to the LTRO program, they did not find any significant impact on the so called GIIPS countries.

It is a fact that most of the researches regarding the interesting topic of European sovereign debt crisis and subsequent unconventional monetary policy measures have been focused more on their effects on bond markets, credit default swap markets and bank performance, whereas, no significant research has been done yet in order to investigate if these measures have an impact on the firm performance of the European countries. This paper is trying to investigate in a more detailed way what is the relationship between the ECB unconventional monetary policy announcements and firm performance for Greece, Italy, Ireland, Portugal, Spain. The results show in general a positive relation between these measures and firm's profitability, expect from the SMP.

This paper is structured as follows: Chapter 2 includes a detailed description for each of the four ECB programs. Chapter 3 reviews relevant background literature on stock prices, monetary policies and the impact of the unconventional monetary policies. Then, in chapter 4 I present Databases that is used in order the data to be collected, moreover, the methodology which is implemented to my thesis as well as my hypothesis are included in this chapter. Chapter 5 presents and discusses the empirical results. Finally, chapter 6 concludes and avenues for further research and studies are proposed.

2. Program Description

The European Central Bank implement a variety of financial programs to boost the European economy and avoid any further financial problems for its country's members. Below I present the most important measures that the ECB took during the period of 2009-2015.

2.1 Securities Market Program (SMP)

The first program that ECB decide to implement is the Securities Market Program (SMP) which was introduced on 10th of May 2010 by the European Central Bank to address the deal with the distress in certain market segments. The main concept of this program is to entail the purchasing of government bonds of the weaker Eurozone countries so that it will manage to reduce the default risk of these countries, this will be accomplished by decreasing the yields on their sovereign bonds. In addition, it is decided that any limit will be set regarding the number of securities which could be purchased, however, on July 2011 the ECB determined to hold almost €75 billion in these securities. The official statements by the ECB state that the SMP program has been built so that will reinsure the depth and liquidity in industrial sectors of the debt securities markets and to restore a suitable functioning of the monetary policy transmission mechanism.

In the first round, starting from May 2010, the main focus of ECB focuses was on buying securities by Greece, Ireland and Portugal. However, in the second round, started in August 7, 2011 the ECB decides to extend this program by including two more countries which seemed to be affected by the fiscal crisis

these were Italy and Spain. Almost one thousand days after the launch of the SMP, holdings were equal to €220 billion, of which the most of them were consisted of Spanish and Italian debt. While there were periods that the program was not active, for instance, the first semester of 2010 until the mid of 2011, the ECB decide to stop purchasing bonds in 2012, since the market conditions show an improvement. The SMP was discontinued, in September 2012, with the introduction of another program: "The Outright Monetary Transactions (OMT)".

Table 1: i) Securities Market Program announcements

Date	*Description of the announcement*
10/05/2010	ECB announces SMP program
08/08/2011	ECB announces the expansion of SMP program

2.2 Long Term Refinancing Operations (LTRO)

Since, the financial crisis continued to be a problem for the Eurozone, the ECB in its effort to minimize it, decides to give collateralized loans over more extended than usual time frames in order to address the illiquidity problem in euro area money markets. As a result, besides its standard and supplementary three-month long-term refinancing operations, the ECB determined to introduce six-month SLTROs, in March 2008.

Furthermore, in May 2009, for the first time the ECB announces time twelve-month SLTROs and carries out four of them between the period of June 2009 and December 2011. During the twelve-month auction the ECB manages to allocate around €442 billion. In addition, because the sovereign debt crisis become more intense and bank funding conditions worsen, the ECB announces in December 2011, the "very" long term refinancing operations (VLTROs) with three-year (36 months) maturity, in these two VLTROs, the ECB allots around €1019 billion in total. In particular, the program entails the predictions of loans to financial institutions under determined conditions and additional obligations, while the interest on these loans are defined by the ECB's policy rate. Simultaneously, the ECB makes clear that the amount of loans provided under

this new program will be unlimited. Specifically, in its statement, the ECB makes easily understandable that the main aim of this program is firstly; to provide credit help to banks and secondly; to ease liquidity and borrowing conditions in the Eurozone.

Table 1: ii) Long-term refinancing operations announcements

Date	*Description of the announcement*
01/12/2011	Draghi's speech introduces the new measures that will help in restoring credit channel of monetary policy
08/12/2011	ECB announces LTRO program

2.3 Outright Monetary Transactions program (OMT)

In September 2012, the ECB announces the details for the third program which is the Outright Monetary Transactions program. Before that, on July 26, 2012 at the Global Investment Conference in London, the ECB's president Mario Draghi announces during his speech that "*The ECB is ready to do whatever it takes to preserve the euro. And believe me, it will be enough*", introducing with this way this new program. The OMT program includes purchases in the secondary bond market and is mainly targeted at reducing the sovereign bond yields by forming more requests, thereby declining refinancing obstacles by distressed sovereigns and bringing down the market interest rates faced by countries subject to speculation that they might leave the euro. Furthermore, the program covers government bonds on the secondary market with resting maturities between 1 and 3 years.

However, in order the OMT program to be activated each country should firstly meet certain predetermined conditions. First of all, the country must have asked and received fiscal help from the European Stability Mechanism (ESM). In addition, the country's authorities' must conform with the reform attempts needed by the respective ESM program. Thirdly, the OMT program can start only when the country regains full permission to private lending markets. The last conditions are related to the country's government bond yields that should

be greater than what can be vindicated by the underlying economic data. In general, it is notices that the OMT's announcement was enough to tranquil markets, however, at the time of writing, the OMT program has still not been activated from any country.

Table 1: iii) Outright Monetary Transactions program announcements

Date	*Description of the announcement*
26/07/2012	Draghi's "whatever it takes' speech, announcement of OMT program
02/08/2012	Additional information about OMT program
27/08/2012	Asmussen's speech about OMT program
06/09/2012	Details of the OMT program

2.4 Asset purchasing Program (APP)

The European Central Bank (ECB) launches its Expanded Asset Purchase Program, more widely known as quantitative easing (QE) on 22nd of January 2015, main scope of this is the revision of the euro area economy. This new program consists of all purchase programs under which non-public segment securities and public-sector securities are bought to face the risks of a very extended period of low inflation. It consists of the

- third covered bond purchase program (CBPP3)
- asset-backed securities purchase program (ABSPP)
- public sector purchase program (PSPP)
- corporate sector purchase program (CSPP)

The ECB would buy as much as €60 billion a month in sovereign bonds until September 2016 (Georgiadis & Grab, 2015). Furthermore, this program is targeted at easing economic and monetary conditions so that it could extend credit supply within the Eurozone and therefore increasing the investment and consumption levels, until the moment that the inflation rates will come back to the preferred target rate which is close to 2%.

