UNIVERSITY OF GREENWICH

TITLE:

“Government bonds spreads and common stock returns of banks: evidence from Greece”

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This assignment studies the influence of ten year government bonds spreads and the conditions of the domestic market to the stock rates returns of fourteen Greek banks. The dependent variables of the regression model are the ten years government bonds spreads, the rate returns of the General Index of the Athens Stock Exchange market and the announcements that was made by the Greek government and by head officials of the European Union. Moreover is analyzed the correlation of the spreads formation and the announcements that was made from the Greek government and the European Union in order to deteriorate the fiscal distortions of the central government. Greece faced significant problems after a long period of macroeconomic growth. In order to avoid bankruptcy a bailout mechanism was imposed by the support of the Monetary Fund, the European Central Bank and the European Union. The research results however indicate that the Greek banks are more vulnerable to the domestic market conditions that to the ten years government bonds spread increase. The relevance between the announcements and the stock returns of the Greek banks, was either positive or negative, but not statistical significant. Additionally the correlation of the central government announcements and the spreads increase is negative and statistically significant. The research results highlight the implicit finding that the spreads formation has a duplex relevance to the attitudes of macroeconomic aggregates of an economy. Thus the increase of ten years government bonds spread should be confronted by the enhancement of the real economy’s activity.

Keywords: government bonds, spreads, fiscal crisis, announcements, banks, bail out, domestic market conditions
1. Introduction

This paper looks into the impact that has government bond spreads upon the performance of banks stocks. The aim of this paper is to analyze this relation in order to draw significant conclusions about the significance that present government bond spreads. Additionally, the research might present important findings about the determinants of the performance of banks stocks returns.

This assignment focuses on the analysis of the Greek economy and consequently the impact that is being asserted upon the performance of Greek banks stocks returns. In this light, research integrates into its structure the financial crisis of 2008 and by extension the intense fiscal crisis of Greece. It is remarkable that since 2007, the world economy confronts the largest financial crisis after the unprecedented recession of 1930. Crisis accrued as a consequence of the mortgage defaults in USA and the concomitant collapse of Lehman Brothers and afterwards transmitted to the most countries worldwide (Demyanyk and Hasan, 2010). Euro area was one of the places that crisis manifested in specific countries. As it is well known, Greece is included in the countries characterized as PIGS (Portugal, Ireland, Greece and Spain). This set of countries face economic problems that are relative to the public deficit and/or their public debt (Katsimi and Moutos, 2010).

Nevertheless, Greek financial crisis is not only resulted by the financial turbulent in USA and the domino that it has caused. Another significant determinant is the endogenous matter of the Greek government’s selection in public economic field as the public expenditures were much higher than the public revenues for a continuous period. Moreover the entry to the Euro area, led Greece to lend with low rates, and the wasteful strategies of public choice were continued. This dysfunctional environment led the country to take loans from the European Union in order to make investments and pay the public expenditures. But when the deficit verged its highest pick European markets seem unavailable to guarantee for the options of Greek government unless the country was accepted the bail out of the International Monetary Fund (Alpha Bank, Economic Report, June 2010).

The assignment investigates the effects of wealth of the spread volatility of the 10 year Euro Greek Government Bonds. Spread volatility is determined by taking the yield difference between 10 year Euro Greek bonds and the 10 year German bonds which are published by the Greek and German government respectively. It is worth
notable that the German government bond is called ‘10 year German Bund or ‘risk-free benchmark’. The wealth effects of these spreads are examined by measuring the influence of government bond spread on the common stock returns of banks in Greece. The purpose of the research is to understand the degree to which Greek banks are protected against spread changes how well they can hedge this type of risk. In addition the research explores the influence level of the Greek banks to the endogenous market conditions.

The significance of studying the impact of the spread of the 10 year Euro Greek Government Bonds upon the performance of the banks stocks is major, because it presents the potential correlation that exists between fiscal and financial field. Specifically, studying the impact of the spread of the 10 year Euro Greek Government Bonds upon the performance of the banks stocks, in periods of economic crisis, might present significant conclusions as far as it concerns the understanding of the development of financial institutions. In addition, potential correlation between the results and the conditions of domestic market might have an important and enlightening role as far as it concerns endogenous dependences that are being developed. Particularly, the problems that are being arisen in periods of low liquidity, are of great importance and might cause turbulences upon bank system (Amihud, 2002).

Consequently, the basic aim of this assignment is to examine if the performances of 10 year bonds could function as a basic determinant of the performances of banks stocks. Nevertheless, in order the framework that this impact takes place, to be understandable, this research takes into consideration the significant role that domestic market plays upon the performance of the banks. In other words, this research integrates into the determinants of stocks performances of the banks, the General index of the Athens Stock Exchange and the announcements that was made by the Greek government and the head officials of the European Union. These announcements was critical for the determination of ten years government bonds spreads as they were done in order Greece to avoid bankruptcy. Consequently, in the linear model that is being used, the dependent variable is the performance of bank share and the independent variables are the performances of spreads of 10 year bonds, the performances of the general index of Athens Stock Exchange and the announcements mentioned above as a dummy variable. It is notable that, to a great extent, the econometric model which is being used relies on the assignment of
Dimenis & Staikouras (1998). In the research participate totally, 14 Greek banks, from which it was taken into consideration 469 remarks of their stocks performance in respective meetings.

Although, the basic findings of the regression show a slight impact of the spreads of 10 year bonds upon the banks stocks performances. This impact is moving either on positive or on negative levels. On the contrary, the impact of the general index of Stock Exchange and of the general bank index upon the performances of 14 banks might be characterized as greater or more important statistically. This result might support the endogenous character of the function of bank market in Greece. But the most interesting issue of our results is that in a set of banks was found positive influence in their stocks from the announcements formation.

The assignment is organized in the following structure: in the second section is being presented the literature review. Literature review includes the presentation of the basic macroeconomic of Greek economy, the citation of the basic characteristics of the Greek bank system and the presentation of related researches. In the third section is being presented the way through which the research was done and the choice of the methodology. In the fourth section takes place the presentation of the basic findings and their conversation. Last but not least, in the fifth section are specified the basic deductions that have come up through the research.
2. Literature Review

2.1 The Greek Economy in 2006 – 2009

The period of economic growth of Greek economy was continued until 2008. From 2009 and then, Greek economy has entered a period of recession, according to the data of table 2.1

Table 2.1 Rate of variation of the Greek Gross Domestic Product 2006 – 2010

<table>
<thead>
<tr>
<th>YEAR</th>
<th>GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>4,5</td>
</tr>
<tr>
<td>2007</td>
<td>4</td>
</tr>
<tr>
<td>2008</td>
<td>2,9</td>
</tr>
<tr>
<td>2009</td>
<td>-2,0</td>
</tr>
<tr>
<td>2010</td>
<td>-4,0</td>
</tr>
</tbody>
</table>

Source: Eurostat

Taking into consideration the data of Table 2.1 it could be drawn the conclusion that Greek economy has come into a process of recession. The development of the period 1994 – 2005 was continued during the years 2006, 2007 and 2008. Nevertheless, since 2008 Greek economy introduced a negative orientation.