Table 1: iv) Expanded Asset Purchase Program announcement

Date	*Description of the announcement*
22/01/2015	Announcement of expanded asset purchase program

Chapter 3: Literature Review

3.1 The relationship between Monetary policy and stock prices

The financial debt crisis stimulated many researchers to implement an immense variety of both theoretical and empirical studies in order to mainly analyze the relationship between the monetary policy and the stock prices in different countries. The aftermath from most of these studies is that monetary policy is possible to impact on stock prices and vice versa. Historically, there have been twenty-four (24) booms in the stock prices in developed countries, however, from these only four have ended in a failure; Finland (1989), Italy (1982) Japan (1990) and Spain (1980).

Another interesting statement on this issue is that the variations in monetary policy affect the estimations of interest rates that have been mainly determined by the market, the equity cost of capital, and the predictions of corporate profitability (Waud, 1970). On the other hand, many researchers/economists support that central banks ease in respond to economic enlargement, thus, ex ante required and realized ex post returns rise (fall) (Jensen and Johnson, 1995; Conover et al., 1999a, 1999b). Jensen and Johnson (1995) examine the monthly and quarterly performance of stocks returns, their results show that anticipated stock returns are significantly greater during extensive monetary periods. Conover's et al (1999a, 1999b) research show comparable results, the only difference is that in this case the authors decide to use cross-country data. However, these results are easily affected by different proxies for monetary policy; the use of excess as opposed to raw stock return; sample selection, as more recent samples do not bring out a statistically significant relation (Durham 2001a, 2003).

In addition, Stefano Neri (2004) adds more inputs on the correlation between monetary policy and stock market indices through his paper since, he finds that monetary policy shocks that are measured by exogenous rises in the not long-lasting interest rate have, typically, unimportant, negative and temporary impacts on stock market indices. Furthermore, he finds that across the countries there is a difference between the insistence, the importance and the timing of these effects.

In their paper, Ioannidis & Kontonikas (2008) analyze the effect of monetary policy on stock returns in 13 OECD countries (United States, United Kingdom, Japan, Germany, Italy France, Canada, Belgium, Finland, Netherlands, Spain, Sweden and Switzerland) from 1972 – 2002, using monthly stock price data, nominal stock returns and interest rate data. The findings of this research show that 80% of the countries under investigation, during periods of tight money, are linked with simultaneous decrease at market value. Also, they express the opinion that that these results can be easily connected to the existing value model in which raises in interest rates result in reduced stock prices through higher discount rates and lower cash flows. Finally, on of the most important parts of their research is that stock market can be influenced by the market policy both directly and indirectly.

3.1.1 Transmission channels of monetary policy

Figure 1: The stock market channel

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┌─────────────────────────────┐
│  Monetary Policy(money supply, │
│      instrumental rate)       │
└─────────────────────────────┘
              │
              ▼
┌─────────────────────────────┐
│        Stock Markets          │
└─────────────────────────────┘
              │
              ▼
┌─────────────────────────────┐
│   Real activity(employment,   │
│         investment)           │
└─────────────────────────────┘
              │
              ▼
┌─────────────────────────────┐
│          Inflation            │
└─────────────────────────────┘
```
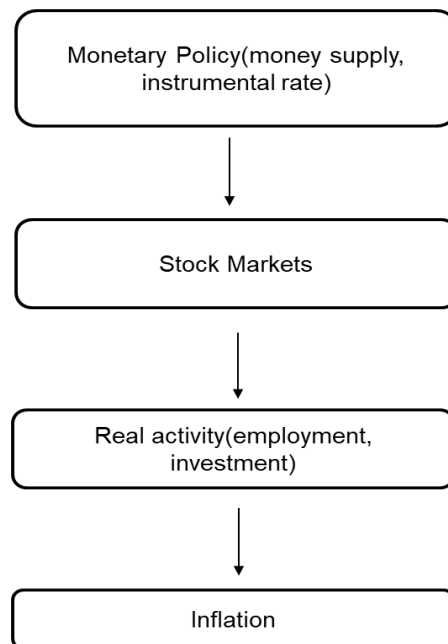
The role of stock markets in the transmission mechanism of monetary policy in the Euro area, is another famous and interesting topic which was under investigation from several researchers. Cassola et al. (2004) conduct a Vector Auto Regressive (VAR) analysis of the interdependence between the macroeconomic effects, real M3, short term interest rates, bond yield and real stock prices. The results suggest that the interest rate and the asset price channels are relatively important to the transmission of monetary policy in the Euro area, but since this moment, no prove has been found to support any direct significant effect of stock prices on inflation. However, from their research they find that non-temporary productivity shocks make a significant contribution to the cyclical behavior of stock prices and monetary policy can contribute to stock market price steadiness in the long run.

Gilchrist et al. (2002), decide to implement on their paper two different experiments by which they examine the outcome of specific shocks on the efficiency of monetary policy to affect asset prices. These shocks can be distinguished by; those that are able to influence the economy through forecasts for upcoming development and shocks that are related to the net worth. Their findings point out that there is no justification to take account of

asset prices when choosing for the best monetary policy. Nevertheless, this result cannot be considered as realistic, recognizing that stock market is considering as a transmission mechanism for the monetary policy in any economy.

3.1.2 The federal monetary policy shocks and its impact on stock prices

Thorberke (1997) investigates the way that federal monetary policy shocks influence stock prices in the United States. As many researchers did in the past, he applies Vector Autoregressive system aiming to analyze the causality among the monthly stock returns, federal funds rate and growth in output. For this scope, the usage of monthly data was preferred since, they are considered acceptable for the empirical analysis, additionally, the Freidman Schwartz (1963) index is implemented as a mean which helps to recognize monetary policy shocks. Overall, his results indicate that monetary policy shocks account only for a limited amount of stock price movements, as, the stock prices react with significant delays.

In their paper, Basistha et al. (2008) investigate the cyclical variation in the effect of the federal policy on stock prices. They implement an event study approach which consists of 130 announcements made by the Federal Open Market Committee (FOMC) from 1990-2004, in addition, Ordinary Least Squares (OLS) is used to examine the impact of interest rates on stock returns. The results show that the phase of the business cycle and the accessibility of credit are highly influence the effectiveness of unexpected movements in the federal fund rate on stock prices. Another important finding is that the reaction of the stock to monetary policy is double in a period of decline than in normal periods. Additionally, firms that deal with financial difficulties are eager to reciprocate to monetary policy in comparison with firms that are financially unconstrained when there is a fiscal crisis. The results show that some of the federal rate decreases are not predicted by the market, resulting in significant increased stock prices.

3.1.3 The impact of ECB's measures on firm's profitability and real economy

The last years, due to the sovereign debt crisis, the ECB had to take several measures in order to face the effects of economic crisis which begun at the end of 2007, some of these measures are the OMT, LTRO, SMP and APP programs. According to Acharya, T. Eisert & al. (2015) research, the OMT announcement leads to a higher supply of loans to non-public borrowers in Europe. Furthermore, a really interesting and important finding is that companies that get new loans from banks use them mainly to build up their cash reserves, without having, any significant impact on the real economy such as employment or investments. In addition, they compare GIIPS countries with other European countries (such as German) and they prove that GIIPS countries are more benefited from the OMT announcement because of their solid amount of sovereign debt holdings. Regarding to the bank credit risk, they find that there is a significant decrease on the days close to the OMT announcement, a finding which is in accordance with this of Acharya's, Pierret's et al. (2015).

Moreover, Acharya et al. (2014) show that losses on sovereign debt of examined countries during the economic crisis have a negative impact on most of the Eurozone banks, resulting to the contraction in loan availability to European firms and in general, in the Eurozone economy. Another interesting result from their paper is that financial institutions with greater windfall gains on their sovereign debt holdings increase loan supply to the corporate sector more, in periods following the OMT announcement. Looking to the impact on the real economy, they find out that investments and employment are not affected by the OMT windfall gains, this is in accordance with the results of Acharya, Eisert & al. (2015).

Regarding the OMT impact, Altavilla et al. (2014) employed a cross-country vector autoregressive model including six macroeconomic variables. They show that the OMT announcement influences government bond yields for Spain and Italy (they are decreased), while bond yields with the same duration in Germany and France seem to remain unchanged. Thus, any deviation in

monetary policy which influences the tendency to lend to firms would have a greater impact on the profitability and ability to finance operations of firms that are basically based on these loans.

Bougheas et al. (2005) and Kasyap et al. (1993) investigate the impact of monetary tightening on weaker financial firms. In order to implement their research, they create a variable which will measure external finance dependence and differentiates among bank loans and other external funds. Through this research they contribute another proof for a credit and bank lending channel by showing how these sources of external funds decline due to monetary tightening.

In addition, they conduct a panel data analysis where they investigate the impact of company characteristics on firm's access to various sources of external finance. Their main proposal declares that credit supply differs across time as, monetary policy stances adjust to business cycle dynamics. Their results show that smaller, riskier and younger firms are influenced by monetary policy more than other firms. Finally, through this research they prove a general broad-based credit channel effect through which monetary policy has an impact on lending conditions to diverse kinds of firms.

3.1.3.1 Aftermaths of OMT, SMP, LTRO, APP announcements

We can count more than fifty events of unconventional monetary policy for the period 2008-2012, when we are looking for factors affecting yield spread changes that are employed on Falagiarda's & Reitz's (2015) paper. One of their findings is that declarations of unconventional monetary policy, in general, reduced the risk of Eurozone sovereign debt, except from the case of Greece. In addition, Krishnamurthy et al. (2014) evaluate the effectiveness of the SMP, OMT and LTRO program on yields of distressed sovereign bonds in the Eurozone, the findings show a dramatic decline in yields for all countries close to SMP and OMT announcement dates, whereas, looking at the results of the LTRO program no dramatical changes for the GIIPS countries are noticed.