These negative repercussions are due to two basic factors: firstly, the impact that has put the world financial crisis of 2008 upon Greek economy and secondly on endogenous problems. World financial crisis had negative far – reaching implications on the process of interbank lending and as a result, it was difficult for small businesses to borrow from Greek banks. In parallel, the politic of strong euro which was adopted by the European Central Bank, led the weak economies of euro area to have difficulties in fulfilling effective exports, as their products became more and more expensive. If we take into account the fact that small countries of euro area very often buy products from the richest countries, then it could easily be understood that they cope with very high fiscal cost (Institute for Labor Force, 2009).

The peculiarity of this situation could be easily understood through the lending conditions that faced the Greek economy for a long period. After the entrance to the euro area it was easier for Greece to proceed in borrowing, in order to satisfy the needs of public sector. This happened, on the one hand, because as a member state of euro area was facing low cost during the process of borrowing and on the other
hand, due to the fact that its positive elements of its economic growth, reinforced its public awareness towards financial markets. The low cost of borrowing, not only for the state, but for the businesses of the financial sector (banks and other financial institutions) as well, strengthened the liquidity level of the market. As a consequence, the development conditions were improved even more (Bank of Greece, 2009).

Nonetheless, this course suddenly was reversed. As it has already been mentioned, the sock that Greek economy has faced, is due to exogenous and endogenous factors. Exogenous factors, in action, had put public and financial sector out of world financial markets. In first analysis, the endogenous problems had come up from the difficult situation in which the fiscal finals of Greece were entered into (Institute for Labor Force/ 2010). In table 2.2 there are presented data for the fiscal deficit and for the public debt as percentage of the Gross Domestic Product of Greek economy.

Table 2.2 Deficit and Debt of Greek economy

<table>
<thead>
<tr>
<th>YEAR</th>
<th>DEFICIT</th>
<th>DEBT</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>-3,6</td>
<td>97,8</td>
</tr>
<tr>
<td>2007</td>
<td>-5,1</td>
<td>95,7</td>
</tr>
<tr>
<td>2008</td>
<td>-7,7</td>
<td>99,2</td>
</tr>
<tr>
<td>2009</td>
<td>-15,4</td>
<td>126,8</td>
</tr>
</tbody>
</table>

Source: Eurostat

It could be easily understand, through the data of the table 2.2, that the deficit of the budget of the Greek economy from 3.6 % in year 2006 was increased to – 15,4 % in year 2009. Respectively, public debt of the general government from 97.8 % in year 2006 was increased to 126.8 % in year 2009. To a great extent, this development was due to a serious decrease in public revenue that public sector presented the same period (Pelagidis & Mitsopoulos, 2011). Consequently, there was an imbalance in public budget that led to the misconduct of public economics.

These data were reinforced by the existence of an intense inflation, which made the Greek problem more difficult. In table 2.3 are presented the aggregated data of the Greek inflation.
Table 2.3 Inflation of Greek economy 2005-2009

<table>
<thead>
<tr>
<th>Year</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inflation</td>
<td>3,5</td>
<td>3,3</td>
<td>3,0</td>
<td>4,2</td>
<td>1,3</td>
</tr>
</tbody>
</table>

Source: Eurostat

If we enrich the above data with the data that average inflation for the previous months of 2010 was approximately in 5 % (data of the Greek Statistical Authority), it will come up a conclusion of a very difficult economic conjuncture. A characteristic element is that the existence of an intense inflation in a country might provoke high variation of the economic function, due to the efforts of the economic authorities to confront it, on one hand and due to the function of the economic mechanisms of the economic system that provoke it, on the other hand (IOBE, 2010). This variation comes up because of the weakness of the economic authorities to decrease the inflation, as it is taking into consideration the inflation perspective that might come into the economy (Kintis and Pournarakis, 1993:67). It is obvious that this variation of the general prices level might cause serious turbulences into the exchange rates and as a consequence the appearance of significant pressure upon Greek exports (Bank of Greece, 2009).

The effect of the above data upon world economic relations and especially world trade relations in the Greek economy is obvious. Intense inflation leads to the increase of prices in the Greek products and consequently they are more expensive than others, which are substitutes of them (Tsakalotos, 2010). If in that fact, we sup up the high exchange rate of euro towards other currencies, then it is obvious why the Greek products face distortions in their world circulation (Bank of Greece, 2009).

In other words, the effect of the financial crisis and the concurrent economic crisis of the Greek economy in world trade transactions is significant. If we take into consideration the measures that are encapsulated in the πακέτο στήριξης that the Greek government announced in the spring of this year, which are, in action, restrictive economic policy, then the problem will be more obvious. Specifically, liquidity weakness that exists in Greek market imposes obstacles in the investments funding, and consequently creates negative repercussions into world commercial activity. These outcomes could be connected with the banking sector function for the
reason that the fiscal problems generate low liquidity of the market. Thus the banking sector found in the eye of the storm.

2.2 The Greek fiscal crisis

In November 2009, Greece got into a major fiscal crisis, which became crisis in the Greek government bonds market and continues until today. The crisis broke out after the new Government’s announcement in November 2009 that the country’s budget deficit was 12.7% of GDP and not 6%-8%. The national debt to GDP ratio was also at that moment 113 per cent. European Union heightened the negative evaluation about the situation in Greece by predicting that both deficit and debt not only will not be declined in 2010 but they will also be increased up to 12.8% and 135.4% of GDP in 2011 (Alpha Bank, Economic Report, June 2010).

The previous prediction by the European Commission led to degradation of the Greek debt credit rating of Greek debt by Fitch and S&P’S from A- to BBB+ and by Moody’s from A1 to A2. Furthermore, the European estimations and the above degradation provoked crisis in the Greek government bonds market: spreads between 10-year Greek government bond and 10-year government bond issued by Germany as well as Credit Default Swaps (CDS) towards Greek government bonds were inflated in a very short time (Delis and Mylonidis, 2010).

The conversion of this crisis, which was initially a consequence of the Lehman Brothers collapse in USA, to a systematic crisis was for many an unexpected event and a “shock” for the Euro officials and the euro market. However, this fast is in dispute until today because many claims that European Union was familiar with the exact fiscal situation of Greece. The unstable Greek financial environment not only has led to the large inflation between Greek and German Bonds but it has also cause “abnormalities” to the markets of Spain, Ireland and Portugal. In addition, it has caused fears for the collapse of “euro” (Katsimi and Moutos, 2010).

At February 2010 the famous economist Nouriel Roubini stated that if Greece government does not reconcile in the highest level both its financial measures and policies in order to make the country competitive again in the markets without instabilities, a mechanism of bailout by the European Union and the European Central Bank will still be needed if Europe wants to avoid same phenomena in the other countries of the eurozone (2010). Roubini added then that if the situation do not
change the negative impact to the survival of the European Monetary Union will be extremely significant. He continued by saying that at the end a bankruptcy and a loan default by Greek part could provoke exactly the same consequences to the global system as mortgage defaults and the collapse of Lehman Brothers caused in 2008.