Chodorow-Reich (2014) dived into the announcement results of unconventional monetary policies on financial institutions and life insurers by

applying high frequency event studies on CDS, bond yields and equity price. He comes up with the conclusion that the introduction of these measures seems to have a significant equilibrizing effect on banks in the US, especially on life insurers. In general, his results imply that one of the main ways through which the unconventional monetary policy measures can have an impact on the stabilization of banks and their activity in the real economy is the recapitalization of the financial institutions by asset relief and strengthening balance.

According to M. Fratzscher's et al. research, liquidity injections via the supplementary LTROs with long maturity, the Outright Monetary Transactions (OMT) and the SMP have a positive impact on equity prices in the "core" and the "periphery" of the euro area, nevertheless, the bond yields have declined in the "periphery". In general, these policies affect most of the worldwide markets mainly through an increase in confidence/decline in risk aversion. Also, they lead to a minimization of sovereign risk in Eurozone as well as other strong - development economically countries whereas, simultaneously, they lead to a significant drop of the financial institution's credit risk. Furthermore, this study provides results that ascertain the fact that the policies that the ECB took have a positive impact on global markets for a non-long-term period since, they raise the asset prices and reduce the global price of risks in periods where the uncertainty's levels are relatively high.

3.1.3.2 Key Difference between QE and LTRO policies

Through their paper, Crosignani et al. (2015) contribute to the comparative analysis of large scale unconventional monetary policies across the globe by emphasizing on key differences between v-LTRO-style and QE-style policies. They found out that one of the possible contributions of v-LTRO-style policies is at the steepening of the term structure of interest rates, an effect that is at odds with the impact of QE-style policies and may have significant implications for financial stability and the aggregate maturity gap. Furthermore, the importance of v-LTRO-style policies has grown beyond the eurozone, with similar policies being implemented in countries such as Russia and China. The policy seems to be mainly aimed at alleviating liquidity difficulties faced by local banks, as well as, to eliminate the effects of any possible rollover crisis by over-indebted local governments.

3.1.3.3 The impact of monetary policy on bank profitability

The paper of Borio et al. (2015) focuses mainly on the connection between monetary policy and bank profitability. They use a data set including the 109 largest international banks for the period of 1995–2012. In addition, they determine to control for both macroeconomic conditions and typical bank-specific characteristics and due to the lack of detailed bank-level dataset on these characteristics, they built their study based on the BIS International Banking Statistics.

Their results show that there is a positive relation between the level of interest rates and ROA, which means that greater interest rates boost the profitability. Therefore, higher short-term interest rates rise banks' net interest income, as, they raise bank interest margins. Also, another interesting result that come up from this paper is that the bank's provisions are increasing when the interest rates are relatively high. Finally, they prove that there are non-linearities in the connections between the bank profitability and the interest rate structure.

3.1.3.4 The impact of QE on asset prices and growth

Regarding to the Quantitative Easing program Wallace (1981), Eggertsson and Woodford (2003) obtain comparable results with Modigliani and Miller (1958) for corporate capital structure. In case that markets are considered as full, households have the possibility to unwind any unexpected results could arise from extremely differences that could occur in the central bank's portfolio. Consequently, inflation, consumption and asset prices are uninfluenced by the QE program. Furthermore, Eggertsson and Woodford (2003) show that QE can impact positively on asset prices and growth through diverse ways and they assert that the QE program can be valuable if it can be used to identify possible monetary policy commitments. For instance, by purchasing long-duration bonds, the central bank might have an extra reason to keep interest rates in relatively low levels until maturity to stay away from large mark-to-market losses.

The second channel through which prices and portfolio change, is the so called "portfolio balance channel." Therefore, if the ECB decides to buy

government bonds, it decreases the amount of duration risk in the hands of investors, which as a result lowers the term premium. As a reaction to the lower term premium, investors can turn their attention to other assets and rise prices (and lower risk premia) of other risky assets. Based on the movements of investors, like how they behave across various risk factors or characteristics, other asset prices are influenced as well (Krishnamurthy and Vissing-Jørgensen, 2011).

Chapter 4: Data and Methodology

This part describes the sample implemented in this paper and the sources from where it is obtained. Furthermore, the regression models used, and the hypotheses tested are also presented in detailed in this section.

4.1 Sample

First, I use the Orbis Database in order to obtain the ISIN codes for the companies that I was interested in, which were all the public companies in Greece, Ireland, Italy, Portugal and Spain. I come up with a sample of 3.563 public companies. The ISIN codes were necessary since, the first step of my study was to download all the daily stock prices for the public companies of GIIPS countries within the period 01/01/2008 - 31/12/2015. The database which is used in order to retrieve the stock prices is DataStream. However, after obtaining all the data, I had missing values for some companies, so my final sample consists of 2.261 public companies.

Additionally, I use DataStream in order to download the necessary data for the market return. I decide to use the synthetic Euro benchmark bond as the "market return". The synthetic Euro benchmark bond refers to the weighted average yield of the benchmark bond series from each European Monetary Union member.

Then, I had to download the companies' data, one of the best source for this purpose is Orbis Database. Therefore, the data linked to company's

determinants (like assets, equity, Tobin's Q etc.) are obtained from consolidated annual statements of Orbis Database.

Finally, the variables related to the macroeconomic factors; Gross Domestic Product per capital and Inflation, are obtained from the Organization for Economic Co-operation Development Data (OECD Data).

4.2 Event study approach and stock market data

I choose the event dates in conformity with other event studies implemented in the past in order to investigate the impact of ECB unconventional monetary policy announcements on bond and CDS markets. Most of these event studies (e.g. Falagiarda & Reitz (2015) and Saka et al. (2015)) set the dates and times as are represented in Table 2.

In order to examine over what ways, the mentioned unconventional monetary policy measures are operating, I did not include in my study possibly relevant other event dates, this decision could be seen as a drawback since, it can decrease the reliability of the test, nevertheless, it does not create any significant biases. Furthermore, due to the importance of my selected event dates, concerning for instance the OMT, APP and SMP in these earlier studies, I can be convinced that these are the most important dates.

Table 2: Event table and description of European Central Bank unconventional monetary policy announcement

Date	Event	Description
10/05/2010	SMP	ECB announces SMP program
08/08/2011	SMP	ECB announces the expansion of SMP program
01/12/2011	LTRO	Draghi's speech, introduction of measures to restore credit channel of monetary policy