After many pressures, Greece accepted finally, in May 2010, the financial support of €110 billions of the International Monetary Fund in order to consolidate its fiscal situation. Until today, many events took place and Greece is trying in a daily base to apply the “tough” provisions of Memorandum in order to take loan installments (Alpha Bank, Economic Report, June 2010). According to the report for the Greek financial-credit stability, written by the Bank of Greece in July 2010, unfortunately, the unpleasant fiscal situation in Greece influences in a great degree the stock prices of Greek banks.

### 2.3 The Greek Banking Sector

Bank field, is one of the pivots in economic activity of Greek’ sectors. According to the data of the Greek Statistical Authority (2011) during the period of the previous decade services participation of the financial field into the Gross Domestic Product ranged from 3.75 % to 4.95 %. In spite of, the fact that this data isn’t especially high, it’s worth noting that this particular field and especially bank environment is regarded as one of the most significant of the economic activity.

In general, after the entrance of Greece into the Economic and Monetary Union, it was developed a favorable macroeconomic environment for Greek banks. The substitution of the weak drachma from the powerful euro provided significant perspectives to Greek bank market for development and modernization. Increase rate returns reduction, exchange rate stability that took place in favor of euro, policies of restricting deficits and the dynamic economic development of the Greek economy during the period of 1996 – 2008, entered Greek bank market into the centre of domestic and world economic development (Karamouzis, 2002: 64 -66)\(^1\).

Nonetheless, bank sector is governed by a special characteristic. The peculiarity that bank sector presents is due to the fact that money holds a prominent

\(^1\) It’s important to note that many Greek banks chose to export their activities through the process of amortization of banks and financial institutions of Balkan economies.
position not only as a means of exchange or means of measurement or preservation of value, but also as a basic productive factor (Benos, 1996: 47). Consequently, the value that is being incorporated into a monetary unit influences and forms the financial institutions operation, to a significant degree. This element is determinative, because the fluctuations in the money value, either through interest rate or through inflation and exchange rate, influence directly the instability that is being connected with the business activity of financial institutions. The above mentioned element is the keystone of bank activity. Nonetheless, as the basic mission of a bank is to buy money from its depositors and to sell it through loans to its mortgage holders, is normal, because money is a basic product, to be subject to significant fluctuations of its value. Beyond money, bank system is being influenced by a series of variables.

The market of the Greek bank system is being characterized by a special dynamic, in spite of the fact that, due to the current financial crisis and the fiscal deficit, cope serious disorders. According to data of Bank of Greece\(^2\), there are approximately 462 financial institutions in Greek region. More specifically, there are 65 financial institutions that have their headquarters in Greece, 340 financial institutions that have their headquarters in another member state of the European economic space, which provide services to Greece and 57 other companies of the broader financial field. As far as it concerns the 65 financial institutions, their structure is the following:

- 35 financial institutions (19 commercial and 16 cooperative banks) have their head offices in Greece, have been certified and supervised by the Bank of Greece and they are subjected to the law of 3601/2007.
- 24 financial institutions have their headquarters in another member state of the European Union, they are subjected to the same legislation, but they are supervised by the authorities of their origin country.
- 5 financial institutions have their head offices in countries which are not member states of the E.U., but they are supervised by the Bank of Greece.
- 1 financial institution which is not subjected to the provisions of the above legislation (Law 3601/2007) and that is the Deposits and Loans Fund.

\(^2\) The data is retrieved from the following electronic address: http://www.bankofgreece.gr/Pages/el/Supervision/SupervisedInstitutions/default.aspx:2011
A special interest presents the location of Greek banks in comparison to the rest of the member states of the European Union and the Eurozone. In table 2.1 is shown the ratio of banks per inhabitant in these regions.

Table 2.4 Number of financial institutions per inhabitant

<table>
<thead>
<tr>
<th></th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greece</td>
<td>3.365</td>
<td>3.251</td>
<td>3.111</td>
<td>3.005</td>
<td>2.902</td>
<td>2.740</td>
</tr>
<tr>
<td>European Union</td>
<td>2.377</td>
<td>2.316</td>
<td>2.269</td>
<td>2.183</td>
<td>2.123</td>
<td>2.092</td>
</tr>
<tr>
<td>Euro area</td>
<td>1.872</td>
<td>1.864</td>
<td>1.839</td>
<td>1.744</td>
<td>1.735</td>
<td>1.730</td>
</tr>
</tbody>
</table>

Source: European Central Bank

Examining the above table, it could be easily understood that despite the decreasing trend, which was observed during the last 6 years, Greece is still having a significant large number of financial institutions in comparison to the respective medium averages of European Union and Euro area (ECB- Structural Indicators for the EU Banking Sector, January 2010). Except for the peculiarity of the Greek territory (many islands, many highlands with significant population), the causes of this deviation might be find in the fact that many of the banks belonged to the public sector but also in high demand for bank products and services on behalf of the population. It is important to understand that trade competition among banks plays a significant role, such as their basic mission is to meet the needs for the general public.

As far as it concerns the market share of the Greek banks, this presented serious increasing trends during the period of the last years. More specifically, market share of the five largest banks in Greece reached 69.5 %, presenting a small increase in comparison to previous economic periods, according to data of 2008 (Greek Bank Union, 2010:28-29). It is important to note that the concentration rate in the respective market of Europe of 27 states is in lower level, approaching almost 58%\(^3\). Beyond this granted deviation, it is also a fact that the concentration rate of the Greek market is lower than the corresponding rate of the states of Euro area which have approximately the equivalent population with Greece (the Netherlands, Belgium, Finland). Finally, capital adequacy of Greek banks is in satisfactory levels, because their related index was, in year 2008, in 10 percentage units (Bank of Greece, 2009).

\(^3\) The data indication takes place in terms of Assets Structure.
Inevitably, in the last quarterly of 2009 banks faced, as well as the Greek country, their degradation, the degradation of their subsidiaries and the degradation of their securitizations. Furthermore, European Union was for them the only financing source due to the fact that global markets refused to make investments to Greek financial institutions. Furthermore, although, Greek banks’ profitability reduced in 2009, it remained in positive levels. Negative impact on the profitability had the low interest revenues. However, some banks like Alpha Bank and Marfin in order to give a boost to their liquidity proceeded to augmentation of their equity.

2.4 Spreads

According to Ebner (2009), government bonds are those bonds which are published by a specific government. A government issues bonds in the currency of its own country. In reality, government bonds are loans that are agreed by the legal authorities of different countries which stipulate to pay off on a determinate date. In other words, government bonds represent the commitment of a country to return the credit that has been given for a specified period of time. A appointed interest rate is paid two times a year by the nation which has taken the loan. (Ebner, 2009).

In general, bonds issued by governments are faced as one of the most secure investments due to the fact that nations are not willing to go bankrupt or reveal loan defaults or loan repayments. However, there are some circumstances such as are bankruptcies and reshuffle debts in which it is not sure that an investor will take his/her money back. Last but not least, it is all known that government bonds are negotiated to the stock market. In that market, where buying and selling are taken place, prices can be increased or declined based on the law of supply and demand (Christiansen, 2000).

On the other hand, Bond spreads represents the risk premium an investor wants to achieve when he buys a particular bond issued by a nation rather than holding another of a different country. In general, we calculate spreads by measuring “the difference between the yield to maturity (YTM) of a 10 year government bond published by a country and denominated in Euro and the YTM of the respective 10 year German government bond” (Ebner, 2009).
2.5 Spreads and Economic Activity

The significance of spreads in the development of economic activity is great, as they have the power to determine the terms of economic operation in the strategies formation of main economic actors. This impact is functioned throughout a process of interpretation of the real economy’s basic indexes. Through a cognitive framework spreads are –among others) significant determinant factors of the employment rate, the GDP rate, the gross fixed capital formation (Faust et al, 2011).

But on the other hand it is remarkable that the spreads attitude is being determined by the real economy process. More specifically, the inflation rate, the terms of international trade, the solvency and the liquidity level of an economy impacts their governments spreads formation (Min, 1998). Interestingly the spreads level enacts as a predictor of the inflation rates and especially in the long term (Moddy & Taylor, 2003). So, it can be stated that the spreads formation and the economic activity have a bidirectional coherence that varies depending in a matter of factors. In a more analytical statement it can be addressed that the recession of the Greek economy that was discussed above was being impacted from the fiscal domestic crisis, but also influenced the spreads high levels.

These findings have considerable importance because they shed strong light to the connection of real economic process and the financial operation of international markets. It is apparent therefore that as the economies show different results in their fiscal, dissimilar spreads rates will be exposed. Hence it is very difficult the government bond’s spreads of different countries to follow a random walk, or to be simply the same. In the Euro area case, where the participants (or the state members) are economies with different structures and diverse competitive advantages, spreads fluctuations is a common phenomenon. Furthermore there are significant implementations in the financial integration field, for the reason that the governments bonds differences in a monetary union (i.e. the euro area) is a crucial factor of the non attainment of this target. This is happens as a result that spreads reflect the creditworthiness of borrowers and as real economies have different perspectives, then the states show different capabilities to cover their fiscal obligations (Codogno et al, 2003).

As financial institutions is a main economic actor, it is logical to suppose that a significant correlation might be developed between bank and spreads level.
According to Manganelli & Wolswijk (2009) there are significant risk components and liquidity options that impact this relevance. The risk aversion and the interest rates are significant determinants of spreads attitudes.

Therefore, a strong banking system might be more resistant to the pressure of the public deficit and the public debt distortion. Apparently this is the case for the bigger banks, as they have the capital adequacy in order to protect their interests from external variations (Morgan and Stiroh, 1999). But on the other hand banks are more vulnerable to the endogenous perspective of the markets and this apparatus is prevalent especially in a financial crisis status (Knau & Bagner, 2008). Consequently it can be understood that the banking sector function could be influenced either from the spreads variations, or from the intrinsic characteristics of the domestic market.
3. Research Design

The primary aim of this research is to study basic characteristics of the relation which is being developed between the fluctuation of spreads of 10 year bonds and the performances of the values stocks of 14 Greek banks. The research takes place with the aim of analyzing the wider context of the impact of fiscal crisis in Greece upon the function of bank field. The research was designed in a way that it explains not only the impact of spreads but also the impact of the domestic market upon the performances of bank field. It is useful to be noted that the spreads of ten year bonds are referred to the differences between the performances that have the Greek bonds in comparison to the respective bonds of the general government.

3.1 Research Process Development

Research choices of this assignment took places given that the current fiscal crisis which Greek State faces. In addition, during the process of designing this research, it was taken under consideration the current intense crisis that Greek economy confronts. As a result, it was preferred to determine the influences that have been exercised upon banks stocks not only from abroad, but from domestic factors as well. In other words, during the process of data collection, was emerged the importance of the announcements that was made from the Greek government and official of the European Union or/and the European Monetary Union, in order Greece to confront its fiscal problems.

Subsequently, the fact that the literature review of this assignment included not only the basic characteristics of this crisis but also significant banks data had a significant effect on the empirical choices of the research. Additionally, due to the fact that the effect which government bonds have upon economic activity, was studied, it was understandable the interaction relationship which is developed. More specifically, the performances of 10 year bonds not only influence the economic and financial activity, but they are also shaped by it (Faust et al, 2011; Min, 1998). As a result, Greek financial and fiscal crisis affected the rapid increase of spreads and vice versa. In this point of view were integrated in the data, the announcements that was made in eleven different dates.
However the integration in the regression of the general index of Athens Stock Exchange was important in terms that were revealed the significance of domestic market in the stock returns formation. The interesting element of this finding pointed out the importance of the domestic market in the formation of economic activity and of course banks performances (Mamatzakis & Remoundos, 2003. Consequently, it was necessary to give greater emphasis on the impact of this crucial factor. The effect of this factor was incorporated into the research through the general index of the Athens Stock Exchange but the announcements as well. The announcements had in their majority endogenous perspective, as it was made mainly from the officials of the Greek government.

But due to honesty reasons, this research regards necessary to clarify that the choice of a small data of the dummy variable was based in an effort to concentrate on the more significant announcements. The research process avoided to select more critical dates that could enact as announcements signs. This choice took place for the reason that the research tried to keep away from an overexposure of the data announcements. To be more specific, research’s aim was to incorporate the basic announcements that were promoted so Greece do not bankrupt. If a greater sample of announcements was induced, the danger of bias of this dummy variable to the final effect in stock returns would be emerged. This difficulty arose from the fact that a set of variant announcements should have been connected with the current fiscal crisis, a choice which carries the risk of bias. This bias would come up through the existence of subjective assessments as regards the relation or not of the announcements with the current fiscal crisis of the country and finally due to the spreads formation. As a result the research process was contended to the initial planning and thus in the regression was incorporated dates such as the date of the elections or the date of the country’s entrance to the support mechanism etc. Finally, the option of the reception of a greater dates sample for the dummy variable they wouldn’t offer significant help in the examination of the stocks course. But nevertheless from the other hand they were introduced eleven critical dates that are correlated to the Greek fiscal crisis. The potential correlation that was investigated was amid the spreads formation and these dates. The set of these dates is appeared on the appendix of the assignment.

On the other hand, it must be pointed out that this choice includes major limitations. The basic restraint comes from the fact that this research gives greater gravity at the effect that is exercised by a specific data set of the announcements and
not from a more cognitive set. It is also important to be noted that this choice doesn’t limit the extent of the effect of spreads of 10 year bonds upon banks performances. In parallel, a significant restraint factor in the research is the period which is being analyzed. While it is studied the relation between spreads and stocks performances during 2009 and during a long period in 2010, the dynamic of the findings is being limited. This means that a research of a longer period (for example a research of five years) could potentially present more significant findings.