08/12/2011	LTRO	ECB announces LTRO program
26/07/2012	OMT	Draghi's "whatever it takes' speech, announcement of OMT program
02/08/2012	OMT	More details about OMT program
27/08/2012	OMT	Asmussen's speech about OMT program
06/09/2012	OMT	Details of the OMT program
22/01/2015	APP	Announcement expanded asset purchase program

4.3 Determinants of the firm performance

Research on firm's profitability drivers highlights three main categories of determinants of the firm profitability: 1) firm specific variables, 2) industry specific variables, 3) macroeconomic variables:

- **Firm specific factors:** The most common ratios for firm performance are return on assets (ROA), return on equity (ROE), Tobin's Q (Q) and Profit Margin (PM). There are some of the firm's specific factors that may have an impact on firm's profitability: asset

quality, asset's growth, business risk, level of competition, management efficiency and firm size.

- **Macroeconomic factors: T**his category includes variables such as inflation, long-term interest rate and level of economic growth – GDP.

- **Industry specific factors:** Industry specific factors are ownership structure and firm concentration index.

4.4 Definition of variables

The following parts present the definitions of the variables used in the regressions, as well as the hypotheses which are going to be tested in this paper.

4.4.1 Dependent variables

The dependent variable in my regression will be the Cumulative abnormal return of each program (SMP, LTRO, OMT, APP). Cumulative abnormal return, or CAR, is the sum of the differences between the expected return on a stock (systematic risk multiplied by the realized market return) and the actual return, often used to evaluate the impact of news on a stock price. Cumulative Abnormal Returns are usually calculated over small windows, often only days, because evidence has shown that compounding daily abnormal returns can create bias in the results.

.4.4.2 Independent variables

The main goal of this study, as it was stated in the introduction, is to investigate the relation between the ECB's measures on the public and the firm's performance. Many explanatory variables are added to the model, in order to control for other factors affecting the effectiveness of these measures. These factors are divided in three main categories: firm specific variables, macroeconomic variables and industry specific variables.

4.4.2.1 Measures of firm performance

As mentioned in the second section of this paper, the existing literature implements several measures to assess firm's profitability. However, this study focuses on two measures.

There are two categories of performance measurement; the accounting-based performance measurement and the marketing-based performance measurement. According to Hutchinson, Gul (2004) and Mashayekhi, Bazazb (2008), the accounting-based performance measures describe the management actions result therefore, are preferred over market-based measures when the relationship between corporate governance and firm performance is examined.

The accounting-based measurement that I choose in order to measure the firm's performance after the announcements of the ECB measures is the Return on Assets (ROA). In addition, I decide to include in my study an additional measure from the market-based measures category. In this category Tobin's Q is the most know and reliable measure, thus, I decide to use this.

i)   Return on assets (ROA)

The financial ratio of return on assets is significant when evaluating a business profitability, as, it gives the opportunity to see how efficient management is at using its assets to generate company's earning. A drawback of this ratio is that it may be deceiving when assets or liabilities are intentionally not included into the balance sheet. In general, the higher the ROA, the better is the firm's management. *The ratio is computed by dividing the net income to the total assets.*

ii)   Tobin's Q

Tobin's Q is one of the most well-known and accurate measurements of firm performance (Bozec, Dia & Bozec, 2010). The implementation of market value of equity may reveal the firm's future growth opportunities which could stem from factors exogenous to managerial decisions and this is indicated by the company's level (Shan & McIver, 2011; Demsetz & Villalonga, 2001). A high Q (greater than 1) implies that a firm's stock is more expensive than

the replacement cost of its assets, which implies that the stock is overvalued. *The ratio is computed by diving the market capitalization to the total assets.*

4.4.2.2 Firm-specific variables

Firm-specific variables interpret internal factors which can be affected by the managerial body of a firm. This paper analyzes the following determinants:

i) Firm size

The proxy for firm size employed in this study is the logarithm of total assets. In the existing literature, the impact of this variable on firm's profitability is mixed. On the one hand, there is evidence that the profit rates are positively correlated with the firm size (Jim Lee, 2009). Additionally, Negring et al. (2009) and Adenauer & Heckelei (2011) found that firm size may lead to higher levels of returns on assets. On the other hand, Caves and Porter (1997) point out that the relationship between firm size and profitability varies across industries. In addition, Amato (2004) find that the firm-size relationship holds in retailing industries only.

ii) Shareholder's Equity

This ratio is computed by dividing shareholder's equity to total assets of the firm. It is generally representing the amount of assets on which shareholders have a residual claim. This ratio calculates the percentage that the shareholders would receive in the case of a company-wide liquidation. If the ratio is positive, it means the company has more than enough asset value to cover its liabilities, on the contrary, if the figure is negative, the company has debts that outweigh its assets.

iii) Business Risk

There is a wide range of ratios that you can use to measure the business risk. One of them is the Financial Leverage Ratio, which measures the amount of debt held by the business firm that they use to finance their operations. In other words, it shows how much of the company assets belong to the shareholders rather than creditors. When shareholders own most of the assets, the company is less leveraged, in contrary, when creditors own a majority of the assets, the company is considered highly leveraged. This measure is

important for investors as it helps them to understand how risky the capital structure of a company is. This ratio is computed by dividing the operating income to the net income of a firm. In general, most of the studies indicated that leverage has a negative impact on financial performance (Faris Alshubiri et al. 2015).

iv)   Management Efficiency

To estimate the management efficiency, I calculate the Inventory turnover, which is a ratio showing how many times a company's inventory is sold and replaced over a period. It is calculated as net sales divided by inventory. In their paper Khan et al. found that Inventory turnover is negatively correlated with profit margin percentage, profit margin is another measure for firm performance, equivalent results were found from Koumanakos (2008) study.

4.4.2.3 Macroeconomic variables

It is well known that the economic environment is significantly affecting by the behavior of public companies. In this paper will be analyzed two macroeconomic variables: the economic growth and the inflation.

i)   Economic growth

The economic growth is measured by the GDP per capita growth. It is predicted to have a positive impact on the behavior of firms. This is because the increase in consumption leads to an increase in firms' income, which boosts firm's activity and performance (Petria et al., 2013).

ii)   Inflation

Inflation is the rate at which the general level of prices for goods and services is rising and, consequently, the purchasing power of currency is falling. The effect of this variable on firm's performance could be either positive or negative. In this study inflation is measured by the GDP deflator. Because the main goal of all these unconventional monetary policies is to boost development and increase inflation as much as possible, its impact should rise the overall effect of inflation on firm's performance. Nevertheless, whether this impact is positive