### 3.2 The Research Hypothesis

According to the issues that are analyzed above, the research process proceeded in the following assumptions:

1. Performances of spreads of 10 year bonds are an important determinant for the performances of banks stocks
2. Performances of the general index of the Athens Stock Exchange are also significant determinants of banks stocks
3. There is a positive relation between the level of banks capital adequacy and the effect of spreads
4. It is observed a negative effect that the announcements offer to the Greek banks stock returns

### 3.3 Research Methodology and Sample Size

#### 3.3.1 Data and Descriptive Statistics

The data of the research process were selected for the Athens Stock Exchange market database (http://www.ase.gr/) in the summer of 2011. In total 14 banks composed the research sample. These banks are Bank of Greece, National Bank of Greece, Commercial Bank, Eurobank EFG, Marfin Investment Group, Marfin Egnatia Bank, Agricultural Bank, Geniki Bank, Post Bank, Proton Bank, Bank of Piraeus, Attica Bank, Bank of Cyprus and Aspis Bank. Moreover the General Index of Athens Stock Exchange of this market was being consisted in the data. Data set was constituted by the stock’s price in a period which included entire 2009 and almost 2010 (until the
first days of November). The overall number of observations is 469 and it includes the returns rates of stocks and the spreads returns as well. The descriptive statistics of the data are portrayed in table 4.1.

The average spread rate was in this period 217.06 base units (standard deviation 73.6), a number that indicates the upcoming Greek financial crisis. Only three banks had positive returns in this period. These financial institutions are Proton Bank with 0.17 (5.15), Eurobank with 0.03 (4.25) and Ethniki bank with 0.01(0.5). The other 11 banks’ observations led to negative results whereas the greater is the one of Marfin Investment Group with -0.46(5.68), and the second is Aspis’ Bank (and then TBank) with -0.3 (6.69), while the third worst is the average Emporiki Bank return with -0.29 (3.03). In the negative side is Geniki Bank with average -0.28 (4.72), Attica Bank with -0.13 (3.58), Marfin Egnatia Bank with -0.097 (4.9), Piraeus Bank with -0.079 (3.77), Cyprus Bank with -0.73(5.8), Agrotiki Bank with -0.05 (3.91), TT Post Bank with -0.035(3.67) and Bank of Greece with average return rates fall -0.029 (2.16). Furthermore the return rates of the General Index is -0.24 (5.12)in this period.

3.3.2 Methodology

The following chart shows the daily changes of spread from 01/01/2009 until 05/11/2010. It is obvious that in certain dates like the day in which Greece has signed the agreement with the International Monetary Fund, spreads level presents extremely high increase.
A simple linear regression model is used in order to estimate the impact of spreads rate in the rates returns of the banks’ stocks that mentioned in the uppers section. The model has the following form:

The methodology that will be followed is the OLS regression analysis and the empirical model that will be used to test the impact of spreads is the following:

\[ R_{i,t} = a_i + b_i R_{M,t} + \Delta S_t + D_t \Delta S_t + E_{i,t} \]

where:
- \( R_{i,t} \): Daily Return of bank i on day t
- \( R_{M,t} \): Daily Index Return on day t
- \( \Delta S_t \): Daily change in spreads of 10-year Government Bonds on day t
- \( D_t \): Dummy variable which takes the value of 1 if a significant announcement has been made during that day and zero otherwise

This model was composed in terms of the model that was published by Dinenis and Staikouras (1998). Unfortunately it was not feasible to incorporate in the sample the total of announcements that was made in this period. Consequently, eleven critical dates were adopted as potential dummy variables. The other two independent variables (general index and ten years government bonds spreads) shed strong light in the rate returns of the stocks. The research results lay in the next chapter of the assignment.

3.3.3 Expected Results

The research process will try to examine the degree that the common stock returns of the 14-listed Greek banks are influenced by a sudden material change in Government Bonds spreads. This procedure will take place by the methodology that mentioned above. The expected results of the assignment are the follows:

- The Greek banks are vulnerable to the fluctuations of domestic market
- The Greek banks’ returns are being influenced by the spread formation
- There is significant correlation between the ten years government spreads and the announcements that took place in selected dates
4. Results and Discussion

Results

In this chapter the research results are being addressed. The main instrument is the regression analysis for the fourteen banks of the sample. In total fourteen separate regressions took place in order to interpret the variation of stock rate returns of the Greek Banks. Apart from the linear regression this chapter contains the study about the influence of spreads to the general index and the potential correlation between the spreads and the announcements. Finally the correlation status is being filled by the relative option of bank’s capital adequacy and the spreads. According to the research empirical results, spread’s impact on Greek bank’s stock rates is slight, whereas the relative impact if general index is much stronger and more significant. Moreover the announcements impact is relatively in low levels, but not statistical significant. Consequently the variation of the stock rates’ returns is more vulnerable to the domestic market proceedings.

4.1 The Influence in Stock Returns of Banks

Aspis Bank.

Aspis Banks regression results review a more significant influence from the bank index in her stock price returns than the respective of general index and the spreads (Table 1). The constant variable is negative (-0.07), an outcome that reveals the reductive course of the Aspis Bank returns. General index impact on bank’s returns is equal to 0.815 and significant in statistical terms. But the less important is the beta of spreads variable (almost zero) whilst the impact of announcements is negative (-1.775). Obviously spreads influence to Aspis Bank returns is in low levels, but the most interesting thing is that the announcements played a negative role to the banks returns.

Moreover the model summary study highlights the significance of the results (table 2). R square and adjusted R square (0.665 & 0.663) is significant as they

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4 The tables numbering refers to their apposition in the Appendix.
interpret the volatility of the dependent variable due to the regression of the independent variables. To be more specific the announcements, spreads rates and general index are responsible for the approximately 66% of Aspis Bank’s returns variation. Consequently the three independent variables are critical and determinant for the process of bank’s returns. This effect can be seen and by the significance of F test whereas the significance level is 0.000.

**Attica Bank.**

Table 3 depicts the regression results of Attica’ bank stock rates return as a result of the spreads, the Athens Stock Exchange general index, and the announcements dummy variable. Interestingly the findings here disclose the zero pressure of spreads rates to the firm’s stock returns. The constant variable is positive (0.013), whereas the more significant influence comes from the General index (0.173), and the most negative from the announcements (-0.1.446). But and here the statistical significance exists only for the general index influence (t- significance equal to 0.00)/

The model summary lies on table 4. There it can be shown that the R square influence is not in high levels as this variable takes the value of 0.064 and the R square adjusted is 0.058. But F statistic is significant, a result that support the diverse variations of the independent variables. Therefore Attica’s bank returns were more sensitive to the general index of Athens Stock Market and to the announcements fluctuation that to the one of the spreads between German and Greek government bonds.

**Eurobank**

The next bank that is being examined in terms of the dependence of its return to the variation of spreads, the bank index and the general index is Eurobank. Table 5 represents the regression results and informs the research process about the strength of the independent variables to banks’ stock returns variation. Then it is obvious that a negative constant term is present here (-0.306), a no significant minor impact of spreads (0.002) a positive impact of announcements (0.803) and a relative one from the general index (0.303). Needless to say the statistical significance lies in the option
of the general index, but the negative pressure of announcements is present and in that banks’ returns.

After all this kind of persistence of the results can be comprehended and from the data of table 6. Eurobank’s stock returns variation in the research period, have been determined from the volatility of the independent variables in a 13.5% (adjusted R square 0.129). The variation between variables behaviour is not stochastic, as F value (326.454) is statistically significant.

**Marfin Egnatia Bank.**

Hence in table 7 the results of the regression for Marfin Egnatia Bank demonstrate the vital influence of the General Index function to the banks’ returns and the relative announcements as well, but not for the spreads increase. The constant variable is negative and for this bank (-0.405). In contrast positive is also the influence of general index in Marfin Egnatia Bank returns (0.077), and more positive is the particular impact announcements (0.58). The increase of spreads rates do not have strong contact with the returns rates as the b value at this point equals to 0.001 But and in this regression the results are not significant in statist terms for the spreads influence on stock returns, as also for other variables including on the other hand the significant influence of bank and general index.

The fact that Marfin Egnatia Bank has low relative stock prices can be connected by the weak interpretation perspective of the model (table 6). R square takes the non significant value of 0.07, even though that F statistic is significant as its value expose the different variations. As a result it can be addressed that and for that bank the spreads influence is very small in its returns rates.

**Marfin Investment Group**

The persistence of the relatively stable influence of Athens Stock Market General Index is valid and for the case of Marfin Investment Group. Nevertheless, it should be noted that Marfin Egnatia Bank holds a great share of Marfin Investment Group, so their correlation might throw strong light to their comparatively results. The constant variable is negative (-0.151), the spreads variable is zero, the
announcements variable is 0.174 and the General Index is 1.016. But these findings hold statistically their validity only for the case of general index impact.

Accordingly the explanation level of the independent variables to the variation of dependent variable is strong as R square is 0.83 and F statistic is also significant for the variations. So it can be stated due to the upper results that the general index and the announcements are responsible for the variation of the MIG rates, in a more important level than the one of the spreads. In that order, the findings of four regressions show that the return rates of the Greek banks are more vulnerable to the domestic market, that to the respective of Euro area. But up to now the interesting issue is that the announcements impact is positive for some banks.

**Proton Bank**

Proton Bank findings are consistent with the upper observation as for table 11 is apparent that the spreads influence pinpoints in low levels. Especially the spreads b is identical to 0.002 for the Proton rate returns, while positive is the influence that is being taken from the General index variable (0.288) and less than zero is the constant variable as well (-0.153). Another one negative impact comes from the announcements function as its beta is equivalent to -1.247 (a value that carries a strong dependence of stock to the domestic market conditions. Moreover it is apparent that these influences hold statistically only for the general index (0.000) and not the spreads (0.389).

In table 12 the summary of the regression model for the Proton Bank case is portrayed. R square is small enough (0.084) and R square adjusted is also not very important (0.078). The F value here is smaller (14.241), but it is significant in statistical terms. As a result Proton Bank returns are more relevant to the domestic market functions than to the respective of the spreads.

**Agrotiki Bank**

Agrotiki Bank is the next case to study and it is an important financial institution as it has strong administration relationship with the Greek public sector. Especially this bank manages the loans and the subsidies that are given to the agricultural sector
either from the Greek central government, or the European Union. Agrotiki is one of banks of the research sample that appears a positive constant term (0.453). This result is reliable with the fact of the bank growth, and its primary operation in Greek economy. Furthermore positive sign has the finding of the general index impact on banks’ stock returns (0.247). But in contrast the spreads and the announcements move in low negative levels (-0.002 and -1.25). But the most noteworthy result is that no more than the general index results are significant (t=0.000 for both). So the fact that the dependent variables’ fluctuation is interpreted by the 0.104 (or 10.4%) of the behaviour of the dependent variables is concurrent with the upper findings. The difference in variables variance is semantic (121.368) and significant. Agrotiki Bank seems to follow the rule, that the Greek banks are more influenced by the local market procedures.

**Geniki Bank**

Geniki Bank a relative small bank of Greek banking branch joins the prevalent trend that is based on the greater influence that bank’s stock returns accept form the main stock index than the spreads variable. In table 15, this statement is apparent for the reason that the general index beta is the most positive (0.259) among the other variables and constant term is also positive (0.347). In contrast the spreads beta is slight negative (-0.003) and announcements follow this path but more persistently (-0.262). But and here the case is that the general index impact is statistical significant.

Model summary is not so impressive however for the Geniki Bank case as the values of R square and adjusted R square are below from 0.01. More specifically values are 0.078 and 0.072 in that rank, as the F statistic is relative low also (73.99), but significant.

**Ethniki Bank**

Ethniki bank is one another special case as the Greek central government has the firm’s managements and approximately a 15% of total stocks is held by public institutions. Ethniki is one of the most important firms in Greece, and operates in a various countries.
However the results of the table 17 show that the spreads influence is very small and not significant statistically. The constant variable is slight positive (0.012), the spreads respective is roughly zero whereas the general index is positive (0.036, but the announcements is negative (-0.176). Last but not least is the undeniable finding that significant statistics for this kind of influence is the general index (t=0.000).

In table 18 consequently are depicted the model summary results. R square and adjusted R square values (0.140 & 0.134 respectively) reveal the relative not strong dynamics of the independent variables to the return rates of Ethniki stocks. The general indexes as also the bank index interprets and shapes the ground for the process of these returns. The variance differences are and here persistent (F=369.414), and significant. So it can be stated that the spreads impact is for that case slightly here.

**TT Post Bank**

The next bank that is being examined in order to comprehend the influence of spreads in its stock rates return is TT Post Bank. It is of great interest that the same options of the results as long as the previous bank are evident and for this case. A positive constant coefficient (0.138), and a zero spreads term are the first results that prepare for the next ones. These are the positive impact of general index (0.244) and a negative one for announcements (-1.807). Only the independent variable of the general index those carries statistical significance to their impact (t=.0000). As a result it can be understood that the local market procedures is of greater importance for the Post Bank returns.

The validity of the results can be interpreted and from the table 20, whereas the R square and the R square adjusted take the values of 0.114 and 0.119 respectively. The different variation of the variables is strong (F= 124.119) and significant. Nevertheless it is obvious that a trend is being formatted due the levels of influence to the stock returns. This trend encompasses the significant impact of the market to the returns but no the respective one of the spreads.

**Bank of Greece**
Bank of Greece is the Central Bank of Greece, but its stocks are object of negotiations in Athens Stock Exchange Market. It is interesting to research the influence that these shares accept from the spreads and the rest variables, in order to estimate the extrovert or the introvert orientation of Central Bank in this specific issue.