or negative, depends on whether the inflation was correctly anticipated by firms or not.

4.4.2.4 Industry-specific variables

Industry-specific variables are external factors that have an influence on firm's effectiveness and cannot be directed by the business's management. In this paper, we investigate the impact of market concentration on firm's performance.

i) **Market Concentration**

The Herfindahl-Hirschman index (HHI) is one of the most popular measures of market concentration (Athanasoglou et al., 2005). The index is obtained by summarizing the squares of market share of each firm competing in a market and can range from close to zero to 10,000. It is considered as a suitable measurement for market concentration, since it takes into account all shares existent in the market and weights every company based on their size. The evidence for the effect of market competition on firm's performance is mixed. On the one hand, Short (1979), Dietrich et al. (2014) find evidence that market concentration has a positive impact on firm's profitability. However, there are also findings suggesting that market concentration impacts negatively on performance (Petra et al. (2013), Michael Smirlock (1985)). These evidences are enhanced by the thought that high competition in the market raises the profitability.

As was mentioned previously, the main goal of OMT, SMP, LTRO and APP is to increase the economic growth and to boost the economic activity. It is known that the performance of the firms is strongly related to the general wealth of the economy. ***The main goal of this paper is to investigate the relationship between cumulative abnormal returns and firm performance.***

Table 3: Definition of independent variables

		Variables (Notation)	Definition/Formula
Independent variables	**Performance measures**	Return on Assets (ROA)	Net Income/ Total Assets
		Tobin's Q (Q)	Market Capitalization/ Total Assets
	Firm Specific variables	Firm Size (FSize)	Logarithm of total assets
		Shareholder's Equity (SEquity)	Shareholder's Equity / Total Assets
		Business Risk: Financial Leverage Ratio (FLeverage)	Operating Income/ Net Income
		Management Efficiency: Inventory turnover (Inventory)	Net Sales/ Inventory
	Macroeconomic variables	Economic growth (GDP)	GDP per capital growth annual
		Inflation (Inflation)	GDP, deflator annual
	Industry Specific variables	Market Concentration (HHI)	$\sum (Market\ Shares)^2$

4.5 Methodology

4.5.1 Daily stock prices

Firstly, I compute the difference of the logarithm of all stock prices for the dates between 01/01/2008 and 31/12/2015 in order to obtain the daily stock price returns. For instance, for the days 01/01/2008 and 02/01/2008 I found the

logarithm of stock prices for the first day and the logarithm of the second day later, I calculate the difference of these two logarithms. The descriptive statistics for the stock prices, for each country separately, are presented in Table 4.

As can be seen from Table 4, the mean of the daily stock return, over the period 2008-2015, is the largest in Spain (-0.0001), in the contrary the smallest is for Greece (-0.0011), also as it can be noticed, for all the countries, the stock price returns are on average slightly negative. In addition, regarding the standard deviation; the largest is presented for Greece and Portugal and the smallest one for Spain, providing evidence for a relative volatile Greek and Portugal stock market during the examined period. A normality test (the Shapiro-Francia W normality test) was implemented and the results indicate a significant degree of non-normality in daily stock returns.

Table 4: Descriptive statistics of daily stock prices.

	Italy	**Ireland**	**Greece**	**Spain**	**Portugal**
Mean	-0,0004	-0,0003	-0,0011	-0,0001	-0,0005
Standard Deviation	0,0283	0,0410	0,0457	0,0104	0,0469
Minimum	-2,2073	-1,2368	-1,7918	-4,5109	-1,4816
Maximum	1,4671	2,2122	1,9237	2,2993	1,8288
Normality Test	0,00	0,00	0,00	0,00	0,00

4.5.2 Dummy variable

As next step, I create dummy variables based on the announcement dates that are presented in Table 1, thus, I create one dummy variable for each announcement day. For instance, for the date 10-05-2010, which is the day that the ECB announces the SMP program, a dummy variable called "SMP1" was created and it is equal to 1 on the announcement day and 0 on the other days. The same methodology was followed for all the announcement days, in total I have 9 dummy variables. Table 5, presents the result of an OLS regression of

event log stock returns on a constant and the p-value indicates the significance at a 5% level.

Table 5: Cross sectional regression of event returns

	Stock prices	p-value
SMP1	0,0246	0,00
SMP2	-0,0151	0,00
LTRO1	0,0003	0,57
LTRO2	-0,0050	0,00
OMT1	0,0073	0,00
OMT2	-0,0054	0,00
OMT3	0,0018	0,00
OMT4	0,0060	0,00
APP	0,0035	0,00

4.5.3 Event study methodology

In this paper the use of an event study methodology has been implemented since, it helps to study the reaction of firm's stock price around economic events such as dividend announcements, mergers, earnings, equity announcements etc. The history of event study starts on 1933 when James Dolley investigate the effects of stock splits to stock prices. (Coutts & Roberts 1994). After these first pioneering studies, a number of adjustments have been employed.

Although the event study process has been extended over the years, it has remained more or less the same, until the moment that Fama (1969) in his paper "The Adjustment of Stock Prices to New Information" improve the process; conditional event study Acharya 1993, the power and robustness by Brown & Warner 1985 and the speed of adjustment measure Hillmer & Yu 1979.

It is assumed that when an event study is implemented, the event set includes all the announcements that have influenced assumptions about the future of monetary policy; these expectations have not been affected by anything other than these announcements; responses can be measured in windows wide enough so that they will capture long-run impacts but, not so wide that information affects stock prices through any other channels that are likely to have arrived.

4.5.3.1 Disadvantages of event studies

Although the benefits of the event study and its extensive application in the field of finance and economics, there are some issues that arise already from the selection of a proper market model. For instance, whereas Capital Asset Pricing Model is one the most promising model to recognize risk, it is proved to face difficulties with specific firms. Banz (1981) notices that firms with low market value yield more than large companies. In addition, Basu (1977) shows that companies with high Earnings/Price rations yield more than other companies.

Furthermore, Bartholdy & Peare (2004) examine the event study's significance with the small stock exchanges. In order to test this, they use data from Copenhagen Stock Exchange (CSE). What they find is that there are some prerequisites in order someone to be able to use the event study: i) 25 observations are needed to manage to have statistical power ii) trade-to-trade returns should be used iii) researchers should separate results from frequently traded stocks and other.

4.5.3.2 Calculation of Cumulative Abnormal Return

In order to calculate the cumulative abnormal return for each program, I firstly run a regression in which the dependent variable was the stock price return.

$$\text{stockprice}_{i.t} = a + \beta_1 * marketreturn_{i,t} + \beta_2 * SMP_1 + \beta_2 * SMP_2 + .. \quad (1)$$

Where:

Stockprice – is the stock price returns

Marketreturn – is the market returns

SMP_1 - *is a dummy variable equal to 1 when the date is 10/05/2010*
SMP_2 - *is a dummy variable equal to 1 when the date is 08/08/2011 etc.*

The cumulative abnormal return for each program is the sum of the coefficients for the certain financial program. Thus, for instance, the cumulative abnormal return for the SMP is:

$$\text{Car}_{SMP} = SMP_1 + SMP_2,$$

where SMP_1, SMP_2 are the coefficients that result from the regression (1), both are related with the SMP program. The same methodology is followed for the calculation of the Cumulative Abnormal Returns (CAR) for all the ECB's programs that are included in this paper.