It is surprising however that the influence of spreads in not statistical significant, and for this case. The significance of the results holds, but only for the bank index and the general index options. This adverse selection amplifies the endogenous perspective of the Greek banking sector, as it departures from the dependence of the spreads persistent increase. So due to the results, there is a negative constant term (-0.109), a zero spread impact, a positive general index presence (0.112) and a bigger one of the announcements (0.257). Thus it can be stated that the announcements exhibit positive feedback to the Bank of Greece returns.

But in contrast the fact that the Bank of Greece develops a majority of operations can be correlated with the relative week results of R squares. R square is equal to 0.071 and adjusted R square is 0.069 The significance of F variable appears with a value of 67.265. As the Bank of Greece operates as the Central Bank is obvious that its stock returns varies due to a plenty of economic variables. Therefore the finding here is that the results for this central financial institution follow the tend, but no with low volatility.

Emporiki Bank

Emporiki bank is a former bank of Greek public sector that now is a part of Credit Agrocole Group. Table 25 portrays the regression results of Emporiki stock rates return, for this period. Constant variable is positive (0.24), spreads impact is little less than zero (-0.002), whereas general index influences positively the returns (0.08). Quite interestingly the announcements is positive (1.315) but not statistically significant.

But on the other hand model summary, shows that the independent variables interpret only a small share of stock returns variation (R square 0.025, and R square adjusted 0.019). On the other hand it interesting that the F value is small (14.759), but statistical significant.
Cyprus Bank

The semi-final case for this research is the Cyprus Bank, a financial institution that has its headquarters in Cyprus Island. Surprisingly the trend that had been noticed above seems to evolve into a dynamic, that path the way for the significant influence of general index to the stock returns and the respective slight impact of the spreads. In that point of view the returns constant variable is positive for the Cyprus Bank (0.134), the spreads variable equal to zero, and the general index positive and high enough (1.034). In contrast the announcements effect is negative (-0.78), but not statistically significant. Obviously the significant results are those of general index (t=0.000).

As result the findings of table 26 are sufficient for the statement composition, that the independent variables determine the variance of the Cyprus Bank returns. The R square is 0.835 and R square adjusted is 0.834. A great value of F (901.874) is an outcome close to the upper report, as it validates the market effects in the banks’ returns.

Piraeus Bank

Finally the last sample member is Piraeus Bank. As it is depicted in table 27, the results are similar to the previous ones. Spreads influence is almost at zero level (0.001), but general index is in high attitude (0.265), and announcements lies in the same field (0.14). The respective standardized betas are 0.009, 2.963 and -2.510, and the constant variable -0.18. But and for this case only the bank index and the general index are statistically significant. Thus the R square and the R square adjusted values are 0.124 and 0.124 respectively as the F value for this regression is 327.919.
4.2 Capital Adequacy and the Influence of Stock Rates

In this subsection research process focuses on the contingent correlation among the capital adequacy of the 14 banks and the impact of the independent variables of the regression. Table 29 portrays the level of capital adequacy of the banks, as the respective spreads beta of the regression. Apart from the Aspis Bank (TBank) which has capital adequacy around 1.5% the other banks seem to capture their financial exposures. Therefore Attica’s capital adequacy is 10.9%, Marfin Egnatia Bank’s respective is 8.7% while Ethniki’s Bank is at the level of 8.2%. Moreover Proton Bank and Cyprus Bank lay together at 6.6%, Bank of Greece at 5.9%, Piraeus Bank at 5.7% TT PostBank at 5.5% Eurobank is at 5.1%, Geniki Bank at 4.5%, Emporiki at 3.6% and Agrotiki Bank is at 2.7%. The impressing level of Marfin Investment Group (80.2%) is an outcome of the group companies’ function of Marfin.

**Table 29 Capital Adequacy and Spreads Impact**

<table>
<thead>
<tr>
<th>BANK</th>
<th>Capital Adequacy</th>
<th>Spreads Beta</th>
</tr>
</thead>
<tbody>
<tr>
<td>ETHNIKI</td>
<td>0.082</td>
<td>0.00</td>
</tr>
<tr>
<td>EUROBANK</td>
<td>0.051</td>
<td>0.02</td>
</tr>
<tr>
<td>GENIKI</td>
<td>0.045</td>
<td>-0.03</td>
</tr>
<tr>
<td>ATE</td>
<td>0.027</td>
<td>-0.02</td>
</tr>
<tr>
<td>MARGIN</td>
<td>0.087</td>
<td>0.01</td>
</tr>
<tr>
<td>MIG</td>
<td>0.802</td>
<td>0.00</td>
</tr>
<tr>
<td>TBANK</td>
<td>0.015</td>
<td>0.01</td>
</tr>
<tr>
<td>TT</td>
<td>0.055</td>
<td>0.00</td>
</tr>
<tr>
<td>ATTICA</td>
<td>0.109</td>
<td>-0.03</td>
</tr>
<tr>
<td>PROTON</td>
<td>0.066</td>
<td>0.02</td>
</tr>
<tr>
<td>EMPORIKI</td>
<td>0.036</td>
<td>-0.02</td>
</tr>
<tr>
<td>CYPRUS</td>
<td>0.066</td>
<td>0.000</td>
</tr>
<tr>
<td>PEIRAUES</td>
<td>0.057</td>
<td>0.01</td>
</tr>
<tr>
<td>BANKOFGREECE</td>
<td>0.059</td>
<td>0.00</td>
</tr>
<tr>
<td>Pearson Coefficient</td>
<td>-0.089</td>
<td></td>
</tr>
</tbody>
</table>

But the most significant finding is the low and negative simultaneously correlation coefficient. (Pearson). The correlation between the spreads the Greek bank’s capital
adequacy lies in very low levels. This result is concurrent with the previous findings that prove that the spreads had slight impact on banks’ stock rate returns.

4.3 Correlation between the independent variables

After all, the results of table 34 indicate that the correlation among the independent variables of the regression. The correlation between spreads and announcements is negative (-0.157) and significant. Respectively the correlation between spreads and general index is slight positive (0.073) but no significant statistically. Finally the correlation between the announcements and the general index is almost zero.

| Table 30 Correlations |
|------------------------|-------------------|-------------------|
|                        | SPREADS | ANNOUNCEMENTS | GENERAL INDEX |
| SPREADS                | Pearson Correlation | 1.000 | -0.157** | 0.073 |
|                        | Sig. (2-tailed)    | 0.001 | 0.114   |
|                        | N                | 469,000 | 469 | 468 |
| ANNOUNCEMENTS          | Pearson Correlation | -0.157** | 1.000 | 0.001 |
|                        | Sig. (2-tailed)    | 0.001 | 0.987   |
|                        | N                | 469 | 469,000 | 468 |
| GENERAL INDEX          | Pearson Correlation | 0.073 | 0.001   | 1.000 |
|                        | Sig. (2-tailed)    | 0.114 | 0.987   |
|                        | N                | 468 | 468 | 468,000 |

**. Correlation is significant at the 0.01 level (2-tailed).

It can be understood that there was a significant negative correlation (-0.157), between the announcement about the Greek fiscal crisis and the increase of spreads returns. This result indicates that the announcements exhibited a bad influence that had as main result the significant increase of ten years government bond spreads.
The upper results indicate the significance of the domestic market conditions to the formation of the banks stock returns. In that point of view the result of this research can be incorporated to the findings that highlight the role of aggregates in the spreads formation (Faust et al, 2011; Min, 1998; Knau & Bagner, 2008). To this perspective it is remarkable that the spread rate returns did not impact significantly the rates returns of banks’ stock. On contrast the attitude of the Greek banks’ returns was more vulnerable to the domestic market conditions. Apparently the creditworthiness of the Greek central government was the main determinant of the spreads increase, and moreover the sequential announcements did not operate well. This result is similar to the research of Codogno et al (2003). But in contrast the fact that the Greek banks was more dependent from the local market conditions is contrary to the findings of Manganelli & Wolswijk (2009), that indicate the correlation amid the liquidity level of banks and their dependence to the government spreads bonds.

5. Conclusions

This assignment tried to focus on the potential correlations that might exist between the spreads of ten years government bonds and the efficiency of the Greek banks. A simple OLS model was used in order to investigate whether the banks’ operation are being determined by the spreads formation or by the conditions of local market. More specifically the model used as dependent variable the stock returns in Athens Stock Exchange Market of 14 Greek banks in a period that captured the 2009 and approximately the three quarters of 2010. Respectively as dependent variables were elected the corresponding returns of the General Index of Athens Stock Exchange Market, the announcements that was made from the Greek government and the head officials of the European Union and of course the spreads of ten years Greek government bonds. Unfortunately it was feasible to select the total of these announcements. This choice took place in order to avoid a bias selection that could effect in distortion the banks’ returns. The research attempted to cover this gap, by measuring apart from the regression, the potential correlation, of the ten years spread formation and a selective set of dates that had been announcement and policy decisions of the Greek government and the European Union as well.
The research took for granted the fiscal crisis of the Greek government and its sequential outcomes. Greece’s fiscal crisis accrued as a matter of the continuous lending of the central state in order to advance the real economy’s process. But the unexpected increase of spreads rates, push pressure of the deficit and the current debt. As a result the central government asked the assistance of the Monetary Fund and the European Central Bank, and the European Union’s as well in rank to capture its basic expenses. A bailout mechanism was imposed, and the government introduced significant and unprecedented reforms to confront the fiscal distortions.

As a result the liquidity level of the market fell down significantly and thus the real economy, entered in an intensive variation period. The Greek banks fell on the eye of the storm, for the reason that they had been from the one day to another exposed to risk. Their operation was then determined by the effects of Greece incorporation to the bailout mechanism in order to avoid default. Nevertheless it should be noted that all these proceedings was taking place in a period that the global economical and financial system was facing the most important crisis of the last years. It was apparent that the central state should implement crucial cut ups in its expenses.

As this process was evolved the ten years governments bonds spreads was increased day by the day. The effects of spreads increase were vital for the Greek marker, which was developed in order to counterweight the exposure to credit risk and to deteriorate the uncertainty. As a result banks ought to re-determine its options about their investments. Moreover banks ought to find solutions that minimize the spreads influence to their effectiveness.

According however to the regression results the impact on ten years government bonds spreads to the Greek banks stock rates, was relatively low. Only few banks faced significant influence of the spreads formation. Moreover it was observed a relative low level negative correlation between the spreads impact and the capital adequacy level of Greek Banks. Greek banks were more vulnerable to the fluctuations of the domestic market. This was the case for the majority of the banks included in the sample data. More specifically it was observed statistical significant impact of the General Index of Athens Stock Exchange Market. This kind of impact was either positive or negative, but it was achieved high levels. Additionally the impact of the dummy variable of announcements was mostly negative in the banks’ stock returns, but in a few cases was positive.
These results indicated that the Greek banks are more exposed to the local market conditions. This might be explained by the loans that the majority of the Greek banks took from the central government in order to confront the liquidity problems. As an important percentage of these loads were spread from the banks to the firms of local real economy, it was then logical, that the exposure to risk had a significant local dimension. In addition the Greek banks had the opportunity to be lend by the European Central Bank, so to counterweigh risk, was a significant locked in mechanism to avoid defaults.

Interestingly there was a negative and statistical significant correlation between the announcements and the ten year government spreads formation. This finding indicates the relevance that exists in the spreads formation and the announcements of the Greek governments and the head officials of the European Union. In contrast the correlation between the spreads and the General Index of Athens Stock Exchange was positive but not statistical significant, whilst the correlation of the same index and the announcements’ promotion was in very low levels. Therefore the announcements impact the spreads, and mostly in a negative level. This result shed light on the question if the final outcome of announcements was positive or negative for the Greek fiscal crisis.

Research results are similar to the studies that the ten years government spreads formation has a bilateral relevance with the local economic activity (Moddy & Taylor, 2003). This connection emerges as an outcome of the domestic development policies and more importantly from the local economic activity. The sequential decrease of the returns rate of the General Index of Athens Stock Exchange Market is a vital issue of this sort of relevance. Moreover the as the creditworthiness of the borrowers and the lenders determine the spreads formation (Codogno et al, 2003) it is logical to accept that the central governments operation was more vulnerable to the spreads increasing returns.

The research results demonstrate that the banks’ operation should pay more attention to the local and domestic market conditions, than it is accepted to do so. In a market whereas the central government guarantees for the banks liquidity and capital adequacy, it is rational to accept that locality matters. Moreover the research results are a significant option, for the interpretation of the local activity of real economy. More particularly policy makers should take into account the fact that the enhancement of local economic activity is a vital impediment to the ten years
governments spreads bonds decrease. Thus the reinforcement of employment as the deterioration of inflation rate should be targets that enacts as means of spreads decrease determinants (Min, 1998).

The future research should focus its interest on studying the potential relevance between the ten years government bonds formation and the economic and financial activity. This process might take into account the operation of the most significant branches of real economy and the respective of financial institutions as well. To this perspective there might be researched the significance of exports, of tax revenues, the bank’s exposure and the banks’ mergers as well. The studying about these coefficients could shed strong light on the potential relevance between the spreads formation and the economic and financial activity.

The research about banks relevance with the spread formation should be at the table according to the basic elements of their operation. Therefore in order to overcome the basic limitation of the research, that was the difficulty in incorporating the announcements of the fourteen Greek banks, that might played a significant role in their stock returns formation research should study in the future different sets of banks’ operation. The classification of this future research might be developed in terms of profitability, or in terms of capital adequacy. This option will clarify the ongoing ten years government bonds impact on the financial and economic activity.
6. References


Hellenic Statistical Authority (2010) Greek Macroeconomic Aggregates


Institute of Economic and Industrial Research-IOBE(2010) Greek Economy Report