Table 6 describes analytically the results from the regression (1). It can be seen from the table that the relation between the stock price return and the market return is positive (0.01339) and statistically significant. Furthermore, we can notice that the coefficient for all the announcement days is positively related with the stock price returns expect from the case of LTRO2 and OMT2 that present a negative coefficient. This means that when these two announcements were announced the stock prices decreased, therefore, there was a negative reaction from the market. It should be mentioned that all the results are statistically significant.

Table 6: Regression where stock price is the dependent variable

	Coefficient	p-value
market return	0,01339	0,000
SMP1	0,02480	0,000
SMP2	0,01414	0,000
LTRO1	0,00098	0,045
LTRO2	-0,00536	0,000
OMT1	0,00780	0,000
OMT2	-0,00560	0,000
OMT3	0,00197	0,000
OMT4	0,00624	0,000
APP	0,00490	0,000
_cons	0,00023	0,000

4.5.4 Regressions

In order to investigate the relationship between the cumulative abnormal return of each of the four measures (SMP, LTRO, OMT and APP) and the firm's performance I run the following cross-sectional regressions:

$$i)\ CAR_{SMP i,j,t} = a + \beta * ROA_{i,j,t-1} + \beta_1 * FirmSpec_{i,j,t-1} + \beta_2 * IndustrySpec_{j,t-1} + \beta_3 * MacroSpec_{j,t-1} + \varepsilon$$

$$ii)\ CAR_{SMP i,j,t} = a + \beta * ROE_{i,j,t-1} + \beta_1 * FirmSpec_{i,j,t-1} + \beta_2 * IndustrySpec_{j,t-1} + \beta_3 * MacroSpec_{j,t-1} + \varepsilon$$

$$iii)\ CAR_{SMP i,j,t} = a + \beta * Q_{i,j,t-1} + \beta_1 * FirmSpec_{i,j,t-1} + \beta_2 * IndustrySpec_{j,t-1} + \beta_3 * MacroSpec_{j,t-1} + \varepsilon$$

Where:

- i-FIRM, j-country, t-year
- CAR – overall cumulative abnormal return for each program
- $ROA_{i,j,t-1}$ – one-period lagged ROA (for certain year each time)
- $ROE_{i,j,t-1}$ – one-period lagged ROE

- $Q_{i,j,t-1}$ - one-period lagged Tobin's Q

- ε – error term;

Model (i)- (iii):

- $FirmSpec_{i,j,t-1}$ – firm size, business risk (leverage ratio), management efficiency (Inventory Turnover), Shareholder's equity

- $IndusrtySpec_{j,t-1}$ – market concentration

- $MacroSpec_{j,t-1}$ – inflation, GDP growth

The regressions investigate the relation between the cumulative abnormal return of each financial program and firm's profitability, measured by Tobin's Q, return on Assets (ROA) and Return on Equity (ROE).

When the coefficient of an interaction term is positive, it means that the cumulative abnormal returns are positively correlated with the firm's profitability. On the contrary, if the coefficient of the interaction term is negative, it shows that the market's reaction and the firm performance are negatively related.

Table 7: Descriptive statistics of variables

Independent variables: Firm profitability	Mean	SD
Q	13.968	242.49
ROA	0,004	0,122
Firm specific factors		
Fsize	9.747	2,164
Sequity	-3.929	192,981
Fleverage	2.864	110.842
Inventory	111.021	1.132.328
Macroeconomic factors		
GDP	0,009	0,032
Inflation	1,473	1,656
Industry specific factors		
HHI	0,182	0,338

Chapter 5: Empirical Results and Discussion

5.1 Empirical results

Table 8: The table illustrates the results of the cross sectional regression of the Dependent variable - cumulative abnormal return for OMT, SMP, LTRO, APP and the independent variables – Tobin's Q and other firm's characteristics (size, equity etc). ***p<0.05, **p<0.10

	CAR1	CAR2	CAR3	CAR4
Q	0,001673**	0,00199**	-0,0069**	0,00779***
Size	0,00106	0,00364	-0,000962	-0,000859**
Sequity	0,0003978**	-0,000594	-0,000895**	-0,000556**
Fleverage	-0,00000420	0,00000355	0,00000732	-0,0000203***
Inventory	-0,00000265	0,00000429	-0,00000214	0,00000538***
GDP	-0,0166203***	0,0011434***	0,0031167***	-0,0022518***
Inflation	-0,000405	-0,0001638***	0,0002826***	-0,0004699***
HHI	-0,000351	0,000163	0,000534	-0,000364
_cons	0,0007265**	-0,0001397**	0,0007486***	0,0015415***

Table 9: The table illustrates the results of the cross sectional regression of the Dependent variable - cumulative abnormal return for OMT, SMP, LTRO, APP and the independent variables – ROA and other firm's characteristics (size, equity etc). ***p<0.05, **p<0.10

	CAR1	CAR2	CAR3	CAR4
ROA	-0,001114	0,00783	-0,002167***	0,002955***
Size	0,000236	0,000213	-0,000533	-0,00212***
Sequity	0,00229**	-0,00214**	-0,000821***	-0,00226**
Fleverage	-0,000000399	0,00000413	0,00000883	-0,0000206***
Inventory	-0,00000391	0,00000706	0,00000175	0,00000624***
GDP	-0,0158748***	0,0011813***	0,003122***	-0,002023***
Inflation	-0,00087	-0,000162***	0,0002895***	-0,0004562***
HHI	-0,000984	0,000854	0,000585	-0,000527**
_cons	0,0008537**	-0,0000486	0,0006557***	0,0016778***

Tables 8-9 illustrate the main empirical results from the cross-sectional regressions that were presented in the previous chapter for cumulative abnormal returns of OMT, SMP, LTRO and APP programs. For instance, in table 8 the first row summarizes the impact of firm performance (calculated by Tobin's Q) on Car1, Car2, Car3 and Car4. The rest row reveals the impact of various firm determinants on the cumulative abnormal returns of the four measures. The same regressions are displayed on tables 9 but this time based on the Return on Assets.

Looking at our findings from the above tables and focusing firstly on the firm's performance it can be seen that the results in general are similar for ROA and Tobin's Q. In more details, firm performance (measured by Q, ROA) seems to

be negatively related to Car3 and positive related to Car4, most of the results are statistically significant. This means that high profitable firms show a positive impact on Car4, the aim of which is the reviving of Euro Area economy and a negative impact on Cumulative Abnormal returns of Outright monetary policy program.

Moreover, the results for Car1 and Car2 are mixed. On the one hand, Q seems to be positively related to Car1, which includes the announcements for the purchase of government bonds of distress eurozone countries in order to reduce the default risk for them. On the other hand, Car2 seems to be positively related to Q and ROA. However, should be mentioned that the results for for the first two cumulative abnormal returns are statistically important only in the case of Tobin's Q.

Next, focusing on firm's size results we can see that the these are the similar between the different measures of performance. It can be noticed a positive relation between the firm's size and Car1, Car2 and negative for the rest cumulative abnormal returns. This can be interpreted finding that shows a tendency for big firms to affect positively the first two measures that the ECB imposed (which are related to the purchase of government bonds of distressed countries and the change of the maturity by providing loans with longer horizons, respectively) whereas, the Car3 and Car4 seems to be negatively influenced by large firms. It is worth mentioning that the results are statistically significant only in the case of APP cumulative abnormal returns (p value = 0.00 and 0.003 for Q, ROA, respectively).

Equivalent results to the previous are found also for the shareholder's equity, which shows the percentage of shareholder's equity to the total assets. As it can be seen it appears to be a positive relation between equity and Car1 while for the other three cumulative abnormal returns this relation is negative. Therefore, based on our results, firms with high shareholders equity affect positively the cumulative abnormal return of Outright Monetary Policy and negatively the rest CARs. nevertheless, this result is not statistically significant as the results from Q and ROE are.

Next, continuing with the leverage, we get mixed results from our analysis. What we can see from these results is that high leveraged firms, so, firms that use debt and other liabilities in order to finance their assets, have a negative impact on Car1 and Car4 and a positive impact on the rest cumulative abnormal returns. However, the fact that the value of the coefficient is very low and in the combination with the fact that more of our results are not statistically significant could suggest that leverage seems to not have a considerable influence on cumulative abnormal returns of the examined programs.

The general picture that emerges from the inventory analysis is mixed. It seems that there is a negative relation between high management efficiency, measured by the inventory, and Car1, also, the same is noticed for Car3 for the tables 8 (Tobin's Q). On the other hand, a good usage of assets and liabilities, thus, a high management efficiency seems to be positively related to the cumulative abnormal returns of LTRO and App. However, as it happens in the case of leverage the coefficients are low and most of the results that we obtain are not statistically significant, so we could draw the conclusion that inventory does not seem to affect the cumulative abnormal returns at a considerable level.

Next, we analyze the results of the macroeconomic factors that are included in our analysis, these are the Inflation and the GDP. Both factors when they are high seems to have a clear negative impact on Car1, Car4 and a positive impact on Car3. In addition, a high inflation has a negative impact on Car2 whereas a high GDP seems to influence positively the cumulative abnormal returns of LTRO. The results are the same for all tables and statistically significant for table 8 (Tobi's Q).

In order to calculate the market concentration, I use the Herfindahl-Hirschman index. When the HHI is high, which means that we have high competitive firms, the Car1 and Car4 are negative and Car2, Car3 positive. This finding shows that high competitive firms have a positive impact on cumulative abnormal returns of LTRO and SMP and a negative impact on the rest returns.

5.2 Robustness test

The robustness of these results is checked by implementing another two important measures of firm performance:

1) **Profit Margin**; which is calculated as net income divided by revenue.

2) **Return on Equity**, this ratio is computed by dividing the net income to the shareholders' equity.

The findings from robustness test are in line with the main findings (when Tobin's Q and ROA are used) with only few differences. For instance, in the case of the Cumulative Abnormal Returns of APP, the coefficient of size, when profit margin is used, is positive. However, when the other three performance measures are implemented the relation between Size and Car4 is negative, therefore, there is more evidence for supporting the negative relationship between the size of a firm and the car4

Furthermore, from the analysis we obtain mixed results regarding the relation between firm's profitability and the cumulative abnormal returns. Using the Tobin's Q this relation is found to be positive for Car1, Car2 and Car4, but, using the ROA we get a negative relation between it and Car1. The findings from robustness test (both Margin profit and ROE) seems to be more in conformity with the results of Tobin's Q. Therefore, it can be drawn the conclusion that the relation between Car1 and firm's profitability seems to be positive.

An interesting and unexpected finding from the robustness test is that in the case of shareholders equity I find a positive relation for the cumulative abnormal returns of APP, which is not in line with the first finding. Consequently, the results are mixed, and any safe results can be made. Finally, the robustness tests show a clear negative relation between the inventory and the Car3, which is in line with the results from table 8.

Chapter 6: Conclusion

This paper aims to answer one main question; Which is the relation between the cumulative abnormal returns of the unconventional monetary policies that the European Central Bank decided and the firm's performance-characteristics.

Using an event study methodology, I provide evidence for significant stock market effects on announcement dates of the SMP, LTRO, OMT and APP programs. In addition, using a simple cross-sectional regression approach of event returns on firm's performance I found mostly positive and significant results, only the OMT program is proved to be negatively affected by the firm profitability.

Regarding the cumulative abnormal returns of the Securities Market Program overall, the results show a positive relation between Car1 and firm performance. Additionally, from the analysis is found that large firms or firms with high shareholder's equity have a positive impact on the Car1. On the contrary, the relation between firm determinants such as leverage, inventory, GDP and HHI and Car1 seems to be negative.

The general picture that emerges from the Car2 results is a positive relation for almost all the firm's determinants (performance, size, leverage, GDP, HHI) expect from the inflation and equity that seems to be negatively correlated with the cumulative abnormal returns of LTRO.

Next, summarizing the results from the regressions of Car3, it can be seen the results are mixed. On the one hand, there is a positive relation between leverage, GDP, HHI, inflation and Car3. On the other hand, high profitable firms seem to be negatively related to the cumulative abnormal returns of OMT, the same has been noticed for large firms, firms that have high shareholder's equity and high inventory.

Finally, I found that the cumulative abnormal returns of the APP, which is aimed to reviving the euro area economy, is positively related to the firm's performance and inventory. While, it is negatively affected by the size, leverage, GDP, HHI and inflation. Unfortunately, we cannot draw any conclusion for the

relation between the Car4 and the size, since, the results that we get are mixed and not so clear as for the other cases.

6.1 Further research

Since the subject of unconventional monetary policies is a controversial and quite complicated topic, many aspects have not been empirically addressed in the existing literature yet. Therefore, I believe that it would be interesting further studies to focus on the consequences of these policies on non-financial institutions of the GIIPS countries and the strongest economical countries of EU so that we can identify if there are significant differences between them and which economy was benefited the most. Another relevant topic would be to analyze empirically the impact of all the programs or each of them separately on the economic growth in the Euro Area. One more avenue for refinement would be to investigate if the addition of other explanatory variables will lead to different or more significant results.

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Appendix 1

Figure 2: Dynamic chart for the synthetic Euro benchmark, form 01/01/2008 till 31/12/2015 for the Euro area.
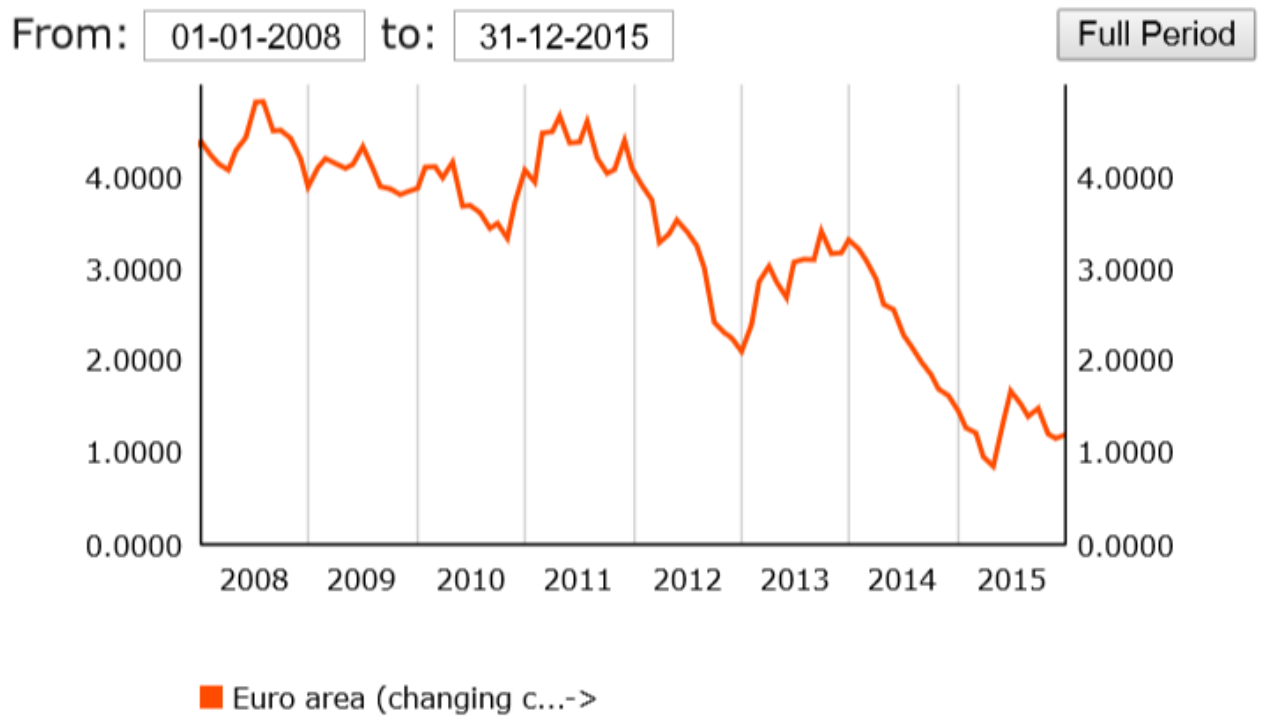
Source: *European Central Bank, Statistical Data Warehouse*

Appendix 2

Robustness test – Results

1) Profit margin

Table 10: The table illustrates the results of the cross sectional regression of the Dependent variable - cumulative abnormal return for OMT, SMP, LTRO, APP and the independent variables – Profit Margin and other firm's characteristics (size, equity etc). ***p<0.05, **p<0.10

	Car1	Car2	Car3	Car4
Profit margin	0,000258	0,000479**	-0,000211***	0,000265
Size	0,0000744	0,0000208	-0,000188***	0,0000166
Sequity	0,0009036	-0,0002069	-0,0003286	0,0002316
Fleverage	-0,0000201	0,00000449	0,0000019	-0,00000165
Inventory	-0,00000185	0,000000242	-0,000001	0,00000668
GDP	-0,0436778***	0,0029772	0,002647	-0,0003189
Inflation	-0,0011146***	-0,0001804***	0,00042***	-0,0005025***
HHI	-0,00048355***	0,000371	0,0003255	-0,0001923
_cons	0,0074984**	0,0003678	-0,0022727**	0,0009988**

2) Return on Equity

Table 11: The table illustrates the results of the cross sectional regression of the Dependent variable - cumulative abnormal return for OMT, SMP, LTRO, APP and the independent variables – ROE and other firm's characteristics (size, equity etc). ***p<0.05, **p<0.10

	CAR1	CAR2	CAR3	CAR4
ROE	0,00419**	-0,00531	-0,00428**	0,00202***
Size	0,00215	0,000386	-0,000803	-0,00171***
Sequity	0,0002097	-0,000199	-0,0001112**	0,000197
Fleverage	-0,00000401	0,00000415	0,00000884	-0,0000205***
Inventory	-0,00000397	0,00000712	-0,00000181	0,00000635***
GDP	-0,015887***	0,0011831***	0,002161***	-0,0020295***
Inflation	-0,000868***	-0,0001621***	0,0002901***	-0,0004572***
HHI	-0,000916	0,000845	0,000117	-0,000478**
_cons	0,0008809***	-0,0000809**	0,0006873***	0,0016288***